eurofins | Product Service

FCC TEST REPORT

FCC 47 CFR Part 15E
Industry Canada RSS-247
Digital transmission systems operating within the 5150 – 5350 band

Report Reference No.....:	G0M-1503-4620-TFC407WF-V01
Testing Laboratory.....:	Eurofins Product Service GmbH
Address.....:	Storkower Str. 38c 15526 Reichenwalde Germany
Accreditation.....:	A2LA Accredited Testing Laboratory, Certificate No.: 1983.01 FCC Filed Test Laboratory, Reg.-No.: 96970 IC OATS Filing assigned code: 3470A
Applicant's name.....:	BARTEC PIXAVI AS
Address.....:	Domkirkeplassen 2 4006 Stavanger NORWAY
Test specification:	
Standard.....:	47 CFR Part 15E RSS-247, Issue 1, 2015-05 RSS-Gen, Issue 4, 2014-11 ANSI C63.10:2013 ANSI C63.4:2014
Test scope…….....:	complete Radio compliance test
Equipment under test (EUT):	
Product description	Wireless camera (Standard version)
Model No.	OrbitX ST
Additional Model(s)	OrbitX EX
Brand Name(s)	None
Hardware version	Rev 2
Firmware / Software version	478
	FCC-ID: YML-ORBITX IC: 9249A-ORBITX
Test result	**Passed**

Possible test case verdicts:

- neither assessed nor tested .....: N/N
- required by standard but not appl. to test object.....: N/A
- required by standard but not tested.....: N/T
- not required by standard for the test object .....: N/R
- test object does meet the requirement.....: P (Pass)
- test object does not meet the requirement.....: F (Fail)

Testing:

Test Lab Temperature.....: 20 – 23 °C

Test Lab Humidity .....: 32 – 38 %

Date of receipt of test item .....: 2015-04-20

Date (s) of performance of tests .....: 2015-04-30 - 2015-05-05

Compiled by ..... : Matthias Handrik

Tested by (+ signature)..... : (Responsible for Test) Wilfried Treffke .....W. Treffke.....

Approved by (+ signature) ..... : Christian Weber .....C. Weber.....

Date of issue ..... : 2015-08-04

Total number of pages ..... : 71

General remarks:

The test results presented in this report relate only to the object tested.

The results contained in this report reflect the results for this particular model and serial number. It is the responsibility of the manufacturer to ensure that all production models meet the intent of the requirements detailed within this report.

This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory.

Additional comments:

BARTEC PIXAVI

Title	**BARTEC PIXAVI OrbitX Model Differences Declaration**
Document ID	PX-ORBITX-Models-DoC
Revision	1
Project	OrbitX
Author	David Wightman
Created	23.04.2015
Last	23.04.2015
Nature of document	~~CONFIDENTIAL~~
Contents	**Contents:** Bartec Pixavi ORBITX RoHS Declaration of Conformity

Revision History

Revision	Date	Change	Revised by
1	23.04.2015		

BARTEC PIXAVI

BARTEC PIXAVI Stavanger, Norway April-23-15

BARTEC PIXAVI OrbitX Model Differences Statement

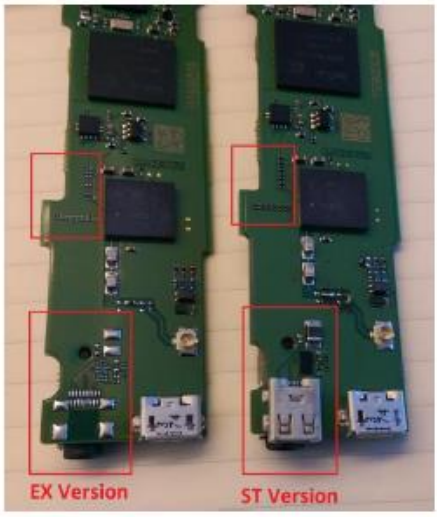
To whom it may concern,

The OrbitX comes in two models, an OrbitX-EX model and an OrbitX-ST model. Both models are identical except for the following differences highlighted below. There are no differences to the radio section between models.

HDMI

The **ST model** includes circuitry to support a Micro-HDMI connection and mechanics to give access to the HDMI port.

The **EX model** uses the same PCB, but does not have the HDMI components populated.



2

BARTEC PIXAVI

BARTEC PIXAVI

SILICON POTTING

The EX model is made for Hazardous areas and therefore is filled with a silicon potting in the following area. The antenna is not enclosed in Silicon.

The ST model is not filled with silicon potting.

Version History

Version	Issue Date	Remarks	Revised by
01	2015-08-04	Initial Release	

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1 Equipment (Test item) Description

Description	Wireless camera (Standard version)	
Model	OrbitX ST	
Additional Model(s)	OrbitX EX	
Brand Name(s)	None	
Serial number	None	
Hardware version	Rev 2	
Software / Firmware version	478	
FCC-ID	YML-ORBITX	
IC	9249A-ORBITX	
Equipment type	End product	
Radio type	Transceiver	
Radio technology	IEEE 802.11 a/n (20 MHz / 40 MHz)	
Master / Client capabilities	Client without radar detection	
Operating frequency range	5180 - 5240 MHz	
Assigned frequency band	5150 - 5250 MHz	
Main test frequencies	Channel 36	5180 MHz
	Channel 40	5200 MHz
	Channel 48	5240 MHz
Spreading	OFDM	
Modulations	BPSK, QPSK, 16-QAM, 64-QAM	
Number of channels	4	
Channel spacing	5 MHz	
Number of antennas	1	
Antenna	Type	integrated
	Model	unspecified
	Manufacturer	Custom
	Gain	0 dBi
Manufacturer	BARTEC PIXAVI AS Domkirkeplassen 2 4006 Stavanger NORWAY	
Power supply	V_{NOM}	3.7 VDC
	V_{MIN}	3.1 VDC
	V_{MAX}	4.2 VDC
Temperature range	T_{NOM}	+20°C
	T_{MIN}	-20°C
	T_{MAX}	+45°C

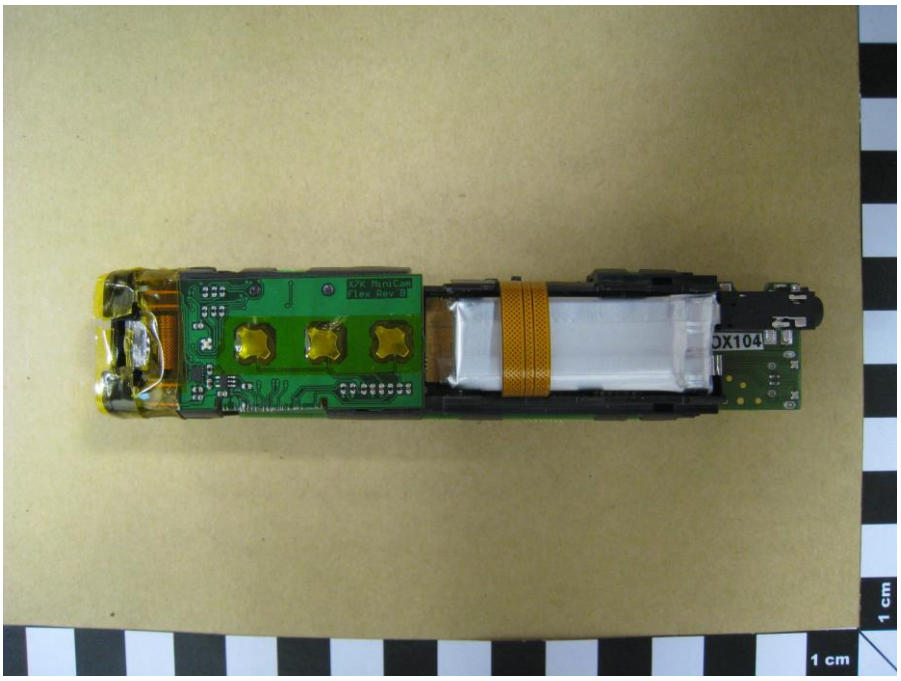
AC/DC-Adaptor	Model	GT-41078-0506-0.4-USB
	Vendor	Globtek
	Input	100-240 VAC - 50-60 Hz
	Output	5.6 VDC

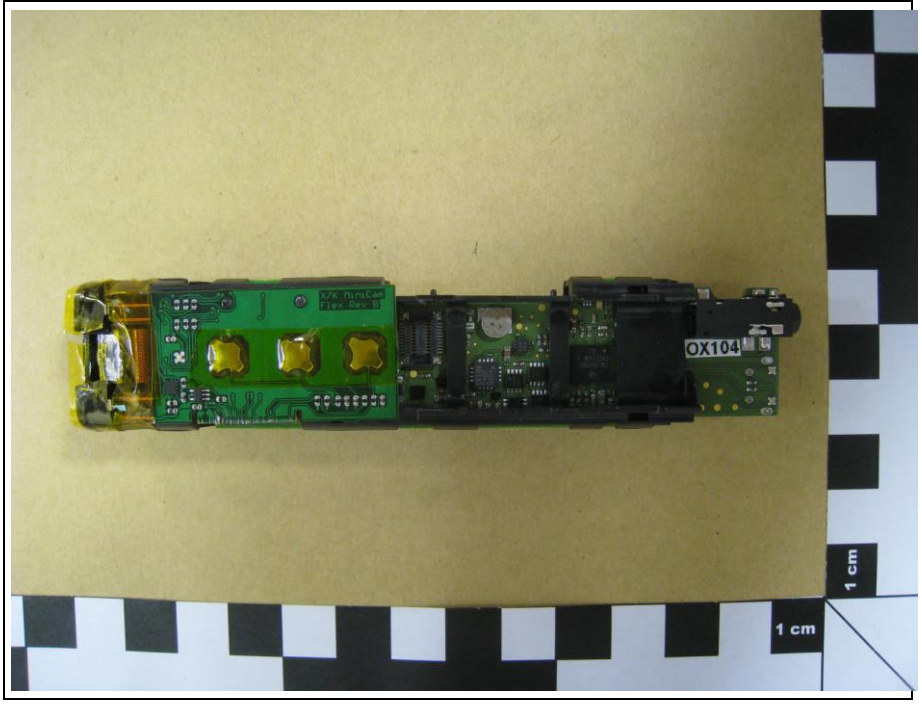
1.1 Photos – Equipment External

EUT TOP

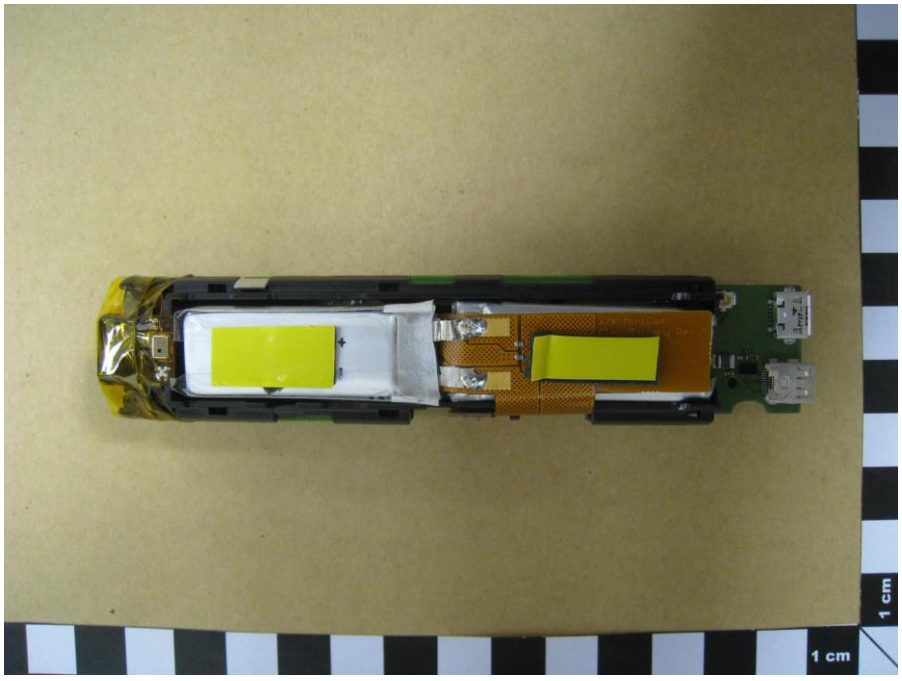
EUT BOTTOM

1.2 Photos – Equipment internal

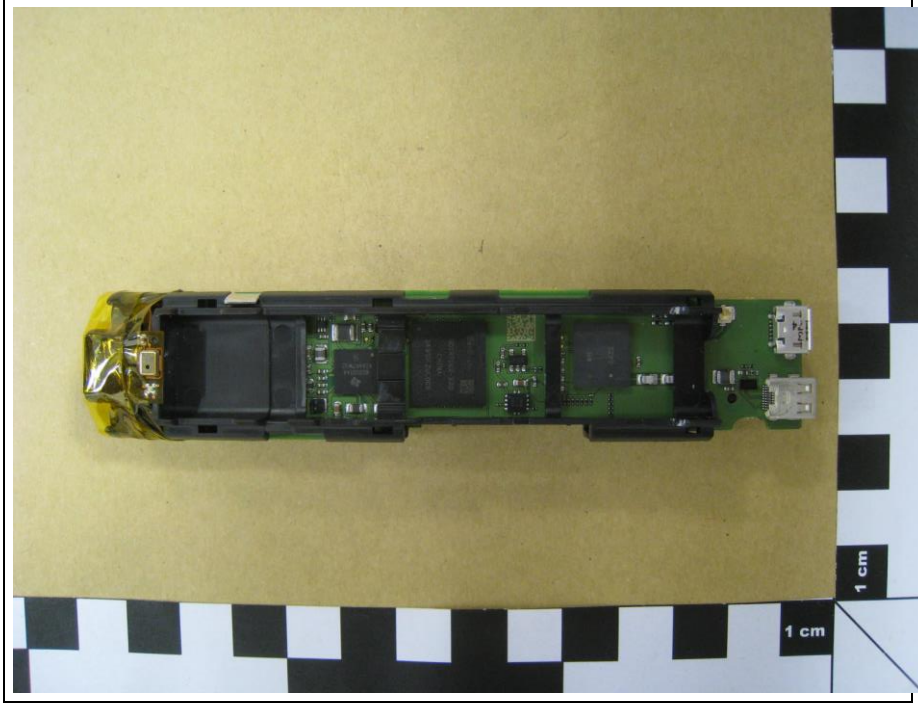
EUT PCB FRONT I


EUT PCB FRONT II


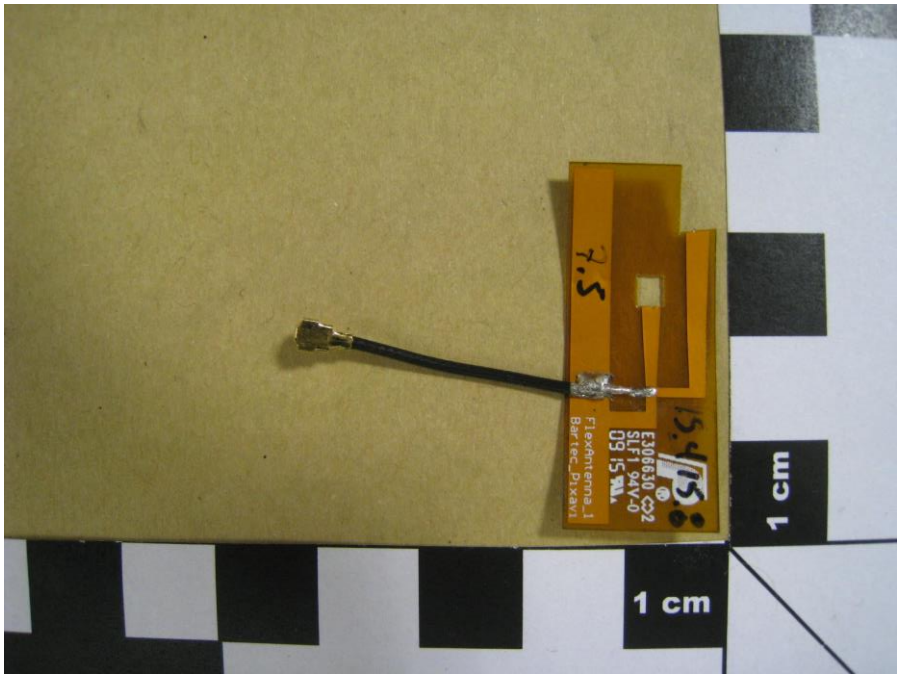
EUT PCB BACK I



EUT PCB BACK II

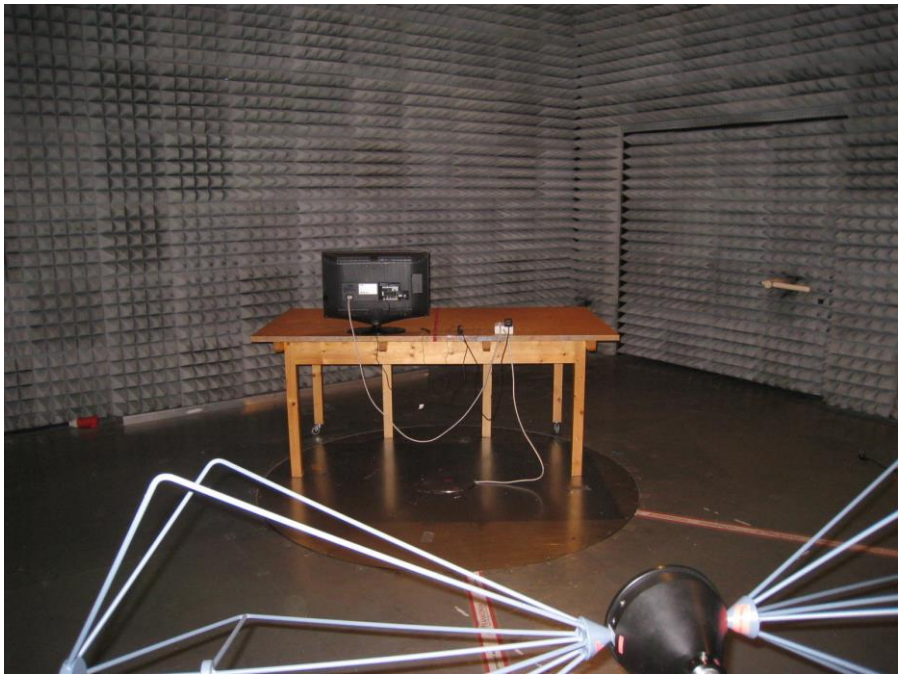


EUT antenna chassis

EUT antenna


1.3 Photos – Test setup

Test setup ac-power line

Test setup radiated emission


1.4 Supporting Equipment Used During Testing

Product Type*	Device	Manufacturer	Model No.	Comments
AE	Laptop	DELL	Latitude E6420	
AE	Monitor	Samsung	LE22B350F2W	
AE	AC/DC adaptor	Globtec	GT-41078-0506-0.4-USB	
AE : Auxiliary/Associated Equipment				

1.5 Test Modes

Mode #	Description	
OFDM	General conditions:	EUT powered by laboratory power supply.
	Radio conditions:	Mode = standalone transmit Spreading = OFDM Modulation = BPSK Data rate = 6 Mbps Bandwidth = 20 MHz Duty cycle = 100 % Power level = 15 dBm
HT20	General conditions:	EUT powered by laboratory power supply.
	Radio conditions:	Mode = standalone transmit Spreading = OFDM Modulation = MCS0 (BPSK) Data rate = 6.5 Mbps Bandwidth = 20 MHz Duty cycle = 100 % Power level = 15 dBm
HT40	General conditions:	EUT powered by laboratory power supply.
	Radio conditions:	Mode = standalone transmit Spreading = OFDM Modulation = MCS0 (BPSK) Data rate = 13 Mbps Bandwidth = 40 MHz Duty cycle = 100 % Power level = 15 dBm
Receive	General conditions:	EUT powered by laboratory power supply.
	Radio conditions:	Mode = standalone receive Spreading = DSSS / OFDM
AC-Powerline	General conditions:	EUT powered by AC/DC adaptor.
	Radio conditions:	Mode = standalone transmit Spreading = OFDM Power level = Maximum

1.6 Test Equipment Used During Testing

Measurement Software			
Description	Manufacturer	Name	Version
EMC Test Software	Dare Instruments	Radimation	2014.1.15

Occupied Bandwidth					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum analyzer	R&S	FSW43	EF00896	2015-03	2016-03

6dB Bandwidth					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum analyzer	R&S	FSW43	EF00896	2015-03	2016-03

Maximum peak conducted power					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum analyzer	R&S	FSW43	EF00896	2015-03	2016-03

Power spectral density					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum analyzer	R&S	FSW43	EF00896	2015-03	2016-03

Band edge compliance					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum analyzer	R&S	FSW43	EF00896	2015-03	2016-03

Conducted spurious emissions					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum analyzer	R&S	FSW43	EF00896	2015-03	2016-03

Radiated spurious emissions					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Semi-anechoic chamber	Frankonia	AC 1	EF00062	-	-
Spectrum Analyzer	R&S	FSIQ26	EF00242	2015-04	2016-04
Biconical Antenna	R&S	HK 116	EF00012	2013-02	2016-02
LPD Antenna	R&S	HL 223	EF00187	2014-03	2017-03
LPD Antenna	R&S	HL 025	EF00327	2013-02	2016-02

AC power-line conducted emissions					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
AMN	R&S	ESH2-Z5	EF00182	2014-11	2016-11
EMI Test Receiver	R&S	ESCS 30	EF00295	2014-10	2015-10

1.7 Sample emission level calculation

The fol1ing is a description of terms and a sample calculation, as appears in the radiated emissions data table. The numbers used in the calculation are for example only. There is no direct correlation to the specific data taken for the product described in this document:

Reading:

This is the reading obtained on the spectrum analyzer in dBµV. Any external preamplifiers used are taken into account through internal analyzer settings.

A.F.:

This is the antenna factor for the receiving antenna. It is a conversion factor, which converts electric fields strengths to voltages, which can be measured directly on the spectrum analyzer. It is treated as a loss in dB. Cable losses have been included with the A.F. to simplify the calculations. The antenna factor is used in calculations as fol1s:

Reading on Analyzer (dBµV) + A.F. (dB) = Net field strength (dBµV/m)

Net:

This is the net field strength measurement (as shown above).

Limit:

This is the FCC Class B radiated emission limit (in units of dBµV/m). The FCC limits are given in units of µV/m. The fol1ing formula is used to convert the units of µV/m to dBµV/m:

Limit (dBµV/m) = 20*log (µV/m)

Margin:

This is the margin of compliance be1 the FCC limit. The units are given in dB. A negative margin indicates the emission was be1 the limit. A positive margin indicates that the emission exceeds the limit.

Example only:

Reading	+	AF	=	Net Reading	:	Net reading - FCC limit = Margin
21.5 dBµV	+	26 dB	=	47.5 dBµV/m	:	47.5 dBµV/m - 57.0 dBµV/m = -9.5 dB

2 Result Summary

FCC 47 CFR Part 15E, IC RSS-247				
Product Specific Standard Section	**Requirement – Test**	**Reference Method**	**Result**	**Remarks**
IC RSS-247 § 3.1	Occupied Bandwidth	ANSI C63.10	N/R	Informational only
FCC § 15.407(a)(h)	26 dB emission bandwidth	ANSI C63.10	N/R	No limit. Basis for other measurements.
FCC § 15.407(a) IC RSS-247 § 6.2	Maximum output power	ANSI C63.10	PASS	
FCC § 15.407(a) IC RSS-247 § 6.2	Maximum power spectral density	ANSI C63.10	PASS	
FCC § 15.407(b) IC RSS-247 § 6.2	Conducted spurious emissions at antenna port	ANSI C63.10	PASS	
FCC § 15.407(b) IC RSS-247 § 6.2	Band edge compliance	ANSI C63.10	PASS	
FCC § 15.407(g)	Frequency stability	ANSI C63.10	PASS	
FCC § 15.407(a)(e) IC RSS-247 § 6.2	Minimum 6 dB Bandwidth	ANSI C63.10	N/R	Only required in 5725 – 5850 MHz band.
FCC § 15.407(h) IC RSS-247 § 6.2	Transmit Power Control (TPC)	ANSI C63.10	N/R	TPC is required in 5250 – 5350 MHz and 5470 – 5725 MHz bands. TPC is not required for EIRP < 500 mW.
FCC § 15.407(h) IC RSS-247 § 6.3	Dynamic Frequency Selection (DFS)	FCC Order, ET Docket No.03-122 (FCC 06-96)	N/R	DFS is required in 5250 – 5350 MHz and 5470 – 5725 MHz bands.
FCC § 15.407(b) FCC § 15.207 IC RSS-247 § 3.1	AC power line conducted emissions	ANSI C63.10	PASS	
FCC § 15.407(b) FCC § 15.209 IC RSS-247 § 6.2	Transmitter radiated spurious emissions	ANSI C63.10	PASS	
IC RSS-247 § 3.1	Receiver radiated spurious emissions	ANSI C63.10	PASS	
Remarks:				

3 Test Conditions and Results

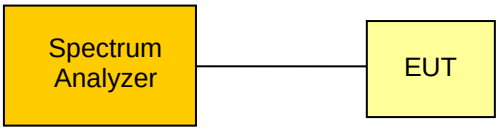
3.1 Test Conditions and Results – Occupied Bandwidth

Occupied Bandwidth acc. to IC RSS-Gen	**Verdict: PASS**
Test according to measurement reference	Reference Method
	ANSI C63.10

Limits

None (Informational only)

Test setup



Test procedure

1. EUT set to test mode (Communication tester is used if needed)
2. Span set to at least twice the emission spectrum
3. Resolution bandwidth set to 1 % of span
4. Occupied Bandwidth (99 %) measurement with spectrum analyzer built in measurement function

Test results

Channel	Frequency [MHz]	Mode	Occupied Bandwidth [MHz]
36	5180 MHz	OFDM	17.0
40	5200 MHz	OFDM	17.2
48	5240 MHz	OFDM	17.0
36	5180 MHz	HT20	18.3
40	5200 MHz	HT20	18.1
48	5240 MHz	HT20	18.1
38	5180 MHz	HT40	36.6
46	5240 MHz	HT40	36.1

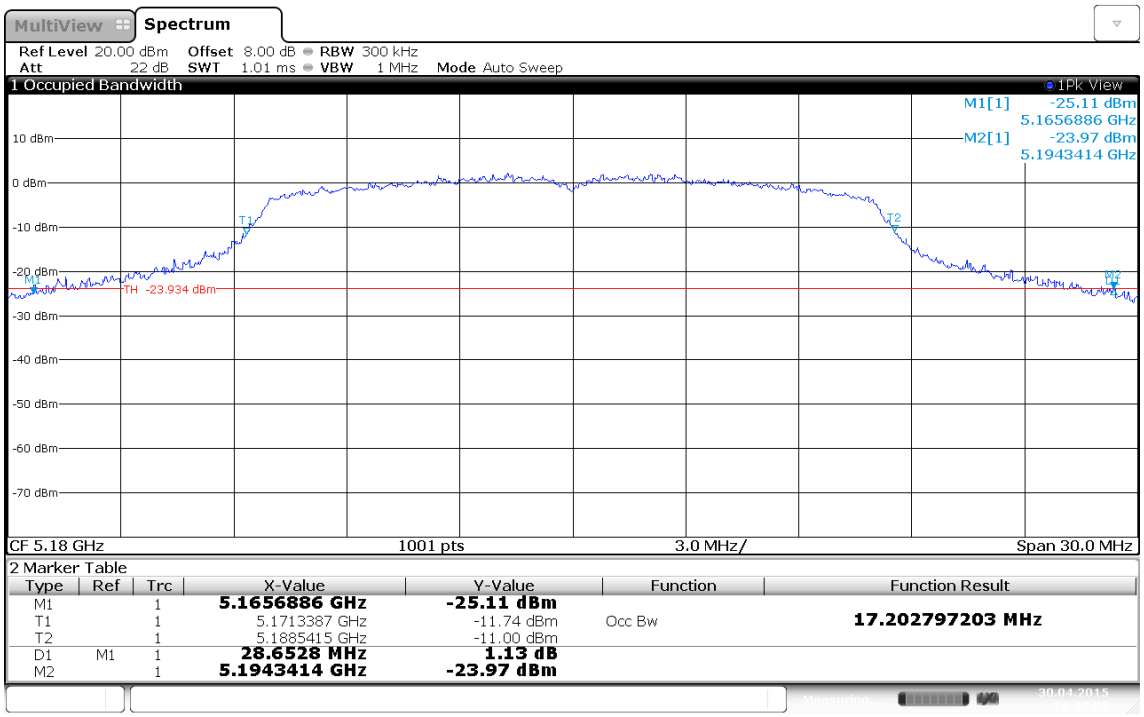
Comments:

Occupied Bandwidth – OFDM CH 36

99% Occupied Bandwidth and 26 dB Emission Bandwidth

Project Number: G0M-1503-4620

Applicant:	Bartec-Pixavi AS
EUT Name:	Wireless camera (Standard version)
Model:	OrbitX ST
Test Site:	Eurofins Product Service GmbH
Operator:	M.Handrik
Test Conditions:	Tnom / Vnom
Mode:	Tx, WLAN OFDM, 5180 MHz
Test Date:	2015-04-30
Verdict:	PASS
Note 1:	RSS Gen



99% Occupied bandwidth: 17.2 MHz; 26dB Bandwidth: 28.7 MHz

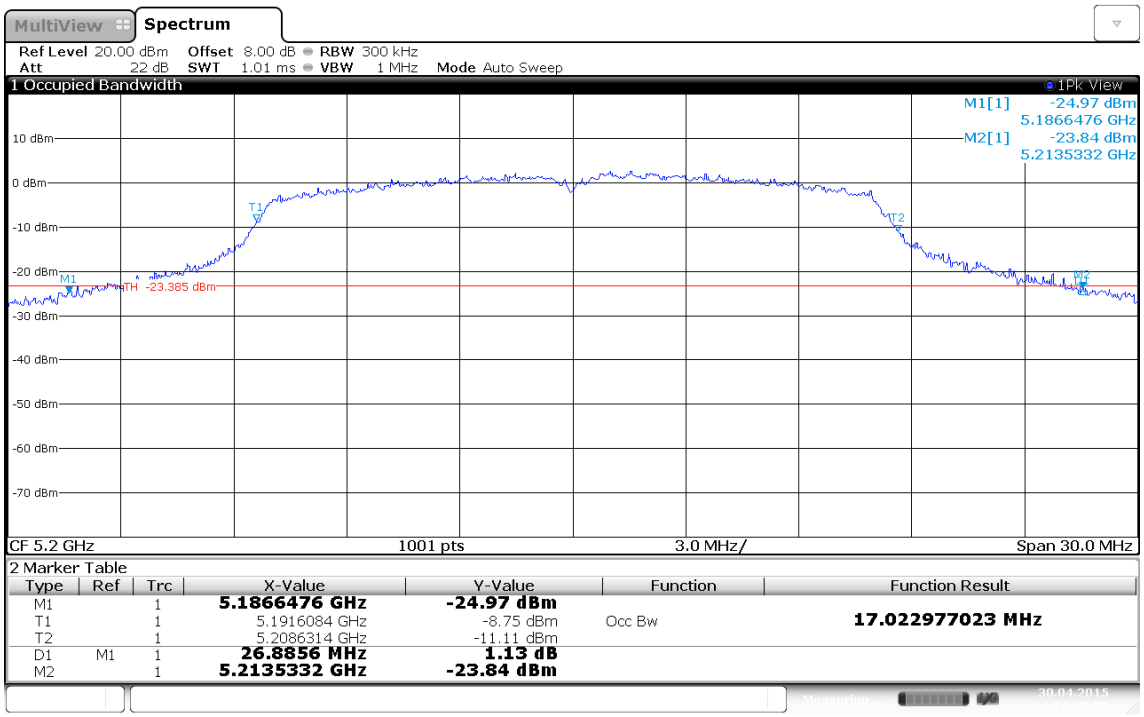
Date: 30.APR.2015 14:38:09

Occupied Bandwidth – OFDM CH 40

99% Occupied Bandwidth and 26 dB Emission Bandwidth

Project Number: G0M-1503-4620

Applicant:	Bartec-Pixavi AS
EUT Name:	Wireless camera (Standard version)
Model:	OrbitX ST
Test Site:	Eurofins Product Service GmbH
Operator:	M.Handrik
Test Conditions:	Tnom / Vnom
Mode:	Tx, WLAN OFDM, 5200 MHz
Test Date:	2015-04-30
Verdict:	PASS
Note 1:	RSS Gen



99% Occupied bandwidth: 17 MHz; 26dB Bandwidth: 26.9 MHz

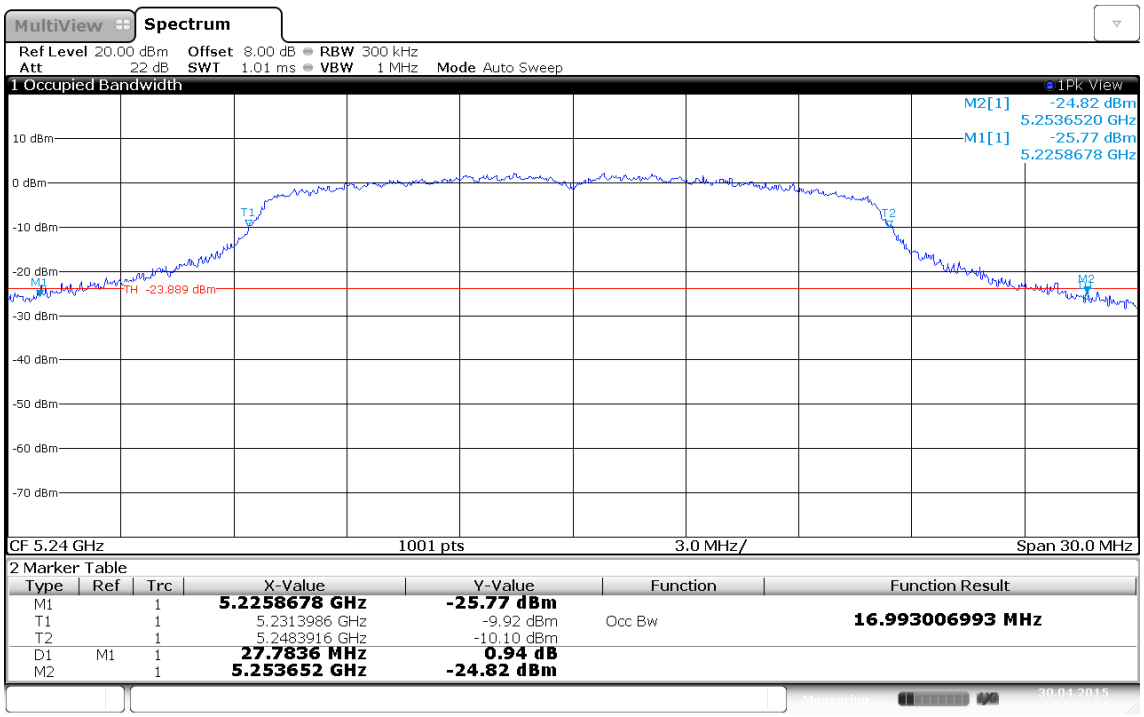
Date: 30.APR.2015 14:49:09

Occupied Bandwidth – OFDM CH 48

99% Occupied Bandwidth and 26 dB Emission Bandwidth

Project Number: G0M-1503-4620

Applicant:	Bartec-Pixavi AS
EUT Name:	Wireless camera (Standard version)
Model:	OrbitX ST
Test Site:	Eurofins Product Service GmbH
Operator:	M.Handrik
Test Conditions:	Tnom / Vnom
Mode:	Tx, WLAN OFDM, 5240 MHz
Test Date:	2015-04-30
Verdict:	PASS
Note 1:	RSS Gen



99% Occupied bandwidth: 17 MHz; 26dB Bandwidth: 27.8 MHz

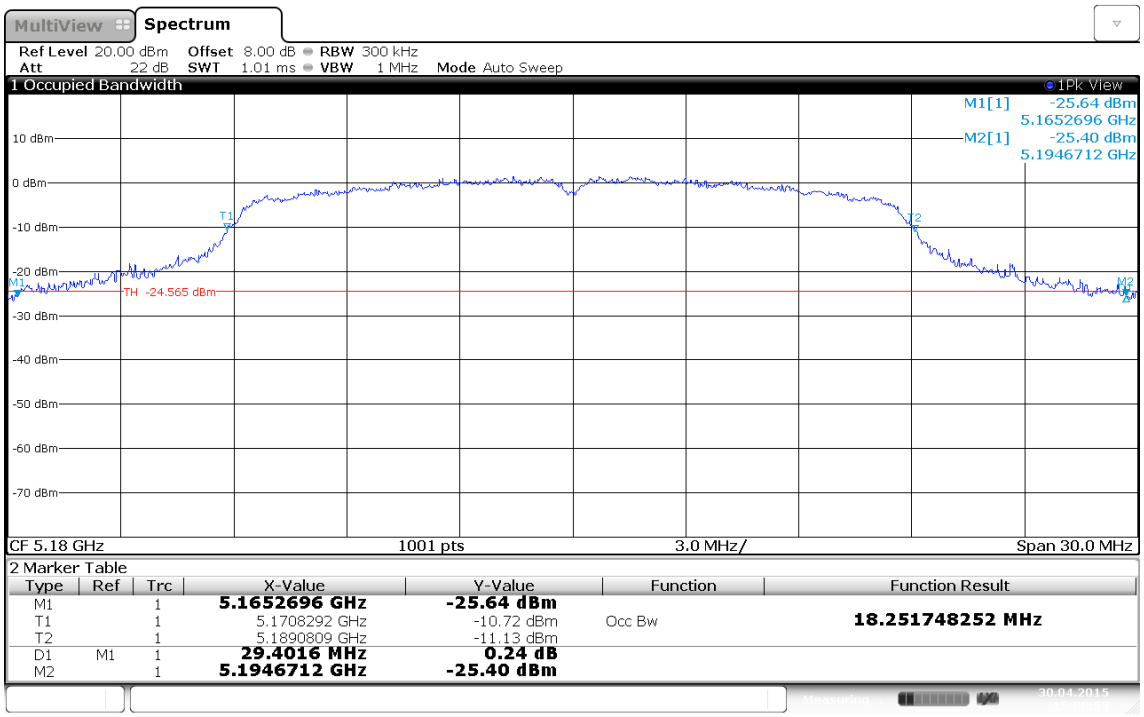
Date: 30.APR.2015 14:51:34

Occupied Bandwidth – HT20 CH 36

99% Occupied Bandwidth and 26 dB Emission Bandwidth

Project Number: G0M-1503-4620

Applicant:	Bartec-Pixavi AS
EUT Name:	Wireless camera (Standard version)
Model:	OrbitX ST
Test Site:	Eurofins Product Service GmbH
Operator:	M.Handrik
Test Conditions:	Tnom / Vnom
Mode:	Tx, WLAN HT20, 5180 MHz
Test Date:	2015-04-30
Verdict:	PASS
Note 1:	RSS Gen



99% Occupied bandwidth: 18.3 MHz; 26dB Bandwidth: 29.4 MHz

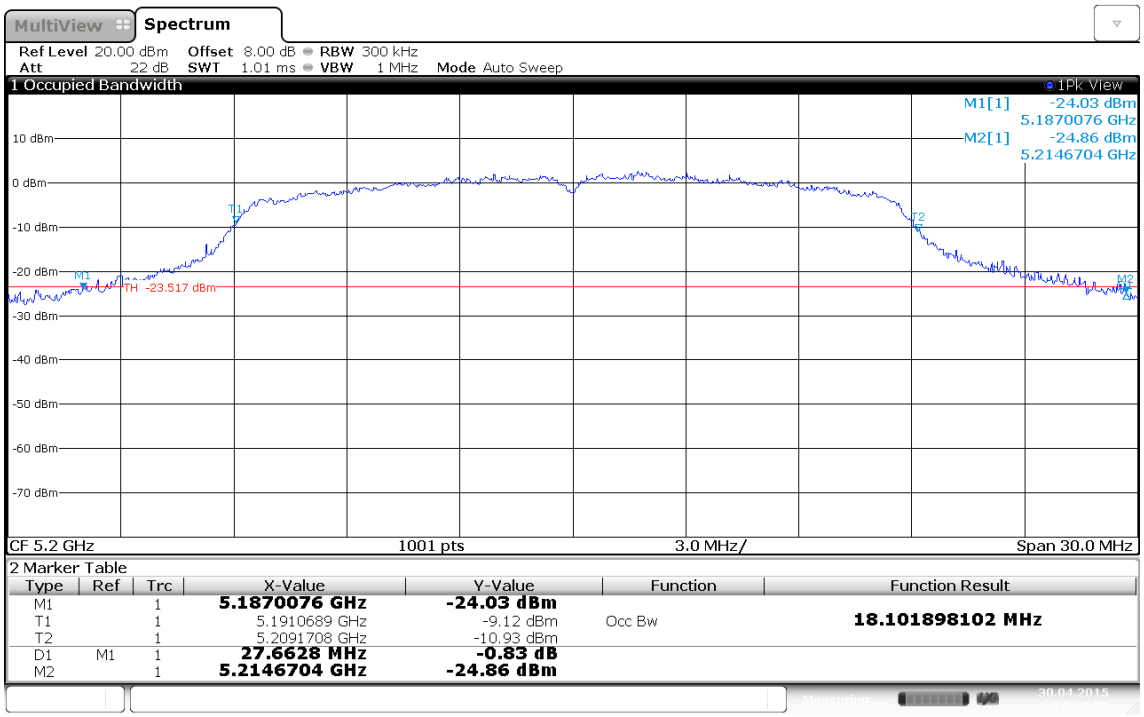
Date: 30.APR.2015 15:00:53

Occupied Bandwidth – HT20 CH 40

99% Occupied Bandwidth and 26 dB Emission Bandwidth

Project Number: G0M-1503-4620

Applicant:	Bartec-Pixavi AS
EUT Name:	Wireless camera (Standard version)
Model:	OrbitX ST
Test Site:	Eurofins Product Service GmbH
Operator:	M.Handrik
Test Conditions:	Tnom / Vnom
Mode:	Tx, WLAN HT20, 5200 MHz
Test Date:	2015-04-30
Verdict:	PASS
Note 1:	RSS Gen



99% Occupied bandwidth: 18.1 MHz; 26dB Bandwidth: 27.7 MHz

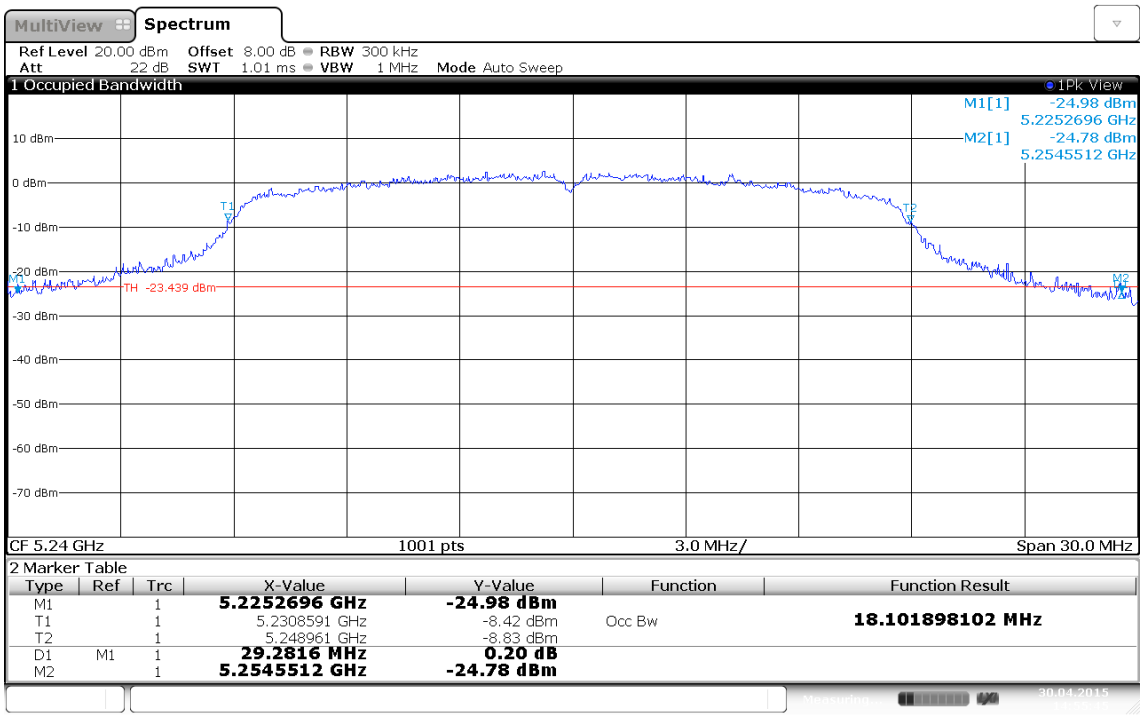
Date: 30.APR.2015 14:59:25

Occupied Bandwidth – HT20 CH 48

99% Occupied Bandwidth and 26 dB Emission Bandwidth

Project Number: G0M-1503-4620

Applicant:	Bartec-Pixavi AS
EUT Name:	Wireless camera (Standard version)
Model:	OrbitX ST
Test Site:	Eurofins Product Service GmbH
Operator:	M.Handrik
Test Conditions:	Tnom / Vnom
Mode:	Tx, WLAN HT20, 5240 MHz
Test Date:	2015-04-30
Verdict:	PASS
Note 1:	RSS Gen



99% Occupied bandwidth: 18.1 MHz; 26dB Bandwidth: 29.3 MHz

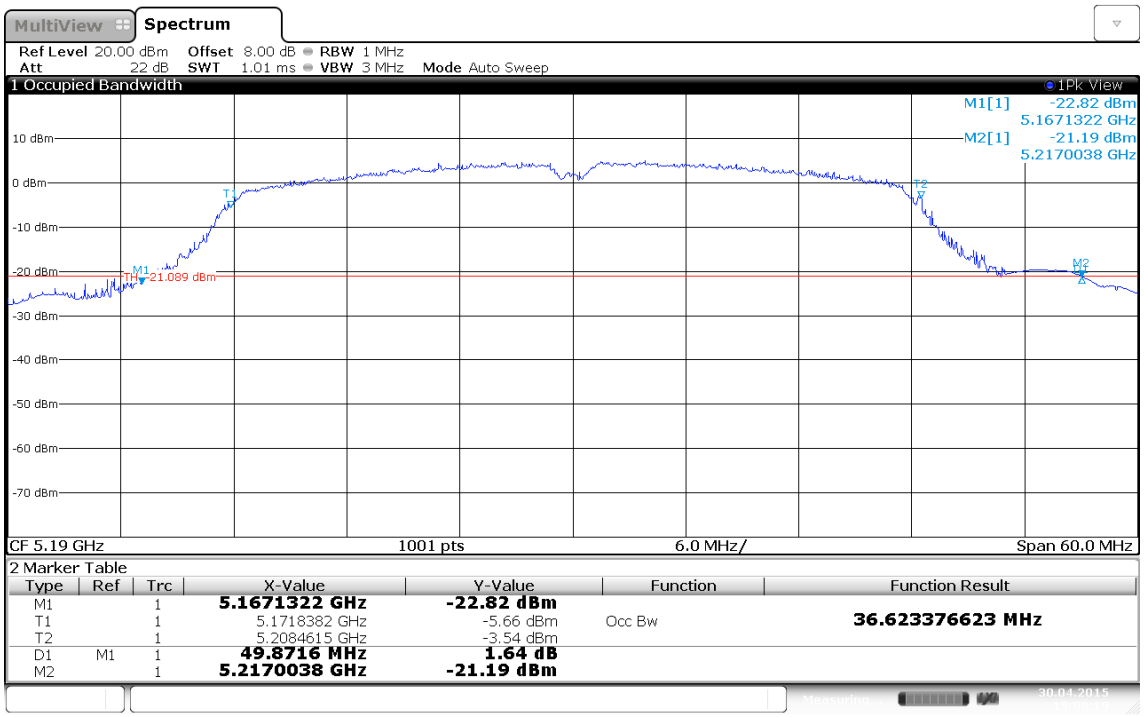
Date: 30.APR.2015 14:55:44

Occupied Bandwidth – HT40 CH 38

99% Occupied Bandwidth and 26 dB Emission Bandwidth

Project Number: G0M-1503-4620

Applicant:	Bartec-Pixavi AS
EUT Name:	Wireless camera (Standard version)
Model:	OrbitX ST
Test Site:	Eurofins Product Service GmbH
Operator:	M.Handrik
Test Conditions:	Tnom / Vnom
Mode:	Tx, WLAN HT40, 5190 MHz
Test Date:	2015-04-30
Verdict:	PASS
Note 1:	RSS Gen



99% Occupied bandwidth: 36.6 MHz; 26dB Bandwidth: 49.9 MHz

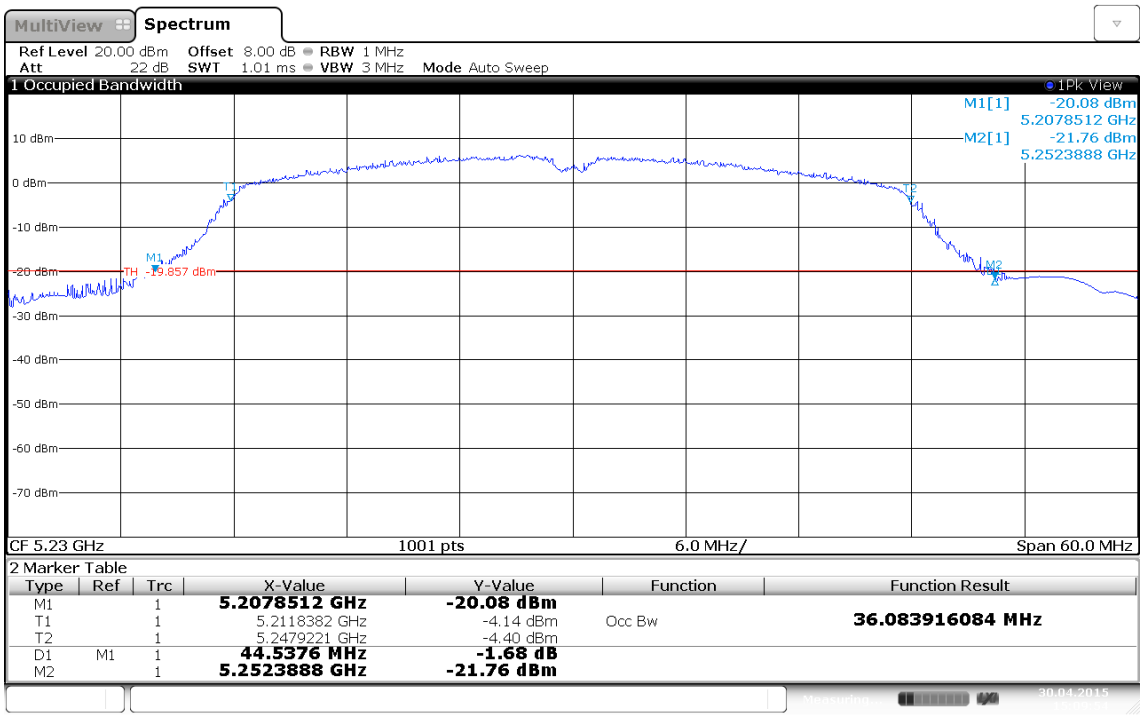
Date: 30.APR.2015 15:08:19

Occupied Bandwidth – HT40 CH 46

99% Occupied Bandwidth and 26 dB Emission Bandwidth

Project Number: G0M-1503-4620

Applicant:	Bartec-Pixavi AS
EUT Name:	Wireless camera (Standard version)
Model:	OrbitX ST
Test Site:	Eurofins Product Service GmbH
Operator:	M.Handrik
Test Conditions:	Tnom / Vnom
Mode:	Tx, WLAN HT40, 5230 MHz
Test Date:	2015-04-30
Verdict:	PASS
Note 1:	RSS Gen



99% Occupied bandwidth: 36.1 MHz; 26dB Bandwidth: 44.5 MHz

Date: 30.APR.2015 15:09:54

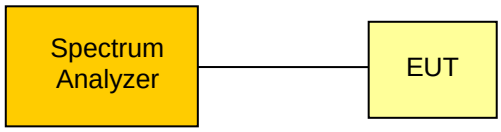
3.2 Test Conditions and Results – 26 dB Emission Bandwidth

26dB Bandwidth acc. FCC 15.407	**Verdict: PASS**
EUT requirement rule parts and clause	Reference
	FCC 15.407(a), (h)
Test according to measurement reference	Reference Method
	ANSI C63.10

Limits

No limit. Basis for other measurements.

Test setup



Test procedure

1. EUT set to test mode
2. RBW is set to approximately 1% of emission bandwidth and VBW > RBW.
3. Set detector to peak and trace to max hold
4. Envelope peak value of emission spectrum is selected
5. Set marker to level of -26 dB to the left of the peak
6. Set marker to level of -26 dB to the right of the peak
7. 26 dB Bandwidth is determined by marker frequency separation

Test results

Channel	Frequency [MHz]	Mode	26 dB bandwidth [MHz]
36	5180 MHz	OFDM	28.7
40	5200 MHz	OFDM	26.9
48	5240 MHz	OFDM	27.8
36	5180 MHz	HT20	29.4
40	5200 MHz	HT20	27.7
48	5240 MHz	HT20	29.3
38	5180 MHz	HT40	49.9
46	5240 MHz	HT40	44.5

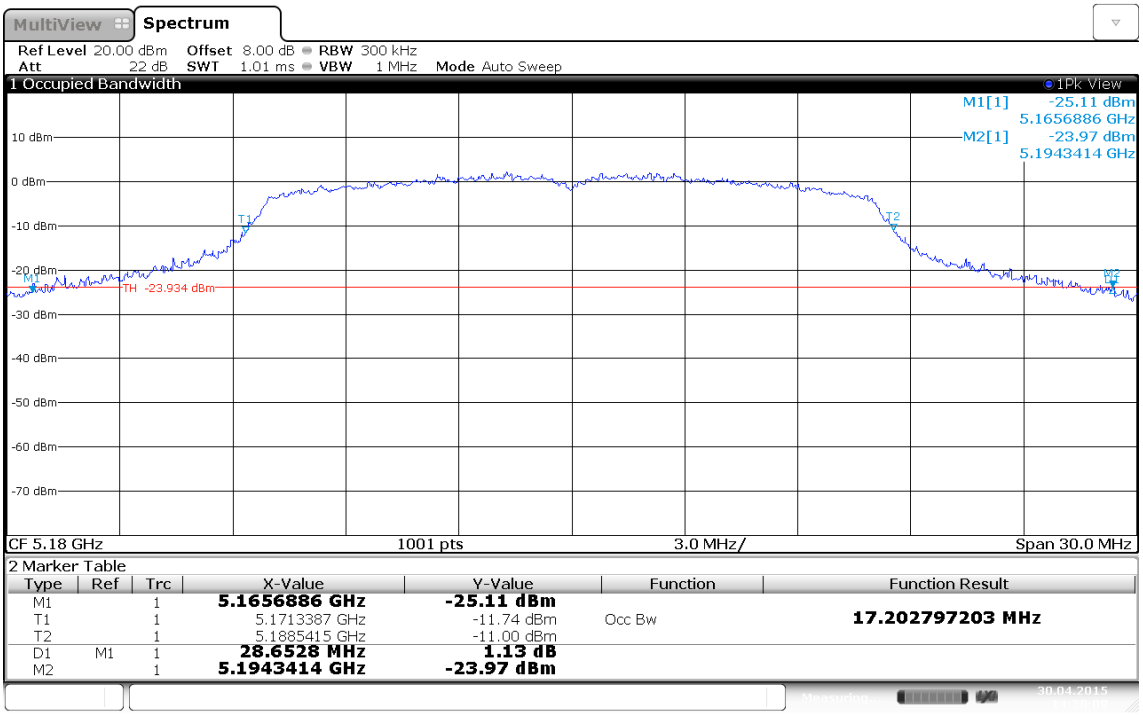
Comments:

26 dB Bandwidth – OFDM 5180 MHz

99% Occupied Bandwidth and 26 dB Emission Bandwidth

Project Number: G0M-1503-4620

Applicant:	Bartec-Pixavi AS
EUT Name:	Wireless camera (Standard version)
Model:	OrbitX ST
Test Site:	Eurofins Product Service GmbH
Operator:	M.Handrik
Test Conditions:	Tnom / Vnom
Mode:	Tx, WLAN OFDM, 5180 MHz
Test Date:	2015-04-30
Verdict:	PASS



99% Occupied bandwidth: 17.2 MHz; 26dB Bandwidth: 28.7 MHz

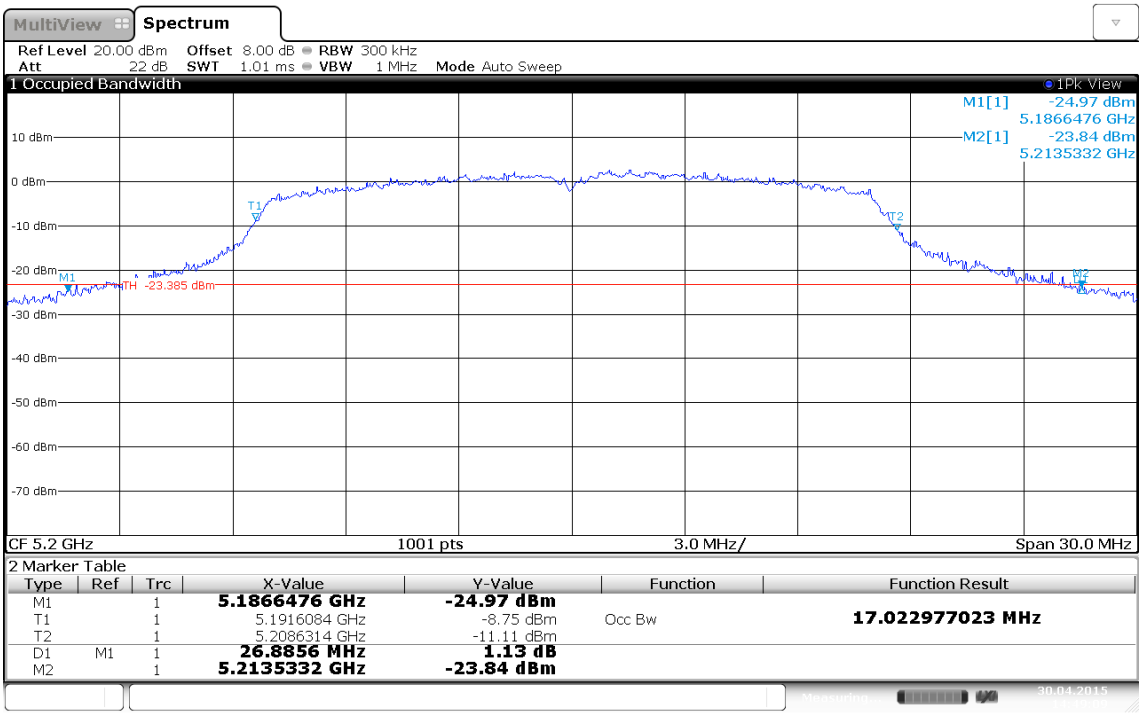
Date: 30.APR.2015 14:38:09

26 dB Bandwidth – OFDM 5200 MHz

99% Occupied Bandwidth and 26 dB Emission Bandwidth

Project Number: G0M-1503-4620

Applicant:	Bartec-Pixavi AS
EUT Name:	Wireless camera (Standard version)
Model:	OrbitX ST
Test Site:	Eurofins Product Service GmbH
Operator:	M.Handrik
Test Conditions:	Tnom / Vnom
Mode:	Tx, WLAN OFDM, 5200 MHz
Test Date:	2015-04-30
Verdict:	PASS



99% Occupied bandwidth: 17 MHz; 26dB Bandwidth: 26.9 MHz

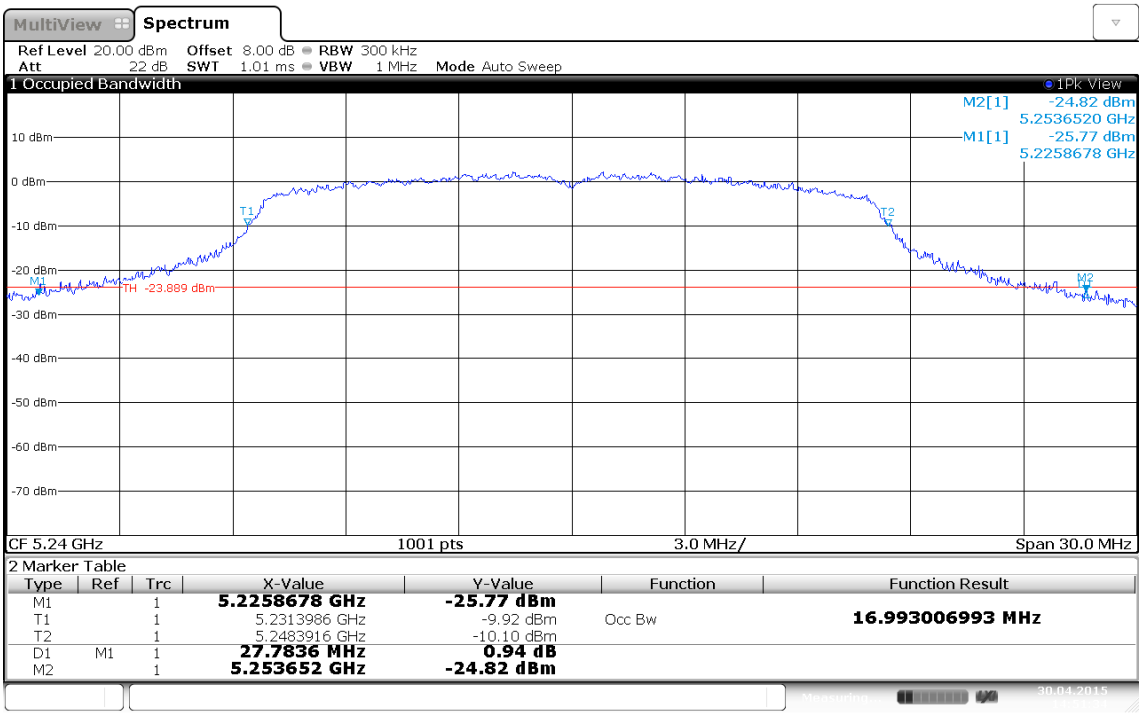
Date: 30.APR.2015 14:49:09

26 dB Bandwidth – OFDM 5240 MHz

99% Occupied Bandwidth and 26 dB Emission Bandwidth

Project Number: G0M-1503-4620

Applicant:	Bartec-Pixavi AS
EUT Name:	Wireless camera (Standard version)
Model:	OrbitX ST
Test Site:	Eurofins Product Service GmbH
Operator:	M.Handrik
Test Conditions:	Tnom / Vnom
Mode:	Tx, WLAN OFDM, 5240 MHz
Test Date:	2015-04-30
Verdict:	PASS



99% Occupied bandwidth: 17 MHz; 26dB Bandwidth: 27.8 MHz

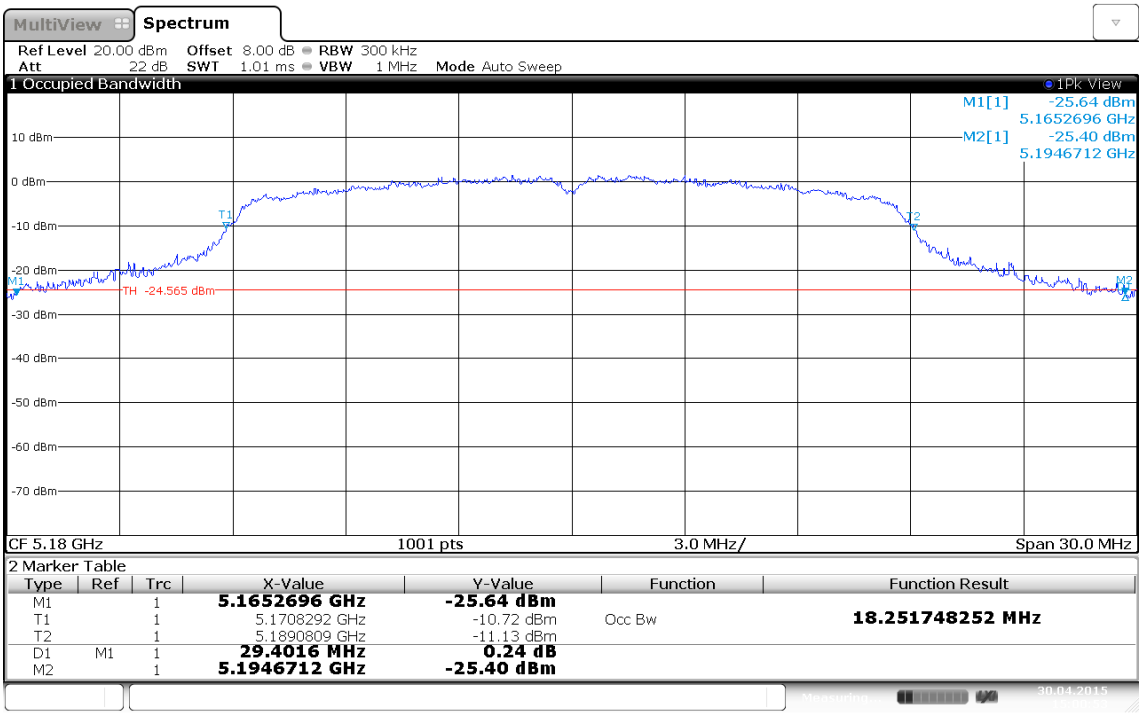
Date: 30.APR.2015 14:51:34

26 dB Bandwidth – HT20 5180 MHz

99% Occupied Bandwidth and 26 dB Emission Bandwidth

Project Number: G0M-1503-4620

Applicant:	Bartec-Pixavi AS
EUT Name:	Wireless camera (Standard version)
Model:	OrbitX ST
Test Site:	Eurofins Product Service GmbH
Operator:	M.Handrik
Test Conditions:	Tnom / Vnom
Mode:	Tx, WLAN HT20, 5180 MHz
Test Date:	2015-04-30
Verdict:	PASS



99% Occupied bandwidth: 18.3 MHz; 26dB Bandwidth: 29.4 MHz

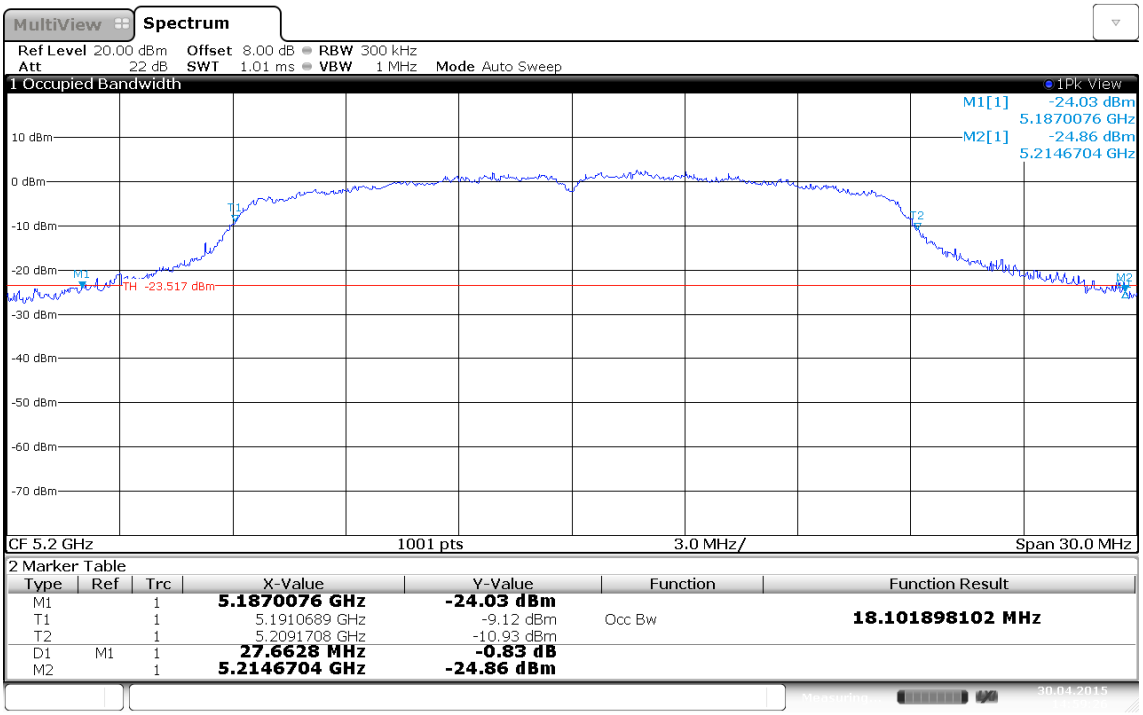
Date: 30.APR.2015 15:00:53

26 dB Bandwidth – HT20 5200 MHz

99% Occupied Bandwidth and 26 dB Emission Bandwidth

Project Number: G0M-1503-4620

Applicant:	Bartec-Pixavi AS
EUT Name:	Wireless camera (Standard version)
Model:	OrbitX ST
Test Site:	Eurofins Product Service GmbH
Operator:	M.Handrik
Test Conditions:	Tnom / Vnom
Mode:	Tx, WLAN HT20, 5200 MHz
Test Date:	2015-04-30
Verdict:	PASS



99% Occupied bandwidth: 18.1 MHz; 26dB Bandwidth: 27.7 MHz

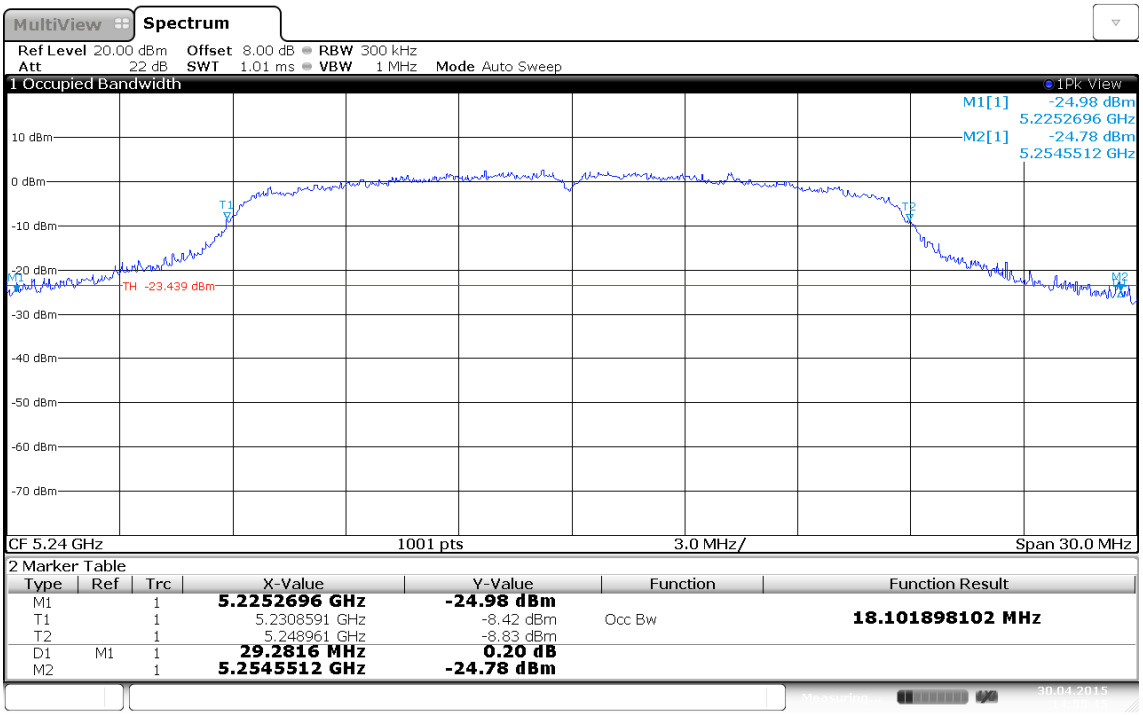
Date: 30.APR.2015 14:59:25

26 dB Bandwidth – HT20 5240 MHz

99% Occupied Bandwidth and 26 dB Emission Bandwidth

Project Number: G0M-1503-4620

Applicant:	Bartec-Pixavi AS
EUT Name:	Wireless camera (Standard version)
Model:	OrbitX ST
Test Site:	Eurofins Product Service GmbH
Operator:	M.Handrik
Test Conditions:	Tnom / Vnom
Mode:	Tx, WLAN HT20, 5240 MHz
Test Date:	2015-04-30
Verdict:	PASS



99% Occupied bandwidth: 18.1 MHz; 26dB Bandwidth: 29.3 MHz

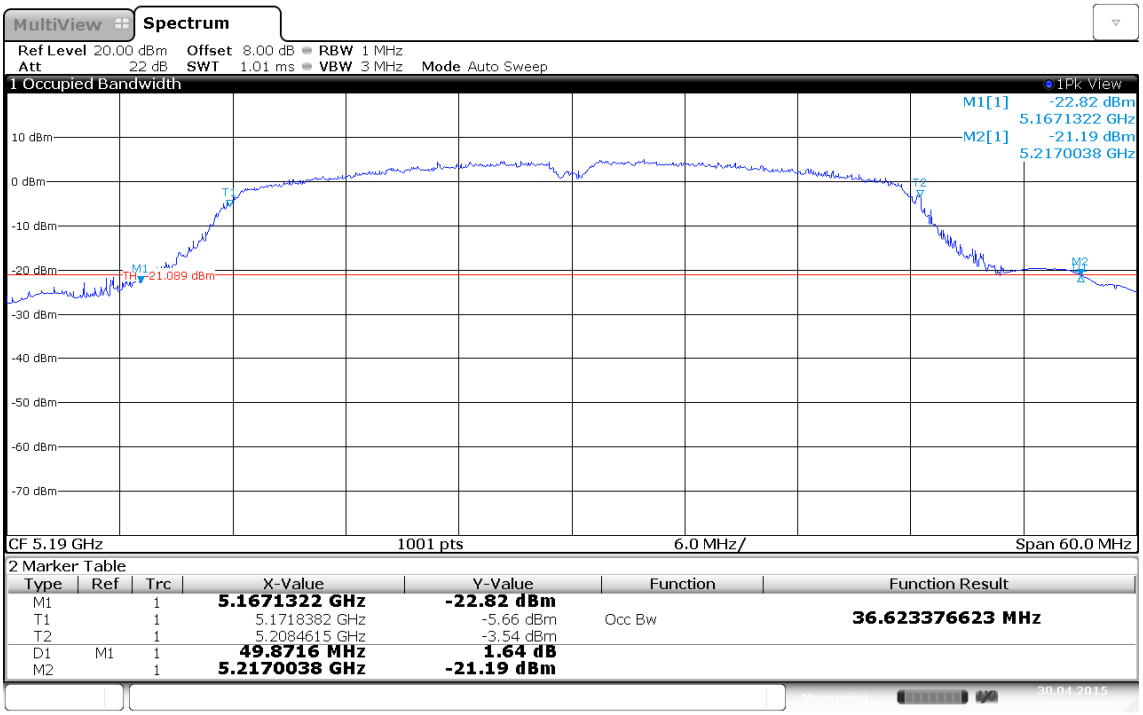
Date: 30.APR.2015 14:55:44

26 dB Bandwidth – HT40 5190 MHz

99% Occupied Bandwidth and 26 dB Emission Bandwidth

Project Number: G0M-1503-4620

Applicant:	Bartec-Pixavi AS
EUT Name:	Wireless camera (Standard version)
Model:	OrbitX ST
Test Site:	Eurofins Product Service GmbH
Operator:	M.Handrik
Test Conditions:	Tnom / Vnom
Mode:	Tx, WLAN HT40, 5190 MHz
Test Date:	2015-04-30
Verdict:	PASS



99% Occupied bandwidth: 36.6 MHz; 26dB Bandwidth: 49.9 MHz

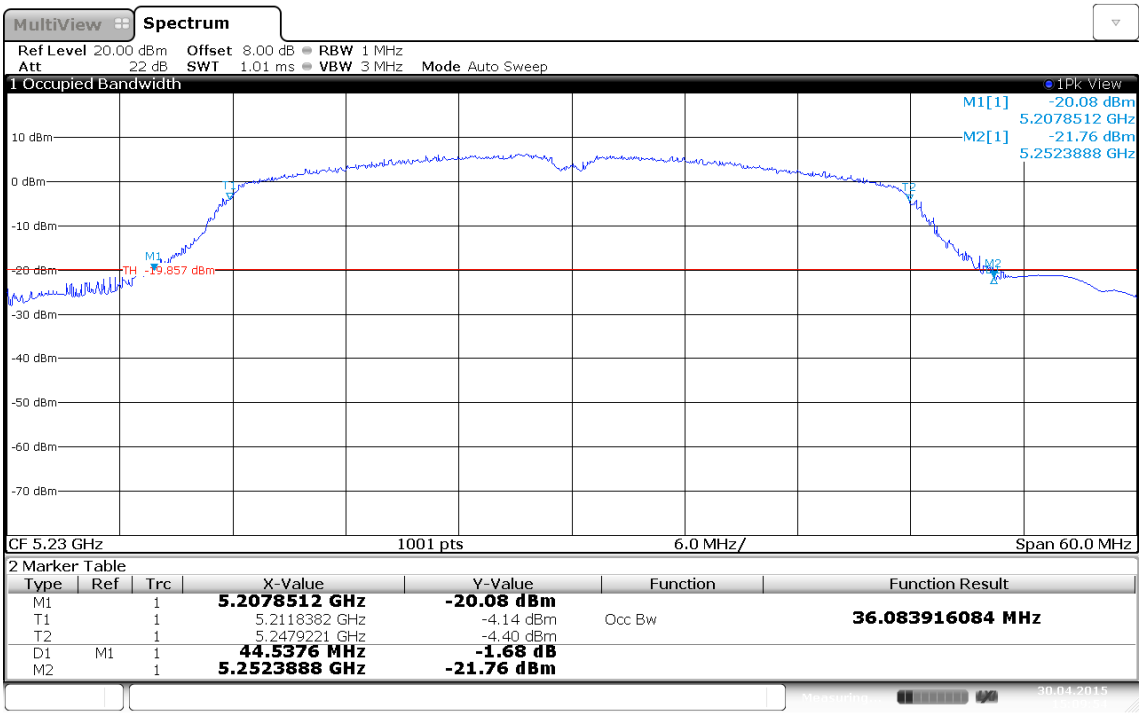
Date: 30.APR.2015 15:08:19

26 dB Bandwidth – HT40 5230 MHz

99% Occupied Bandwidth and 26 dB Emission Bandwidth

Project Number: G0M-1503-4620

Applicant:	Bartec-Pixavi AS
EUT Name:	Wireless camera (Standard version)
Model:	OrbitX ST
Test Site:	Eurofins Product Service GmbH
Operator:	M.Handrik
Test Conditions:	Tnom / Vnom
Mode:	Tx, WLAN HT40, 5230 MHz
Test Date:	2015-04-30
Verdict:	PASS



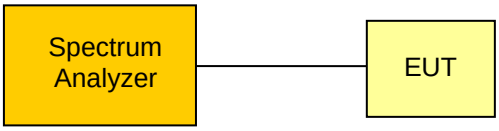
99% Occupied bandwidth: 36.1 MHz; 26dB Bandwidth: 44.5 MHz

Date: 30.APR.2015 15:09:54

3.3 Test Conditions and Results – Maximum output power

Maximum output power acc. to FCC 15.407 / IC RSS-247			**Verdict: PASS**
EUT requirement rule parts and clause		Reference	
		FCC 15.407(a) / IC RSS-247 6.2	
Test according to measurement reference		Reference Method	
		ANSI C63.10	
Maximum antenna gain		0 dBi ⇒ Limit correction = 0 dB	
Limits FCC 15.407			
Frequency band [MHz]	Application	Limit	Max antenna gain without limit correction
5150 - 5250	outdoor / indoor access point	1 W (30 dBm)	6 dBi
5150 - 5250	fixed point-to-point access point	1 W (30 dBm)	23 dBi
5150 - 5250	mobile and portable client	250 mW (24 dBm)	6 dBi
5250 - 5350 5470 - 5725		The lesser of 250 mW (24 dBm) or 11 dBm + 10 log (26 dB emission BW)	6 dBi
5725 - 5850		1 W (30 dBm)	6 dBi
5725 - 5850	fixed point-to-point devices	1 W (30 dBm)	-
If transmitting antennas of directional gain greater than listed above are used, the conducted output power from the intentional radiator shall be reduced by the amount in dB that the listed gain is exceeded.			
Limits IC RSS-210			
Frequency band [MHz]	Application	Conducted limit	e.i.r.p. limit
5150 - 5250	indoor only	N/A	The lesser of 200 mW (23 dBm) or 10 dBm + 10 log (99% emission BW)
5250 - 5350	All	The lesser of 250 mW (24 dBm) or 11 dBm + 10 log (99% dB emission BW)	The lesser of 1 W (30 dBm) or 17 dBm + 10 log (99% dB emission BW)
5470 - 5600 5650 - 5725	All	The lesser of 250 mW (24 dBm) or 11 dBm + 10 log (99% dB emission BW)	The lesser of 1 W (30 dBm) or 17 dBm + 10 log (99% dB emission BW)
5725 - 5825	All	The lesser of 1 W (30 dBm) or 17 dBm + 10 log (99% dB emission BW)	The lesser of 4 W (36 dBm) or 23 dBm + 10 log (99% dB emission BW)

Test setup



Test procedure

1. Set EUT to test mode
2. Set span to encompass the entire emission bandwidth
3. Set trigger to free run
4. Set RBW to 1 MHz and VBW ≥ 3 MHz
5. Set detector to RMS and trace to max hold
6. Allow max hold to run for at least 60 seconds
7. Compute power by integrating across emission bandwidth

Test results

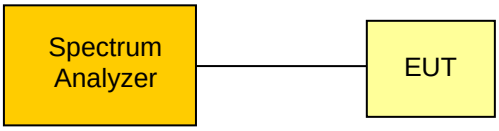
Channel	Frequency	Test mode	Max power [dBm]	Calculation of most stringent conducted limit [dBm]	Conducted limit [dBm]	Margin [dB]
36	5180 MHz	OFDM	15.3	10 dBm +10 log(17) - 0 dBi	22.3	-07.00
40	5200 MHz	OFDM	14.8	10 dBm +10 log(17) - 0 dBi	22.3	-07.50
48	5240 MHz	OFDM	15.4	10 dBm +10 log(17) - 0 dBi	22.3	-06.90
36	5180 MHz	HT20	15.5	10 dBm +10 log(17) - 0 dBi	22.3	-06.80
40	5200 MHz	HT20	16.2	10 dBm +10 log(17) - 0 dBi	22.3	-06.10
48	5240 MHz	HT20	16.7	10 dBm +10 log(17) - 0 dBi	22.3	-05.60
38	5190 MHz	HT40	16.0	10 dBm +10 log(17) - 0 dBi	22.3	-06.30
46	5230 MHz	HT40	17.1	10 dBm +10 log(17) - 0 dBi	22.3	-05.20

Calculation of most stringent conducted limit:

- Calculation of IC radiated limit
- Calculation of maximum conducted power from radiated IC power limit by subtracting the antenna gain
- Calculation of IC conducted limit (if applicable)
- Correction of FCC maximum conducted output power from EUT antenna gain (if applicable)
- Selection of the lowest allowed conducted output power from the FCC / IC requirements

The resulting most stringent conducted limit expression is given in column “Calculation of most stringent conducted limit [dBm]” and the corresponding power limit value is given in column “Conducted limit [dBm]”.

3.4 Test Conditions and Results – Maximum power spectral density

Power spectral density acc. to FCC 15.407 / IC RSS-247			**Verdict: PASS**
EUT requirement rule parts and clause	Reference		
	FCC 15.407(a) / IC RSS-247 6.2		
Test according to measurement reference	Reference Method		
	ANSI C63.10		
Limits FCC 15.407			
Frequecy band [MHz]	Application	Limit	Max antenna gain without limit correction
5150 - 5250	outdoor / indoor access point	17 dBm/MHz	6 dBi
5150 - 5250	mobile and portable client	11 dBm/MHz	6 dBi
5250 – 5350 5470 - 5725	N/A	11 dBm/MHz	6 dBi
5725 - 5850	N/A	30 dBm/500kHz	6 dBi
5725 - 5850	fixed point-to-point devices	30 dBm/500kHz	-
If transmitting antennas of directional gain greater than listed above are used, the conducted output power from the intentional radiator shall be reduced by the amount in dB that the listed gain is exceeded.			
Limits IC RSS-210			
Frequency band [MHz]	Application	Limit	
5150 - 5250	indoor only	e.i.r.p.: 10 dBm/MHz	
5250 - 5350	N/A	Conducted: 11 dBm/MHz	
5470 - 5600 5650 - 5725	N/A	Conducted: 11 dBm/MHz	
5725 - 5825	N/A	Conducted: 17 dBm/MHz	
Test setup			
			
Test procedure			
1. Set EUT to test mode 2. Set span to encompass the entire emission bandwidth 3. Set trigger to free run 4. Set RBW to 100 kHz and VBW ≥ 300 kHz 5. Set detector to RMS and trace to max hold 6. Allow max hold to run for at least 60 seconds 7. Set marker to maximum of emission envelope 8. Result is scaled to final results with 10*log10(Limit Bandwidth / 100 kHz)			

Test results							
Channel	Frequency [MHz]	Test mode	Max frequency [MHz]	Max power density [dBm/MHz]	Calculation of lowest conducted limit [dBm]	Conducted limit [dBm/MHz]	Margin [dB]
36	5180 MHz	OFDM	5183	5.4	10 dBm/MHz - 0 dBi	10	-04.60
40	5200 MHz	OFDM	5200	5.4	10 dBm/MHz - 0 dBi	10	-04.60
48	5240 MHz	OFDM	5240	5.8	10 dBm/MHz - 0 dBi	10	-04.20
36	5180 MHz	HT20	5178	6.2	10 dBm/MHz - 0 dBi	10	-03.80
40	5200 MHz	HT20	5198	6.6	10 dBm/MHz - 0 dBi	10	-03.40
48	5240 MHz	HT20	5238	6.8	10 dBm/MHz - 0 dBi	10	-03.20
38	5190 MHz	HT40	5188	3.6	10 dBm/MHz - 0 dBi	10	-06.40
48	5230 MHz	HT40	5232	3.9	10 dBm/MHz - 0 dBi	10	-06.10

Calculation of most stringent conducted limit:

- Calculation of maximum conducted power from radiated IC power limit by subtracting the antenna gain (if applicable)
- Correction of FCC maximum conducted limit from EUT antenna gain (if applicable)
- Selection of the lowest allowed conducted power density limit from the FCC / IC requirements

3.5 Test Conditions and Results – Conducted spurious emissions

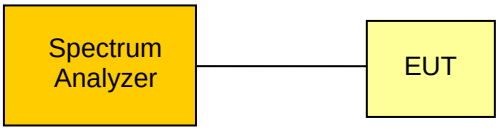
Conducted spurious emissions acc. to FCC 15.407 / IC RSS-247	**Verdict: PASS**
EUT requirement rule parts and clause	Reference
	FCC 15.407(b) (1) – (4) / IC RSS-247 6.2
Test according to measurement reference	Reference Method
	ANSI C63.10
Test frequency range	Tested frequencies
	10 MHz – 10th Harmonic

Limits

Frequecy band [MHz]	Out of frequency band limit [e.i.r.p.]
5150 - 5250	-27 dBm/MHz
5250 – 5350	-27 dBm/MHz
5470 - 5725	-27 dBm/MHz
5725 – (5825) 5850	-17 dBm/MHz (within 10 MHz outside the band edges)
5725 – (5825) 5850	-27 dBm/MHz

Comments: Below 1 GHz peak detector is permitted as alternative to quasi-peak detector.
Above 1 GHz peak detector is requested.

Test setup



Test procedure

1. Set EUT to test mode
2. Adjust reference level according to antenna gain
3. Set sweep time to auto
4. Set detector to peak and trace to max hold
5. Allow max hold to run until trace has stabilized
6. Set markers to emission peaks

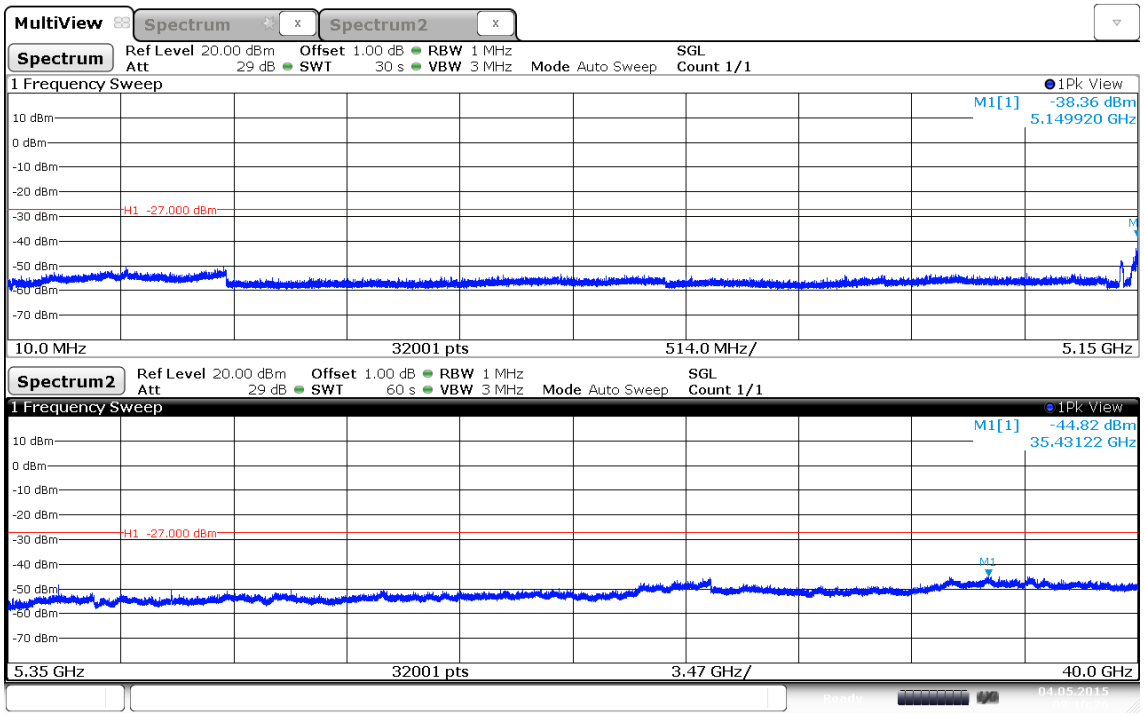
Test results						
Channel	Frequency	Mode	Emission [MHz]	Emission Level [dBm]	Limit [dBm]	Margin [dB]
36	5180 MHz	OFDM	5149.920	-38.36	-27	-11.36
40	5200 MHz	OFDM	5098.040	-46.37	-27	-19.37
48	5240 MHz	OFDM	5137.070	-47.22	-27	-20.22
36	5180 MHz	HT20	5148.800	-38.72	-27	-11.72
40	5200 MHz	HT20	5147.830	-45.47	-27	-18.47
48	5240 MHz	HT20	5134.020	-47.44	-27	-20.44
38	5190 MHz	HT40	5147.030	-32.22	-27	-05.22
46	5230 MHz	HT40	5128.560	-48.80	-27	-21.80
Comments:						

Conducted spurious emissions – OFDM 5180 MHz

Spurious Emissions acc. to FCC 15.407

Project Number: G0M-1503-4620

Applicant:	Bartec-Pixavi AS
EUT Name:	Wireless camera (Standard version)
Model:	OrbitX ST
Test Site:	Eurofins Product Service GmbH
Operator:	M. Handrik
Test Conditions:	Tnom / Vnom
Mode:	Tx, OFDM, 5180 MHz
Test Date:	2015-05-04
Verdict:	PASS



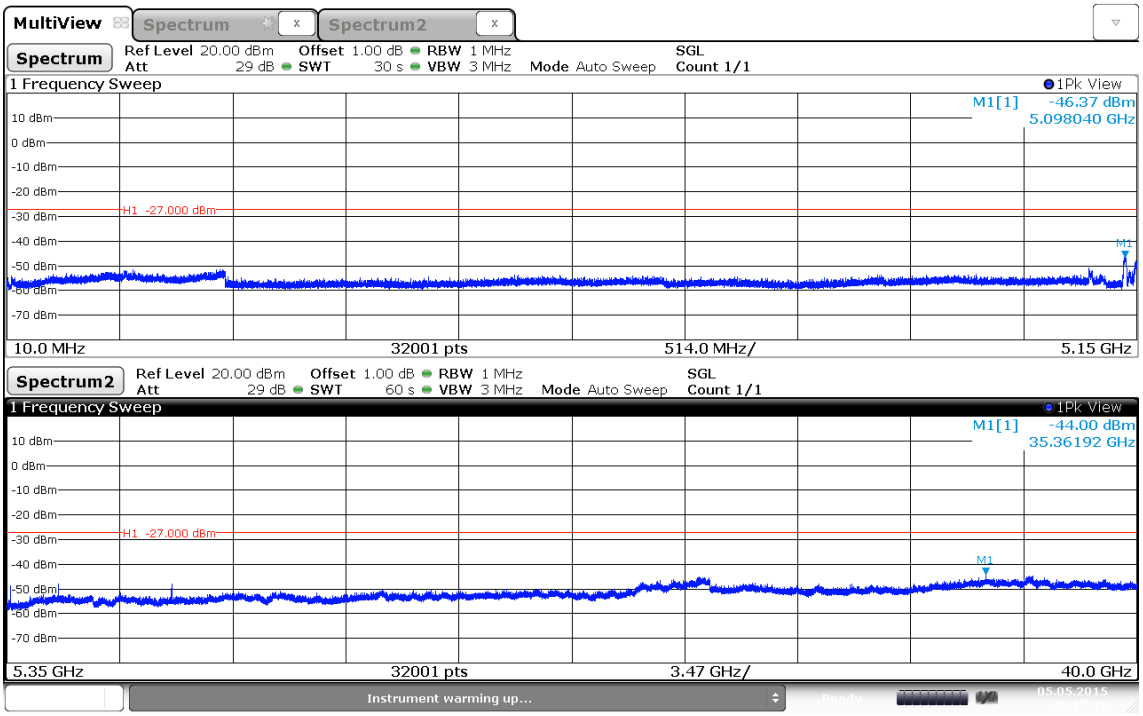
Date: 4.MAY.2015 09:10:26

Conducted spurious emissions – OFDM 5200 MHz

Spurious Emissions acc. to FCC 15.407

Project Number: G0M-1503-4620

Applicant:	Bartec-Pixavi AS
EUT Name:	Wireless camera (Standard version)
Model:	OrbitX ST
Test Site:	Eurofins Product Service GmbH
Operator:	M.Handrik
Test Conditions:	Tnom / Vnom
Mode:	Tx, OFDM, 5200 MHz
Test Date:	2015-05-05
Verdict:	PASS



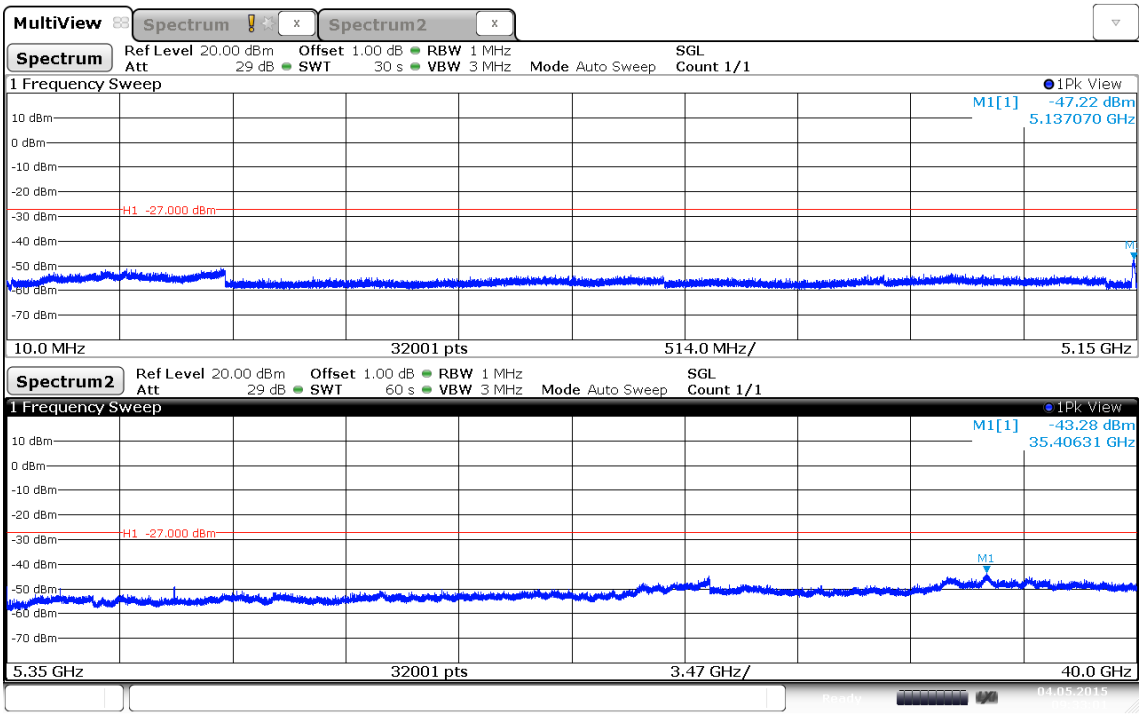
Date: 5.MAY.2015 05:17:19

Conducted spurious emissions – OFDM 5240 MHz

Spurious Emissions acc. to FCC 15.407

Project Number: G0M-1503-4620

Applicant:	Bartec-Pixavi AS
EUT Name:	Wireless camera (Standard version)
Model:	OrbitX ST
Test Site:	Eurofins Product Service GmbH
Operator:	M. Handrik
Test Conditions:	Tnom / Vnom
Mode:	Tx, OFDM, 5240 MHz
Test Date:	2015-05-04
Verdict:	PASS



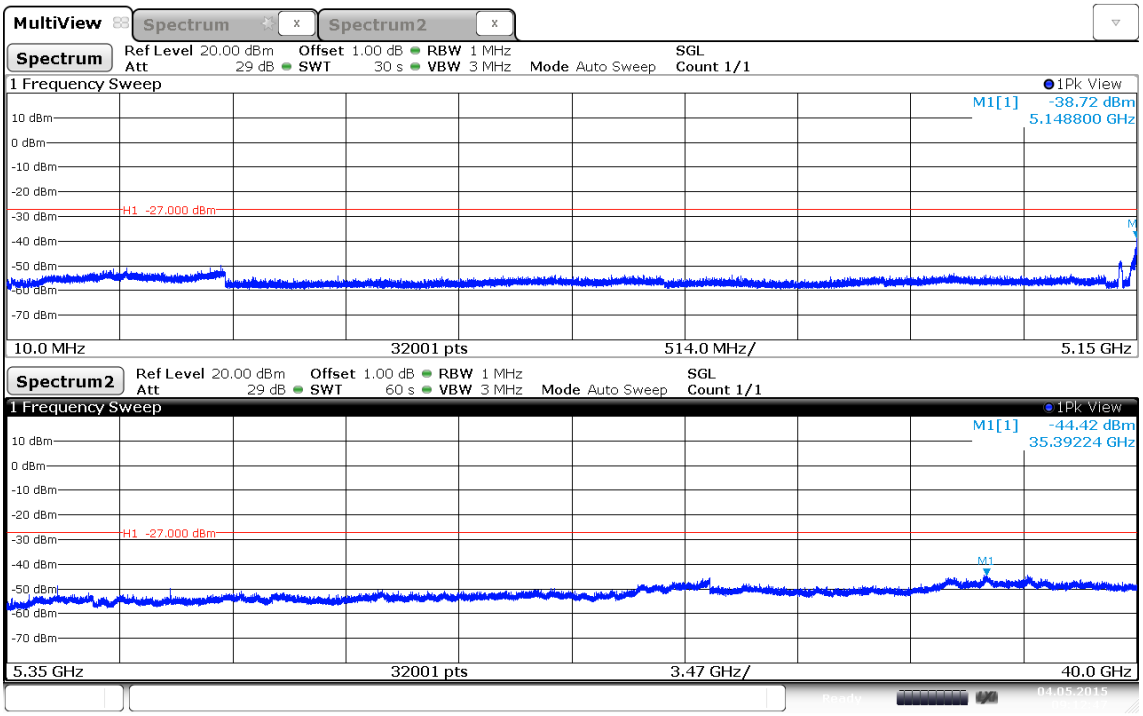
Date: 4.MAY.2015 09:33:00

Conducted spurious emissions – HT20 5180 MHz

Spurious Emissions acc. to FCC 15.407

Project Number: G0M-1503-4620

Applicant:	Bartec-Pixavi AS
EUT Name:	Wireless camera (Standard version)
Model:	OrbitX ST
Test Site:	Eurofins Product Service GmbH
Operator:	M. Handrik
Test Conditions:	Tnom / Vnom
Mode:	Tx, HT20, 5180 MHz
Test Date:	2015-05-04
Verdict:	PASS



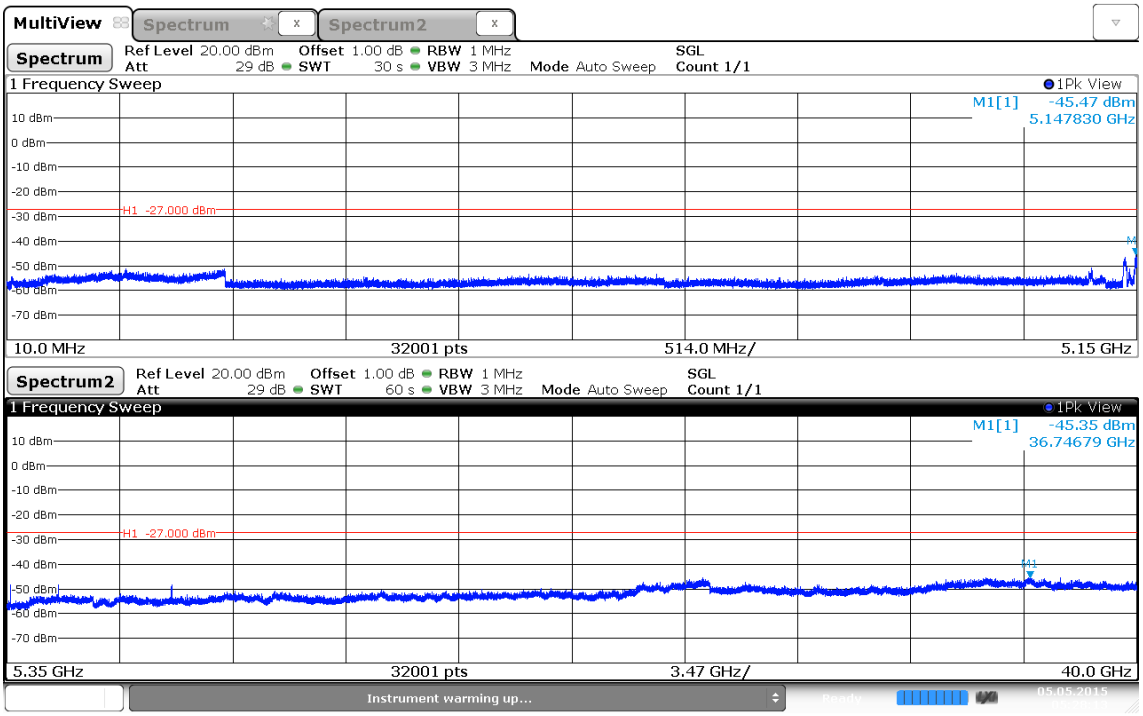
Date: 4.MAY.2015 09:12:48

Conducted spurious emissions – HT20 5200 MHz

Spurious Emissions acc. to FCC 15.407

Project Number: G0M-1503-4620

Applicant:	Bartec-Pixavi AS
EUT Name:	Wireless camera (Standard version)
Model:	OrbitX ST
Test Site:	Eurofins Product Service GmbH
Operator:	M.Handrik
Test Conditions:	Tnom / Vnom
Mode:	Tx, HT20, 5200 MHz
Test Date:	2015-05-05
Verdict:	PASS



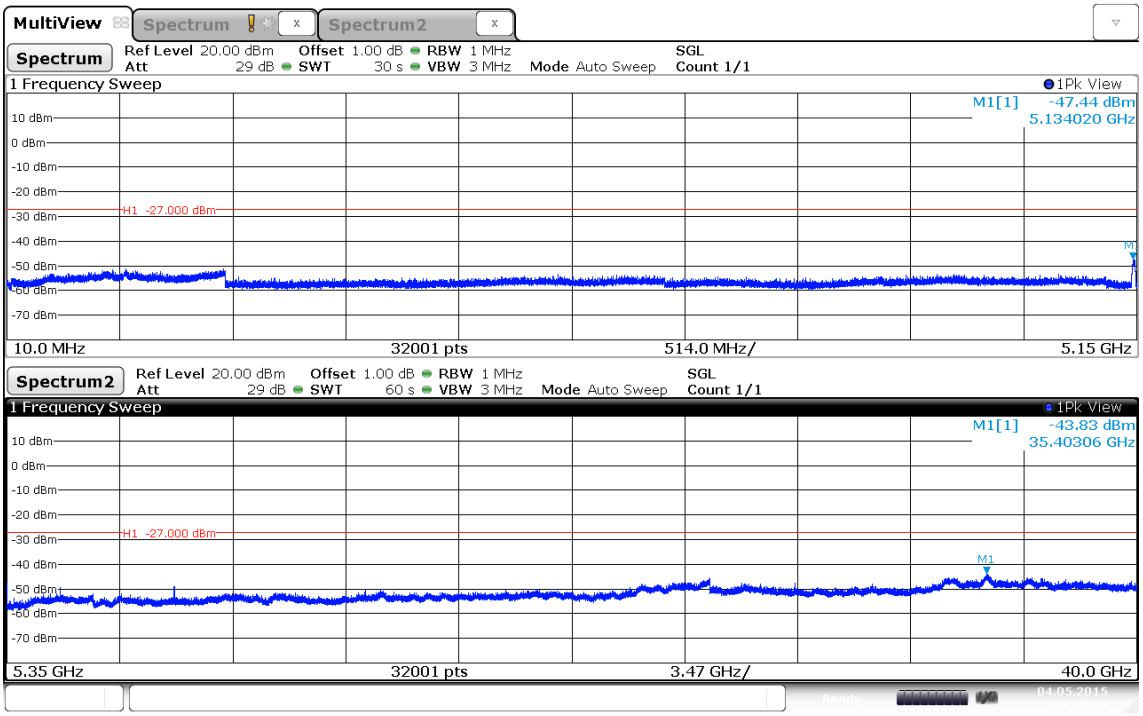
Date: 5.MAY.2015 05:28:13

Conducted spurious emissions – HT20 5240 MHz

Spurious Emissions acc. to FCC 15.407

Project Number: G0M-1503-4620

Applicant:	Bartec-Pixavi AS
EUT Name:	Wireless camera (Standard version)
Model:	OrbitX ST
Test Site:	Eurofins Product Service GmbH
Operator:	M. Handrik
Test Conditions:	Tnom / Vnom
Mode:	Tx, HT20, 5240 MHz
Test Date:	2015-05-04
Verdict:	PASS



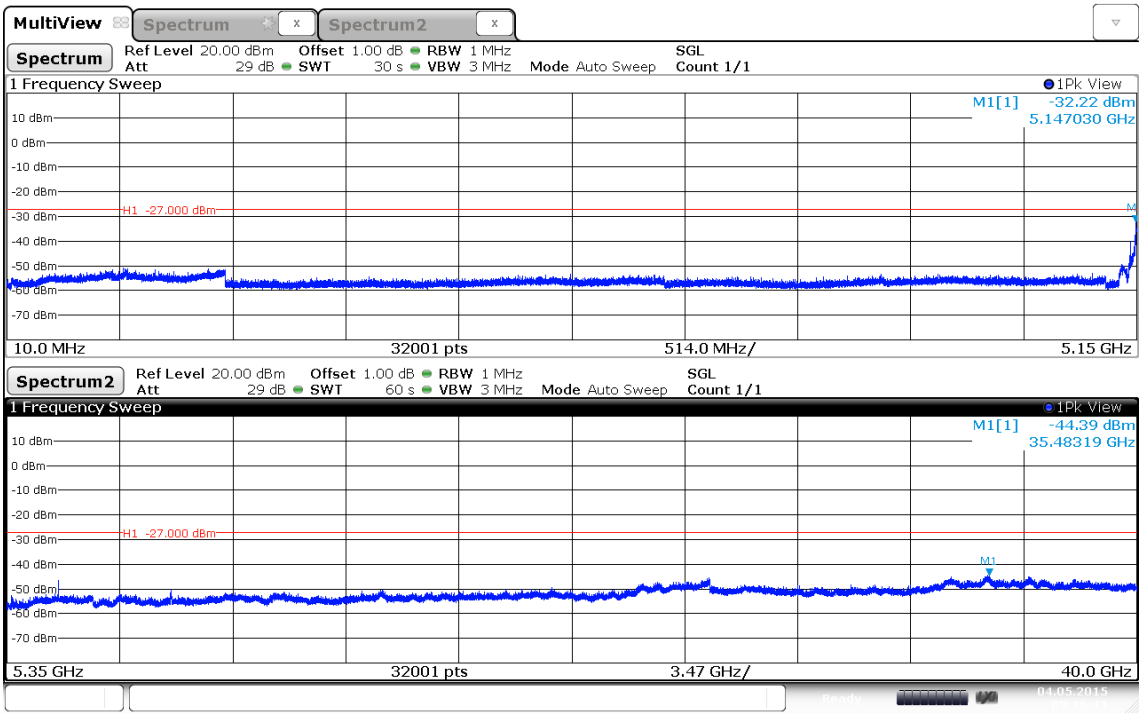
Date: 4.MAY.2015 09:29:19

Conducted spurious emissions – HT40 5190 MHz

Spurious Emissions acc. to FCC 15.407

Project Number: G0M-1503-4620

Applicant:	Bartec-Pixavi AS
EUT Name:	Wireless camera (Standard version)
Model:	OrbitX ST
Test Site:	Eurofins Product Service GmbH
Operator:	M. Handrik
Test Conditions:	Tnom / Vnom
Mode:	Tx, HT40, 5190 MHz
Test Date:	2015-05-04
Verdict:	PASS



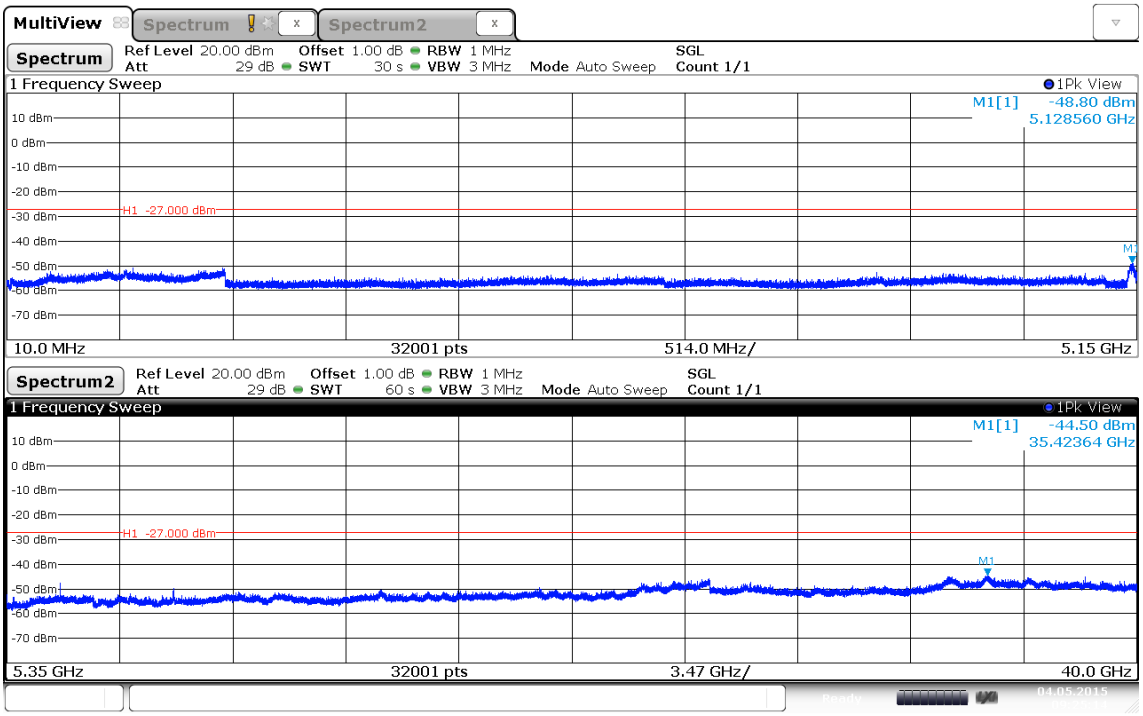
Date: 4.MAY.2015 09:16:42

Conducted spurious emissions – HT40 5230 MHz

Spurious Emissions acc. to FCC 15.407

Project Number: G0M-1503-4620

Applicant:	Bartec-Pixavi AS
EUT Name:	Wireless camera (Standard version)
Model:	OrbitX ST
Test Site:	Eurofins Product Service GmbH
Operator:	M. Handrik
Test Conditions:	Tnom / Vnom
Mode:	Tx, HT40, 5230 MHz
Test Date:	2015-05-04
Verdict:	PASS



Date: 4.MAY.2015 09:25:14

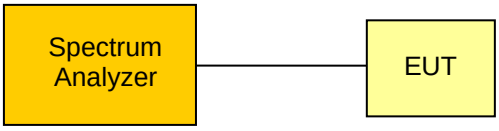
3.6 Test Conditions and Results – Band edge compliance

Band-edge compliance acc. FCC 15.407 / IC RSS-247	**Verdict: PASS**
EUT requirement rule parts and clause	Reference
	FCC 15.407(b) / IC RSS-247 6.2
Test according to measurement reference	Reference Method
	ANSI C63.10
Measurement mode	RMS Integration

Limits

Frequecy band [MHz]	Out of frequency band limit e.i.r.p.
5150 - 5250	-27 dBm/MHz
5250 – 5350	-27 dBm/MHz
5470 - 5725	-27 dBm/MHz
5725 - 5850	-17 dBm/MHz

Test setup



Test procedure

1. Set EUT to test mode
2. Adjust reference level according to antenna gain
3. Set sweep time to auto
4. Set RBW to 100 kHz and VBW ≥ 300 kHz
5. Set detector to RMS and trace to max hold
6. Allow max hold to run until trace has stabilized
7. Compute power by integrating across 1 MHz
8. Repeate measurements under all conditions of normal operations as specified in user manual

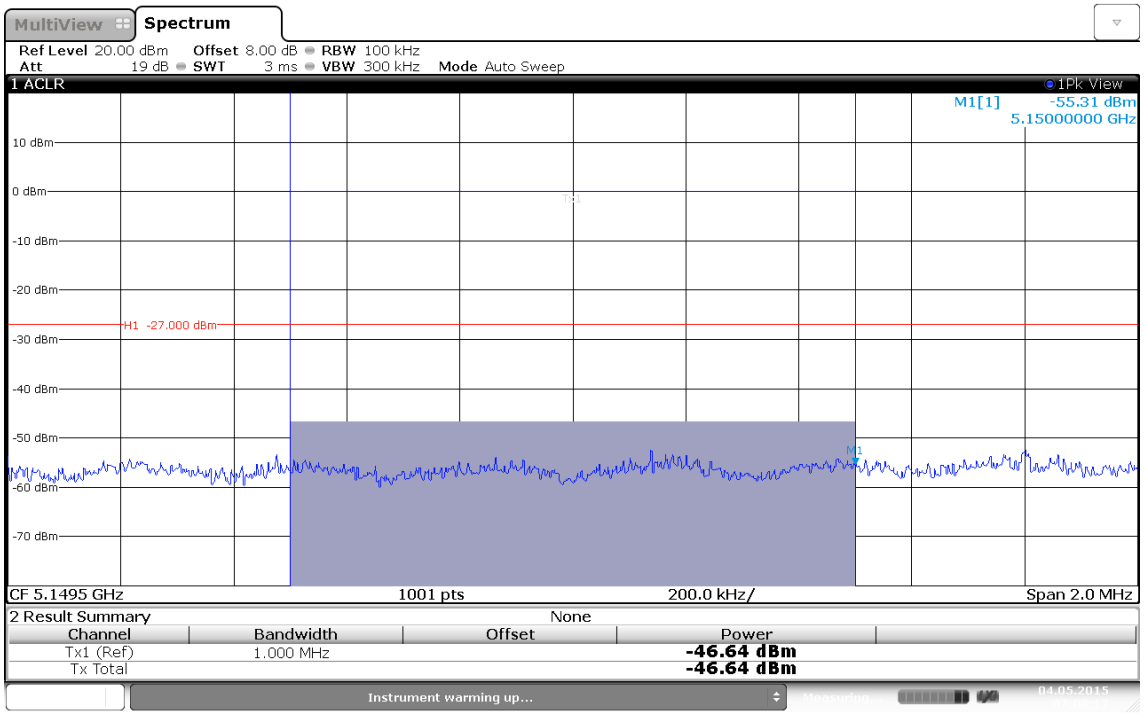
Test results					
Antenna port Channel	Frequency [MHz]	Mode	Emission Level [dBm]	Limit [dBm]	Margin [dB]
36	5180 MHz	OFDM	-46.6	-27	-19.60
48	5240 MHz	OFDM	-48.5	-27	-21.50
36	5180 MHz	HT20	-45	-27	-18.00
48	5240 MHz	HT20	-48.9	-27	-21.90
38	5180 MHz	HT40	-37.3	-27	-10.30
46	5240 MHz	HT40	-52.8	-27	-25.80
Comments:					

Band-edge compliance – OFDM 5180 MHz

Band Edge Compliance acc. to FCC 15.407

Project Number: G0M-1503-4620

Applicant:	Bartec-Pixavi AS
EUT Name:	Wireless camera (Standard version)
Model:	OrbitX ST
Test Site:	Eurofins Product Service GmbH
Operator:	M. Handrik
Test Conditions:	Tnom / Vnom
Mode:	Tx, OFDM, 5180 MHz
Test Date:	2015-05-04
Verdict:	PASS



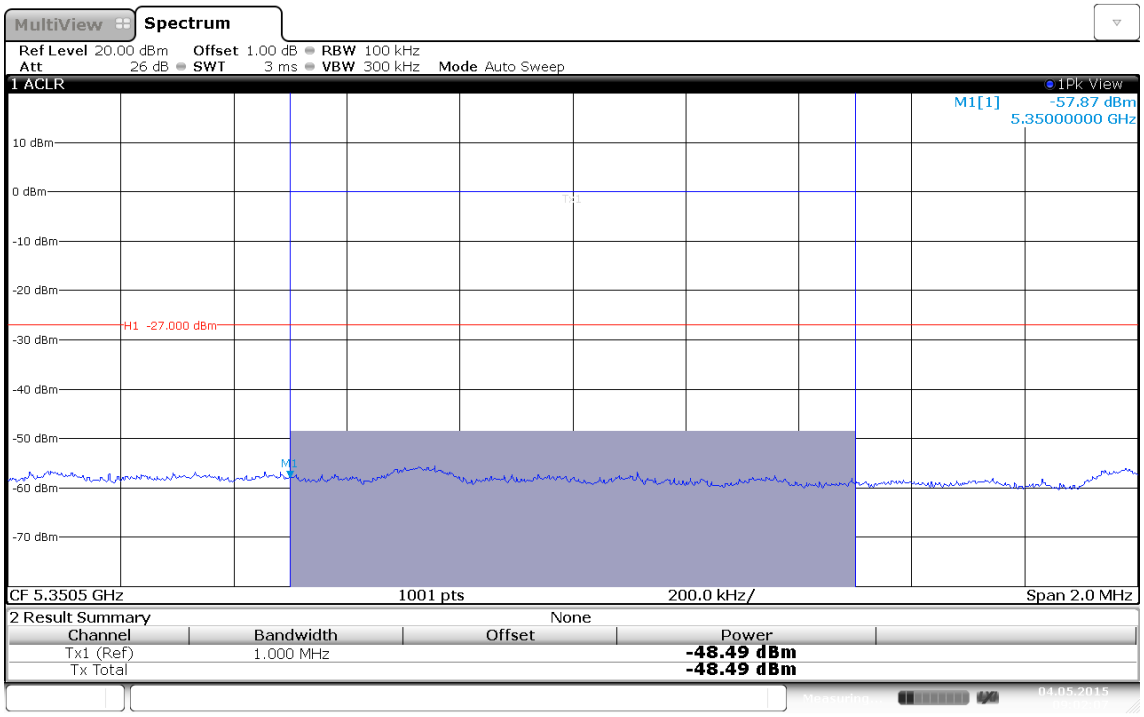
Date: 4.MAY.2015 07:08:17

Band-edge compliance – OFDM 5240 MHz

Band Edge Compliance acc. to FCC 15.407

Project Number: G0M-1503-4620

Applicant:	Bartec-Pixavi AS
EUT Name:	Wireless camera (Standard version)
Model:	OrbitX ST
Test Site:	Eurofins Product Service GmbH
Operator:	M. Handrik
Test Conditions:	Tnom / Vnom
Mode:	Tx, OFDM, 5240 MHz
Test Date:	2015-05-04
Verdict:	PASS



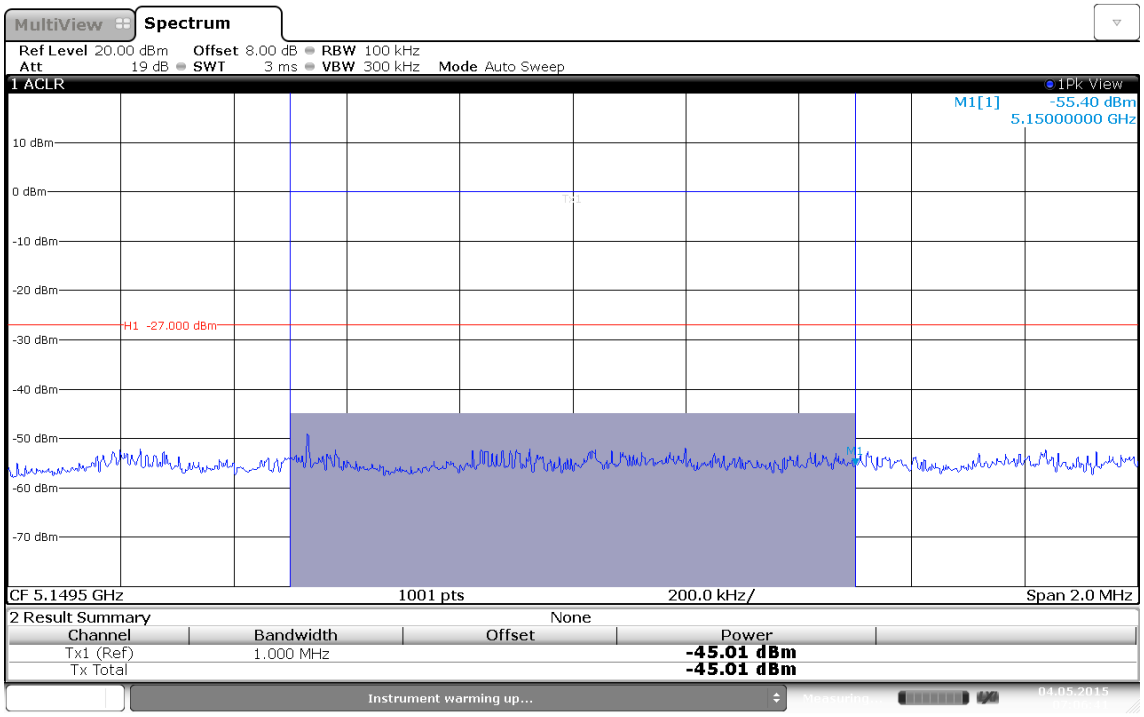
Date: 4.MAY.2015 09:02:07

Band-edge compliance – HT20 5180 MHz

Band Edge Compliance acc. to FCC 15.407

Project Number: G0M-1503-4620

Applicant:	Bartec-Pixavi AS
EUT Name:	Wireless camera (Standard version)
Model:	OrbitX ST
Test Site:	Eurofins Product Service GmbH
Operator:	M. Handrik
Test Conditions:	Tnom / Vnom
Mode:	Tx, HT20, 5180 MHz
Test Date:	2015-05-04
Verdict:	PASS



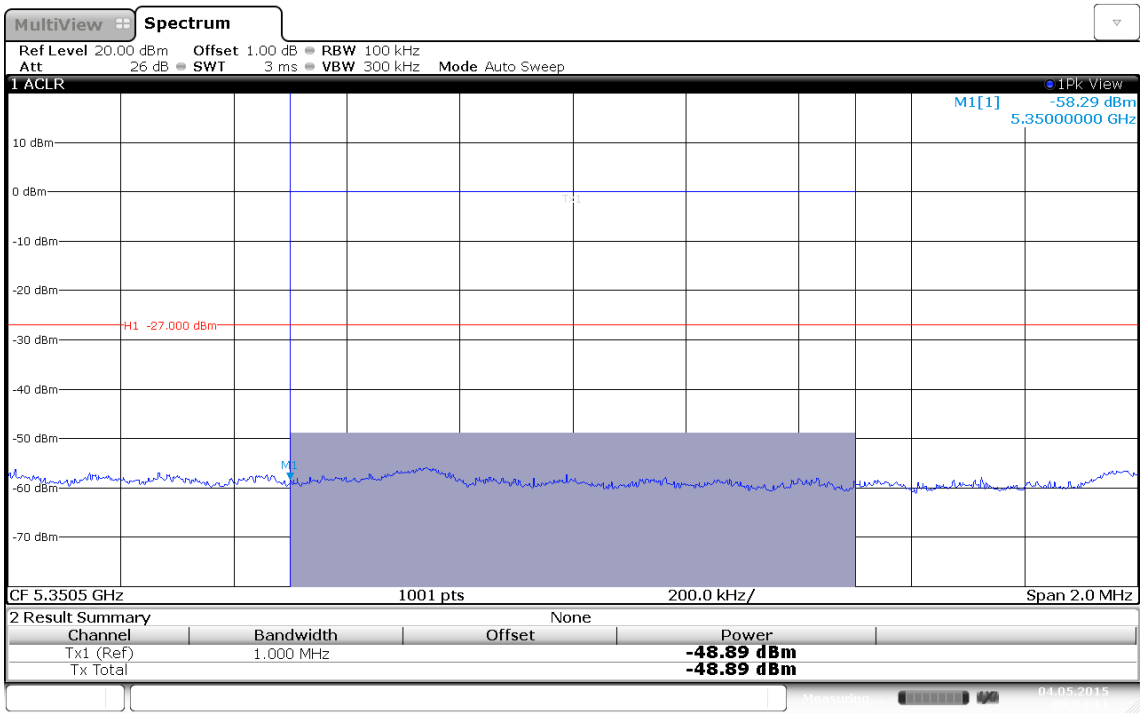
Date: 4.MAY.2015 07:06:40

Band-edge compliance – HT20 5240 MHz

Band Edge Compliance acc. to FCC 15.407

Project Number: G0M-1503-4620

Applicant:	Bartec-Pixavi AS
EUT Name:	Wireless camera (Standard version)
Model:	OrbitX ST
Test Site:	Eurofins Product Service GmbH
Operator:	M. Handrik
Test Conditions:	Tnom / Vnom
Mode:	Tx, HT20, 5240 MHz
Test Date:	2015-05-04
Verdict:	PASS



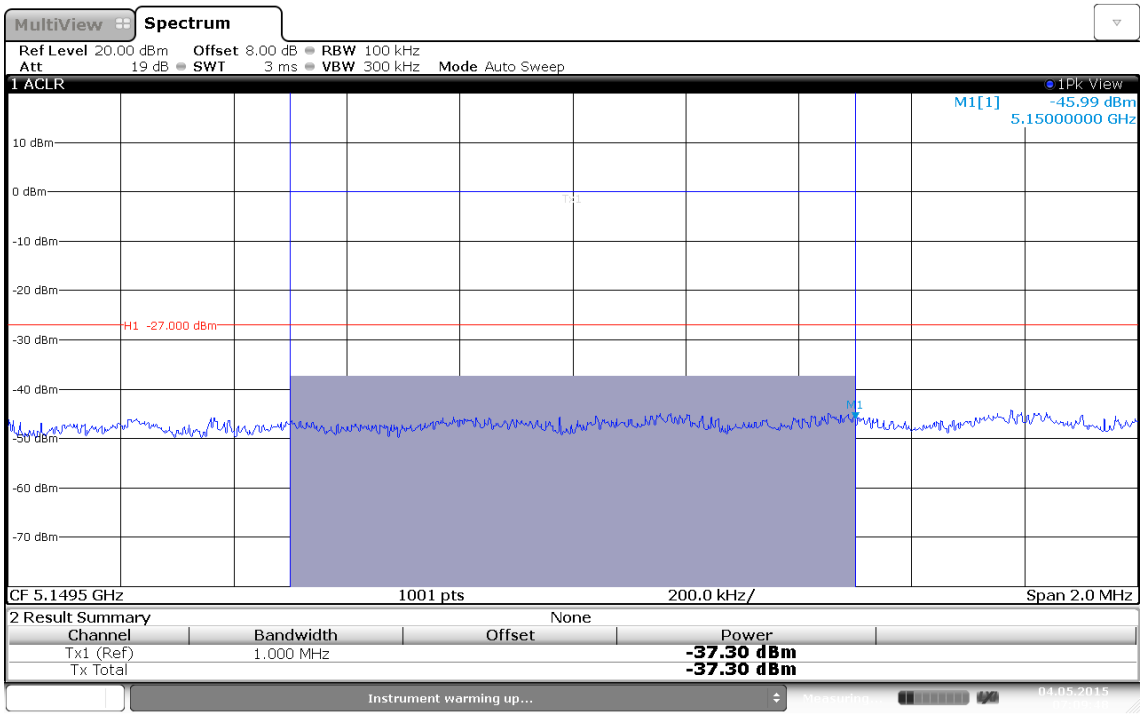
Date: 4.MAY.2015 09:04:11

Band-edge compliance – HT40 5190 MHz

Band Edge Compliance acc. to FCC 15.407

Project Number: G0M-1503-4620

Applicant:	Bartec-Pixavi AS
EUT Name:	Wireless camera (Standard version)
Model:	OrbitX ST
Test Site:	Eurofins Product Service GmbH
Operator:	M. Handrik
Test Conditions:	Tnom / Vnom
Mode:	Tx, HT40, 5190 MHz
Test Date:	2015-05-04
Verdict:	PASS

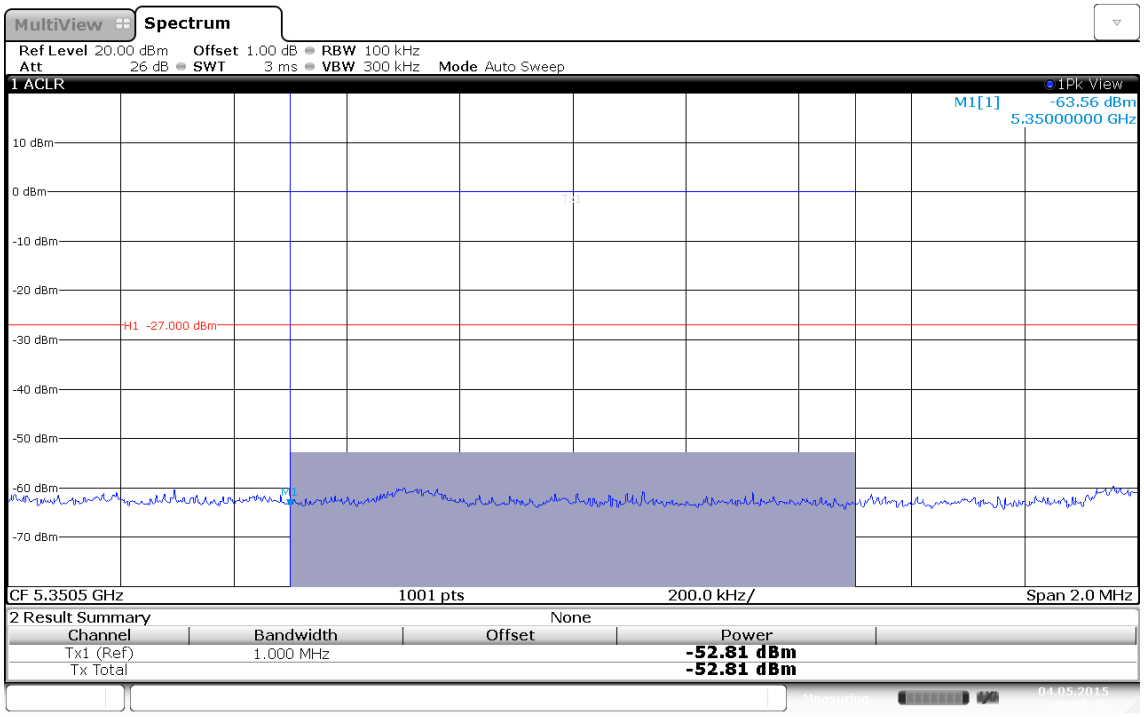


Band-edge compliance – HT40 5230 MHz

Band Edge Compliance acc. to FCC 15.407

Project Number: G0M-1503-4620

Applicant:	Bartec-Pixavi AS
EUT Name:	Wireless camera (Standard version)
Model:	OrbitX ST
Test Site:	Eurofins Product Service GmbH
Operator:	M. Handrik
Test Conditions:	Tnom / Vnom
Mode:	Tx, HT40, 5230 MHz
Test Date:	2015-05-04
Verdict:	PASS



Date: 4.MAY.2015 09:05:35

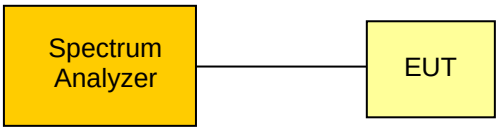
3.7 Test Conditions and Results – Frequency stability

Band-edge compliance acc. FCC 15.407	**Verdict: PASS**
EUT requirement rule parts and clause	Reference
	FCC 15.407 (g)
Test according to measurement reference	Reference Method
	ANSI 63.10
Measurement mode	Frequency counter

Limits according to IEEE 802.11

± 20 ppm

Test setup



Test procedure

1. Set EUT to unmodulated transmit mode
2. Count frequency
3. Repeate measurements under all conditions of normal operations as specified in user manual

Test results

Voltage	Temperature	Frequency Error [ppm]	Limit [ppm]	Margin [ppm]
3.7 VDC	+20°C	-3.86	±20	-16.14
3.1 VDC	+20°C	-3.84	±20	-17.16
4.2 VDC	+20°C	-3.88	±20	-16.12
3.7 VDC	-20°C	-1.83	±20	-18.17
3.7 VDC	-10°C	-2.56	±20	-17.44
3.7 VDC	0°C	-2.78	±20	-17.22
3.7 VDC	10°C	-3.99	±20	-16.01
3.7 VDC	20°C	-3.86	±20	-16.14
3.7 VDC	30°C	-6.89	±20	-13.11
3.7 VDC	40°C	-7.15	±20	-12.85
3.7 VDC	+45°C	-7.63	±20	-12.37

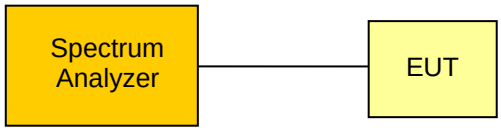
3.8 Test Conditions and Results – Minimum 6 dB Bandwidth

6dB Bandwidth acc. to FCC 15.407 / IC RSS-247	**Verdict: PASS**
EUT requirement rule parts and clause	Reference
	FCC 15.407(e) / IC RSS-247 6.2
Test according to measurement reference	Reference Method
	ANSI C63.10

Limits

Frequency band [MHz]	Limit
5725 - 5850	≥ 500kHz

Test setup



Test procedure

1. Set EUT to test mode
2. Set detector to peak and trace to max hold
3. Set RBW to 100 kHz and VBW to 300 kHz
4. Set sweep time to auto
5. Allow trace to stabilize
6. Set marker to peak value
7. Set marker to level of -6 dB to the left of the peak
8. Set marker to level of -6 dB to the right of the peak
9. 6 dB Bandwidth is determined by marker frequency separation

Test results

Channel	Frequency [MHz]	Mode	6 dB Bandwidth [MHz]	≥ Limit [kHz]	Result
36	5180	OFDM	N/R	500	N/R
48	5240	OFDM	N/R	500	N/R

Comments:

3.9 Test Conditions and Results – AC power line conducted emissions

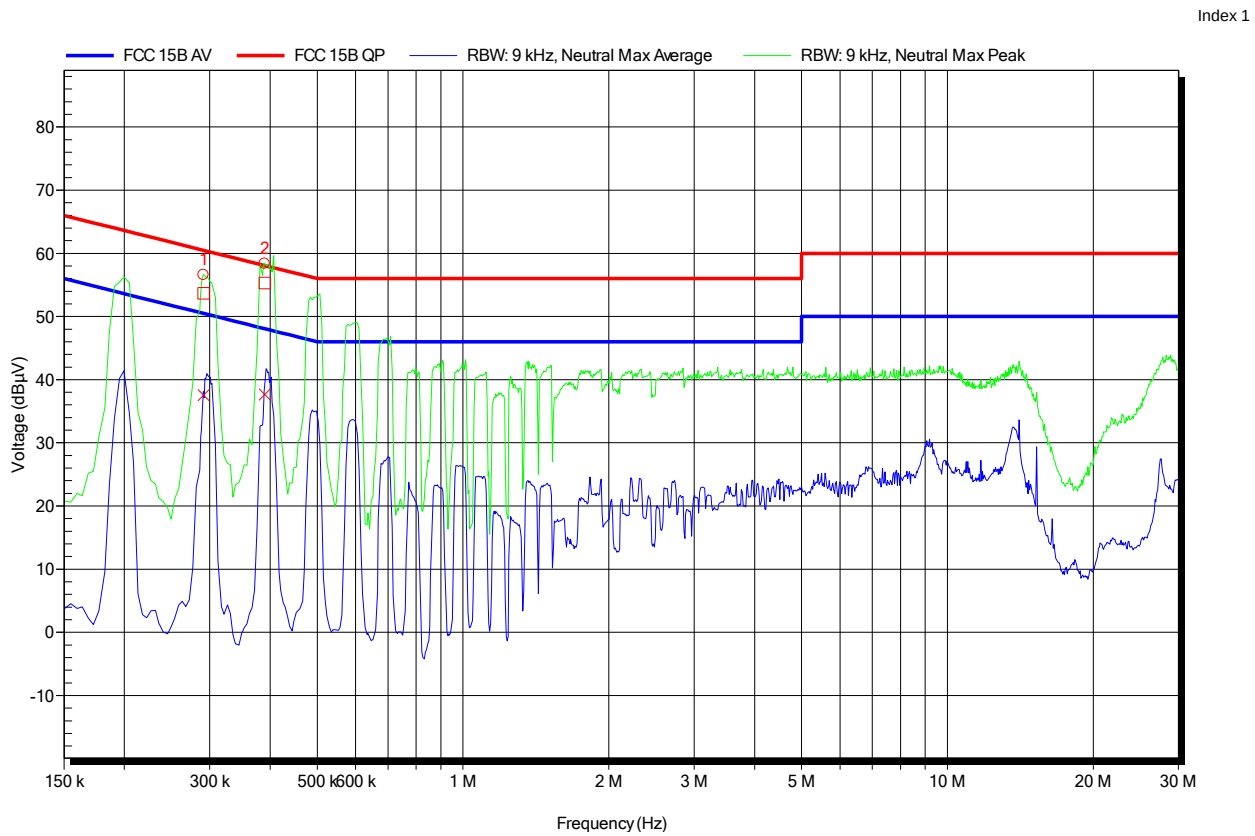
Power line conducted emissions acc. FCC 47 CFR 15.207 / IC RSS-Gen				Verdict: PASS
Test according referenced standards	Reference Method			
	FCC 15.407(b) (6) / 15.207 / ANSI C63.4			
Fully configured sample scanned over the following frequency range	Frequency range			
	0.15 MHz to 30 MHz			
Points of Application	Application Interface			
AC Mains	LISN			
EUT test mode	AC-Powerline			
Limits and results				
Frequency [MHz]	Quasi-Peak [dBµV]	Result	Average [dBµV]	Result
0.15 to 5	66 to 56*	PASS	56 to 46*	PASS
0.5 to 5	56	PASS	46	PASS
5 to 30	60	PASS	50	PASS
Comments: * Limit decreases linearly with the logarithm of the frequency.				

Conducted Emissions

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

Project number: G0M-1503-4620

Applicant:	BARTEC PIXAVI AS
EUT Name:	Wireless camera (Standard version)
Model:	OrbitX ST
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Handrik
Test Conditions:	Tnom: 22°C, Unom: 120 V AC (AC/DC adaptor)
LISN:	ESH2-Z5 N
Mode:	charging, Wlan (ping), HDMI-Monitor
Test Date:	2015-05-05
Note:	



Frequency	Quasi-Peak	Quasi-Peak Limit	Quasi-Peak Difference	Quasi-Peak Status
291.3 kHz	53.68 dBµV	60.49 dBµV	-6.81 dB	Pass
389.4 kHz	55.3 dBµV	58.08 dBµV	-2.78 dB	Pass

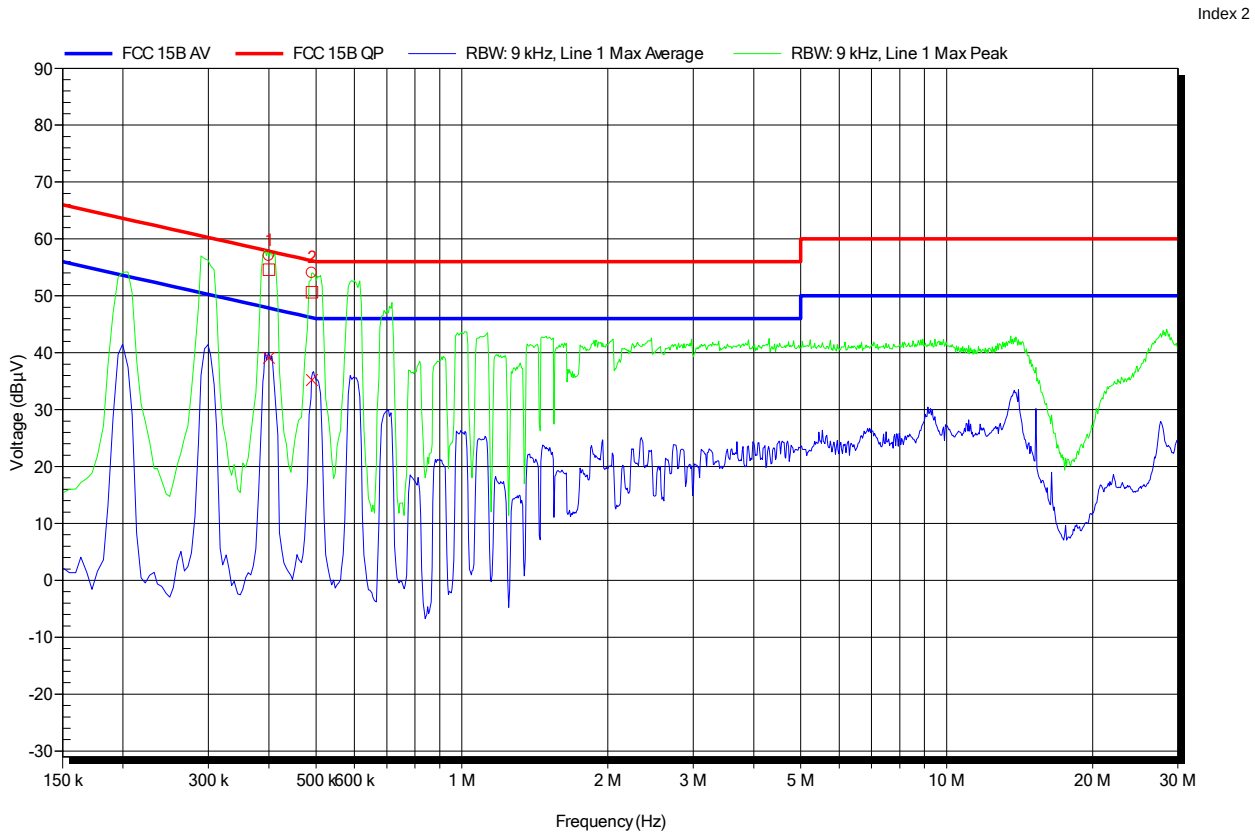
Frequency	Average	Average Limit	Average Difference	Average Status
291.3 kHz	37.56 dBµV	50.49 dBµV	-12.93 dB	Pass
389.4 kHz	37.64 dBµV	48.08 dBµV	-10.44 dB	Pass

Conducted Emissions

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

Project number: G0M-1503-4620

Applicant:	BARTEC PIXAVI AS
EUT Name:	Wireless camera (Standard version)
Model:	OrbitX ST
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Handrik
Test Conditions:	Tnom: 22°C, Unom: 120 V AC (AC/DC adaptor)
LISN:	ESH2-Z5 L
Mode:	charging, Wlan (ping), HDMI-Monitor
Test Date:	2015-05-05
Note:	

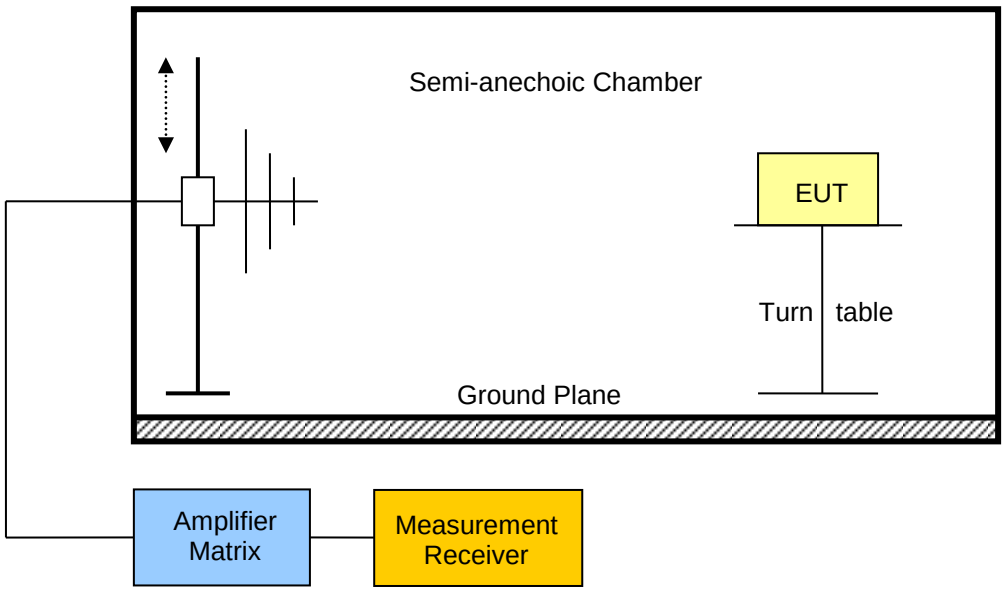


Frequency	Quasi-Peak	Quasi-Peak Limit	Quasi-Peak Difference	Quasi-Peak Status
399.75 kHz	54.58 dBµV	57.86 dBµV	-3.28 dB	Pass
490.65 kHz	50.62 dBµV	56.16 dBµV	-5.54 dB	Pass

Frequency	Average	Average Limit	Average Difference	Average Status
399.75 kHz	39.09 dBµV	47.86 dBµV	-8.77 dB	Pass
490.65 kHz	35.21 dBµV	46.16 dBµV	-10.95 dB	Pass

3.10 Test Conditions and Results – Transmitter radiated emissions in the restricted bands

Transmitter radiated emissions acc. FCC 47 CFR 15.407 / IC RSS-247				**Verdict: PASS**
Test according referenced standards		Reference Method		
		FCC 15.407(b) (7) / IC RSS-247 6.2		
Test according to measurement reference		Reference Method		
		ANSI C63.10		
Test frequency range		Tested frequencies		
		30 MHz – 10th Harmonic		
Limits				
Frequency range [MHz]	Detector	Limit [µV/m]	Limit [dBµV/m]	Limit Distance [m]
30 – 88	Quasi-Peak	100	40	3
88 – 216	Quasi-Peak	150	43.5	3
216 – 960	Quasi-Peak	200	46	3
960 – 1000	Quasi-Peak	500	54	3
> 1000	Average	500	54	3
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 15.205(c)). Below 1000 MHz peak detector is allowed as an alternative to quasi-peak detector. Above 1000 MHz is an additional peak limit 20 dB above the average limit. If all peak measurements satisfy the average limit, then average measurements are not required.				
Test setup				



Test procedure
1. Set EUT to test mode 2. Set span according to measurement range 3. Set resolution bandwidth below 1 GHz according to CISPR 16 with peak/quasi-peak detector and to 1 MHz with peak/average detector above 1 GHz 4. Set markers to peak emission levels within restricted bands

Test results – OFDM

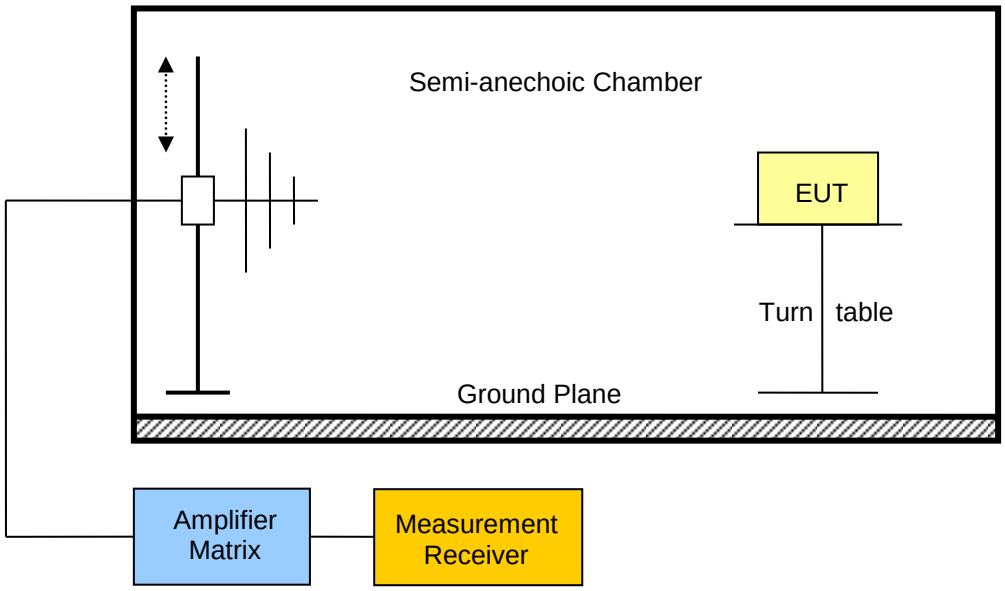
Channel	Channel Frequency [MHz]	Test Mode	Emission Frequency MHz]	Emission Level [dbµV/m]	Det.	Pol.	Limit [dbµV/m]	Margin [dB]
36	5180	OFDM	390.4	23.35	pk	ver	46.00	-22.65
36	5180	OFDM	708.8	26.11	pk	hor	46.00	-19.89
36	5180	OFDM	5149	56.26	pk	hor	74.00	-17.74
36	5180	OFDM	5149	38.96	RMS	hor	54.00	-15.04
36	5180	OFDM	5149	55.63	pk	ver	74.00	-18.37
36	5180	OFDM	5149	39.35	RMS	ver	54.00	-14.65
36	5180	OFDM	15516	49.35	pk	ver	54.00	-04.65
40	5200	OFDM	400	28.77	pk	hor	46.00	-17.23
40	5200	OFDM	400	25.99	pk	ver	46.00	-20.01
40	5200	OFDM	1594	43.20	pk	ver	54.00	-10.80
40	5200	OFDM	3982	48.89	pk	ver	54.00	-05.11
40	5200	OFDM	15600	50.55	pk	ver	54.00	-03.45
48	5240	OFDM	392	23.10	pk	ver	46.00	-22.90
48	5240	OFDM	723.2	24.50	pk	hor	46.00	-21.50
48	5240	OFDM	1396	41.70	pk	hor	54.00	-12.30
48	5240	OFDM	1594	44.47	pk	ver	54.00	-09.53
48	5240	OFDM	5350.6	49.81	pk	hor	54.00	-04.19
48	5240	OFDM	5352	48.10	pk	ver	54.00	-05.90
48	5240	OFDM	15720	55.20	pk	ver	74.00	-18.80
48	5240	OFDM	15720	43.02	RMS	ver	54.00	-10.98

Test results – HT20								
Channel	Channel Frequency [MHz]	Test Mode	Emission Frequency [MHz]	Emission Level [dbµV/m]	Det.	Pol.	Limit [dbµV/m]	Margin [dB]
36	5180	HT20	392	22.37	pk	hor	46.00	-23.63
36	5180	HT20	392	22.08	pk	ver	46.00	-23.92
36	5180	HT20	5150	45.56	pk	hor	74.00	-28.44
36	5180	HT20	5150	36.51	RMS	hor	54.00	-17.49
36	5180	HT20	5150	60.77	pk	ver	74.00	-13.23
36	5180	HT20	5150	39.22	RMS	ver	54.00	-14.78
36	5180	HT20	10352	52.34	pk	ver	54.00	-01.66
36	5180	HT20	10360	48.99	pk	hor	54.00	-05.01
36	5180	HT20	15528	51.24	pk	ver	54.00	-02.76
40	5200	HT20	392	22.48	pk	ver	46.00	-23.52
40	5200	HT20	702.4	29.79	pk	hor	46.00	-16.21
40	5200	HT20	1792	46.98	pk	ver	54.00	-07.02
40	5200	HT20	1990	47.38	pk	ver	54.00	-06.62
40	5200	HT20	2392	46.72	pk	ver	54.00	-07.28
40	5200	HT20	2398	43.04	pk	hor	54.00	-10.96
40	5200	HT20	3190	45.99	pk	hor	74.00	-28.01
40	5200	HT20	10392	48.98	pk	hor	54.00	-05.02
40	5200	HT20	10392	51.33	pk	ver	54.00	-02.67
40	5200	HT20	15600	50.84	pk	ver	54.00	-03.16
48	5240	HT20	390.4	25.63	pk	ver	46.00	-20.37
48	5240	HT20	392	21.18	pk	hor	46.00	-24.82
48	5240	HT20	398.4	26.60	pk	ver	46.00	-19.40
48	5240	HT20	1588	43.60	pk	hor	54.00	-10.40
48	5240	HT20	1594	45.35	pk	ver	54.00	-08.65
48	5240	HT20	1792	45.55	pk	ver	54.00	-08.45
48	5240	HT20	1996	47.50	pk	ver	54.00	-06.50
48	5240	HT20	5351	48.58	pk	hor	54.00	-05.42
48	5240	HT20	5351	49.02	pk	ver	54.00	-04.98
48	5240	HT20	10472	52.87	pk	ver	54.00	-01.13
48	5240	HT20	10480	50.07	pk	hor	54.00	-03.93
48	5240	HT20	15708	51.81	pk	ver	54.00	-02.19

Test results – HT40								
Channel	Channel Frequency [MHz]	Test Mode	Emission Frequency [MHz]	Emission Level [dbµV/m]	Det.	Pol.	Limit [dbµV/m]	Margin [dB]
38	5190	HT40	392	21.16	pk	hor	46.00	-24.84
38	5190	HT40	400	30.11	pk	ver	46.00	-15.89
38	5190	HT40	1594	44.13	pk	ver	54.00	-09.87
38	5190	HT40	1792	46.47	pk	ver	54.00	-07.53
38	5190	HT40	1990	48.05	pk	ver	54.00	-05.95
38	5190	HT40	2392	44.48	pk	hor	54.00	-09.52
38	5190	HT40	2392	47.77	pk	ver	54.00	-06.23
38	5190	HT40	4779	49.62	pk	ver	54.00	-04.38
38	5190	HT40	5149	66.10	pk	hor	74.00	-07.90
38	5190	HT40	5149	46.08	RMS	hor	54.00	-07.92
38	5190	HT40	5150	66.60	pk	ver	74.00	-07.40
38	5190	HT40	5150	46.02	RMS	ver	54.00	-07.98
38	5190	HT40	6919	53.28	pk	hor	54.00	-00.72
38	5190	HT40	6919	52.83	pk	ver	54.00	-01.17
38	5190	HT40	10376	47.73	pk	hor	54.00	-06.27
38	5190	HT40	10376	48.77	pk	ver	54.00	-05.23
46	5230	HT40	390.4	21.55	pk	hor	46.00	-24.45
46	5230	HT40	390.4	24.45	pk	ver	46.00	-21.55
46	5230	HT40	1594	46.17	pk	ver	54.00	-07.83
46	5230	HT40	1792	45.67	pk	ver	54.00	-08.33
46	5230	HT40	1996	49.38	pk	ver	54.00	-04.62
46	5230	HT40	2386	44.21	pk	hor	54.00	-09.79
46	5230	HT40	10456	50.04	pk	hor	54.00	-03.96
46	5230	HT40	10456	50.37	pk	ver	54.00	-03.63

3.11 Test Conditions and Results – Receiver radiated emissions

Receiver radiated emissions acc. IC RSS-247				**Verdict: PASS**
Test according referenced standards	Reference Method			
	IC RSS-247 6.2			
Test according to measurement reference	Reference Method			
	ANSI C63.10			
Test frequency range	Tested frequencies			
	30 MHz – 5th Harmonic			
EUT test mode	Receive			
Limits				
Frequency range [MHz]	Detector	Limit [µV/m]	Limit [dBµV/m]	Limit Distance [m]
30 – 88	Quasi-Peak	100	40	3
88 – 216	Quasi-Peak	150	43.5	3
216 – 960	Quasi-Peak	200	46	3
960 – 1000	Quasi-Peak	500	54	3
> 1000	Average	500	54	3
Test setup				



Test procedure

1. Set EUT to test mode
2. Set span according to measurement range
3. Set resolution bandwidth below 1 GHz according to CISPR 16 with peak/quasi-peak detector and to 1 MHz with peak/average detector above 1 GHz
4. Set markers to peak emission levels

Test results

Channel	Channel Frequency [MHz]	Emission Frequency [MHz]	Emission Level [dbµV/m]	Detector	Polarizat.	Limit [dBµV/m]	Margin [dB]
40	5200	241.6	25.51	pk	hor	46.00	-20.49
40	5200	294.4	35.09	pk	ver	46.00	-10.91
40	5200	297.6	27.84	pk	hor	46.00	-18.16
40	5200	480	27.45	pk	ver	46.00	-18.55
40	5200	795.2	29.90	pk	ver	46.00	-16.10
40	5200	798.4	26.46	pk	hor	46.00	-19.54
40	5200	948.8	28.15	pk	hor	46.00	-17.85
40	5200	1030	36.38	pk	hor	53.98	-17.60
40	5200	1078	36.37	pk	hor	53.98	-17.61
40	5200	1198	45.33	pk	ver	53.98	-08.65
40	5200	1594	38.07	pk	hor	53.98	-15.91
40	5200	1594	42.15	pk	ver	53.98	-11.83
40	5200	1792	44.35	pk	ver	53.98	-09.63
40	5200	1798	42.07	pk	hor	53.98	-11.91
40	5200	1996	45.89	pk	ver	53.98	-08.09
40	5200	2392	44.70	pk	ver	53.98	-09.28
40	5200	2398	41.71	pk	hor	53.98	-12.27
40	5200	3982	47.06	pk	ver	53.98	-06.92
40	5200	6632	51.07	pk	ver	53.98	-02.91

Comments: