

TEST REPORT
of the accredited test laboratory

TÜV Nr.:INE-AT/FG-18/155

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Technik

Applicant: StreamUnlimited Engineering GmbH
High Tech Campus Vienna
Gutheil-Schoder-Gasse 10
A-1100 Vienna

Tested Product: STREAM1832 Bluetooth / BLE / WIFI streaming module
Test report for 2,4 GHz WIFI part only

FCC-ID: 2AJYB-S1832

IC-ID: 20504-S1832

Manufacturer: See applicant

Output power / field strength: 43,65 mW cond. **power supply:** 12 VDC

Frequency range: 2412 - 2462 MHz **Channel separation:** 5 MHz

Standard: FCC: 47 CFR Part 15 (October 1, 2017 edition)
RSS-247 Issue 2, February 2017

Testing Laboratory,
Inspection Body,
Certification Body,
Calibration Laboratory,
VerifizierungsstelleNotified Body 0408
IC 2932K-1Non-executive
Board of Directors:
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1230 Vienna/Austria**Branch Offices:**
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Court / - Number:**
Vienna / FN 288476 f**Bank Details:**
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BIC BKAUATWWIBAN
AT15310000010409328
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DVR 3002476**TUV Austria Services GmbH**
Test laboratory for EMC

Supervisor of EMC-laboratory:

Ing. Wilhelm SeierCopy Nbr.: 01

checked by:

Ing. Michael Emminger

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The results of this test report only refer to the provided equipment.

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1. Applicant

Company: StreamUnlimited Engineering GmbH

Department: Director Systems

Address: High Tech Campus Vienna
Gutheil-Schoder-Gasse 10
A-1100 Vienna

Contact person: Mr. DI Christoph Apel

EUT received on: 05.09.2018

Tests were performed on: 05.09. till 05.11.2018

2. Description of EUT

EUT:	Bluetooth / BLE / WIFI module "STREAM1832"
Serial Number:	Prototype mounted on evaluation board
Manufacturer:	StreamUnlimited Engineering GmbH High Tech Campus Vienna Gutheil-Schoder-Gasse 10 A-1100 Vienna
Description:	StreamUnlimited Engineering GmbH provided the following configuration for the measurements: Prototype mounted on evaluation board with direct connection for conducted measurements and with antenna type of highest gain for radiated measurements
Operating mode:	The measurements were carried out at the following running states: test-firmware running, transmitting continuously
Technical data EUT:	Rated voltage: 12VDC Rated current: 150mA Rated frequency: DC Mains voltage during the tests: 12VDC
Climatic conditions in the emc laboratory:	Relative humidity: 54% Temperature: 23°C

3. Standards / Final result

Name	Title	Deviation	Result
Title 47 CFR Part 15 October 1 st 2017 edition	RADIO FREQUENCY DEVICES	none	OK
RSS-247 Issue 2, February 2017	Digital Transmission Systems (DTSs), Frequency Hopping Systems (FHSs) and Licence-Exempt Local Area Network (LE-LAN) Devices	none	OK
<p>Result: Opinions and interpretation of testing laboratory OK: EUT passed NOK: EUT failed</p>			

4. TEST RESULTS

4.1. TEST OBJECT DATA

General EUT Description

This Bluetooth / BLE / WIFI module is using either 2.4 GHz frequencies or 5 GHz (WIFI only). This test report is only for the 2,4 GHz WIFI part. See additional test reports:

INE-AT/FG-18/153 for Bluetooth

INE-AT/FG-18/154 for BLE and

INE-AT/FG-18/156 for 5 GHz WIFI measurement results including photodocumentation.

2.1033 (c) Technical description

2.1033 (4) Type of emission:

802.11 standards – Channel bandwidths 11,2 MHz (DSSS), 17,2 MHz (20 MHz OFDM) and 37,6 MHz (40 M - aggregation of 2 non-overlapping 20 M OFDM channels) - Channel spacing 5 MHz.

2.1033 (5) Frequency range:

2412 till 2462 MHz (channel center frequencies) in 5 MHz steps resulting in 11 Channels (DSSS and 20 MHz channels)

2422 till 2452 MHz (channel center frequencies) in 5 MHz steps resulting in 7 Channels of 40 MHz bandwidth

2.1033 (6) Power range and Controls: The maximum peak output power is 43,65 mW and there is no power regulation.

2.1033 (7) Maximum output power rating: 43,65 mW.

2.1033 (8) DC Voltage and Current: 12V DC

maximum current consumption: 150 mA

RSS-135 This standard does not apply to:

- 1.1.(a) a receiver that scans radio frequencies for the purpose of enabling its associated transmitter to avoid transmitting in an occupied frequency but which does not have the capability of decoding the message (e.g. converting it to audio voice) contained in the radio signal

Antennas used for all radiated measurements: MOLEX '1461531100'

Worst case Spurious Emissions: 53,2 dB μ V/m Average.

Tests were performed September 5th till November 5th 2018.

Test Report Reference:
INE-AT/FG-18/155

Ambient temperature: 23°C

Relative humidity: 21%

4.2. Number of channels and channel spacing

§ 2.1033

Conducted Measurement

Rated output power: 43,65 mW

There are 11 Channels used starting at 2412 till 2462 MHz each separated by 5 MHz channel spacing with a maximum bandwidth of 20 MHz.

Two channels spaced by 20 MHz can be used simultaneously to give a RF-Bandwidth of 40 MHz, resulting in 7 different channels with 40 MHz bandwidth and center frequencies of 2422 till 2452 MHz each separated by 5 MHz channel spacing.

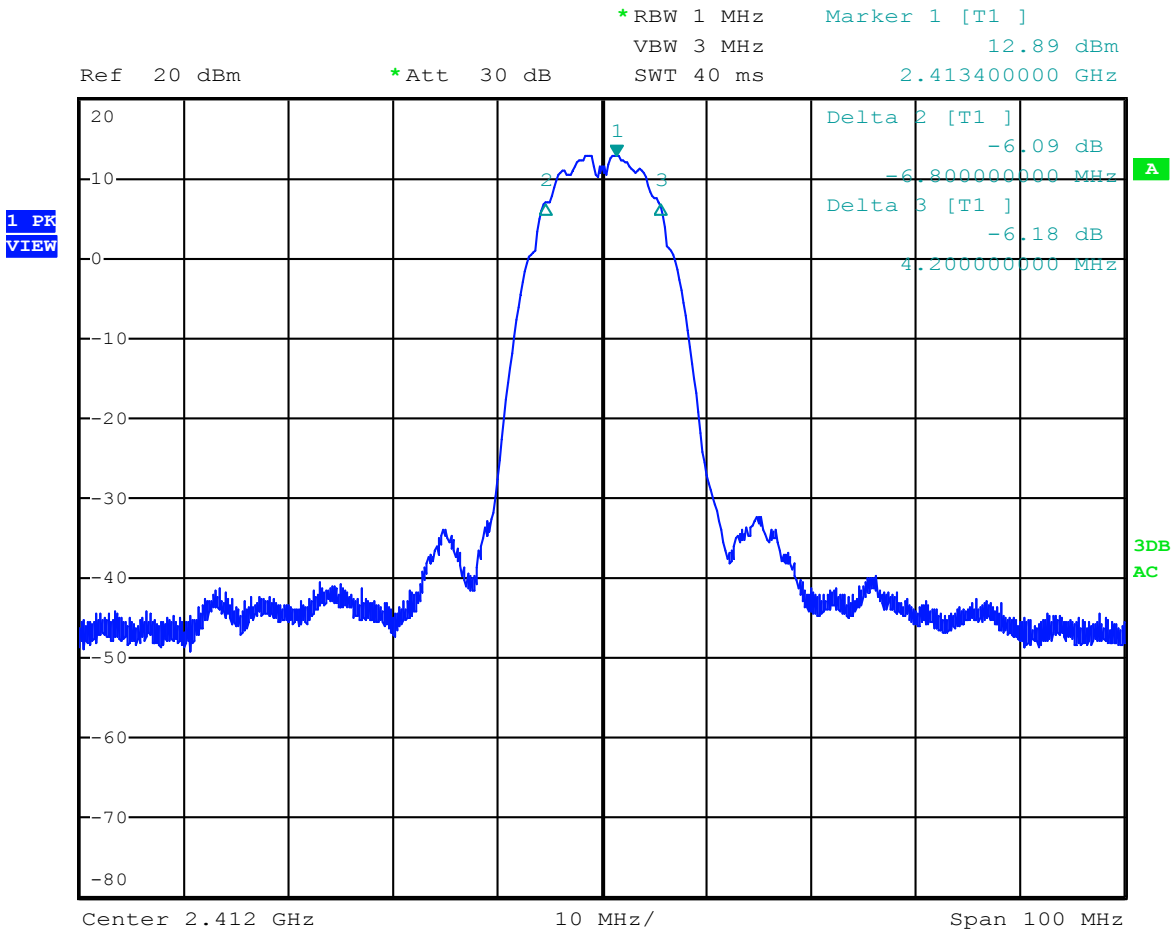
Test Equipment used: N/A

4.3. 6dB Bandwidth

**§ 15.247(a)(2)
5.2(1)**

Conducted Measurement – Antenna 1

Rated output power: 43,65 mW Channel 1 (2412 MHz center frequency) – DSSS



Date: 19.SEP.2018 15:28:17

6dB Bandwidth: 11,0 MHz

LIMIT SUBCLAUSE 15.247(e) – 5.2(1)

Under normal test conditons	6 dB Bandwidth at least 500 kHz
-----------------------------	---------------------------------

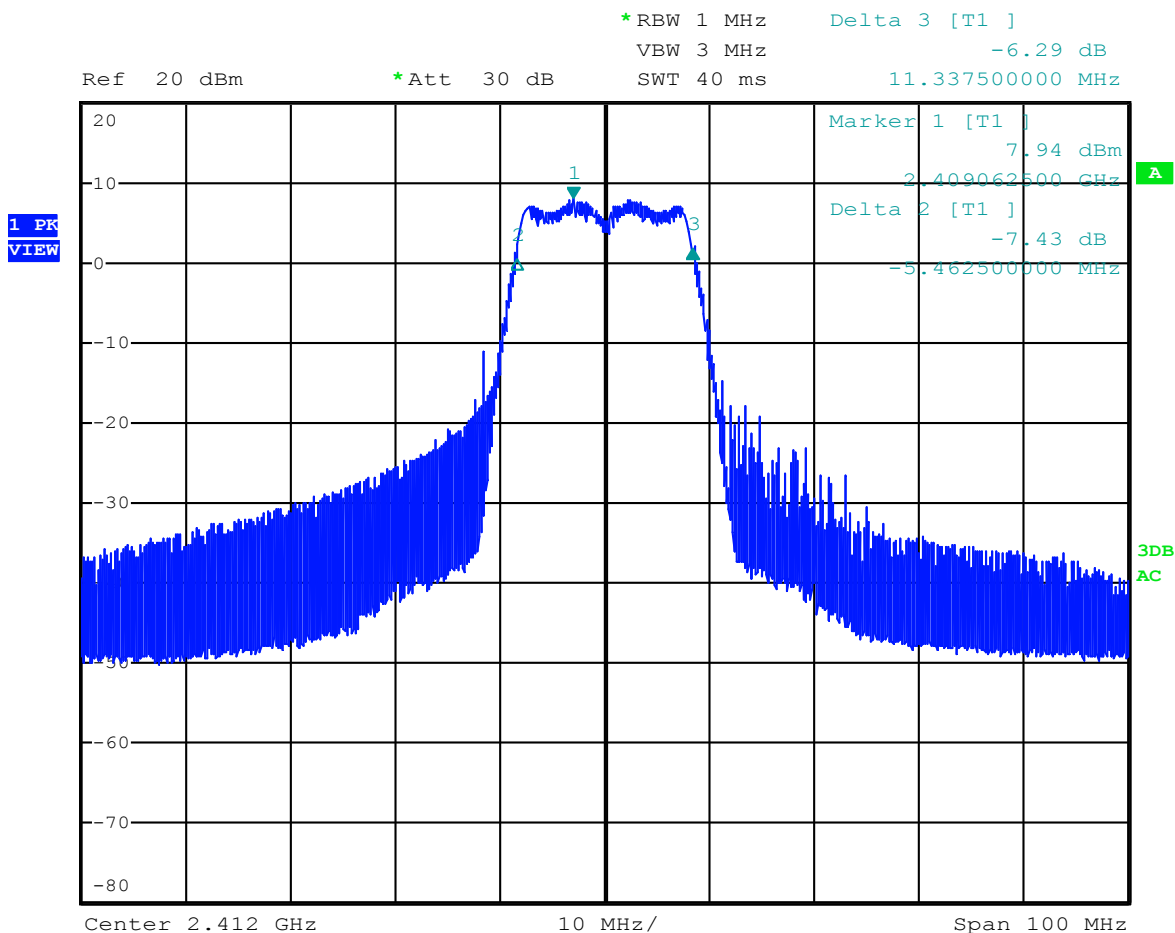
Test Equipment used: NT-203/1

6dB Bandwidth

**§ 15.247(a)(2)
5.2(1)**

Conducted Measurement – Antenna 1

Rated output power: 43,65 mW Channel 1 (2412 MHz center frequency) – OFDM



Date: 19.SEP.2018 15:32:49

6dB Bandwidth: 16,8 MHz

LIMIT SUBCLAUSE 15.247(e) – 5.2(1)

Under normal test conditons	6 dB Bandwidth at least 500 kHz
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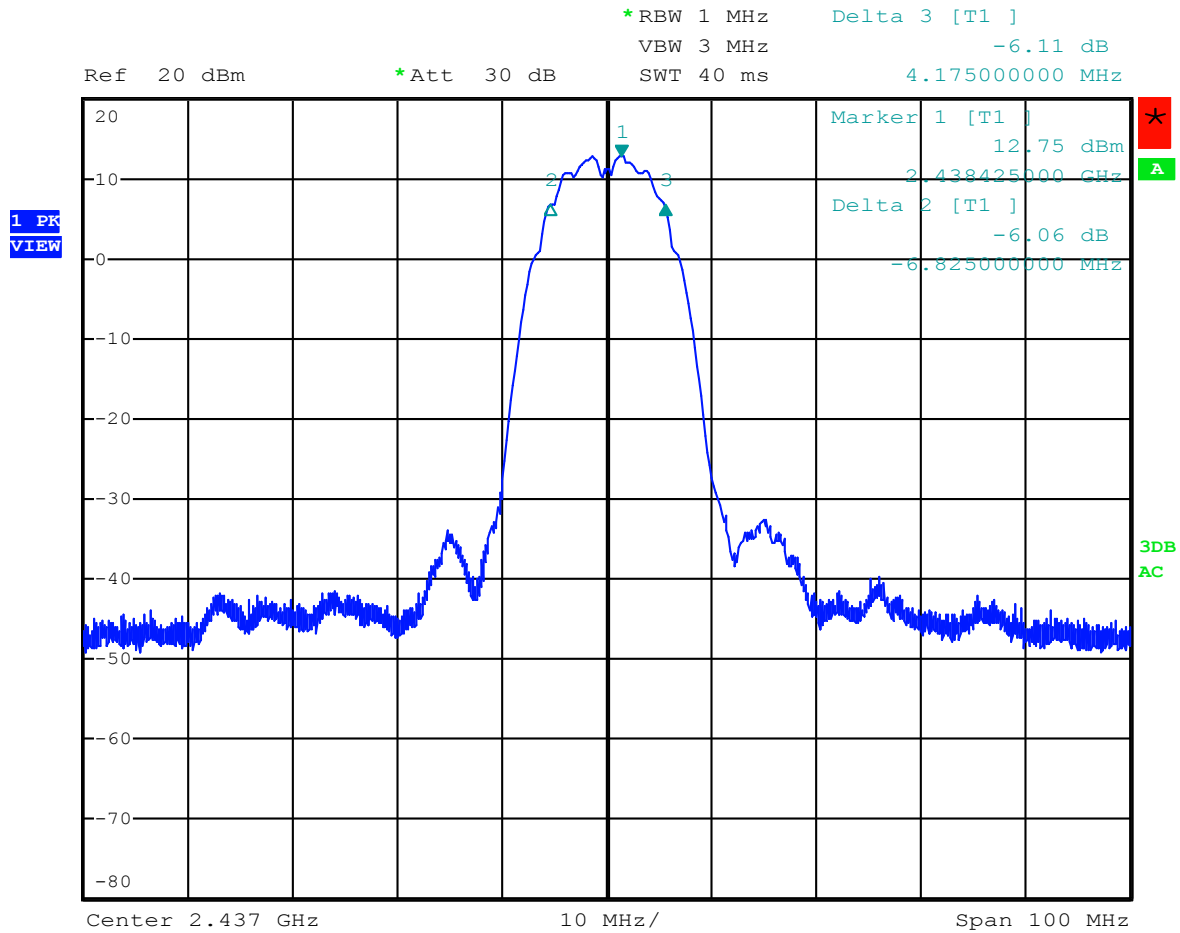
Test Equipment used: NT-203/1

6dB Bandwidth

**§ 15.247(a)(2)
5.2(1)**

Conducted Measurement – Antenna 1

Rated output power: 43,65 mW Channel 6 (2437 MHz center frequency) – DSSS



Date: 19.SEP.2018 15:30:02

6dB Bandwidth: 11,0 MHz

LIMIT SUBCLAUSE 15.247(e) – 5.2(1)

Under normal test conditons	6 dB Bandwidth at least 500 kHz
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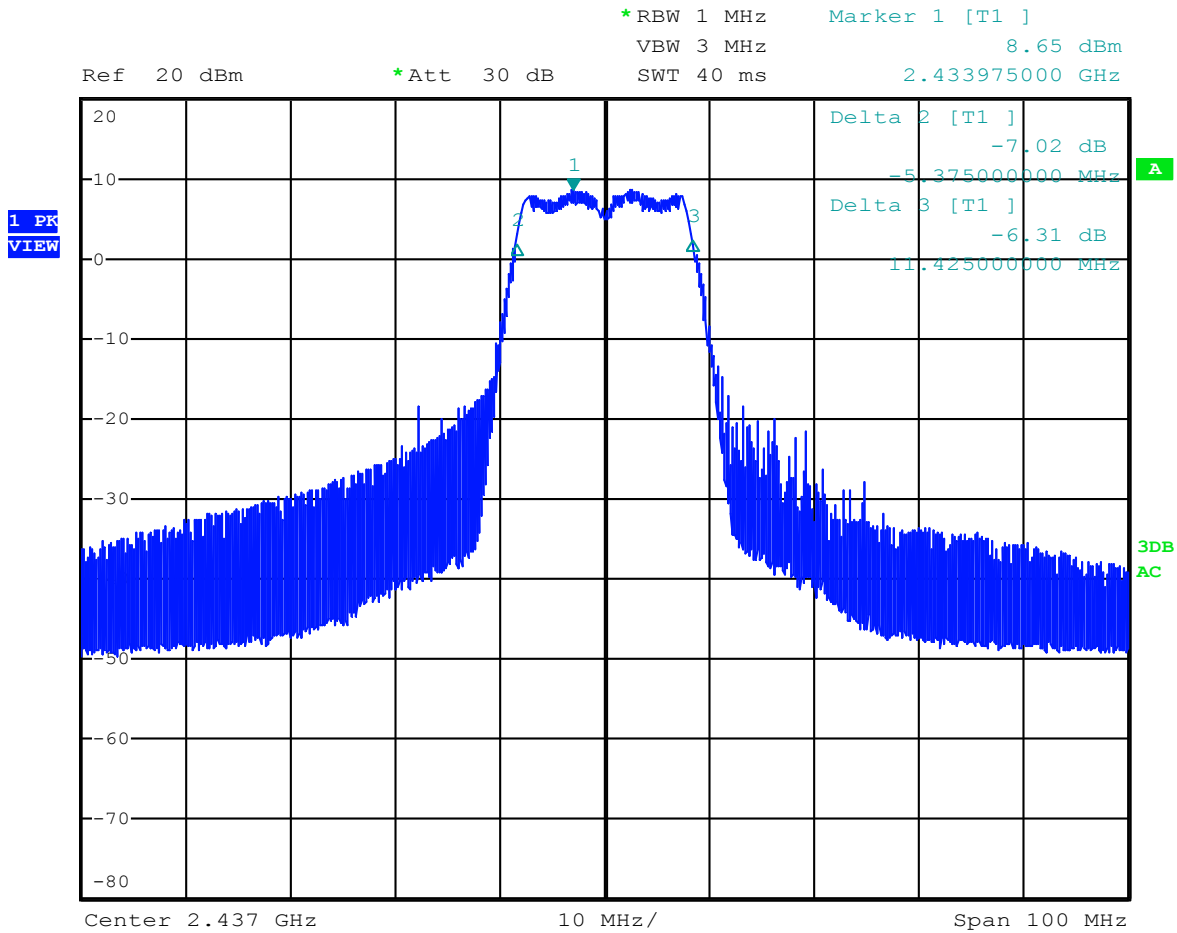
Test Equipment used: NT-203/1

6dB Bandwidth

**§ 15.247(a)(2)
5.2(1)**

Conducted Measurement – Antenna 1

Rated output power: 43,65 mW Channel 6 (2437 MHz center frequency) – OFDM



Date: 19.SEP.2018 15:31:20

6dB Bandwidth: 16,8 MHz

LIMIT SUBCLAUSE 15.247(e) – 5.2(1)

Under normal test conditons	6 dB Bandwidth at least 500 kHz
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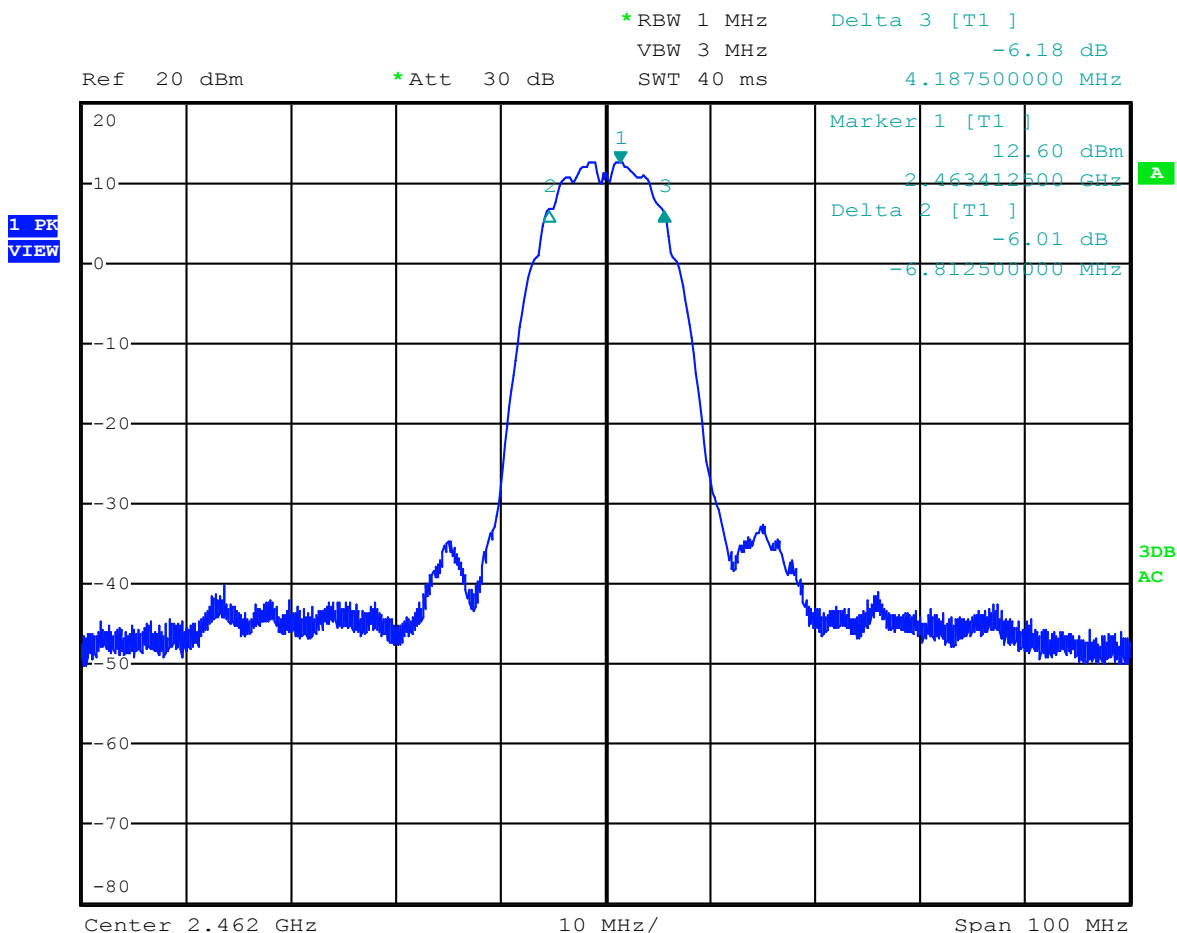
Test Equipment used: NT-203/1

6dB Bandwidth

**§ 15.247(a)(2)
5.2(1)**

Conducted Measurement – Antenna 1

Rated output power: 43,65 mW Channel 11 (2462 MHz center frequency) – DSSS



Date: 19.SEP.2018 15:34:42

6dB Bandwidth: 11,0 MHz

LIMIT SUBCLAUSE 15.247(e) – 5.2(1)

Under normal test conditons	6 dB Bandwidth at least 500 kHz
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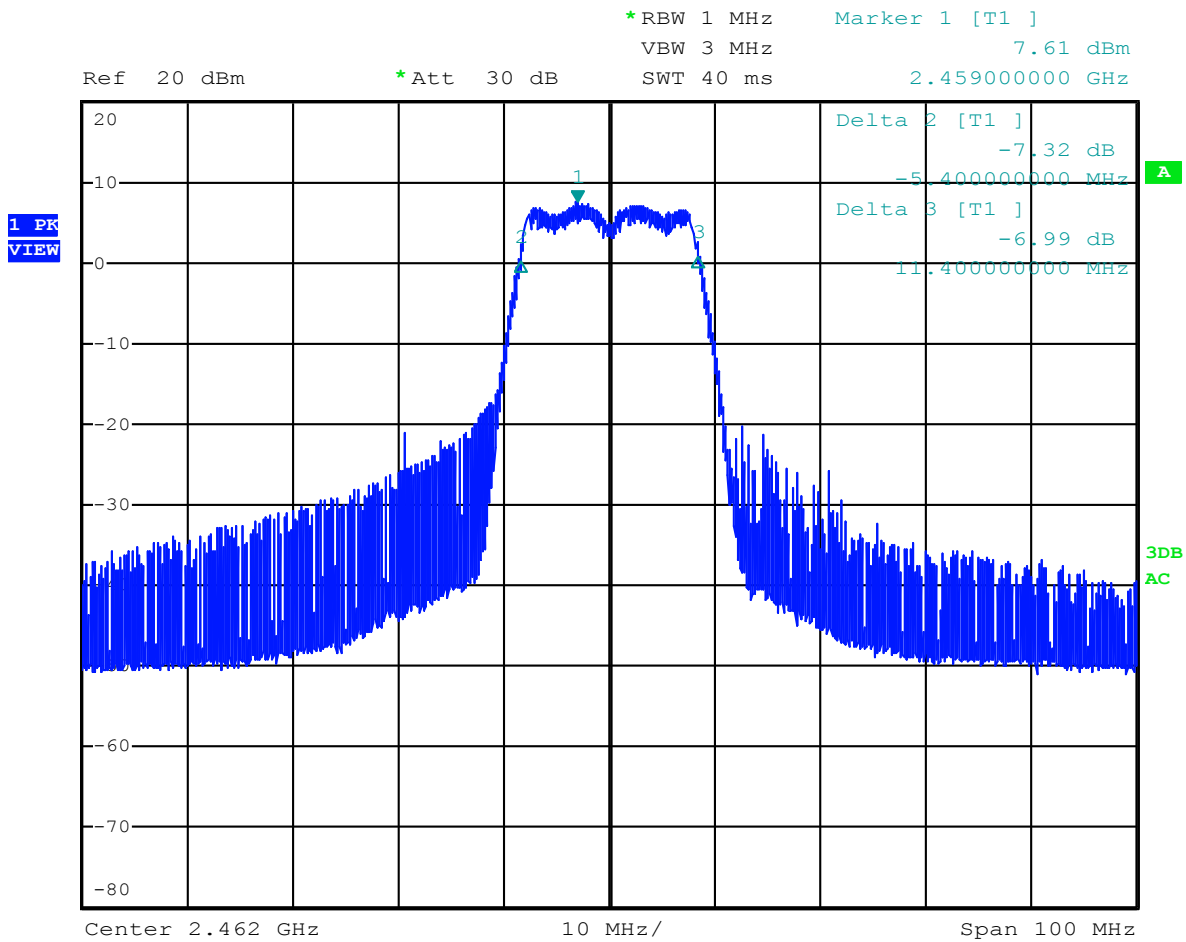
Test Equipment used: NT-203/1

6dB Bandwidth

**§ 15.247(a)(2)
5.2(1)**

Conducted Measurement – Antenna 1

Rated output power: 43,65 mW Channel 11 (2462 MHz center frequency) – OFDM



Date: 19.SEP.2018 15:33:57

6dB Bandwidth: 16,8 MHz

LIMIT SUBCLAUSE 15.247(e) – 5.2(1)

Under normal test conditons	6 dB Bandwidth at least 500 kHz
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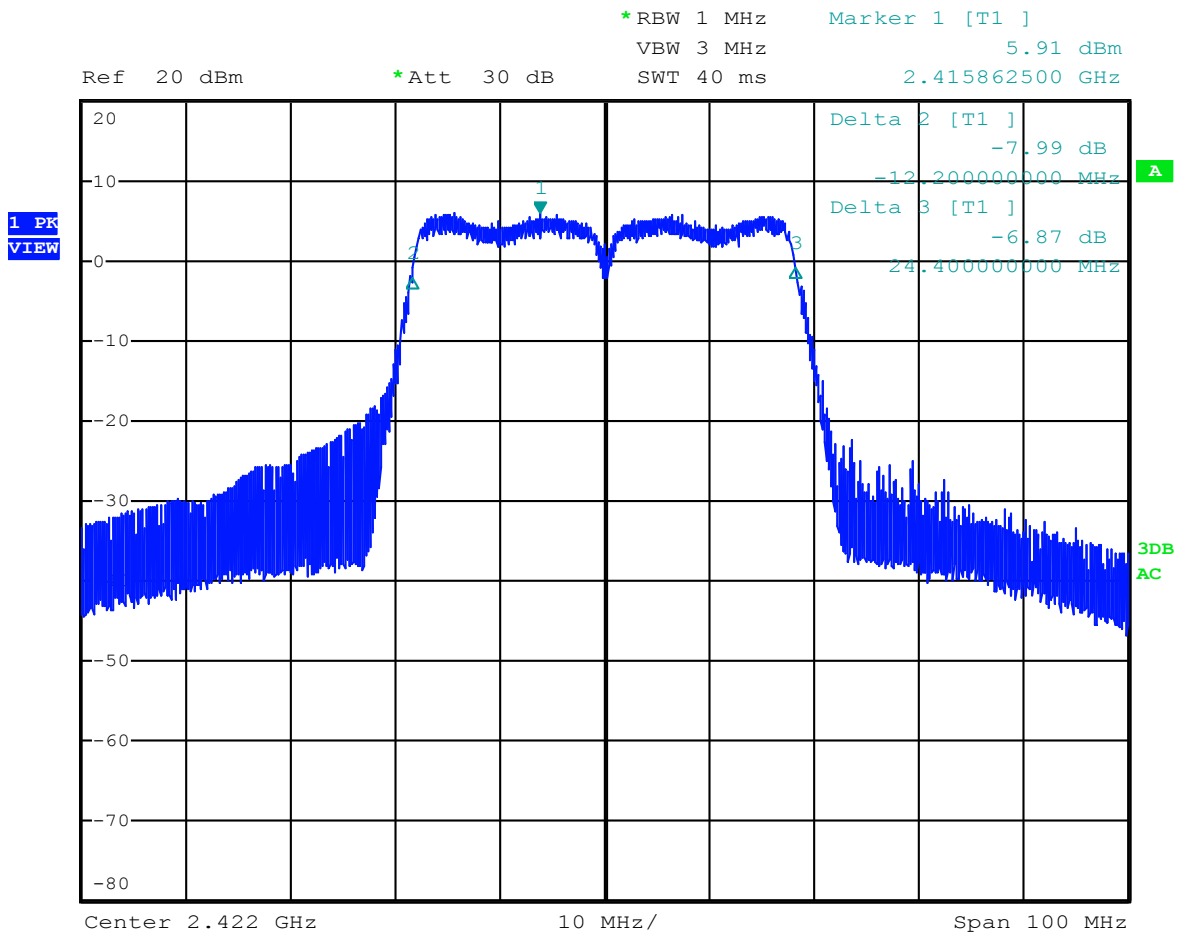
Test Equipment used: NT-203/1

6dB Bandwidth

**§ 15.247(a)(2)
5.2(1)**

Conducted Measurement – Antenna 1

Rated output power: 43,65 mW Channels 1+5 (2422 MHz center frequency)



Date: 19.SEP.2018 15:37:02

6dB Bandwidth: 36,6 MHz

LIMIT SUBCLAUSE 15.247(e) – 5.2(1)

Under normal test conditons	6 dB Bandwidth at least 500 kHz
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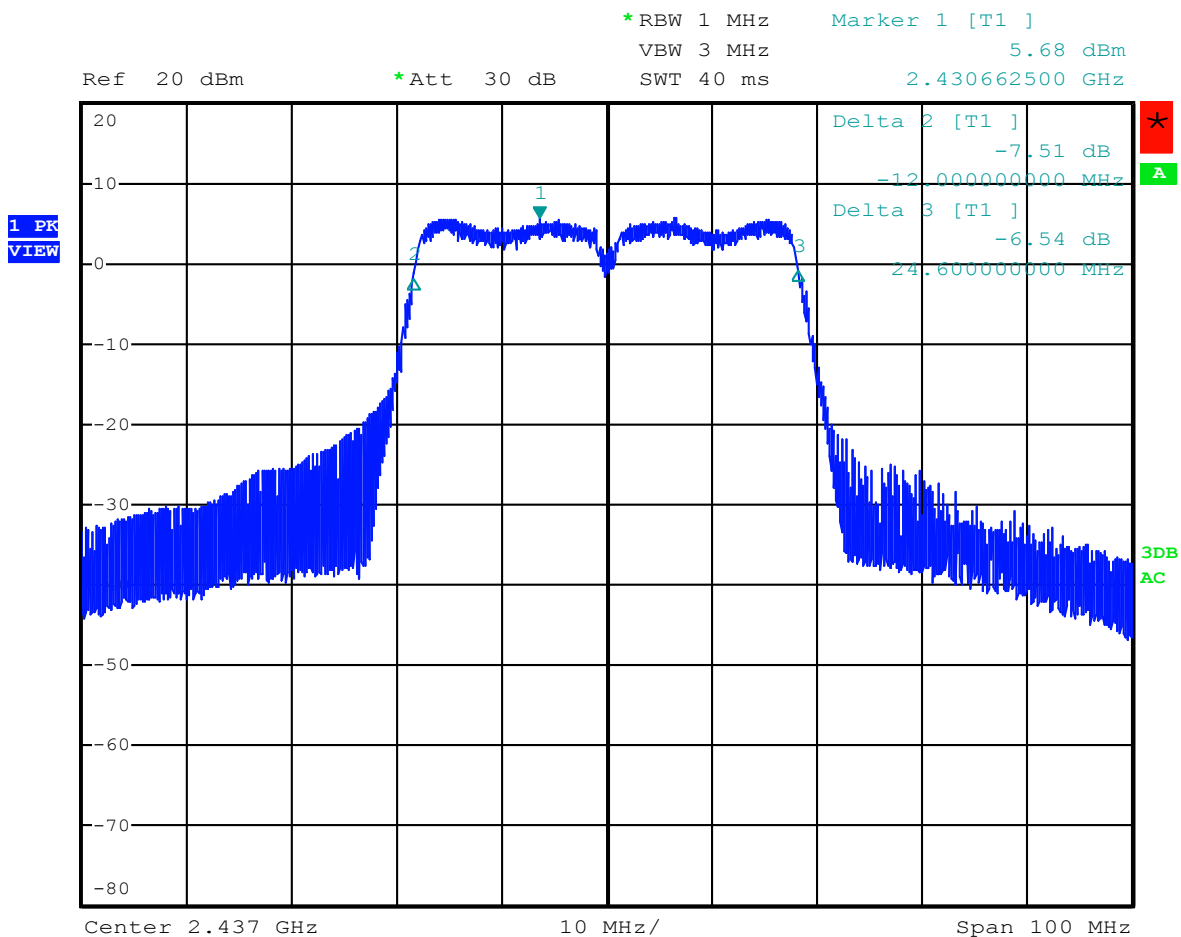
Test Equipment used: NT-203/1

6dB Bandwidth

**§ 15.247(a)(2)
5.2(1)**

Conducted Measurement – Antenna 1

Rated output power: 43,65 mW Channels 4 + 8 (2437 MHz center frequency)



Date: 19.SEP.2018 15:38:03

6dB Bandwidth: 36,6 MHz

LIMIT SUBCLAUSE 15.247(e) – 5.2(1)

Under normal test conditons	6 dB Bandwidth at least 500 kHz
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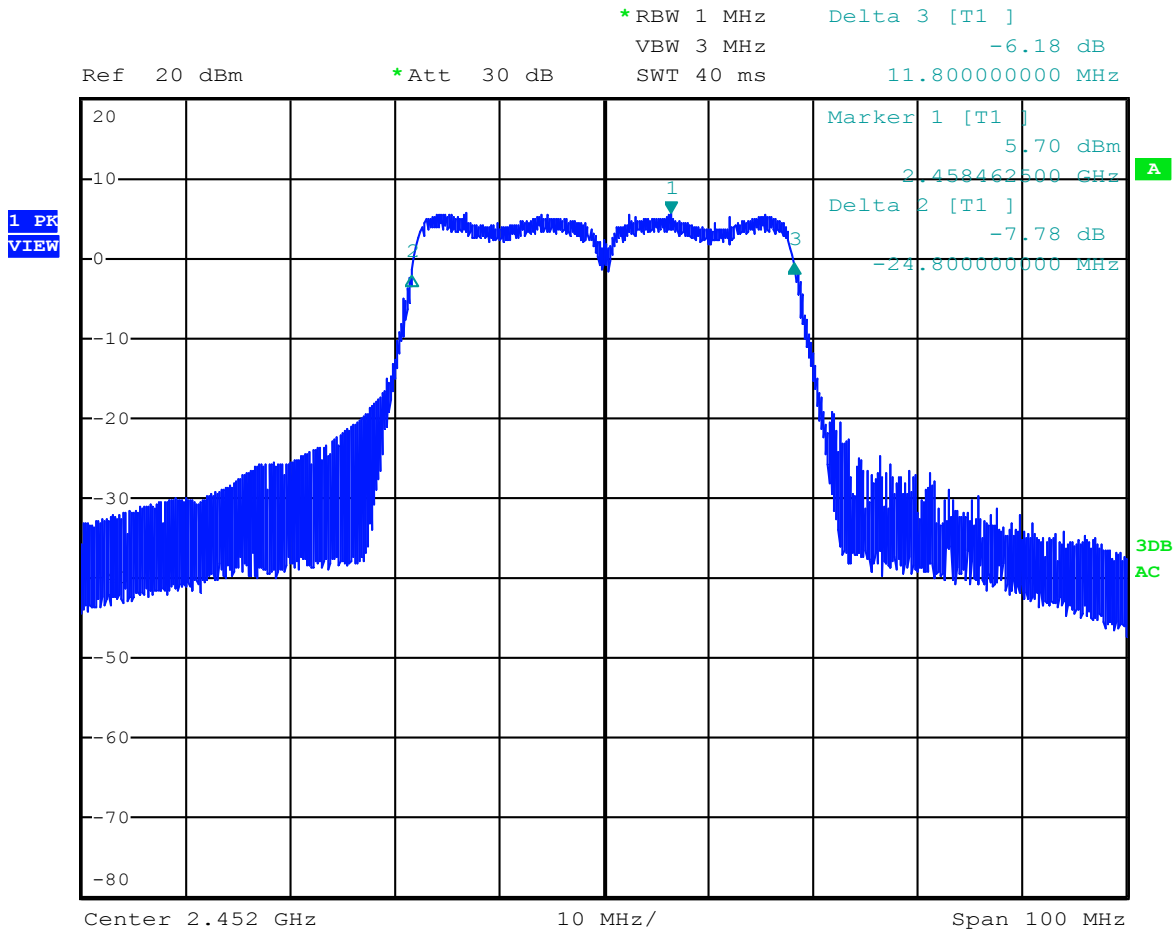
Test Equipment used: NT-203/1

6dB Bandwidth

**§ 15.247(a)(2)
5.2(1)**

Conducted Measurement – Antenna 1

Rated output power: 43,65 mW Channel 7 + 11 (2452 MHz center frequency)



Date: 19.SEP.2018 15:39:00

6dB Bandwidth: 36,6 MHz

LIMIT SUBCLAUSE 15.247(e) – 5.2(1)

Under normal test conditons	6 dB Bandwidth at least 500 kHz
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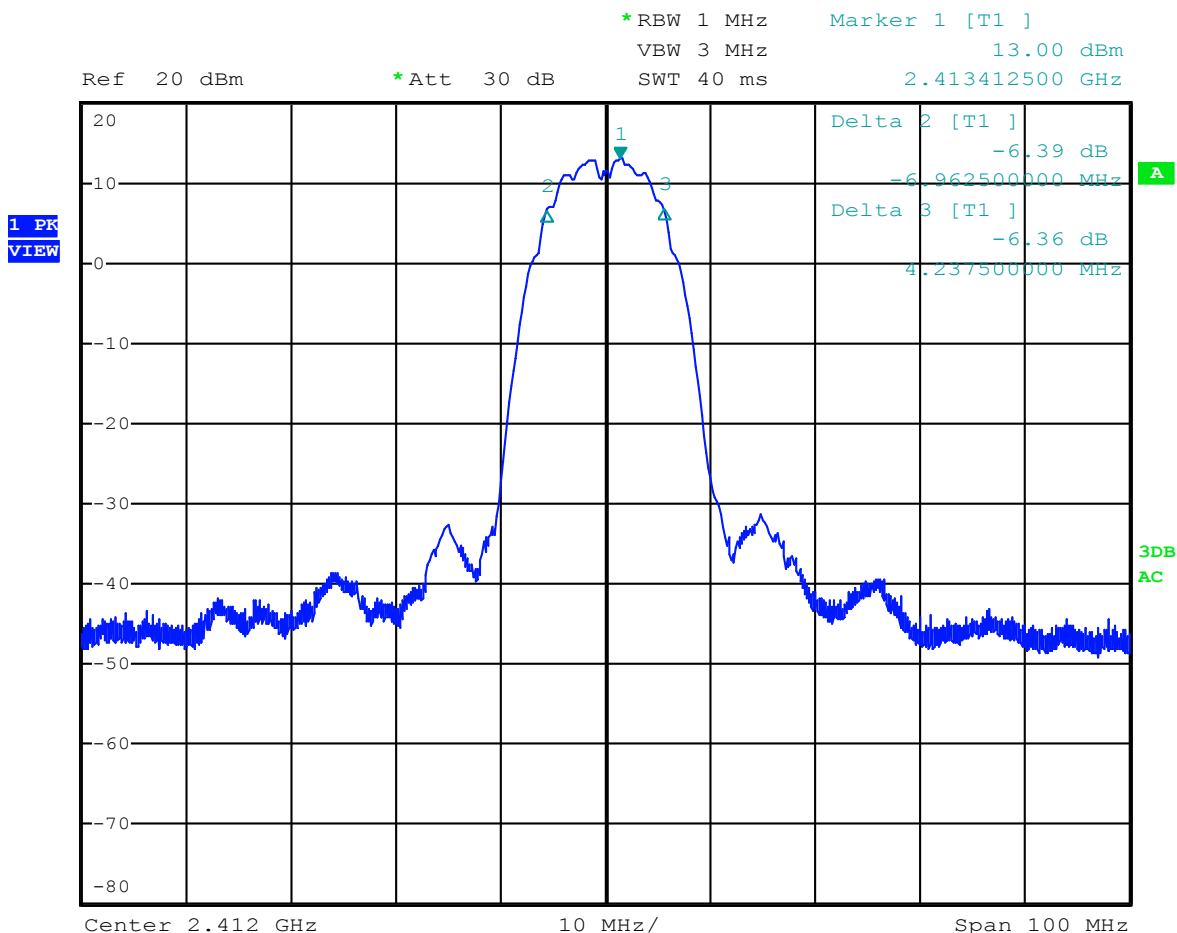
Test Equipment used: NT-203/1

6dB Bandwidth

**§ 15.247(a)(2)
5.2(1)**

Conducted Measurement – Antenna 2

Rated output power: 43,65 mW Channel 1 (2412 MHz center frequency) – DSSS



Date: 19.SEP.2018 17:56:38

6dB Bandwidth: 11,2 MHz

LIMIT SUBCLAUSE 15.247(e) – 5.2(1)

Under normal test conditons	6 dB Bandwidth at least 500 kHz
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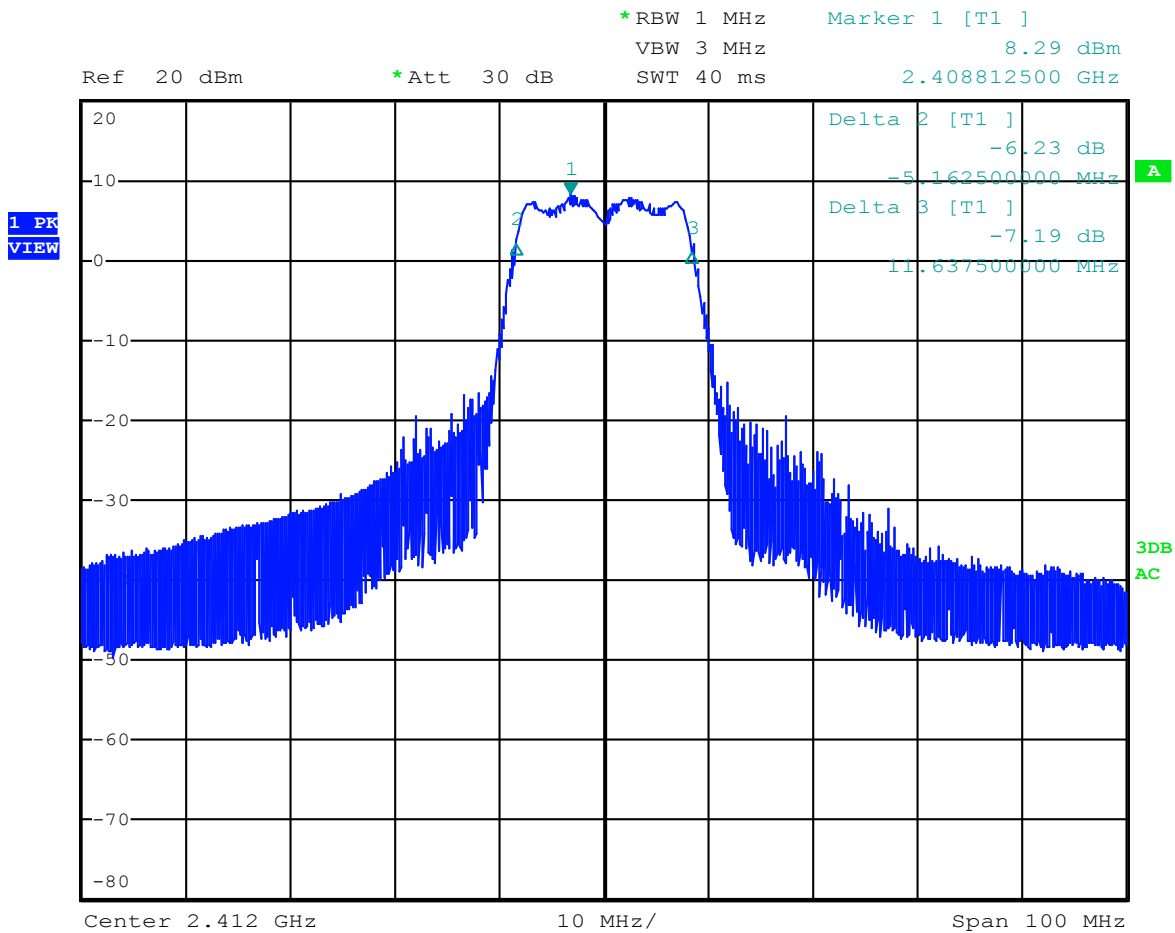
Test Equipment used: NT-203/1

6dB Bandwidth

**§ 15.247(a)(2)
5.2(1)**

Conducted Measurement – Antenna 2

Rated output power: 43,65 mW Channel 1 (2412 MHz center frequency) – OFDM



Date: 19.SEP.2018 17:58:14

6dB Bandwidth: 16,8 MHz

LIMIT SUBCLAUSE 15.247(e) – 5.2(1)

Under normal test conditons	6 dB Bandwidth at least 500 kHz
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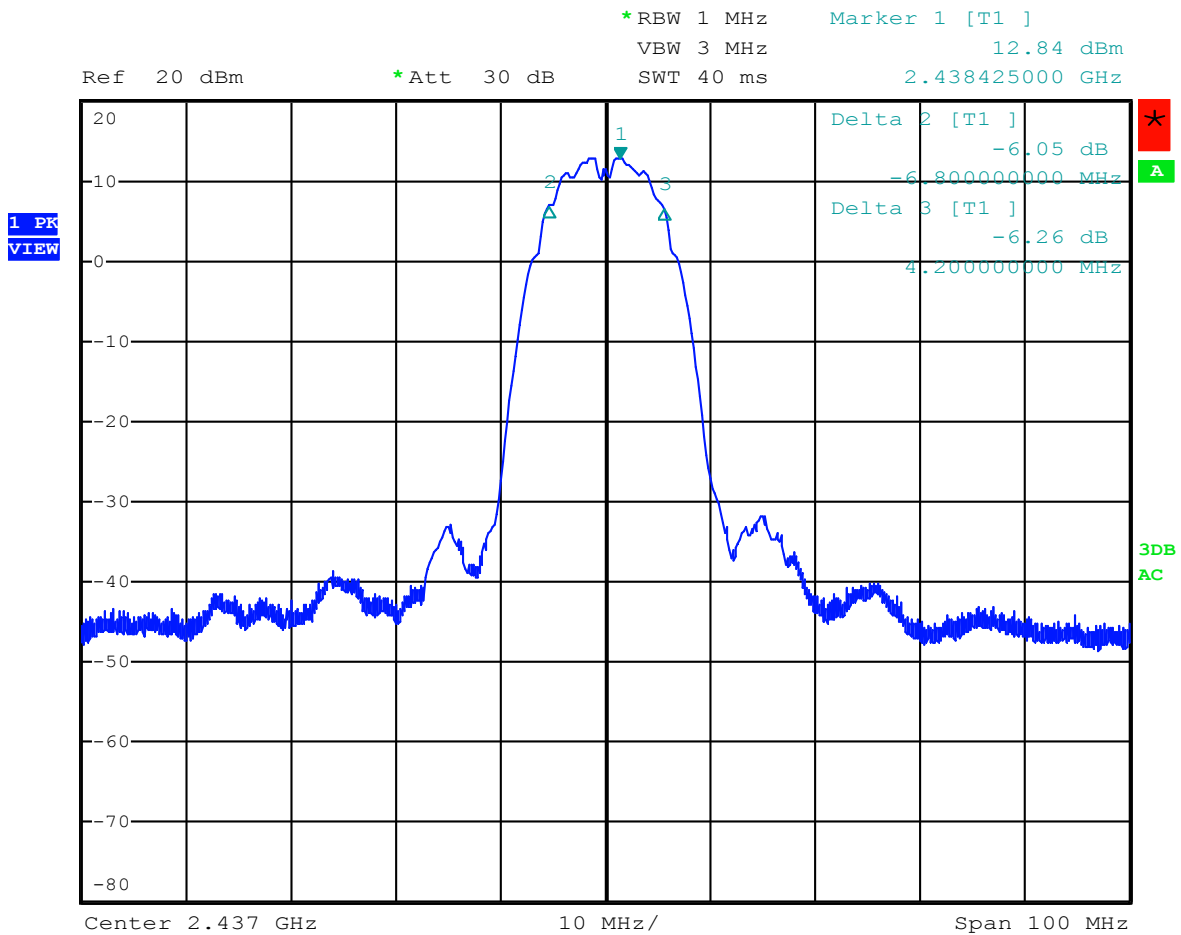
Test Equipment used: NT-203/1

6dB Bandwidth

**§ 15.247(a)(2)
5.2(1)**

Conducted Measurement – Antenna 2

Rated output power: 43,65 mW Channel 6 (2437 MHz center frequency) – DSSS



Date: 19.SEP.2018 17:59:53

6dB Bandwidth: 11,0 MHz

LIMIT SUBCLAUSE 15.247(e) – 5.2(1)

Under normal test conditons	6 dB Bandwidth at least 500 kHz
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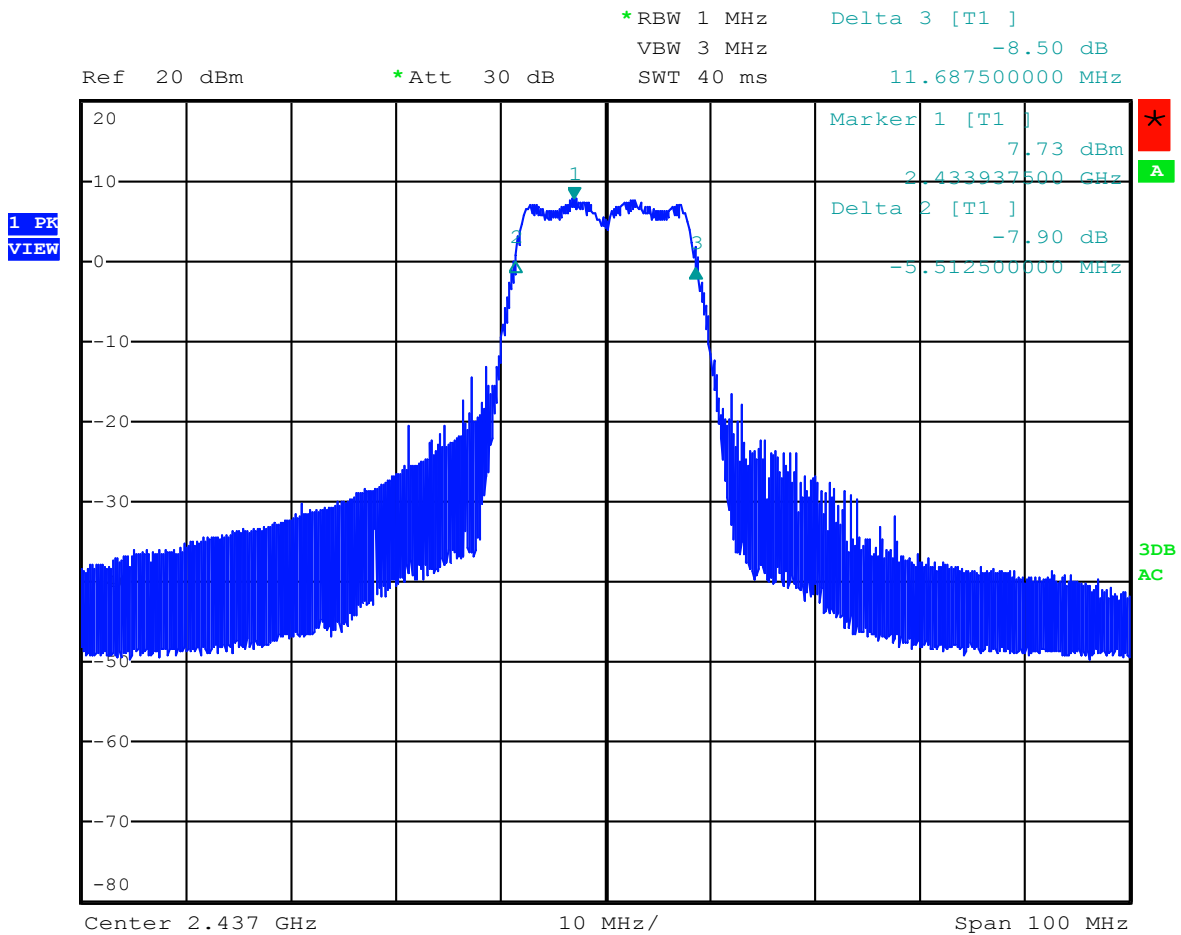
Test Equipment used: NT-203/1

6dB Bandwidth

**§ 15.247(a)(2)
5.2(1)**

Conducted Measurement – Antenna 2

Rated output power: 43,65 mW Channel 6 (2437 MHz center frequency) – OFDM



Date: 19.SEP.2018 18:01:01

6dB Bandwidth: 17,2 MHz

LIMIT SUBCLAUSE 15.247(e) – 5.2(1)

Under normal test conditons	6 dB Bandwidth at least 500 kHz
-----------------------------	---------------------------------

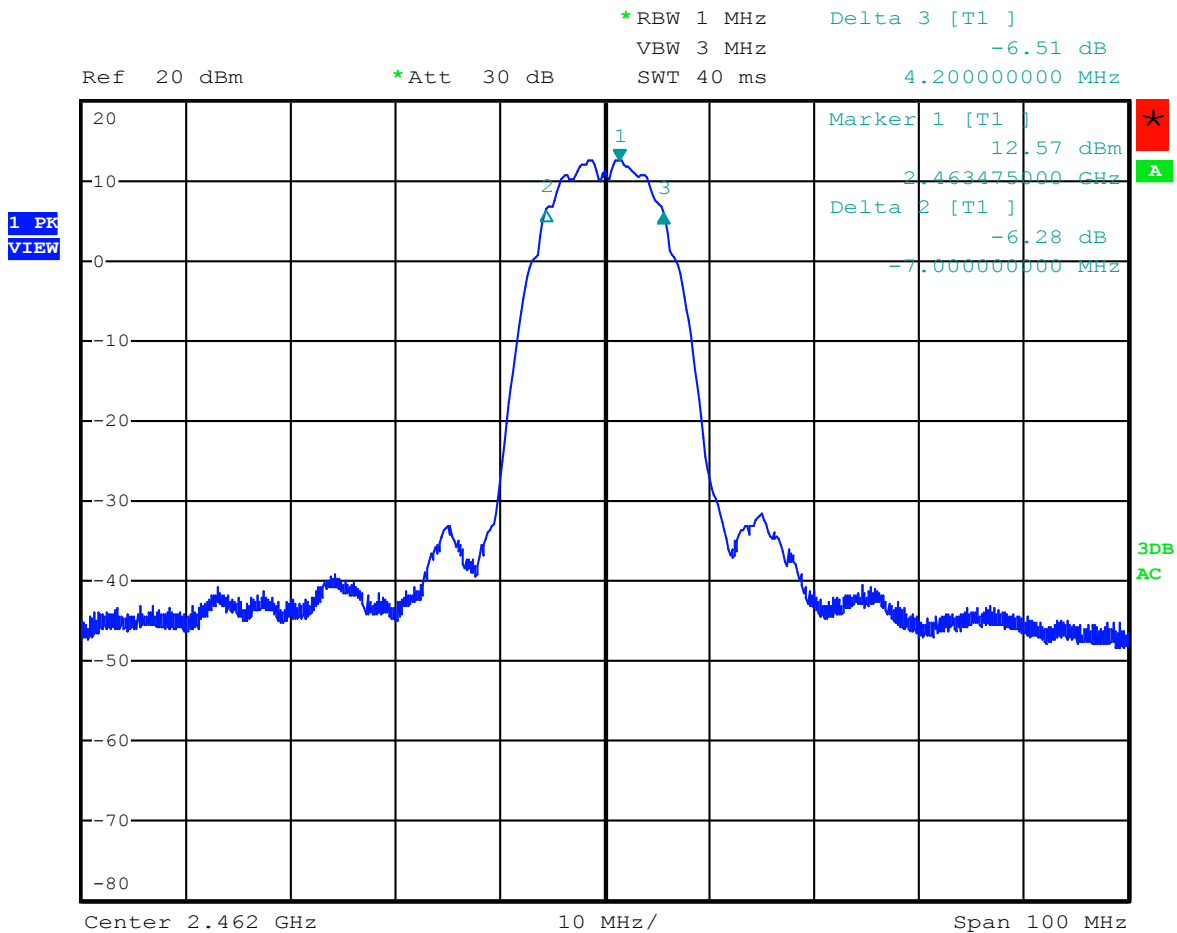
Test Equipment used: NT-203/1

6dB Bandwidth

**§ 15.247(a)(2)
5.2(1)**

Conducted Measurement – Antenna 2

Rated output power: 43,65 mW Channel 11 (2462 MHz center frequency) – DSSS



Date: 19.SEP.2018 18:03:18

6dB Bandwidth: 11,2MHz

LIMIT SUBCLAUSE 15.247(e) – 5.2(1)

Under normal test conditons	6 dB Bandwidth at least 500 kHz
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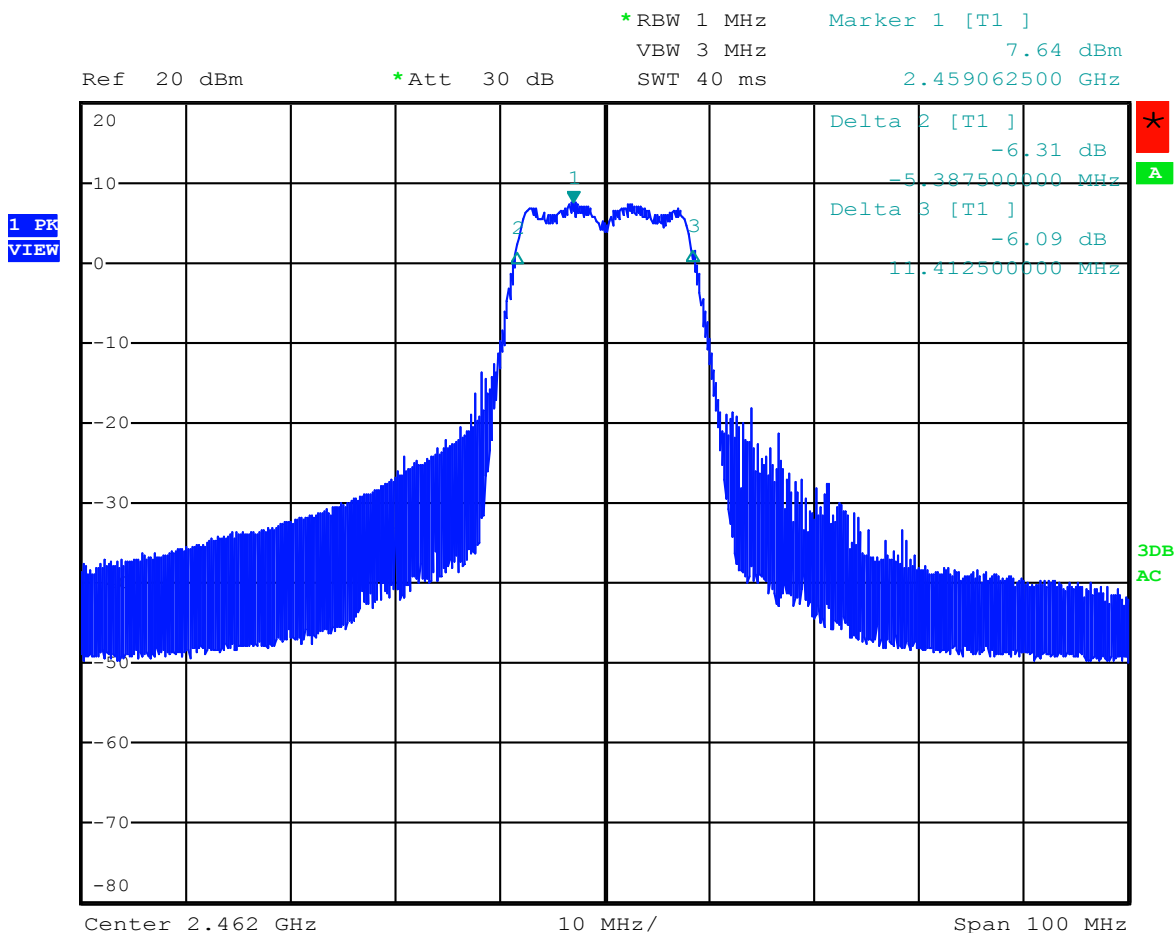
Test Equipment used: NT-203/1

6dB Bandwidth

**§ 15.247(a)(2)
5.2(1)**

Conducted Measurement – Antenna 2

Rated output power: 43,65 mW Channel 11 (2462 MHz center frequency) – OFDM



Date: 19.SEP.2018 18:04:18

6dB Bandwidth: 16,8 MHz

LIMIT SUBCLAUSE 15.247(e) – 5.2(1)

Under normal test conditons	6 dB Bandwidth at least 500 kHz
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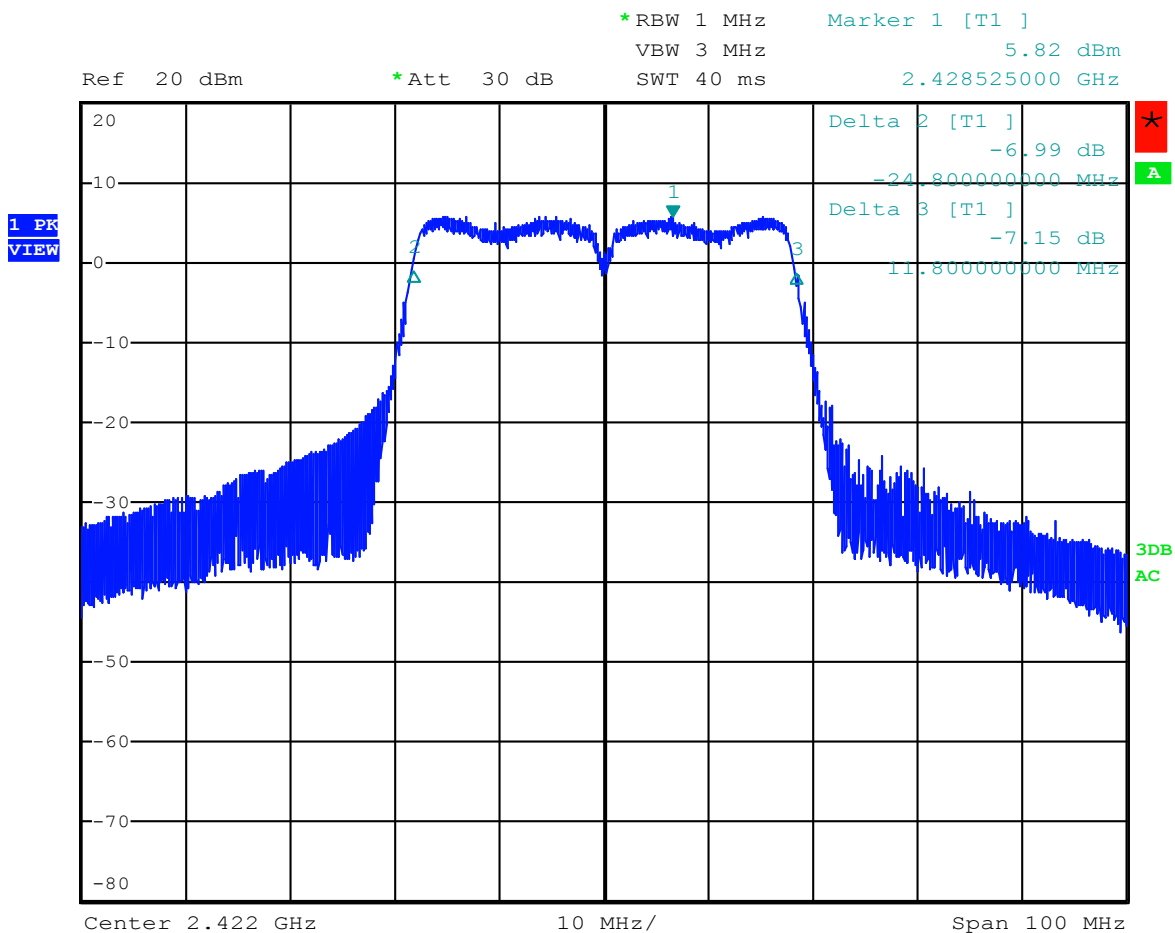
Test Equipment used: NT-203/1

6dB Bandwidth

**§ 15.247(a)(2)
5.2(1)**

Conducted Measurement – Antenna 2

Rated output power: 43,65 mW Channels 1+5 (2422 MHz center frequency)



Date: 19.SEP.2018 18:05:23

6dB Bandwidth: 37,6 MHz

LIMIT SUBCLAUSE 15.247(e) – 5.2(1)

Under normal test conditons	6 dB Bandwidth at least 500 kHz
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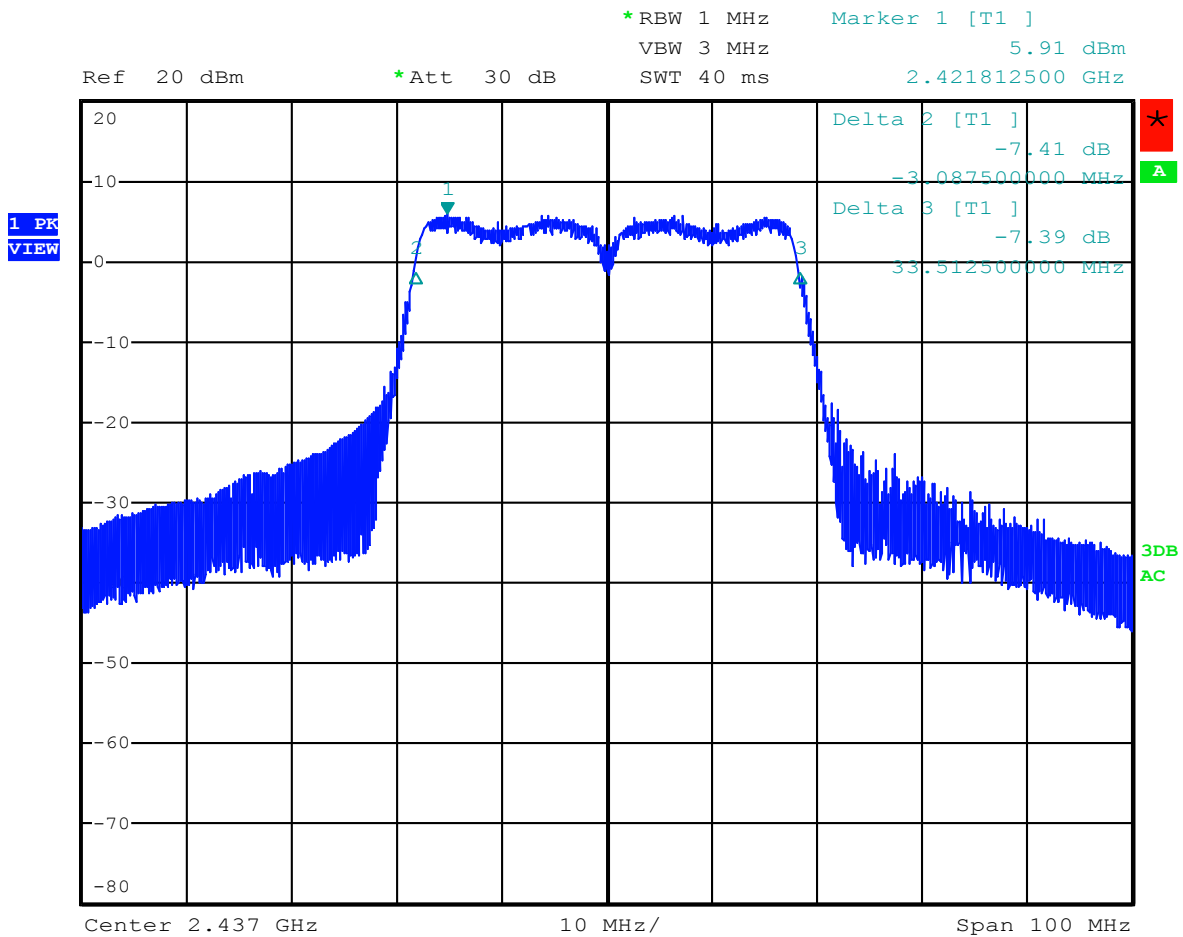
Test Equipment used: NT-203/1

6dB Bandwidth

**§ 15.247(a)(2)
5.2(1)**

Conducted Measurement – Antenna 2

Rated output power: 43,65 mW Channels 4 + 8 (2437 MHz center frequency)



Date: 19.SEP.2018 18:06:23

6dB Bandwidth: 36,6 MHz

LIMIT SUBCLAUSE 15.247(e) – 5.2(1)

Under normal test conditons	6 dB Bandwidth at least 500 kHz
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Test Equipment used: NT-203/1

4.4. Maximum Peak RF Power Output (conducted)

**§ 15.247(b)(3)
5.4(4)**

Conducted Measurement with thermal power sensor (RMS) – Antenna 1

Rated output power: 43,65 mW

Test conditions		Transmitter power (mW)		
		2412 (2422) MHz	2437 MHz	2462 (2452) MHz
T _{nom} (23)°C	DSSS	43,65	41,69	39,81
	OFDM – 20 MHz	10,96	10,72	10,23
	OFDM – 40 MHz	14,13	13,80	13,49
Measurement uncertainty		± 0,75 dB		

LIMIT SUBCLAUSE 15.247(b)(3) – 5.4(4)

Under normal test conditons	1W conducted (4W eirp)
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Test Equipment used: NT-204

Maximum Peak RF Power Output (conducted)

**§ 15.247(b)(3)
5.4(4)**

Conducted Measurement with thermal power sensor (RMS) – Antenna 2

Rated output power: 43,65 mW

Test conditions		Transmitter power (mW)		
		2412 (2422) MHz	2437 MHz	2462 (2452) MHz
T _{nom} (23)°C	DSSS	43,65	41,69	39,81
	OFDM – 20 MHz	10,96	10,72	10,23
	OFDM – 40 MHz	14,13	13,80	13,49
Measurement uncertainty		± 0,75 dB		

LIMIT SUBCLAUSE 15.247(b)(3) – 5.4(4)

Under normal test conditons	1W conducted (4W eirp)
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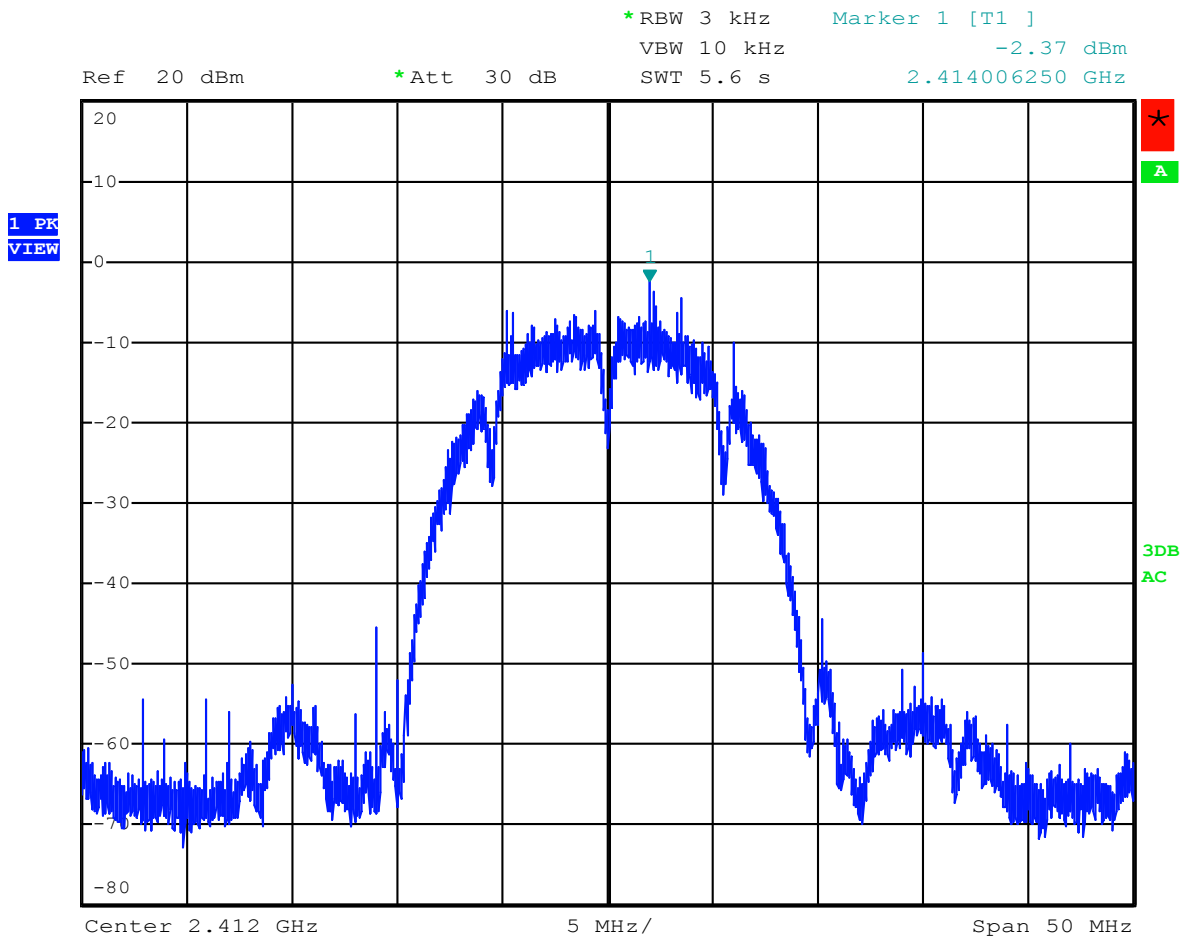
Test Equipment used: NT-204

4.5. Power spectral density (conducted)

§ 15.247(e)
5.2(2)

Conducted Measurement – Antenna 1

Rated output power: 43,65 mW Channel 1 (2412 MHz center frequency) – DSSS



Date: 19.SEP.2018 15:43:58

Power Spectral density: -2,37 dBm @ 2414,006 MHz

LIMIT SUBCLAUSE 15.247(e) – 5.2(2)

Under normal test conditons	+8dBm in any 3 kHz band
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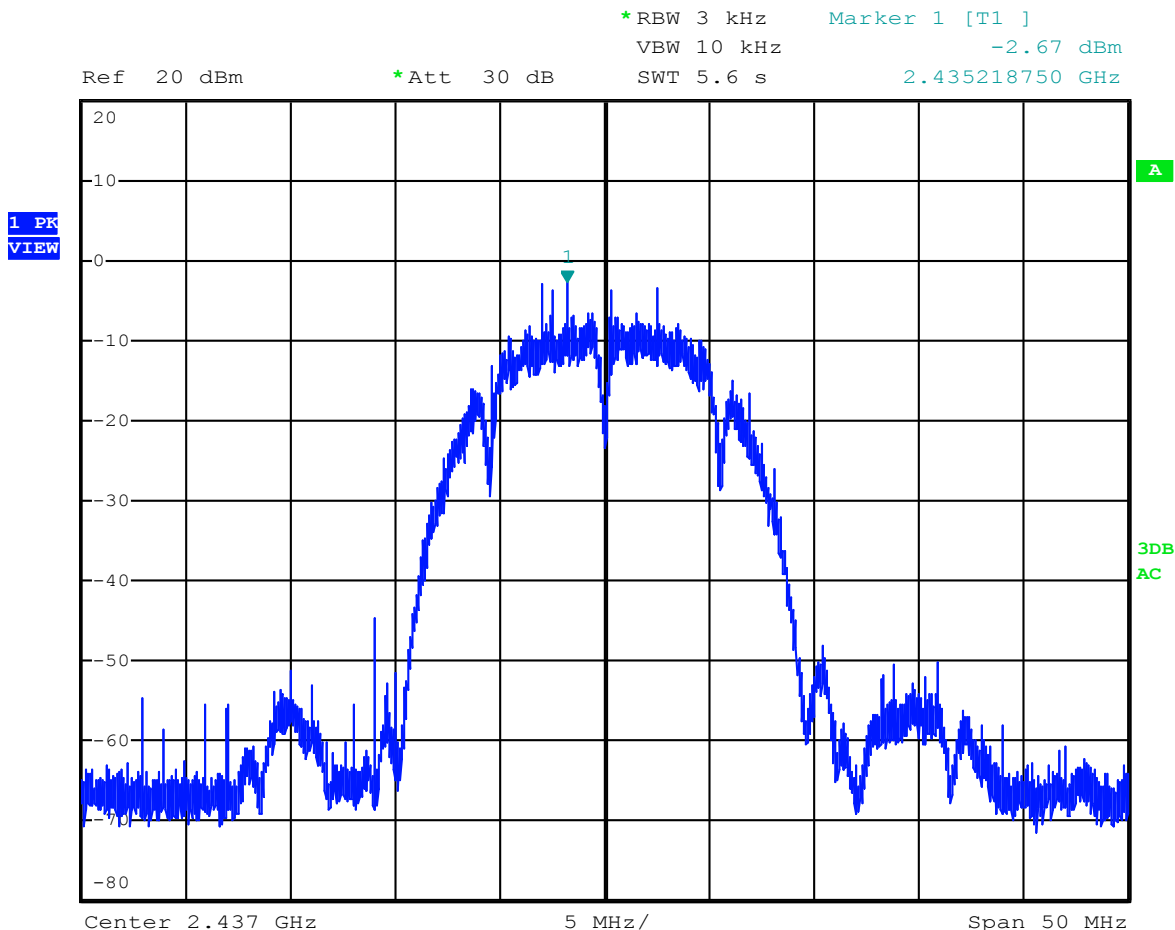
Test Equipment used: NT-203/1

Power spectral density (conducted)

**§ 15.247(e)
5.2(2)**

Conducted Measurement – Antenna 1

Rated output power: 43,65 mW Channel 6 (2437 MHz center frequency) – DSSS



Date: 19.SEP.2018 15:54:47

Power Spectral density: -2,67 dBm @ 2435,219 MHz

LIMIT SUBCLAUSE 15.247(e) – 5.2(2)

Under normal test conditons	+8dBm in any 3 kHz band
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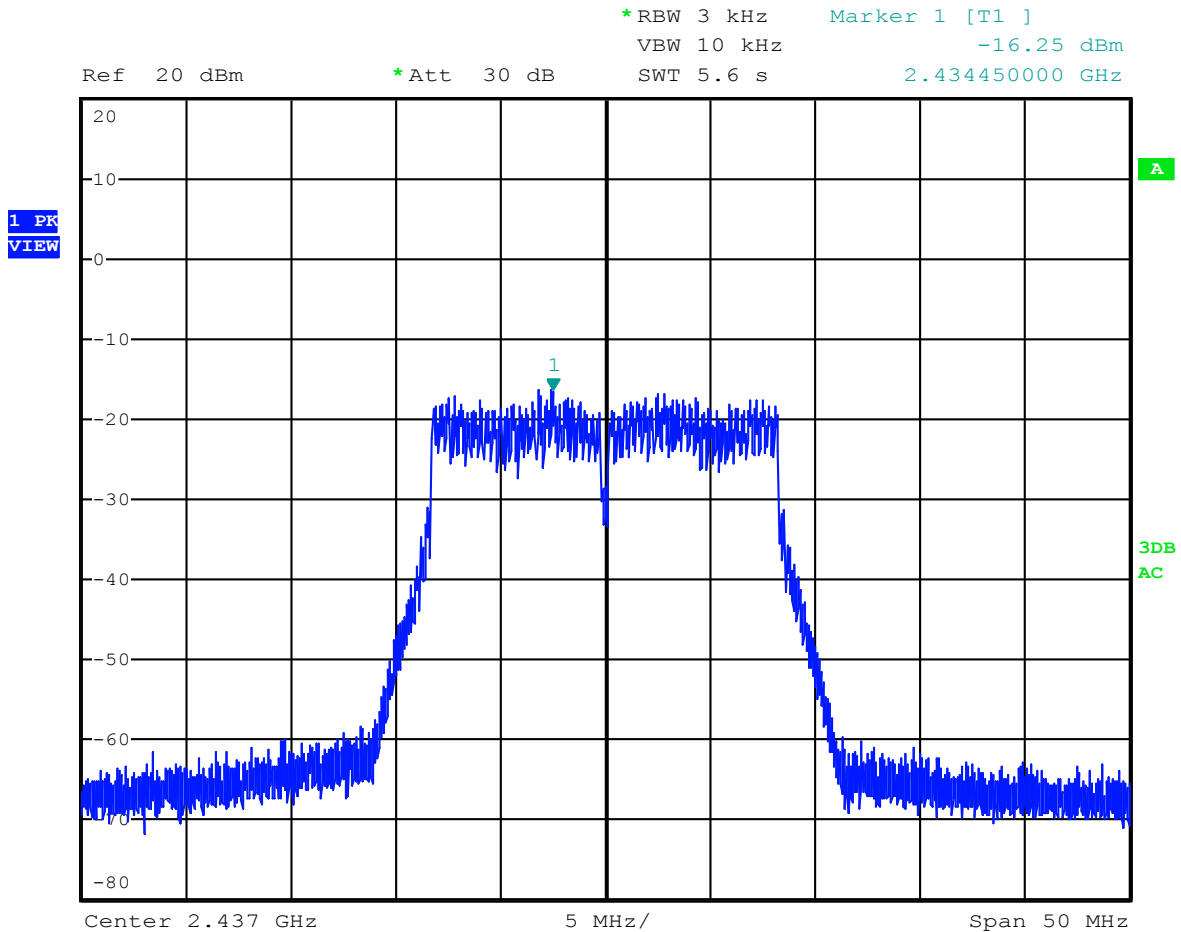
Test Equipment used: NT-203/1

Power spectral density (conducted)

**§ 15.247(e)
5.2(2)**

Conducted Measurement – Antenna 1

Rated output power: 43,65 mW Channel 6 (2437 MHz center frequency) – OFDM



Date: 19.SEP.2018 15:56:19

Power Spectral density: -16,25 dBm @ 2434,450 MHz

LIMIT SUBCLAUSE 15.247(e) – 5.2(2)

Under normal test conditons	+8dBm in any 3 kHz band
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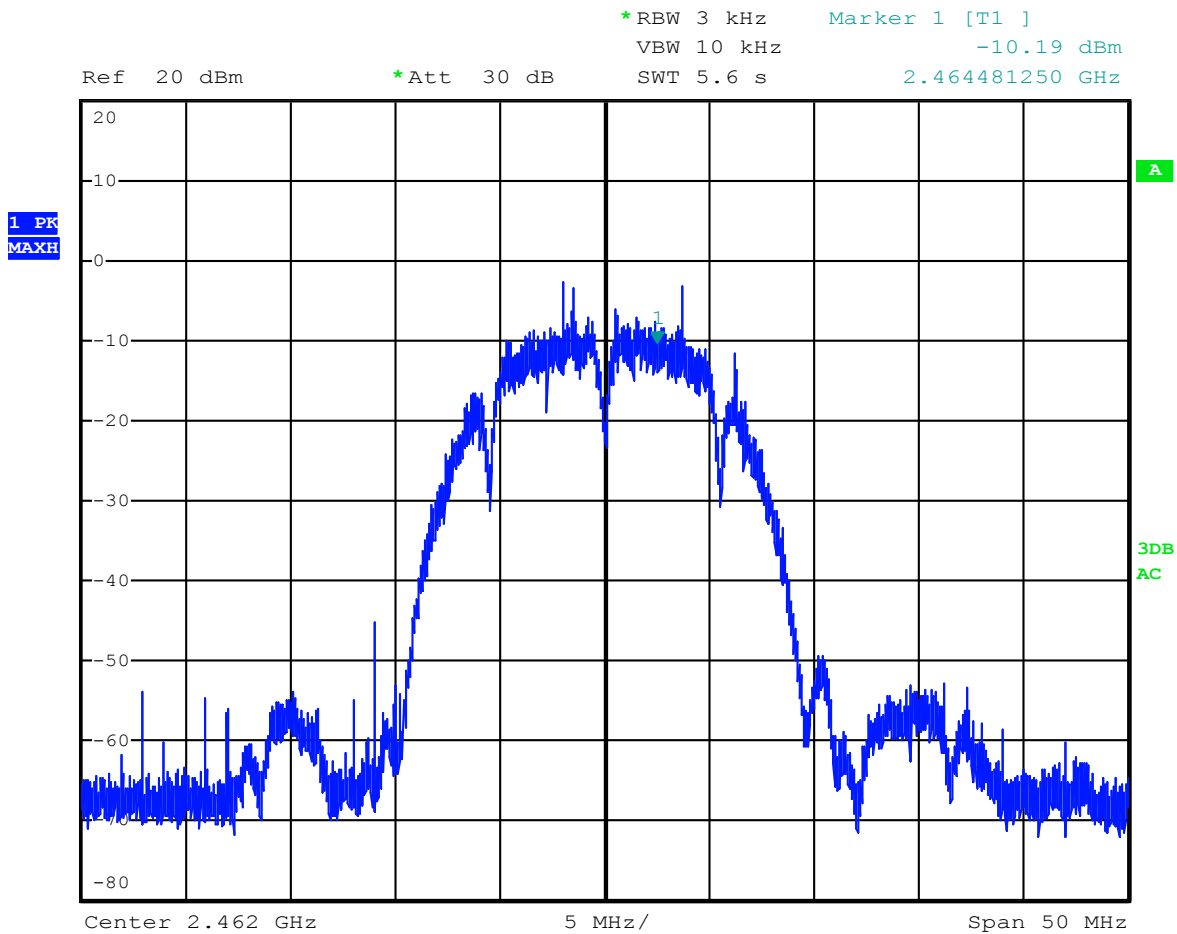
Test Equipment used: NT-203/1

Power spectral density (conducted)

**§ 15.247(e)
5.2(2)**

Conducted Measurement – Antenna 1

Rated output power: 43,65 mW Channel 11 (2462 MHz center frequency) – DSSS



Date: 19.SEP.2018 16:00:46

Power Spectral density: -10,19 dBm @ 2464,481 MHz

LIMIT SUBCLAUSE 15.247(e) – 5.2(2)

Under normal test conditons	+8dBm in any 3 kHz band
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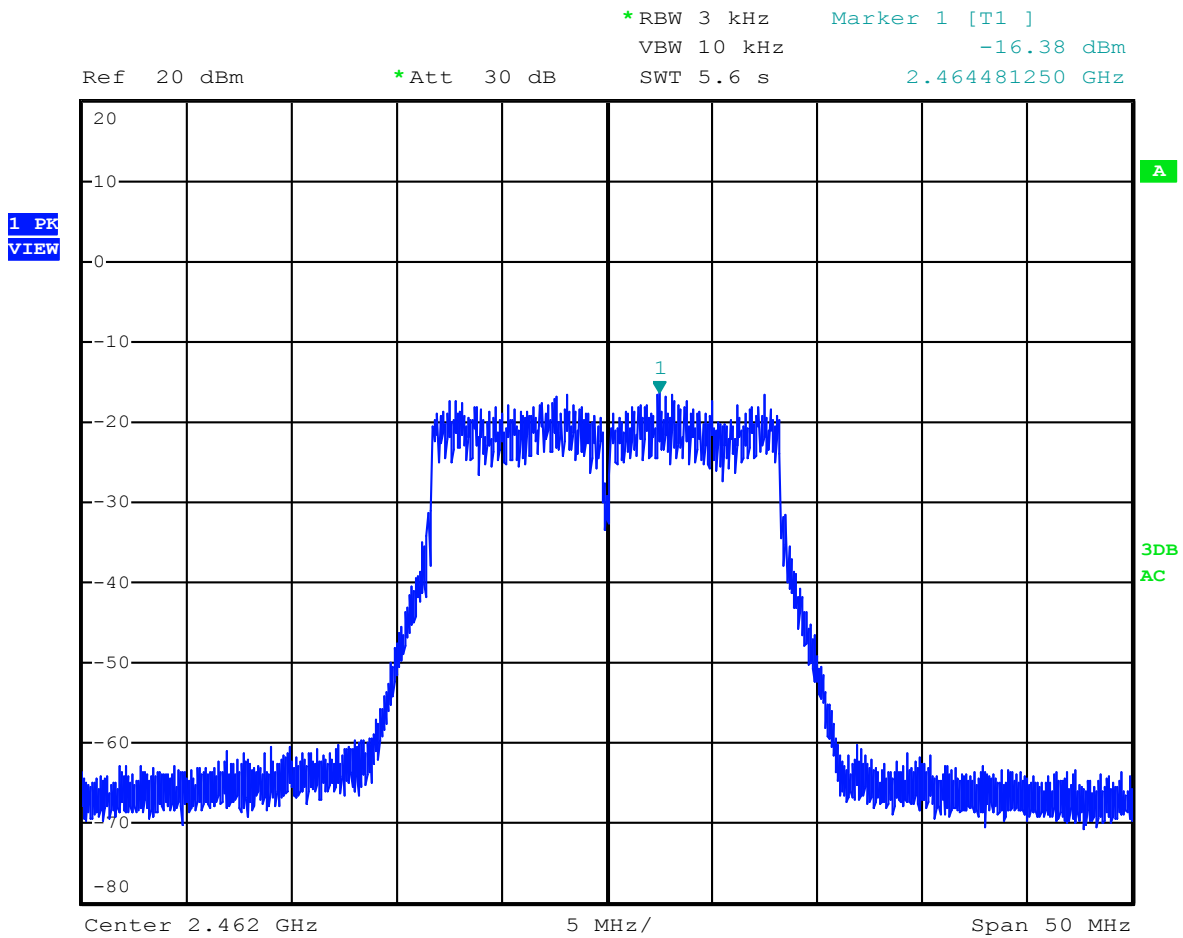
Test Equipment used: NT-203/1

Power spectral density (conducted)

**§ 15.247(e)
5.2(2)**

Conducted Measurement – Antenna 1

Rated output power: 43,65 mW Channel 11 (2462 MHz center frequency) – OFDM



Date: 19.SEP.2018 15:58:50

Power Spectral density: -16,38 dBm @ 2464,481 MHz

LIMIT SUBCLAUSE 15.247(e) – 5.2(2)

Under normal test conditons	+8dBm in any 3 kHz band
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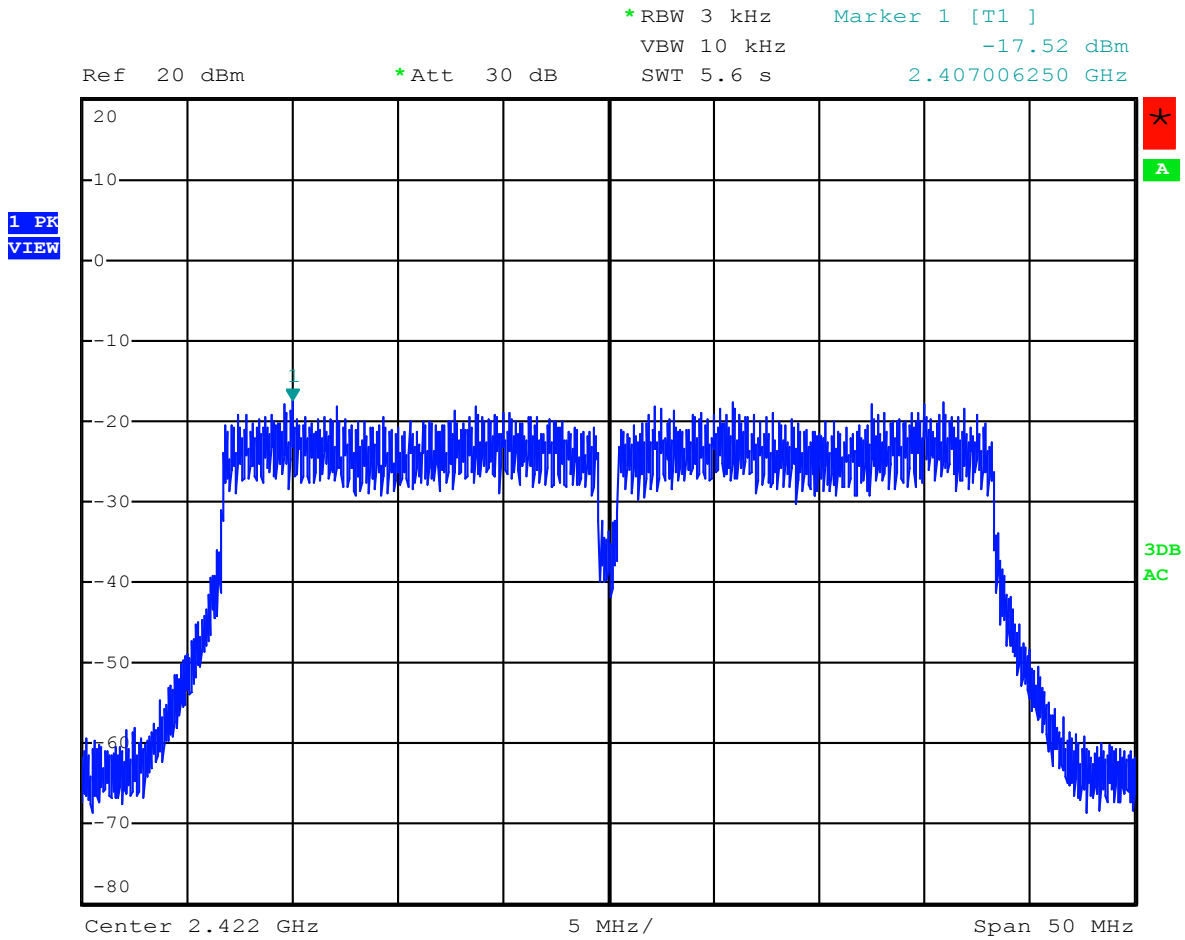
Test Equipment used: NT-203/1

Power spectral density (conducted)

**§ 15.247(e)
5.2(2)**

Conducted Measurement – Antenna 1

Rated output power: 43,65 mW Channel 1 + 5 (2422 MHz center frequency)



Date: 19.SEP.2018 15:42:49

Power Spectral density: -17,52 dBm @ 2407,006 MHz

LIMIT SUBCLAUSE 15.247(e) – 5.2(2)

Under normal test conditons	+8dBm in any 3 kHz band
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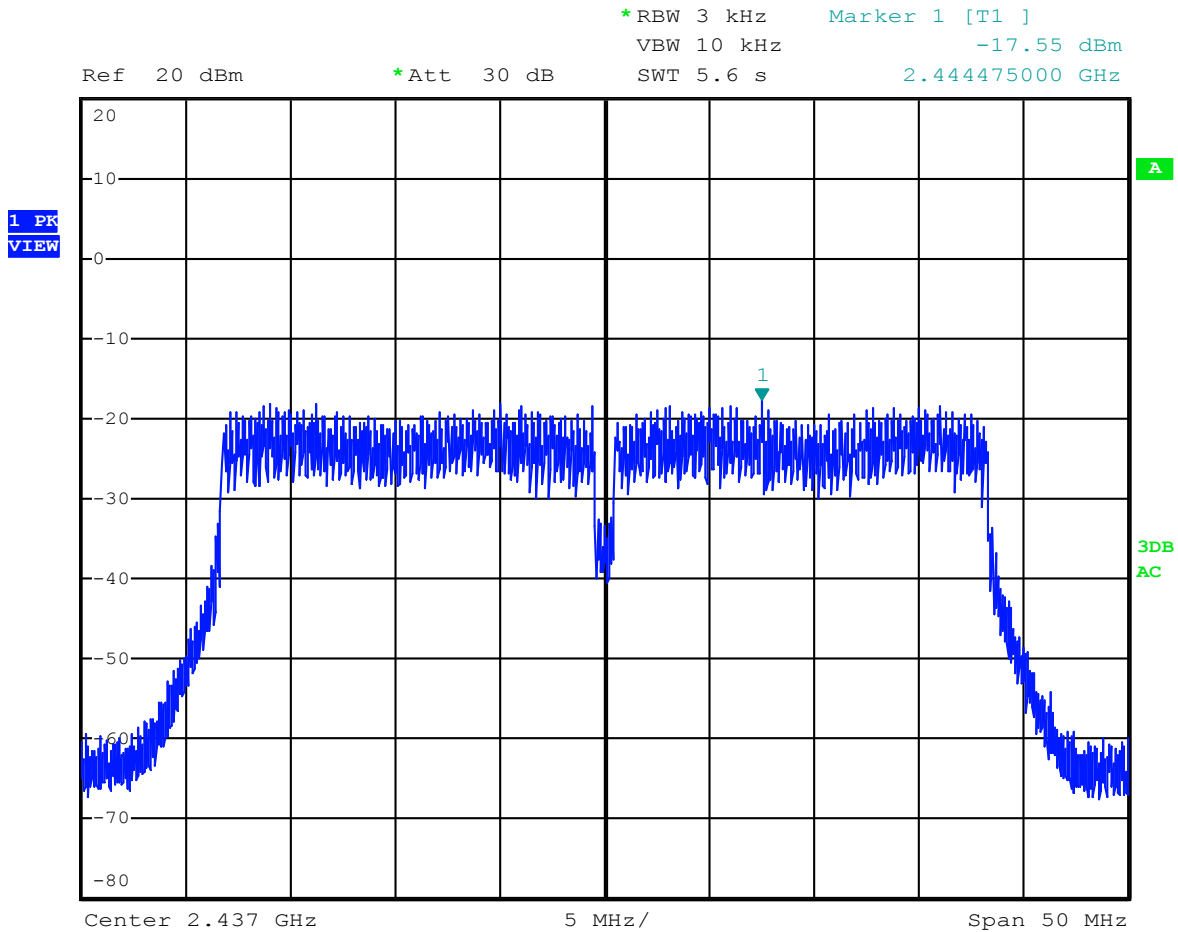
Test Equipment used: NT-203/1

Power spectral density (conducted)

**§ 15.247(e)
5.2(2)**

Conducted Measurement – Antenna 1

Rated output power: 43,65 mW Channel 4 + 8 (2437 MHz center frequency)



Date: 19.SEP.2018 15:41:59

Power Spectral density: -17,55 dBm @ 2444,475 MHz

LIMIT SUBCLAUSE 15.247(e) – 5.2(2)

Under normal test conditons	+8dBm in any 3 kHz band
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Test Equipment used: NT-203/1

Test Report Reference:
INE-AT/FG-18/155

Ambient temperature: 23°C

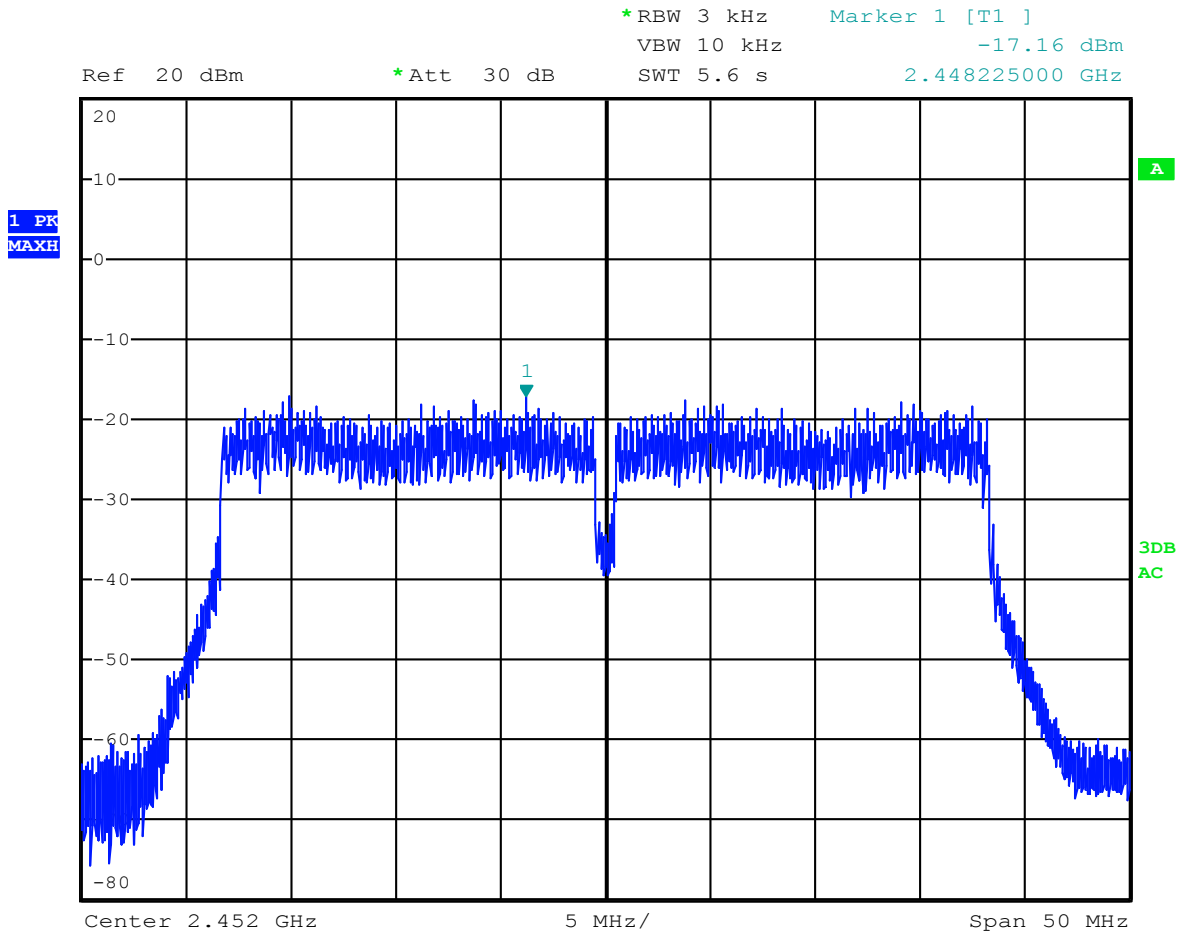
Relative humidity: 21%

Power spectral density (conducted)

**§ 15.247(e)
5.2(2)**

Conducted Measurement – Antenna 1

Rated output power: 43,65 mW Channel 7 + 11 (2452 MHz center frequency)



Date: 19.SEP.2018 15:40:38

Power Spectral density: -17,16 dBm @ 2448,225 MHz

LIMIT SUBCLAUSE 15.247(e) – 5.2(2)

Under normal test conditons	+8dBm in any 3 kHz band
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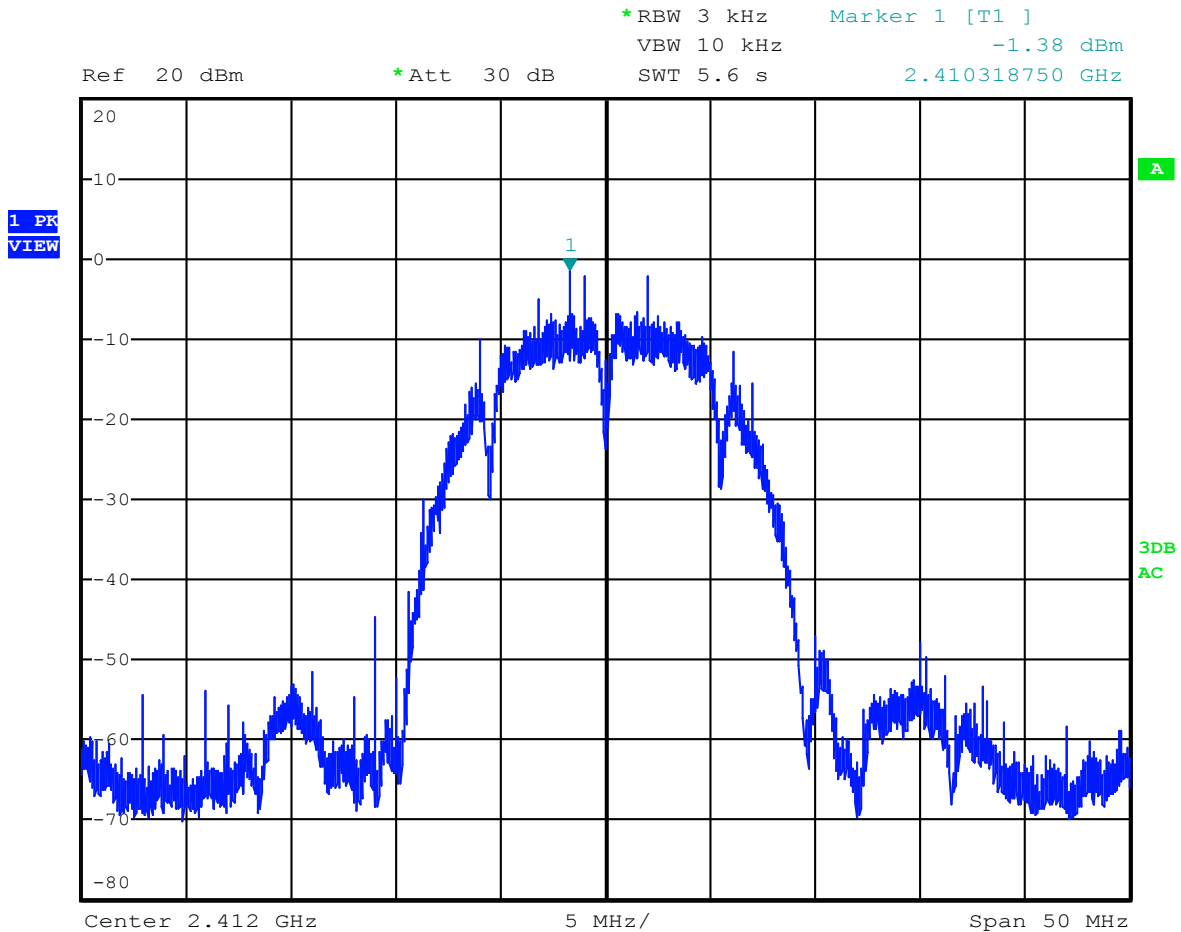
Test Equipment used: NT-203/1

Power spectral density (conducted)

**§ 15.247(e)
5.2(2)**

Conducted Measurement – Antenna 2

Rated output power: 43,65 mW Channel 1 (2412 MHz center frequency) – DSSS



Date: 19.SEP.2018 18:19:17

Power Spectral density: -1,38 dBm @ 2410,319 MHz

LIMIT SUBCLAUSE 15.247(e) – 5.2(2)

Under normal test conditons	+8dBm in any 3 kHz band
-----------------------------	-------------------------

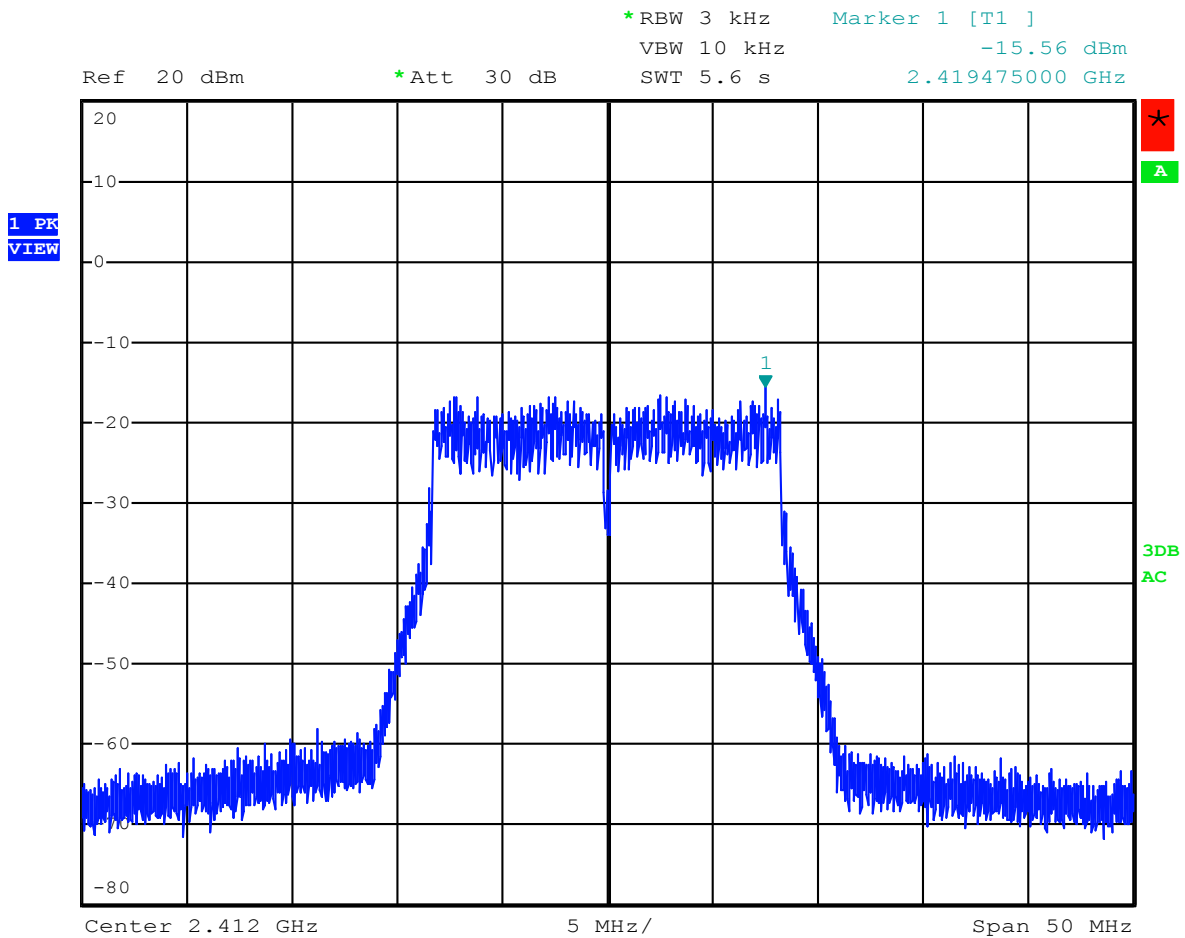
Test Equipment used: NT-203/1

Power spectral density (conducted)

**§ 15.247(e)
5.2(2)**

Conducted Measurement – Antenna 2

Rated output power: 43,65 mW Channel 1 (2412 MHz center frequency) – OFDM



Date: 19.SEP.2018 18:18:07

Power Spectral density: -15,56 dBm @ 2419,475 MHz

LIMIT SUBCLAUSE 15.247(e) – 5.2(2)

Under normal test conditons	+8dBm in any 3 kHz band
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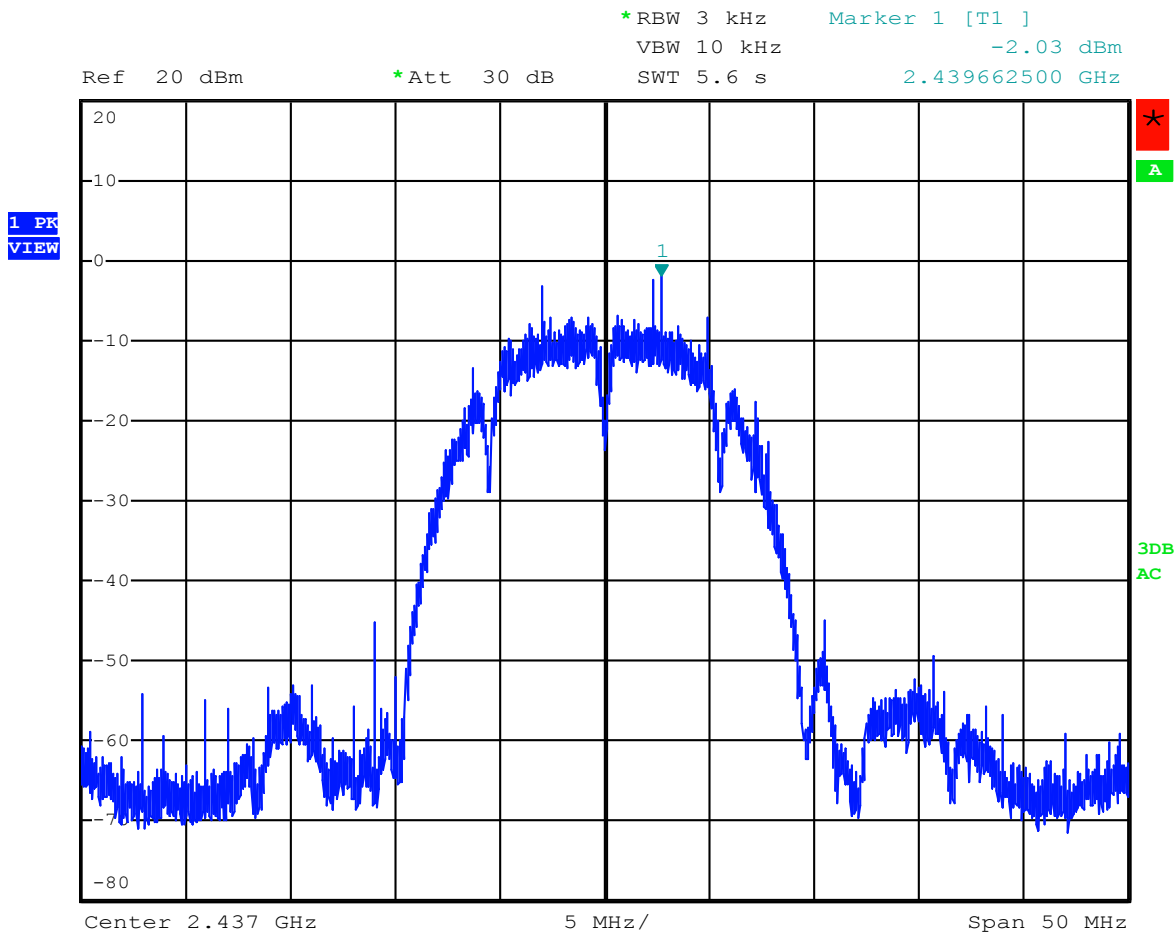
Test Equipment used: NT-203/1

Power spectral density (conducted)

**§ 15.247(e)
5.2(2)**

Conducted Measurement – Antenna 2

Rated output power: 43,65 mW Channel 6 (2437 MHz center frequency) – DSSS



Date: 19.SEP.2018 18:16:04

Power Spectral density: -2,03 dBm @ 2439,663 MHz

LIMIT SUBCLAUSE 15.247(e) – 5.2(2)

Under normal test conditons	+8dBm in any 3 kHz band
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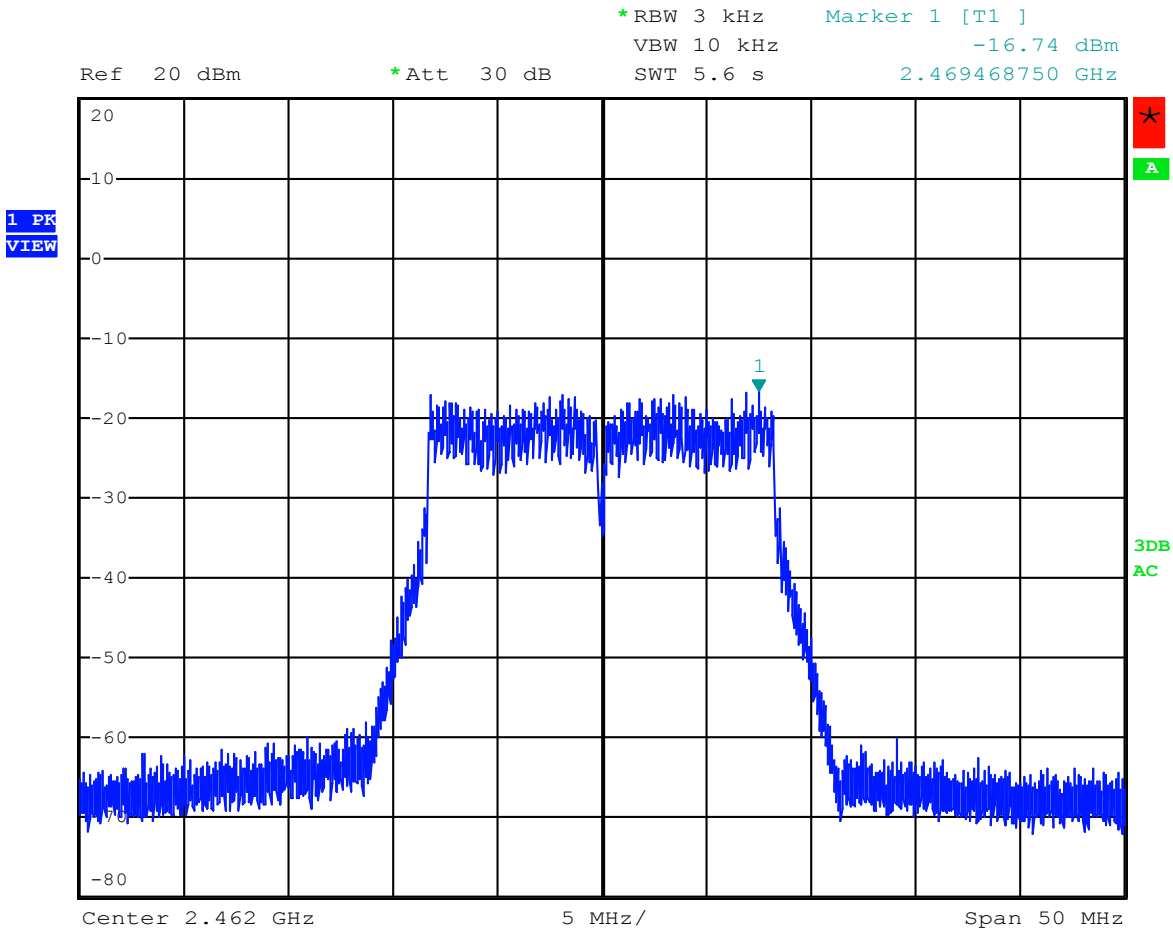
Test Equipment used: NT-203/1

Power spectral density (conducted)

**§ 15.247(e)
5.2(2)**

Conducted Measurement – Antenna 2

Rated output power: 43,65 mW Channel 11 (2462 MHz center frequency) – OFDM



Date: 19.SEP.2018 18:13:48

Power Spectral density: -16,47 dBm @ 2469,469 MHz

LIMIT SUBCLAUSE 15.247(e) – 5.2(2)

Under normal test conditons	+8dBm in any 3 kHz band
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Test Equipment used: NT-203/1

Test Report Reference:
INE-AT/FG-18/155

Ambient temperature: 23°C

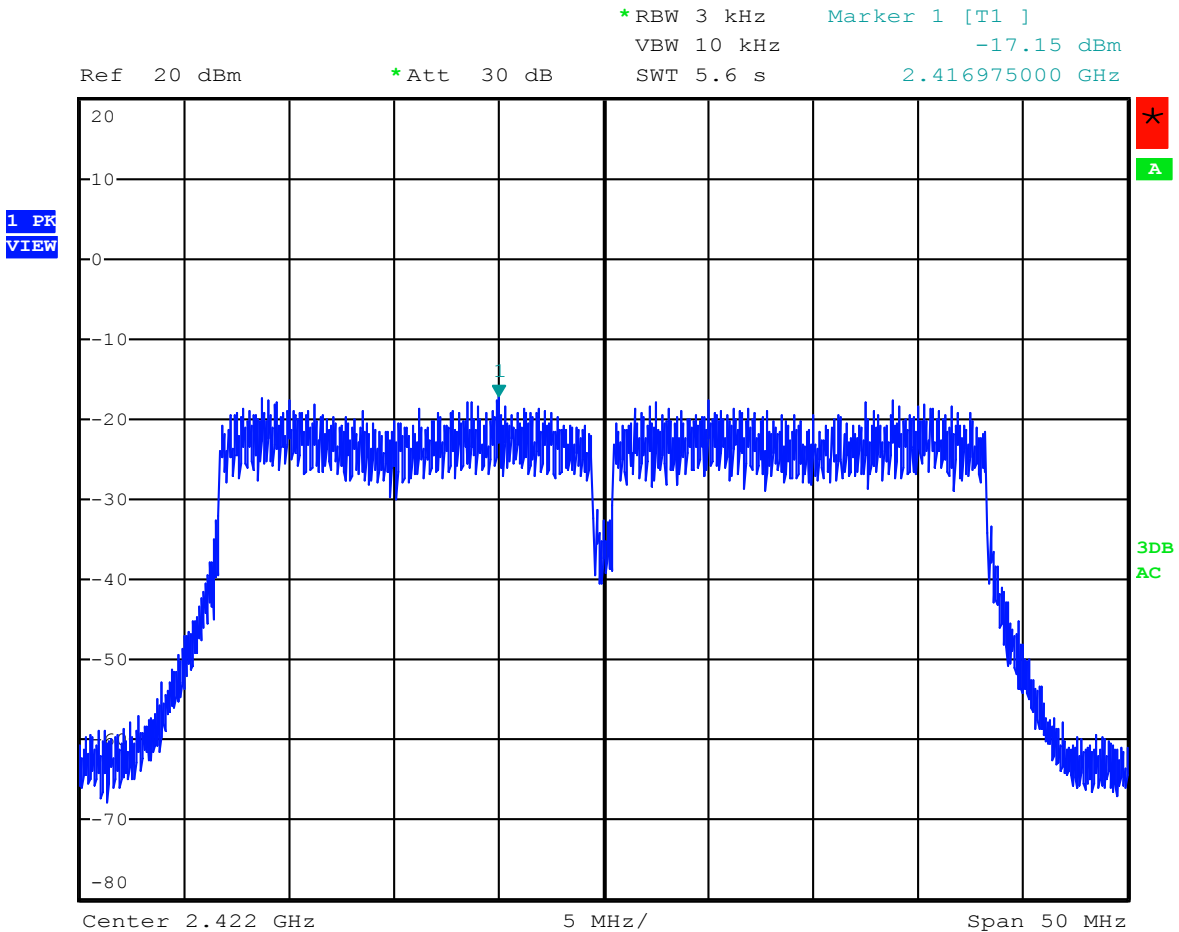
Relative humidity: 21%

Power spectral density (conducted)

**§ 15.247(e)
5.2(2)**

Conducted Measurement – Antenna 2

Rated output power: 43,65 mW Channel 1 + 5 (2422 MHz center frequency)



Date: 19.SEP.2018 18:12:38

Power Spectral density: -17,15 dBm @ 2416,975 MHz

LIMIT SUBCLAUSE 15.247(e) – 5.2(2)

Under normal test conditons	+8dBm in any 3 kHz band
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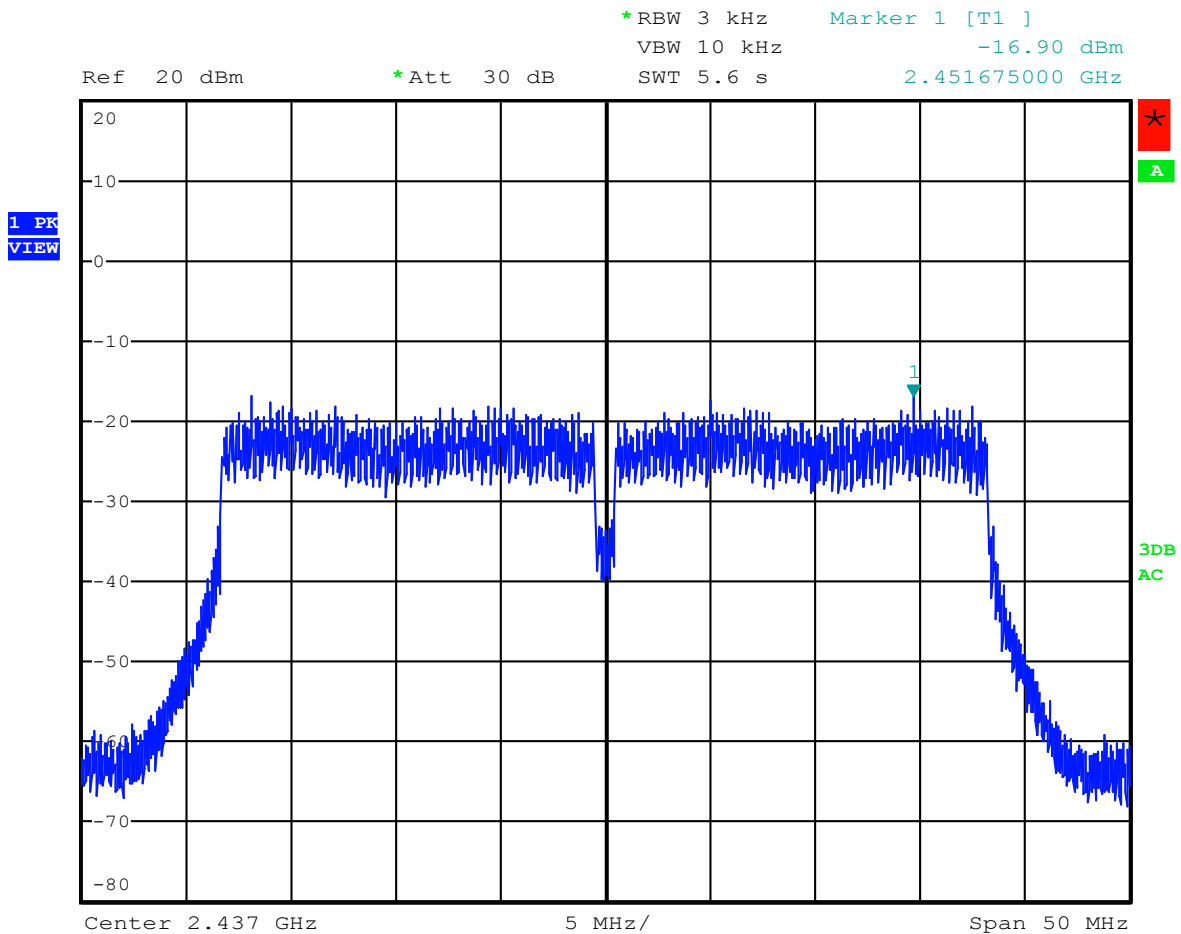
Test Equipment used: NT-203/1

Power spectral density (conducted)

**§ 15.247(e)
5.2(2)**

Conducted Measurement – Antenna 2

Rated output power: 43,65 mW Channel 4 + 8 (2437 MHz center frequency)



Date: 19.SEP.2018 18:11:21

Power Spectral density: -16,90 dBm @ 2451,675 MHz

LIMIT SUBCLAUSE 15.247(e) – 5.2(2)

Under normal test conditons	+8dBm in any 3 kHz band
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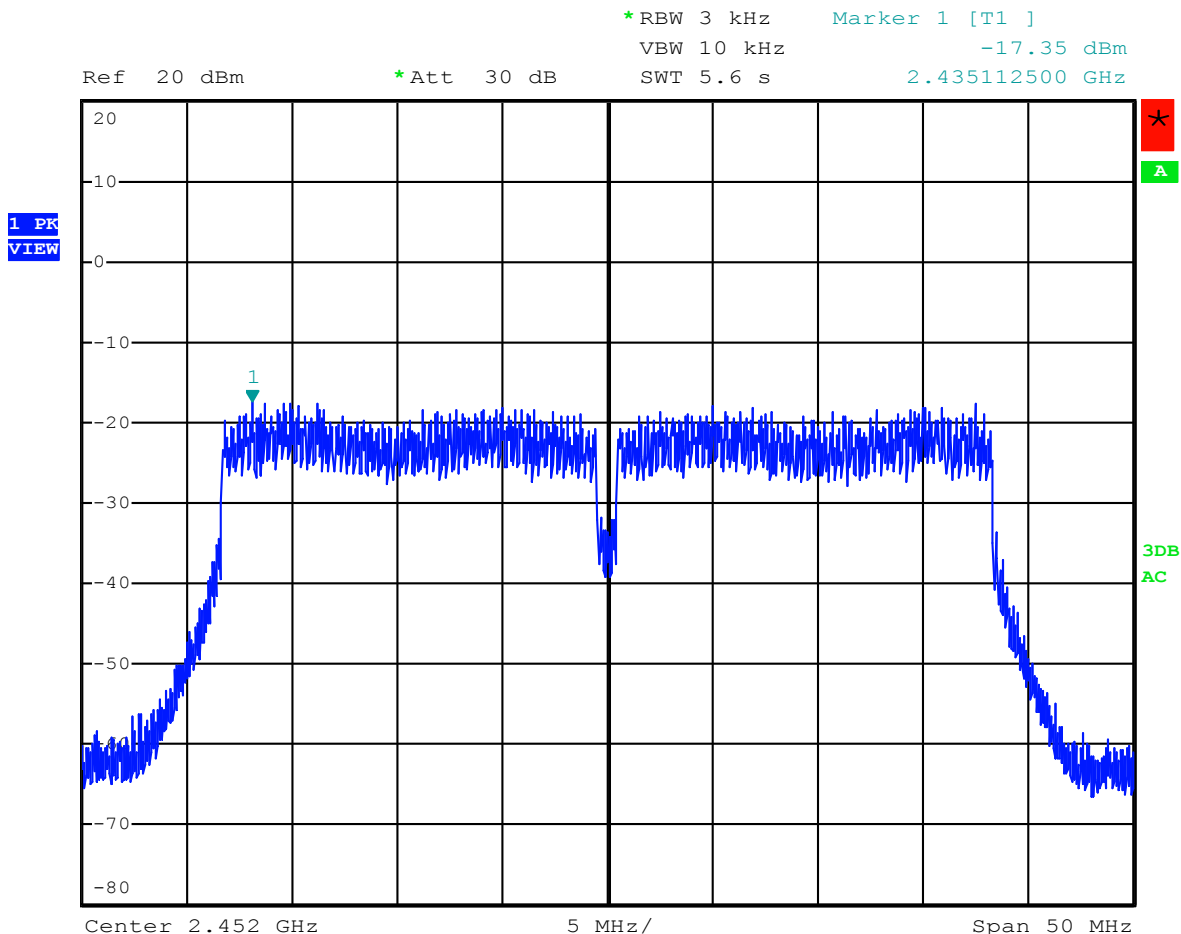
Test Equipment used: NT-203/1

Power spectral density (conducted)

**§ 15.247(e)
5.2(2)**

Conducted Measurement – Antenna 2

Rated output power: 43,65 mW Channel 7 + 11 (2452 MHz center frequency)



Date: 19.SEP.2018 18:10:11

Power Spectral density: -17,35 dBm @ 2435,113 MHz

LIMIT SUBCLAUSE 15.247(e) – 5.2(2)

Under normal test conditons	+8dBm in any 3 kHz band
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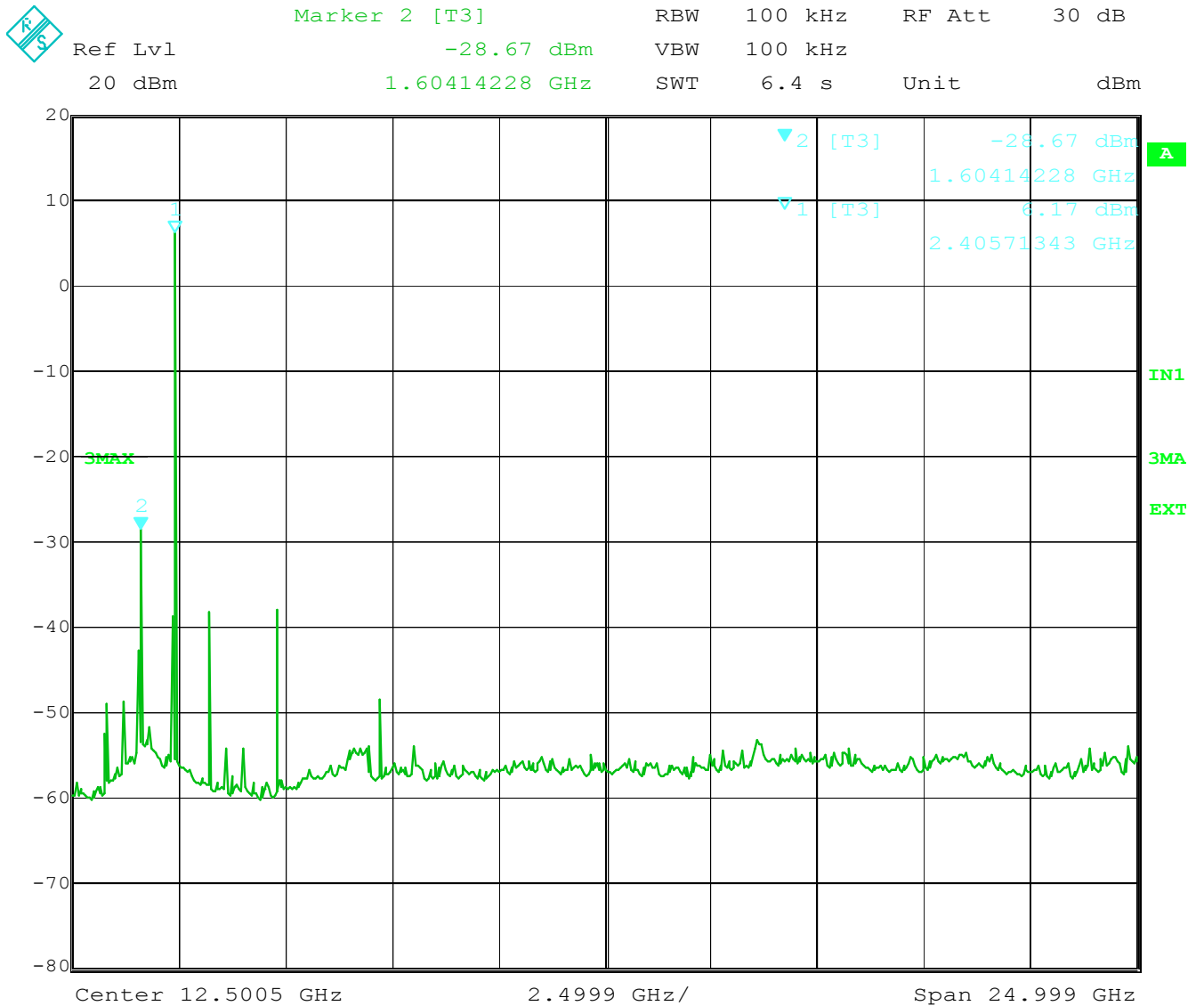
Test Equipment used: NT-203/1

**4.6. Out-of-band Emission
Unwanted Emissions**

**§ 15.247(d)
5.5**

Conducted Measurement – Antenna 1

Setup: CH 1: 2412 MHz – DSSS



Date: 28.SEP.2018 14:23:15

LIMIT SUBCLAUSE 15.247(d) – 5.5

<p>In any 100 kHz bandwidth outside the frequency band in which the radio device is operating.</p>	<p>At least 20dB below the power in the 100 kHz bandwidth within the band that contains the highest level of the desired power.</p>
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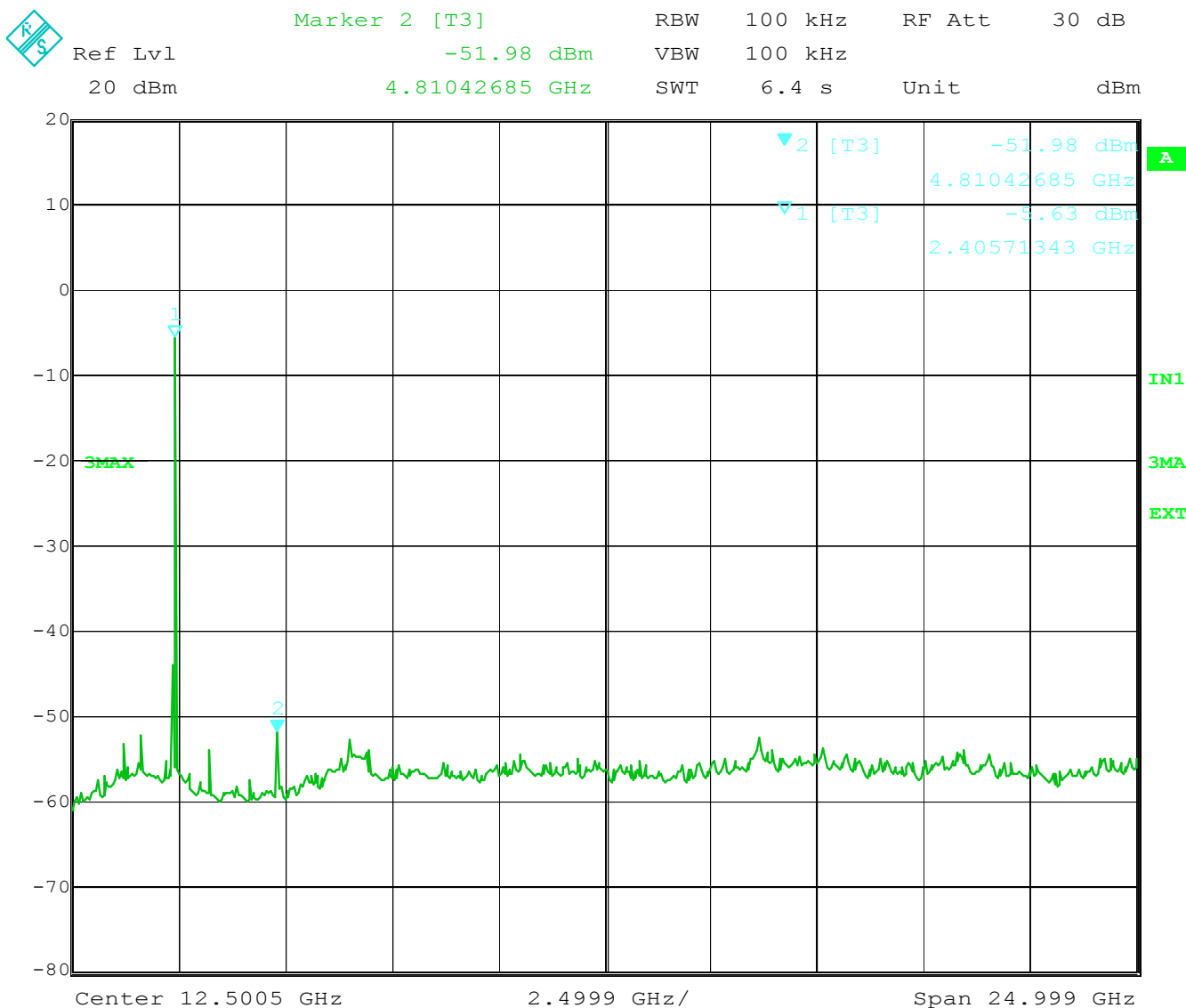
Test Equipment used: NT-207

**Out-of-band Emission
Unwanted Emissions**

**§ 15.247(d)
5.5**

Conducted Measurement – Antenna 1

Setup: CH 1: 2412 MHz – OFDM



Date: 28.SEP.2018 14:28:29

LIMIT SUBCLAUSE 15.247(d) – 5.5

<p>In any 100 kHz bandwidth outside the frequency band in which the radio device is operating.</p>	<p>At least 20dB below the power in the 100 kHz bandwidth within the band that contains the highest level of the desired power.</p>
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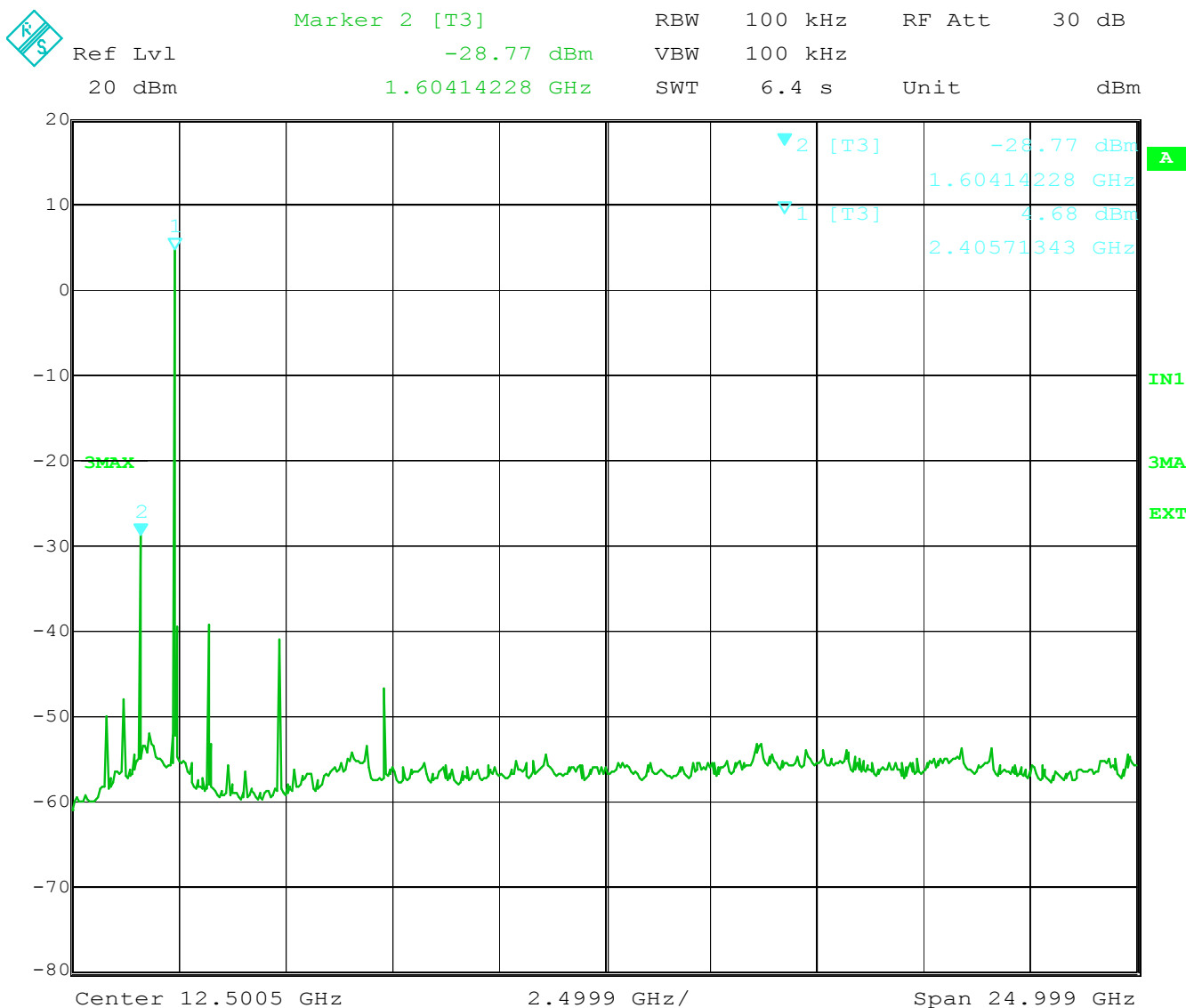
Test Equipment used: NT-207

**Out-of-band Emission
Unwanted Emissions**

**§ 15.247(d)
5.5**

Conducted Measurement – Antenna 1

Setup: CH 6: 2437 MHz – DSSS



Date: 28.SEP.2018 14:24:30

LIMIT SUBCLAUSE 15.247(d) – 5.5

<p>In any 100 kHz bandwidth outside the frequency band in which the radio device is operating.</p>	<p>At least 20dB below the power in the 100 kHz bandwidth within the band that contains the highest level of the desired power.</p>
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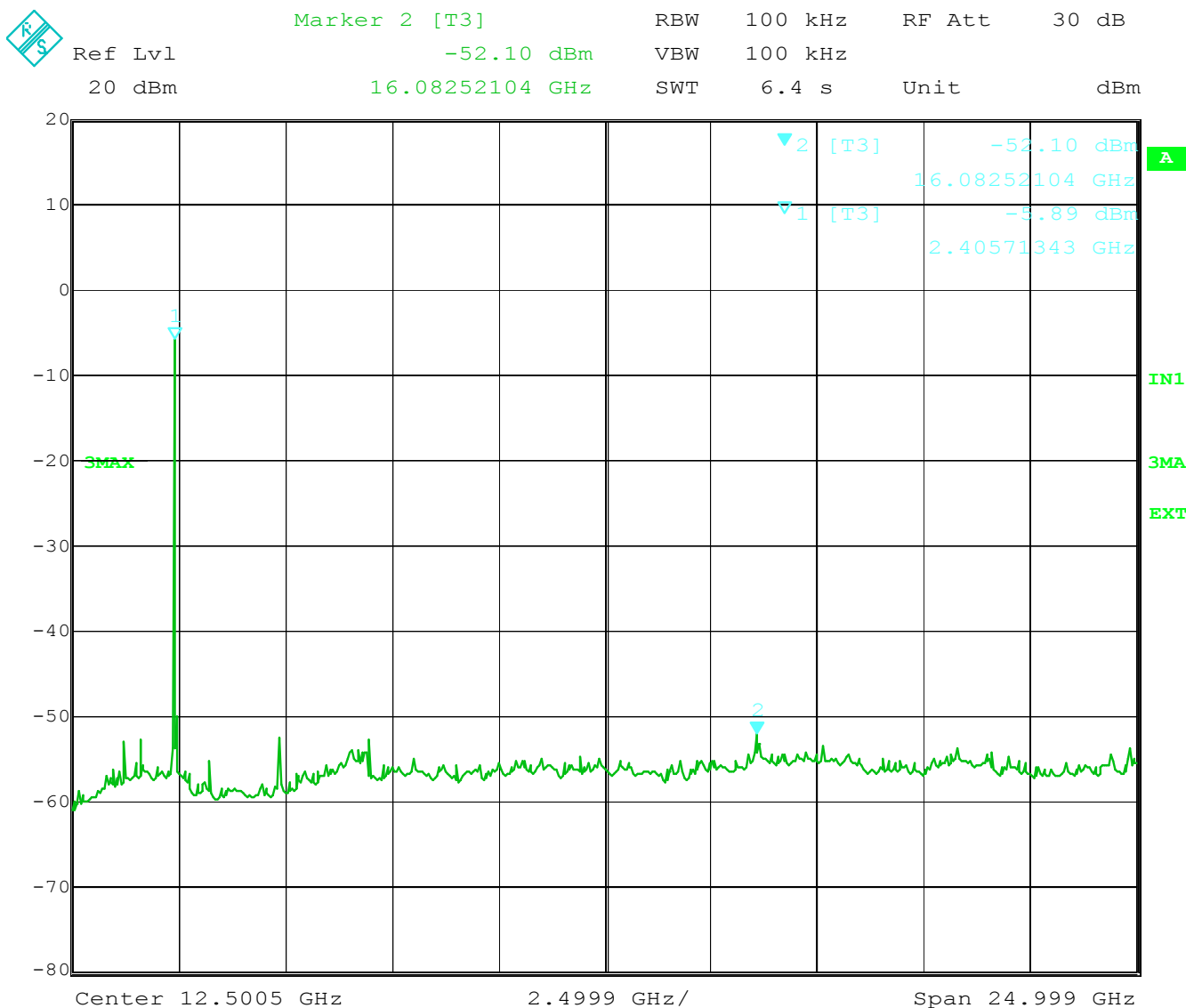
Test Equipment used: NT-207

**Out-of-band Emission
Unwanted Emissions**

**§ 15.247(d)
5.5**

Conducted Measurement – Antenna 1

Setup: CH 6: 2437 MHz – OFDM



Date: 28.SEP.2018 14:27:37

LIMIT SUBCLAUSE 15.247(d) – 5.5

In any 100 kHz bandwidth outside the frequency band in which the radio device is operating.	At least 20dB below the power in the 100 kHz bandwidth within the band that contains the highest level of the desired power.
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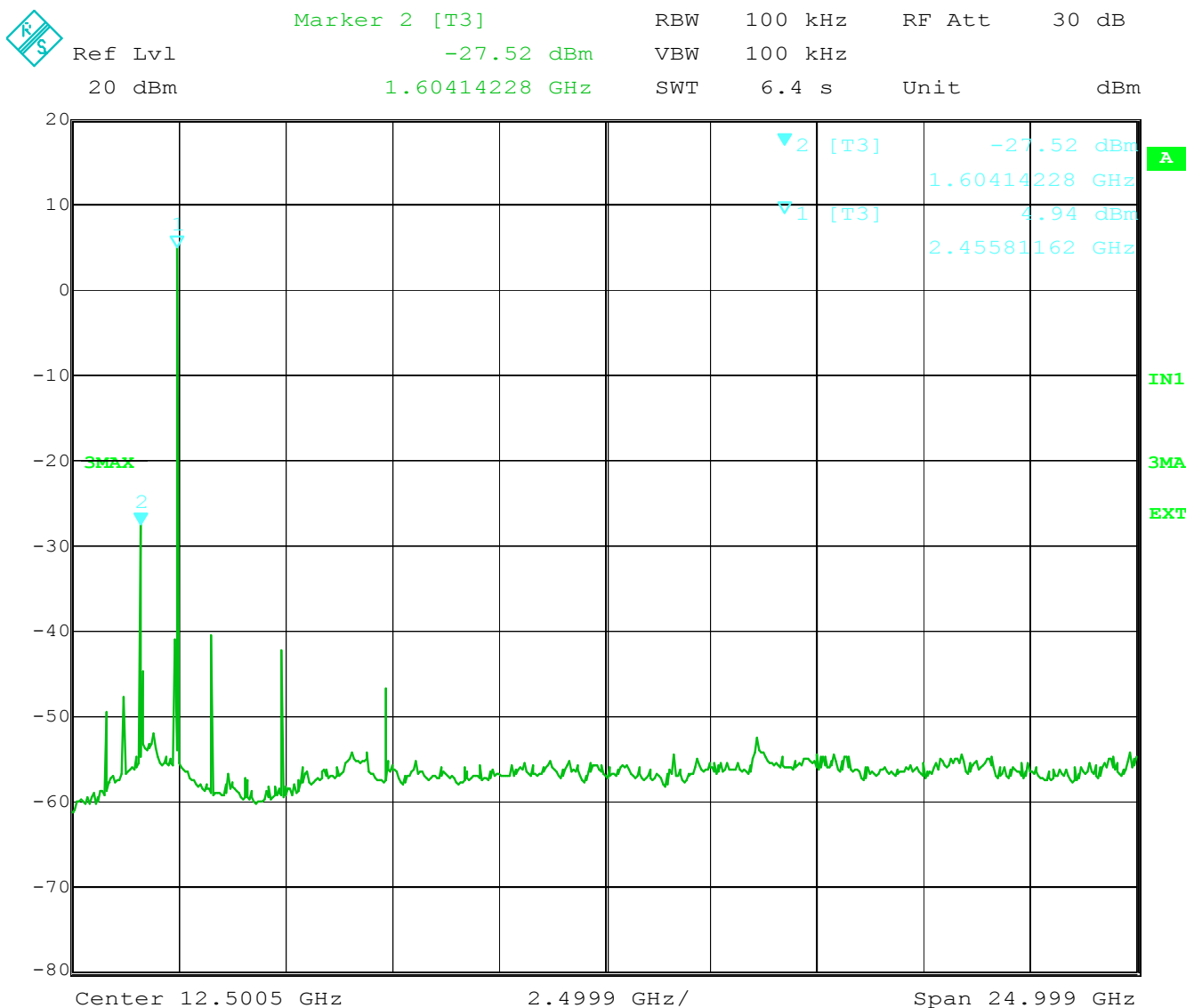
Test Equipment used: NT-207

**Out-of-band Emission
Unwanted Emissions**

**§ 15.247(d)
5.5**

Conducted Measurement – Antenna 1

Setup: CH 11: 2462 MHz – DSSS



Date: 28.SEP.2018 14:25:23

LIMIT SUBCLAUSE 15.247(d) – 5.5

<p>In any 100 kHz bandwidth outside the frequency band in which the radio device is operating.</p>	<p>At least 20dB below the power in the 100 kHz bandwidth within the band that contains the highest level of the desired power.</p>
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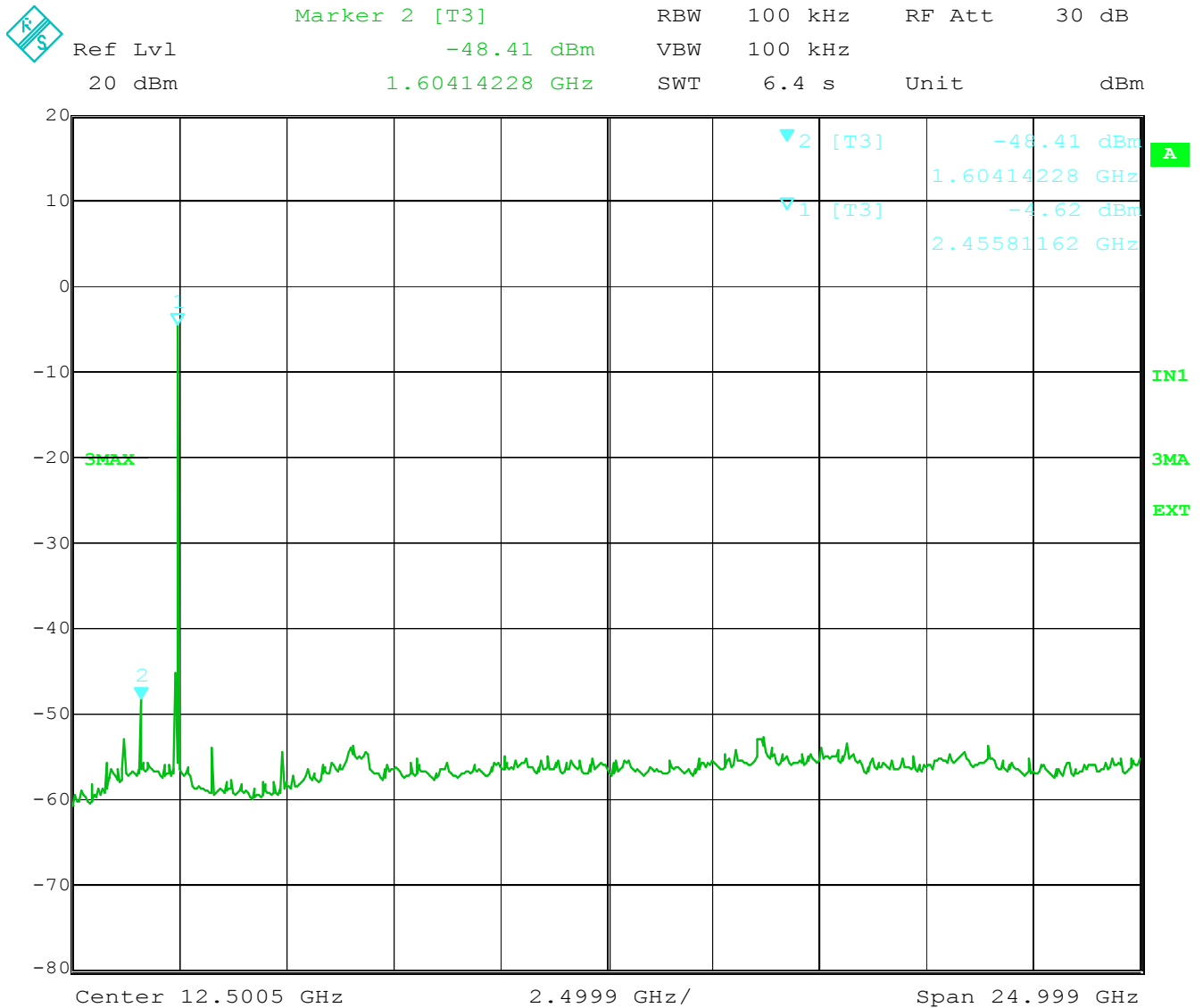
Test Equipment used: NT-207

**Out-of-band Emission
Unwanted Emissions**

**§ 15.247(d)
5.5**

Conducted Measurement – Antenna 1

Setup: CH 11: 2462 MHz – OFDM



Date: 28.SEP.2018 14:26:30

LIMIT SUBCLAUSE 15.247(d) – 5.5

<p>In any 100 kHz bandwidth outside the frequency band in which the radio device is operating.</p>	<p>At least 20dB below the power in the 100 kHz bandwidth within the band that contains the highest level of the desired power.</p>
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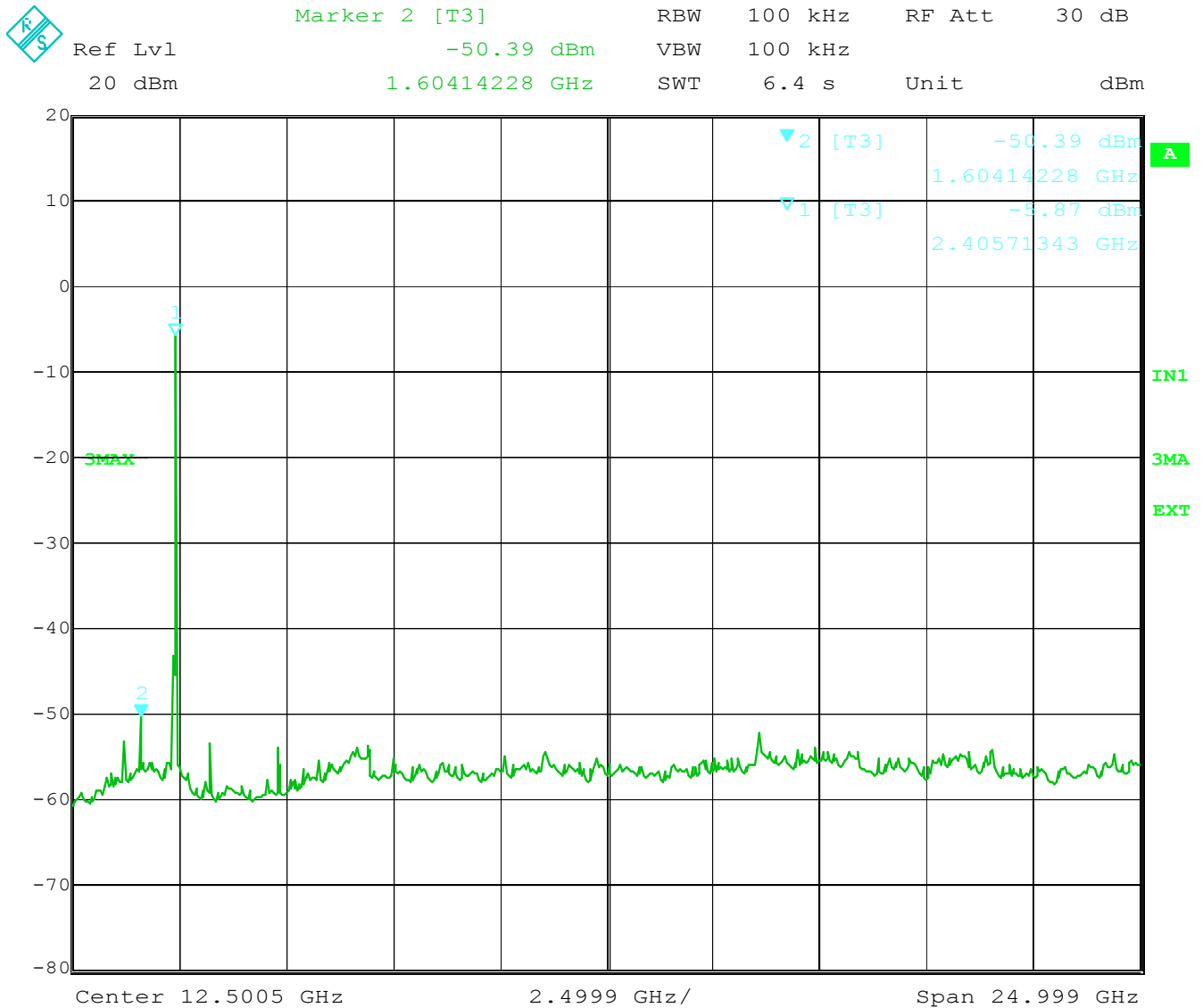
Test Equipment used: NT-207

**Out-of-band Emission
Unwanted Emissions**

**§ 15.247(d)
5.5**

Conducted Measurement – Antenna 1

Setup: CH 1 + 5: 2422 MHz



Date: 28.SEP.2018 14:29:20

LIMIT SUBCLAUSE 15.247(d) – 5.5

<p>In any 100 kHz bandwidth outside the frequency band in which the radio device is operating.</p>	<p>At least 20dB below the power in the 100 kHz bandwidth within the band that contains the highest level of the desired power.</p>
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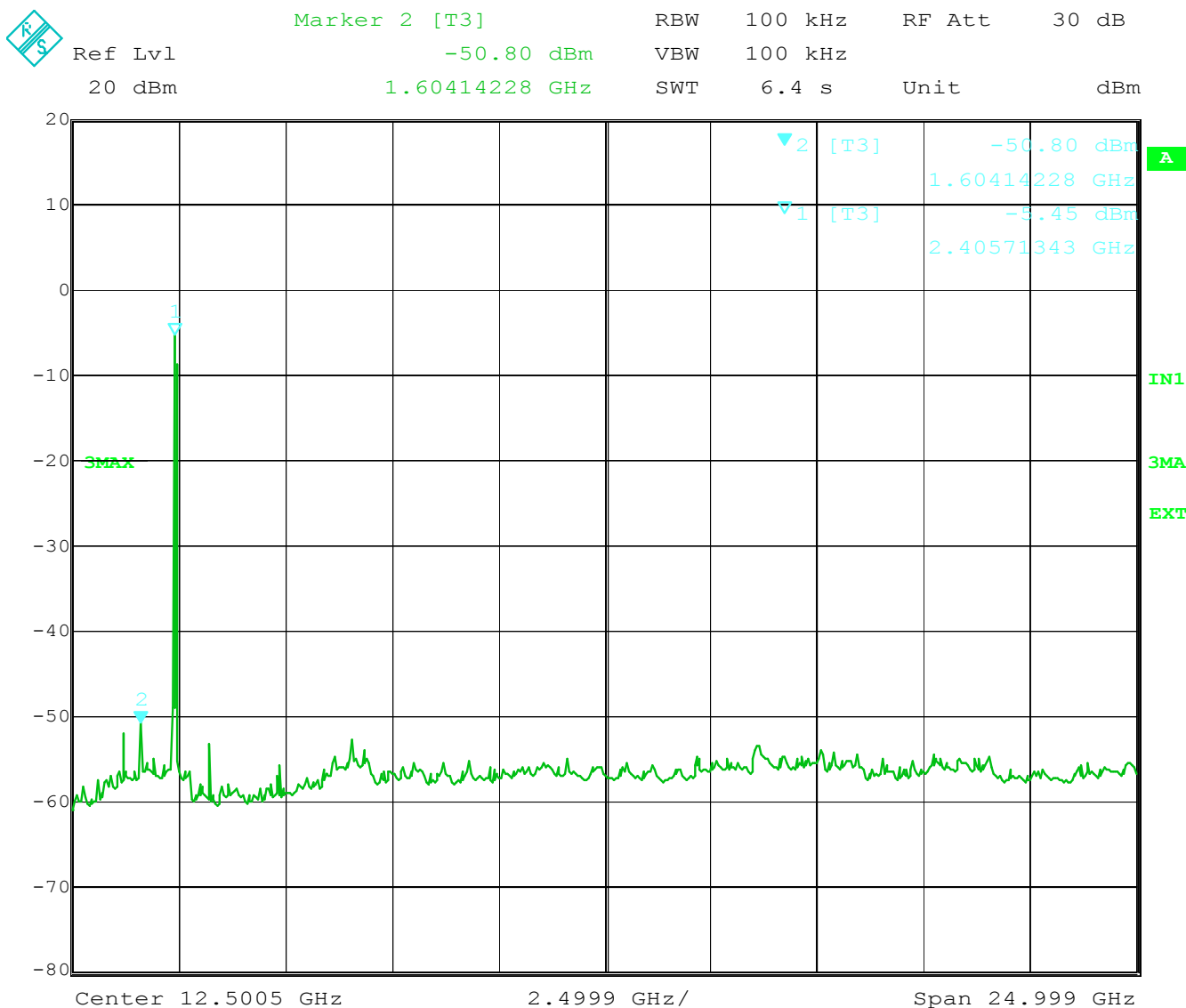
Test Equipment used: NT-207

**Out-of-band Emission
Unwanted Emissions**

**§ 15.247(d)
5.5**

Conducted Measurement – Antenna 1

Setup: CH 4 + 8: 2437 MHz



Date: 28.SEP.2018 14:30:05

LIMIT SUBCLAUSE 15.247(d) – 5.5

In any 100 kHz bandwidth outside the frequency band in which the radio device is operating.	At least 20dB below the power in the 100 kHz bandwidth within the band that contains the highest level of the desired power.
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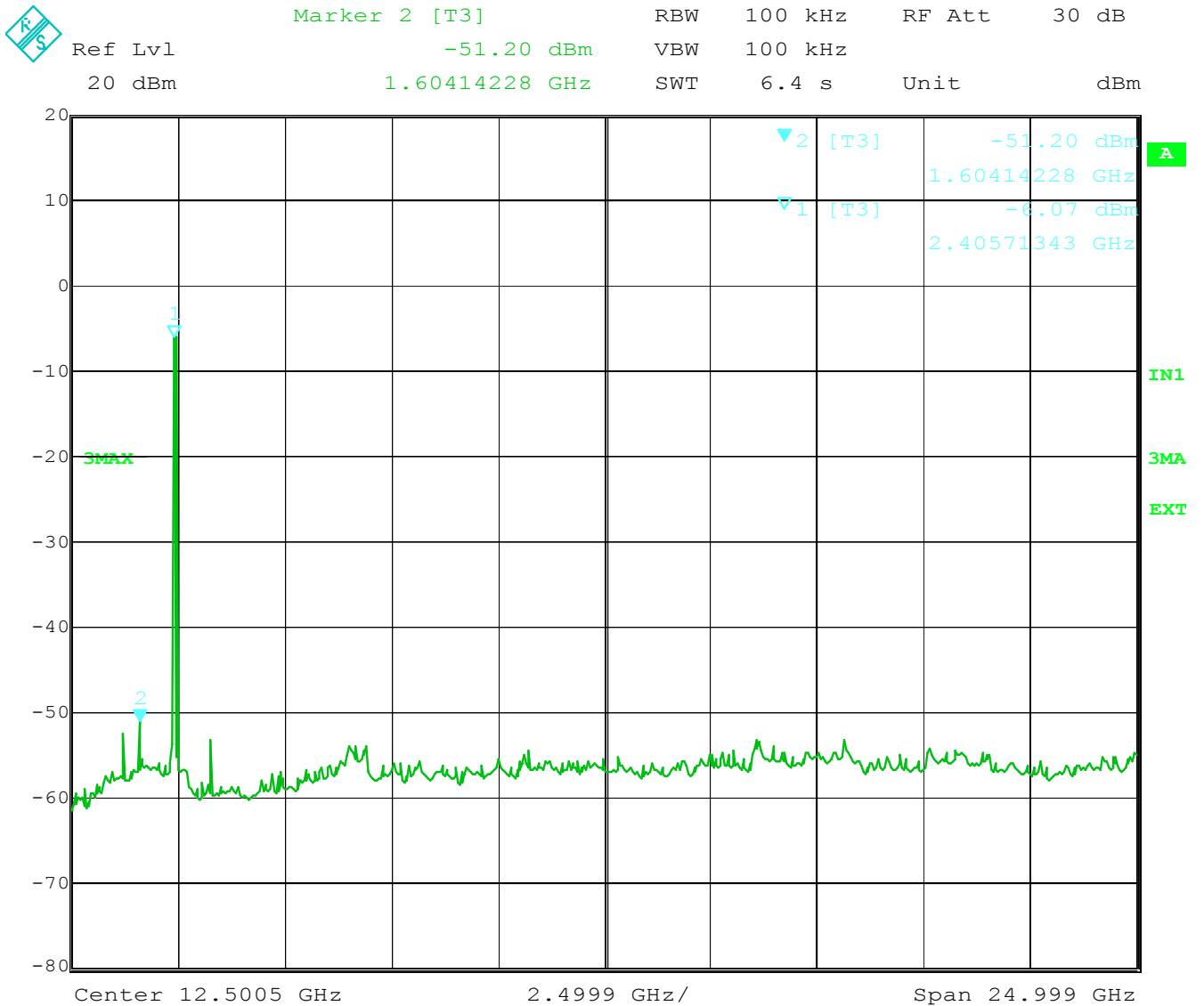
Test Equipment used: NT-207

**Out-of-band Emission
Unwanted Emissions**

**§ 15.247(d)
5.5**

Conducted Measurement – Antenna 1

Setup: CH 7 + 11: 2452 MHz



Date: 28.SEP.2018 14:31:39

LIMIT SUBCLAUSE 15.247(d) – 5.5

In any 100 kHz bandwidth outside the frequency band in which the radio device is operating.	At least 20dB below the power in the 100 kHz bandwidth within the band that contains the highest level of the desired power.
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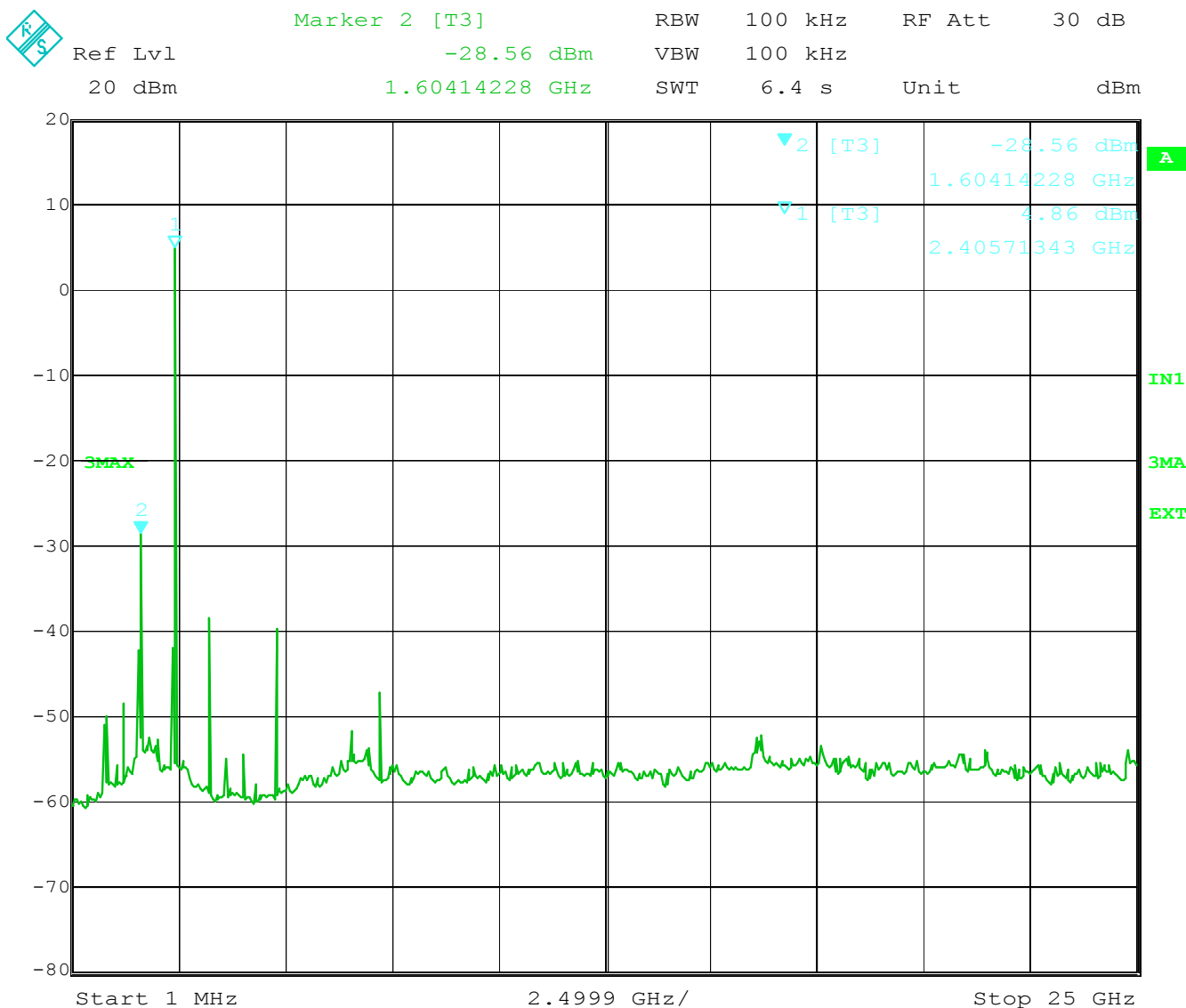
Test Equipment used: NT-207

**Out-of-band Emission
Unwanted Emissions**

**§ 15.247(d)
5.5**

Conducted Measurement – Antenna 2

Setup: CH 1: 2412 MHz – DSSS



Date: 27.SEP.2018 16:28:47

LIMIT SUBCLAUSE 15.247(d) – 5.5

In any 100 kHz bandwidth outside the frequency band in which the radio device is operating.	At least 20dB below the power in the 100 kHz bandwidth within the band that contains the highest level of the desired power.
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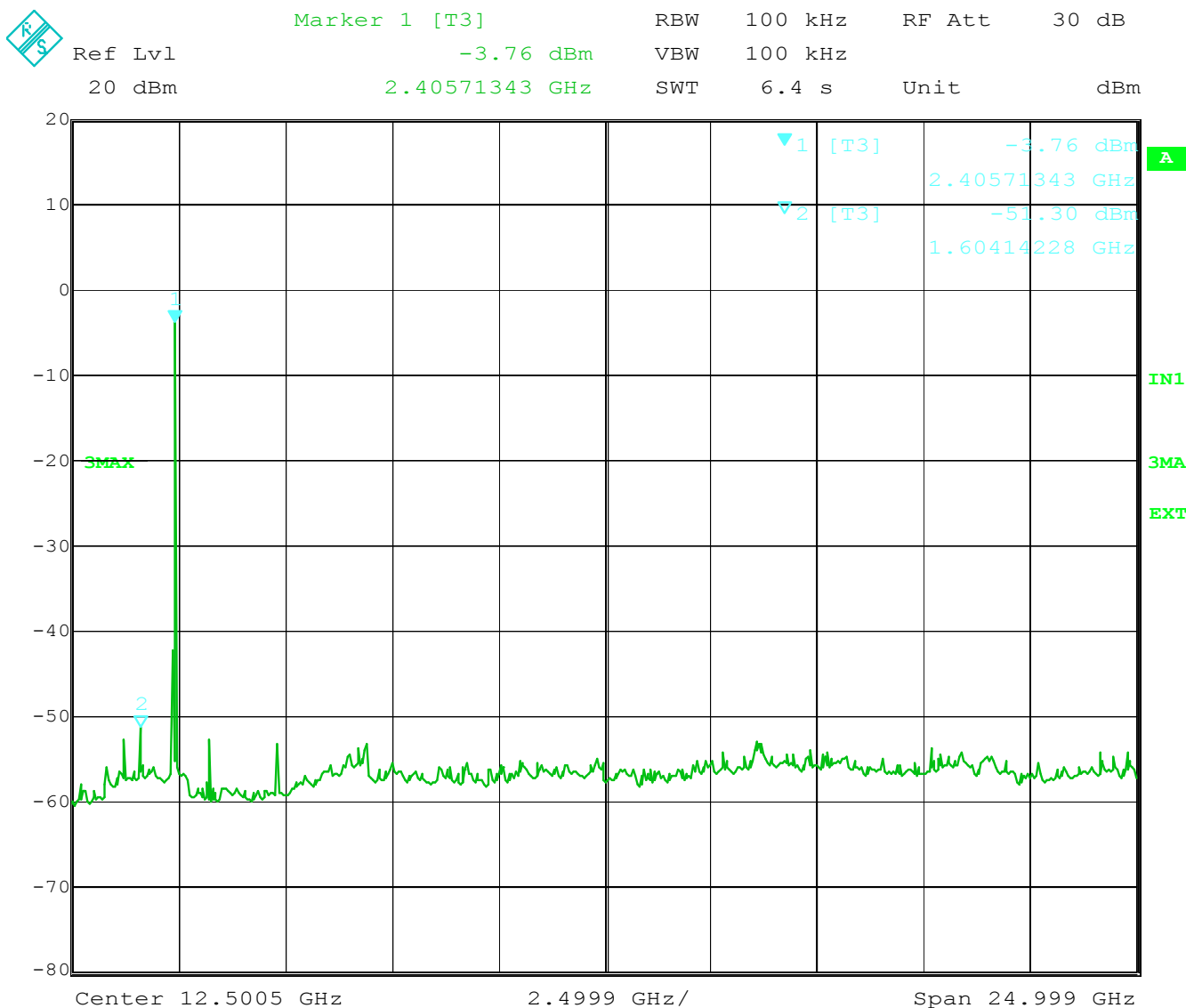
Test Equipment used: NT-207

**Out-of-band Emission
Unwanted Emissions**

**§ 15.247(d)
5.5**

Conducted Measurement – Antenna 2

Setup: CH 1: 2412 MHz – OFDM



Date: 27.SEP.2018 16:31:13

LIMIT SUBCLAUSE 15.247(d) – 5.5

In any 100 kHz bandwidth outside the frequency band in which the radio device is operating.	At least 20dB below the power in the 100 kHz bandwidth within the band that contains the highest level of the desired power.
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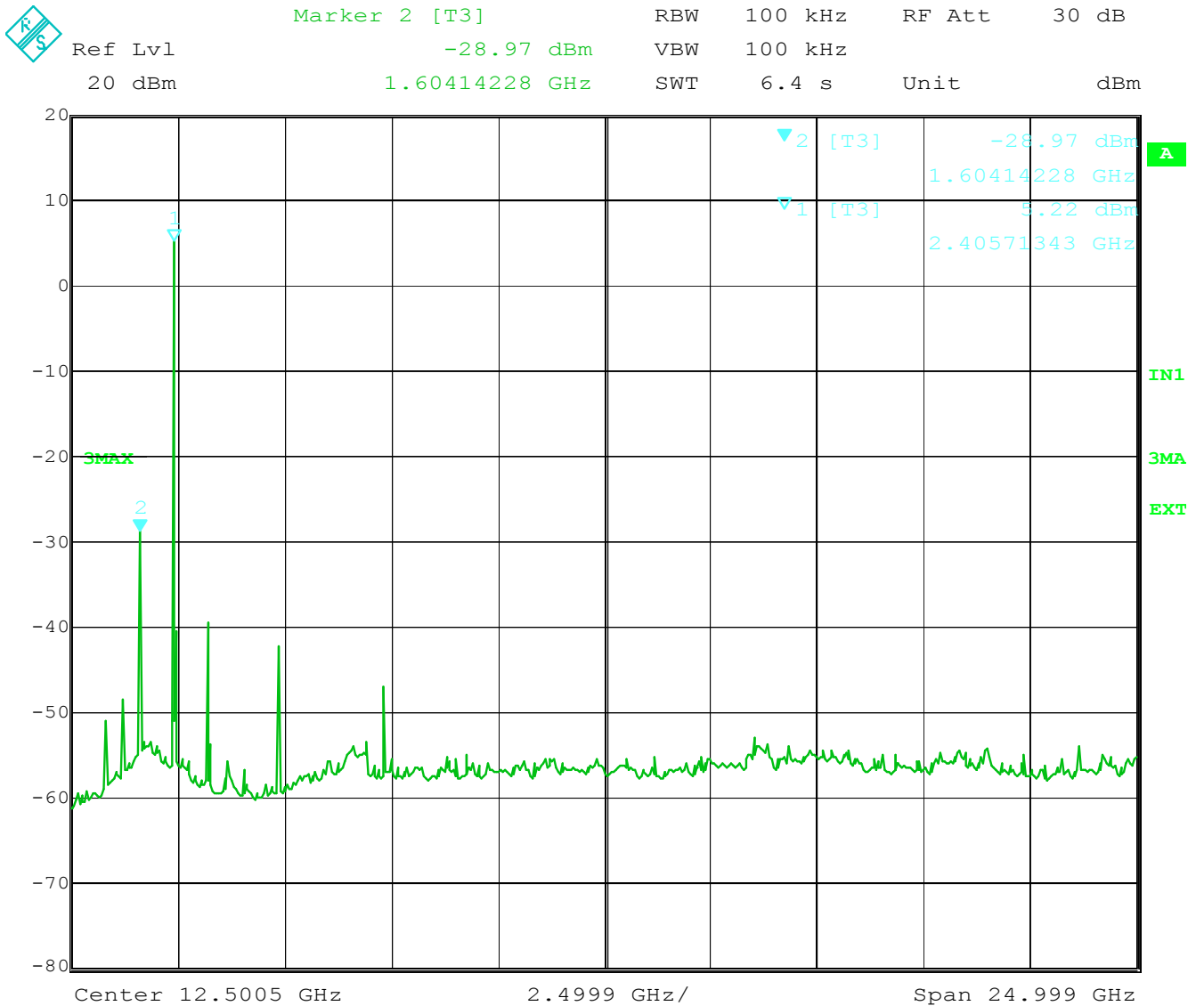
Test Equipment used: NT-207

**Out-of-band Emission
Unwanted Emissions**

**§ 15.247(d)
5.5**

Conducted Measurement – Antenna 2

Setup: CH 6: 2437 MHz – DSSS



Date: 27.SEP.2018 16:29:40

LIMIT SUBCLAUSE 15.247(d) – 5.5

<p>In any 100 kHz bandwidth outside the frequency band in which the radio device is operating.</p>	<p>At least 20dB below the power in the 100 kHz bandwidth within the band that contains the highest level of the desired power.</p>
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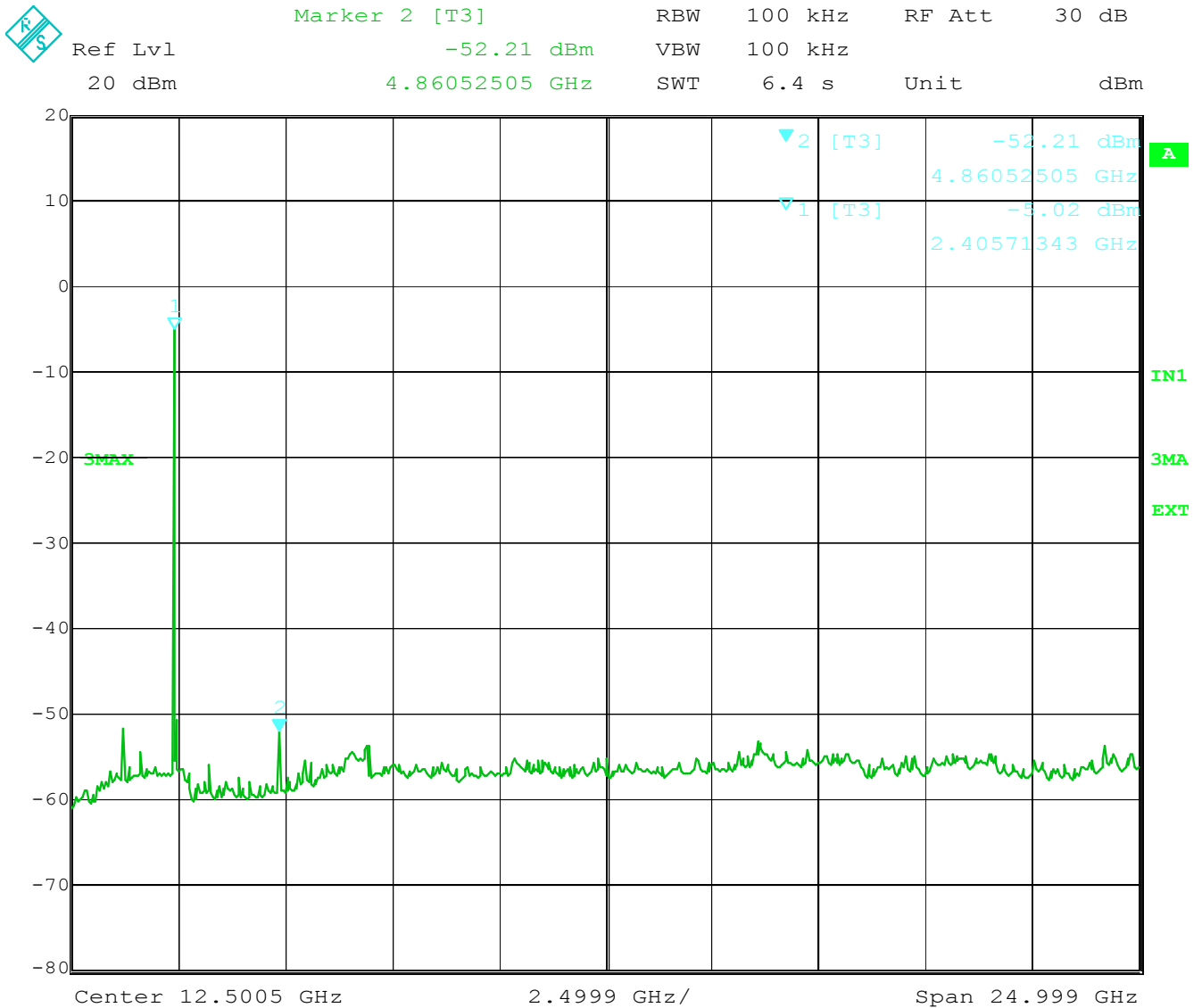
Test Equipment used: NT-207

**Out-of-band Emission
Unwanted Emissions**

**§ 15.247(d)
5.5**

Conducted Measurement – Antenna 2

Setup: CH 6: 2437 MHz – OFDM



Date: 27.SEP.2018 16:32:04

LIMIT SUBCLAUSE 15.247(d) – 5.5

<p>In any 100 kHz bandwidth outside the frequency band in which the radio device is operating.</p>	<p>At least 20dB below the power in the 100 kHz bandwidth within the band that contains the highest level of the desired power.</p>
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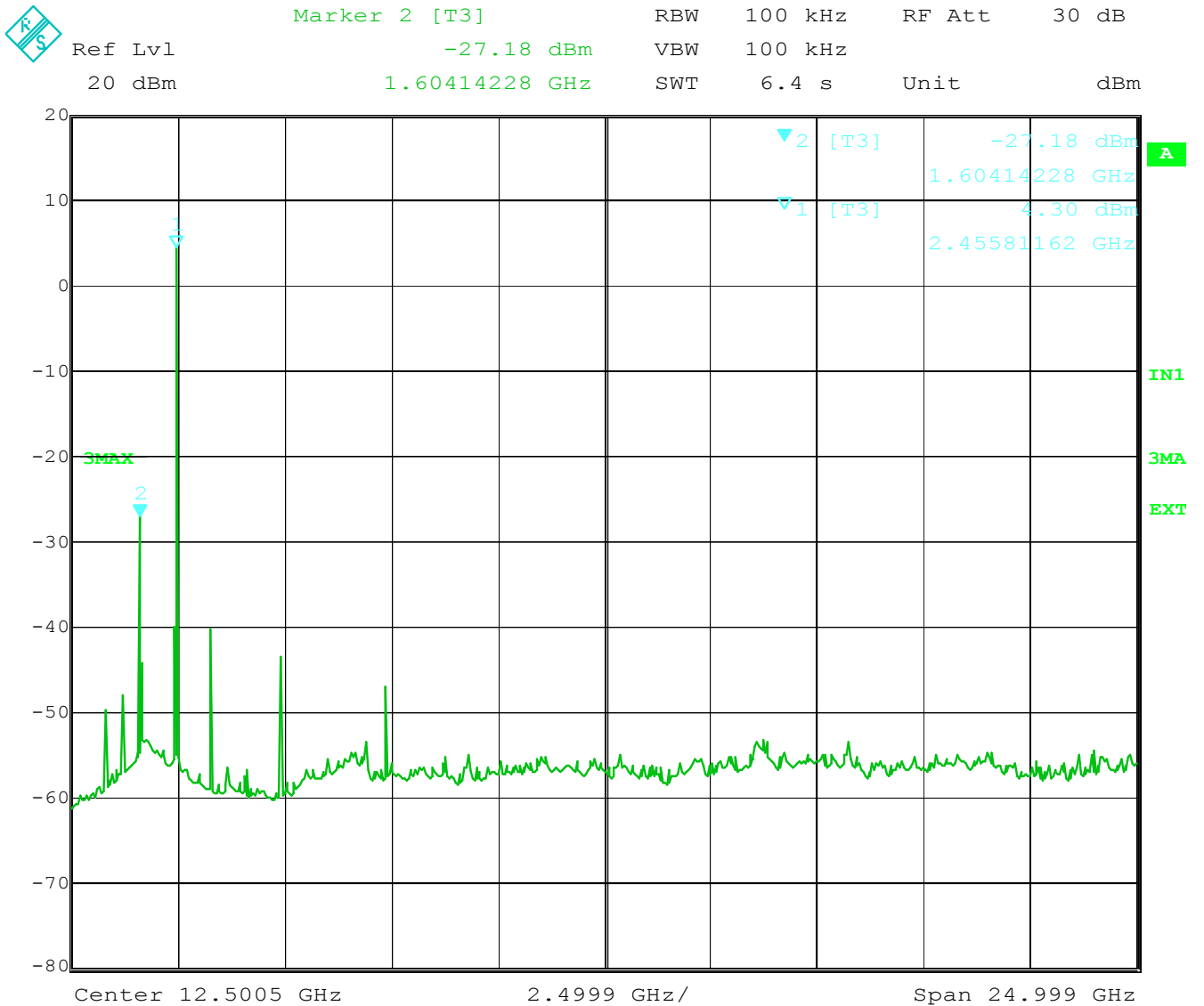
Test Equipment used: NT-207

**Out-of-band Emission
Unwanted Emissions**

**§ 15.247(d)
5.5**

Conducted Measurement – Antenna 2

Setup: CH 11: 2462 MHz – DSSS



Date: 27.SEP.2018 16:30:25

LIMIT SUBCLAUSE 15.247(d) – 5.5

In any 100 kHz bandwidth outside the frequency band in which the radio device is operating.	At least 20dB below the power in the 100 kHz bandwidth within the band that contains the highest level of the desired power.
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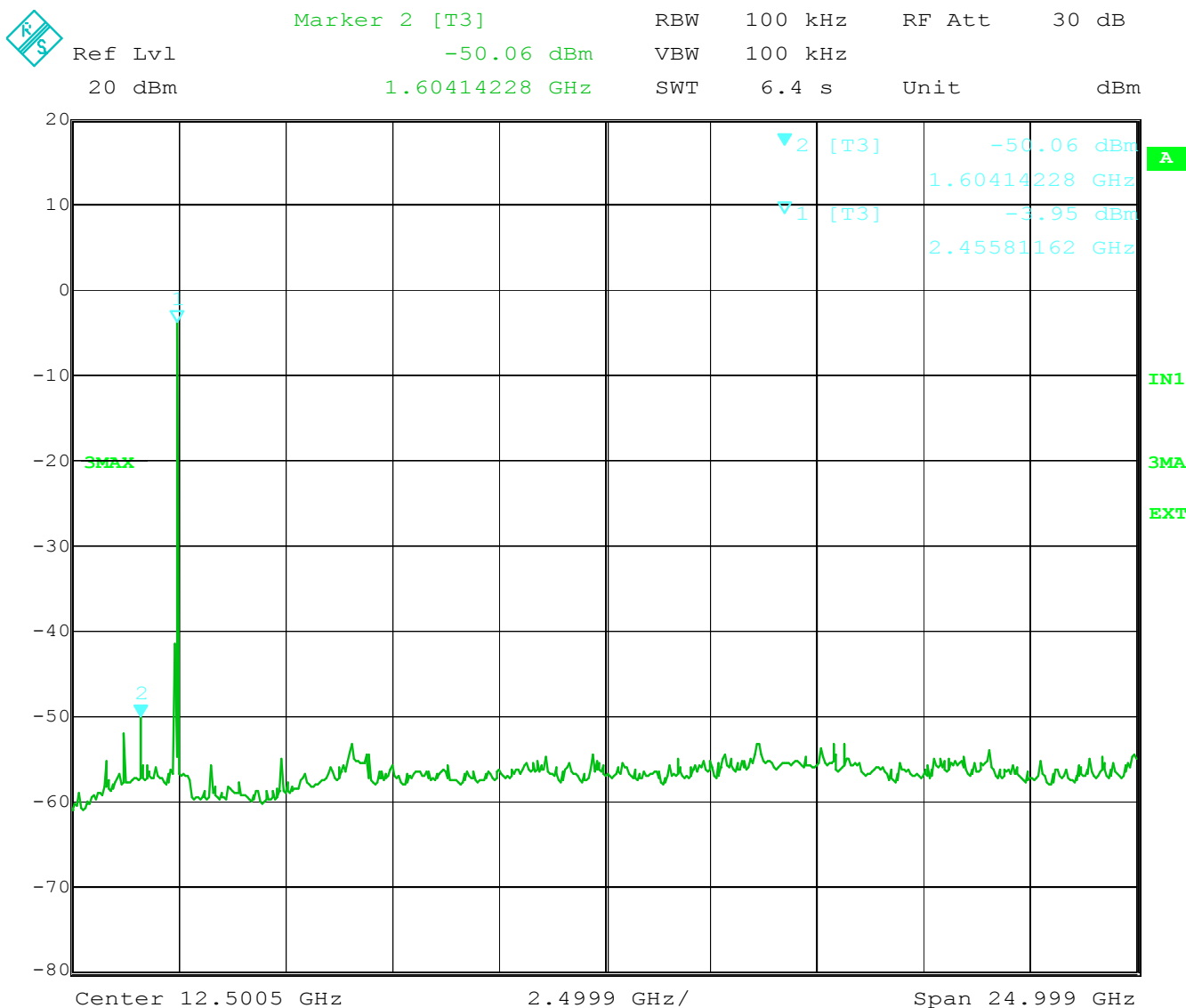
Test Equipment used: NT-207

**Out-of-band Emission
Unwanted Emissions**

**§ 15.247(d)
5.5**

Conducted Measurement – Antenna 2

Setup: CH 11: 2462 MHz – OFDM



Date: 27.SEP.2018 16:32:48

LIMIT SUBCLAUSE 15.247(d) – 5.5

<p>In any 100 kHz bandwidth outside the frequency band in which the radio device is operating.</p>	<p>At least 20dB below the power in the 100 kHz bandwidth within the band that contains the highest level of the desired power.</p>
--	---

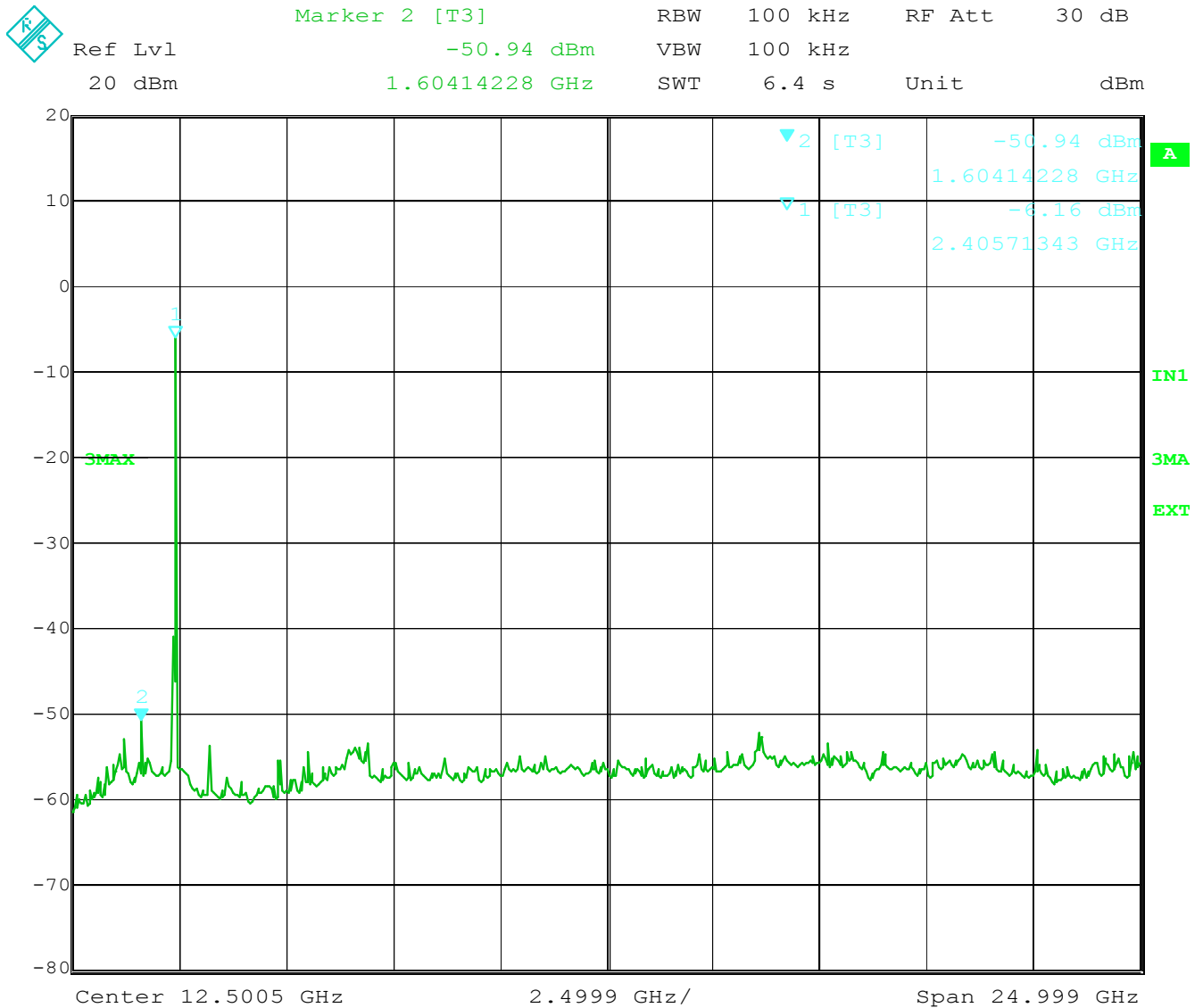
Test Equipment used: NT-207

**Out-of-band Emission
Unwanted Emissions**

**§ 15.247(d)
5.5**

Conducted Measurement – Antenna 2

Setup: CH 1 + 5: 2422 MHz



Date: 27.SEP.2018 16:33:38

LIMIT SUBCLAUSE 15.247(d) – 5.5

In any 100 kHz bandwidth outside the frequency band in which the radio device is operating.	At least 20dB below the power in the 100 kHz bandwidth within the band that contains the highest level of the desired power.
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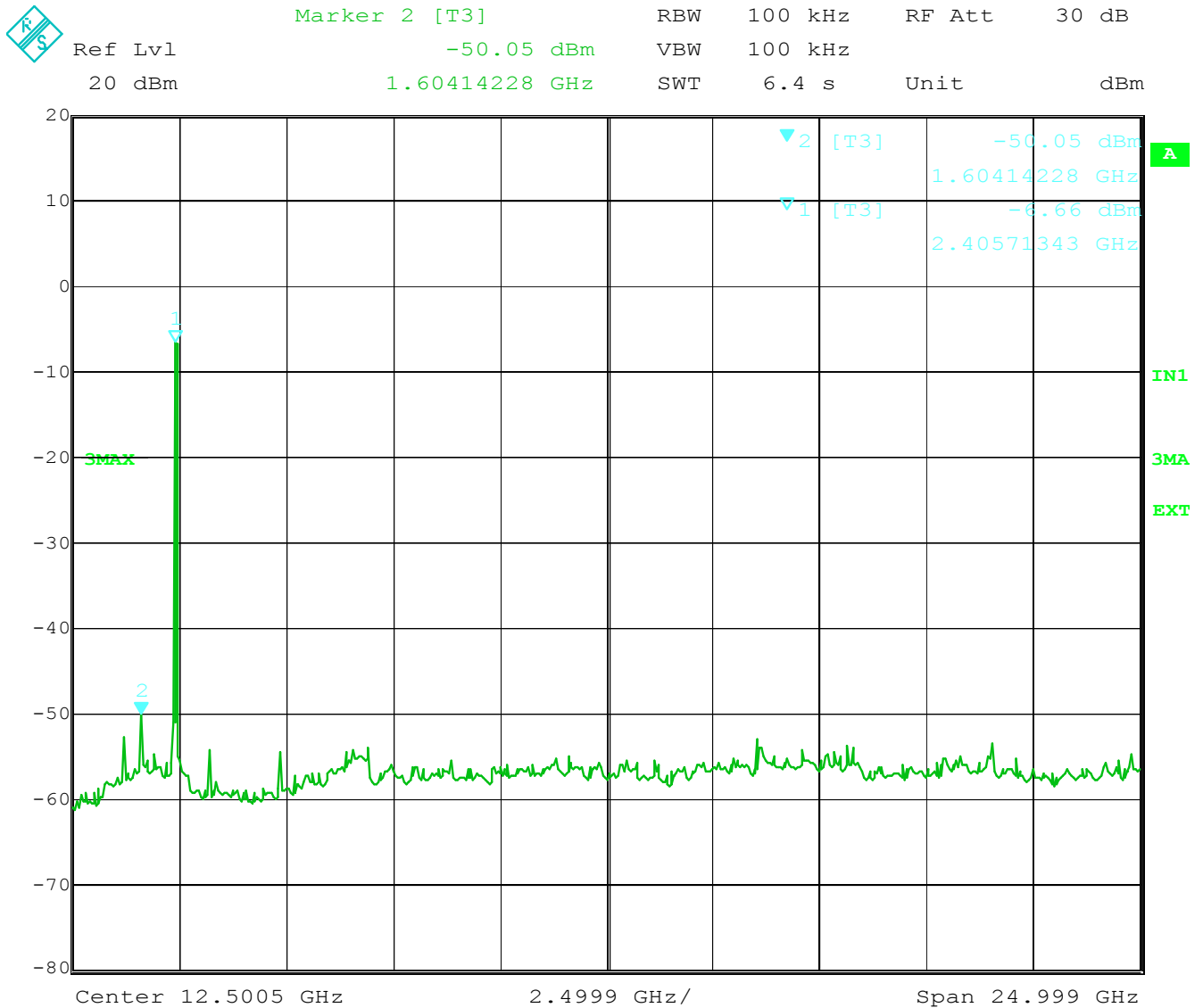
Test Equipment used: NT-207

**Out-of-band Emission
Unwanted Emissions**

**§ 15.247(d)
5.5**

Conducted Measurement – Antenna 2

Setup: CH 4 + 8: 2437 MHz



Date: 27.SEP.2018 16:34:30

LIMIT SUBCLAUSE 15.247(d) – 5.5

In any 100 kHz bandwidth outside the frequency band in which the radio device is operating.	At least 20dB below the power in the 100 kHz bandwidth within the band that contains the highest level of the desired power.
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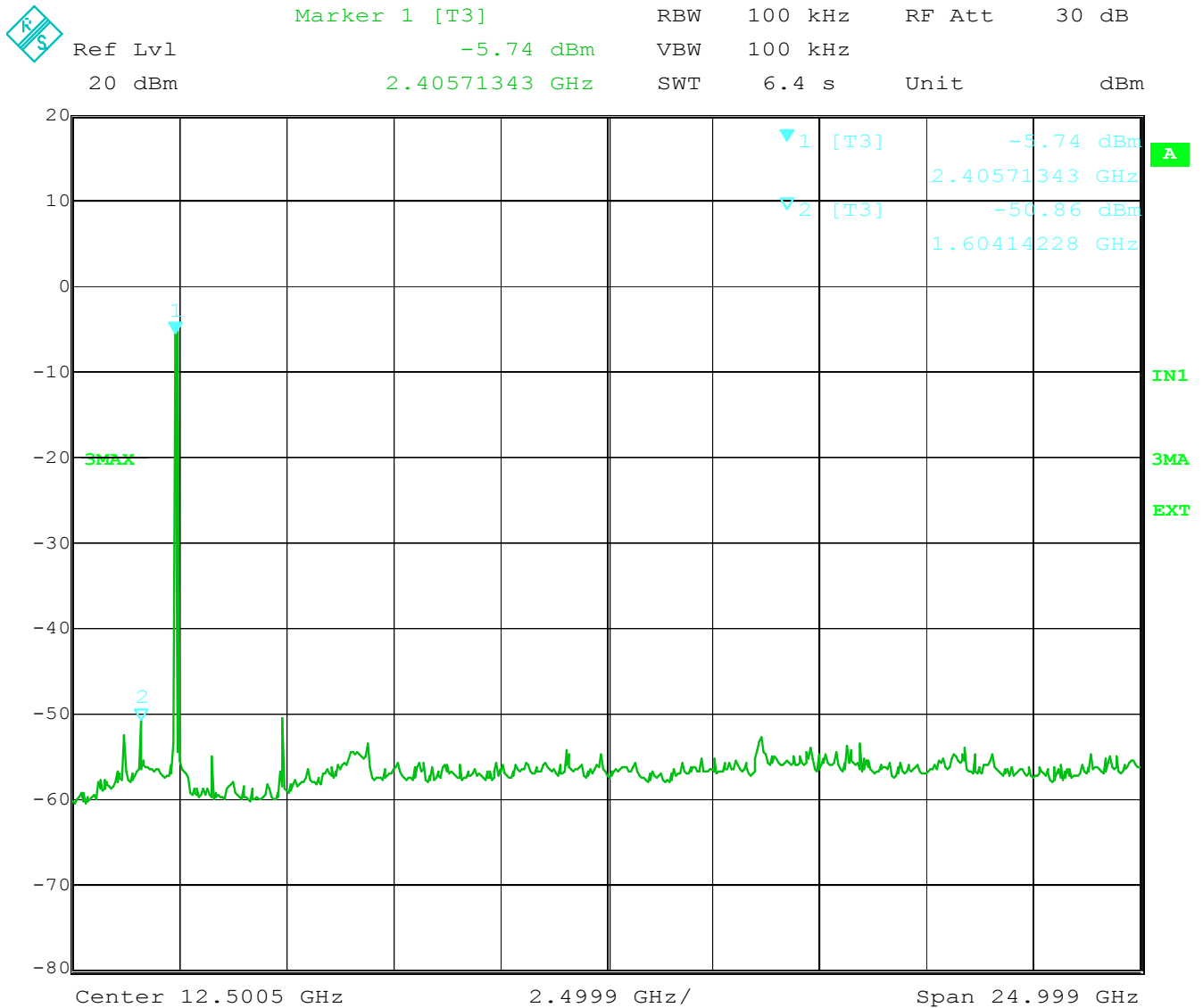
Test Equipment used: NT-207

**Out-of-band Emission
Unwanted Emissions**

**§ 15.247(d)
5.5**

Conducted Measurement – Antenna 2

Setup: CH 7 + 11: 2452 MHz



Date: 27.SEP.2018 16:35:25

LIMIT SUBCLAUSE 15.247(d) – 5.5

In any 100 kHz bandwidth outside the frequency band in which the radio device is operating.	At least 20dB below the power in the 100 kHz bandwidth within the band that contains the highest level of the desired power.
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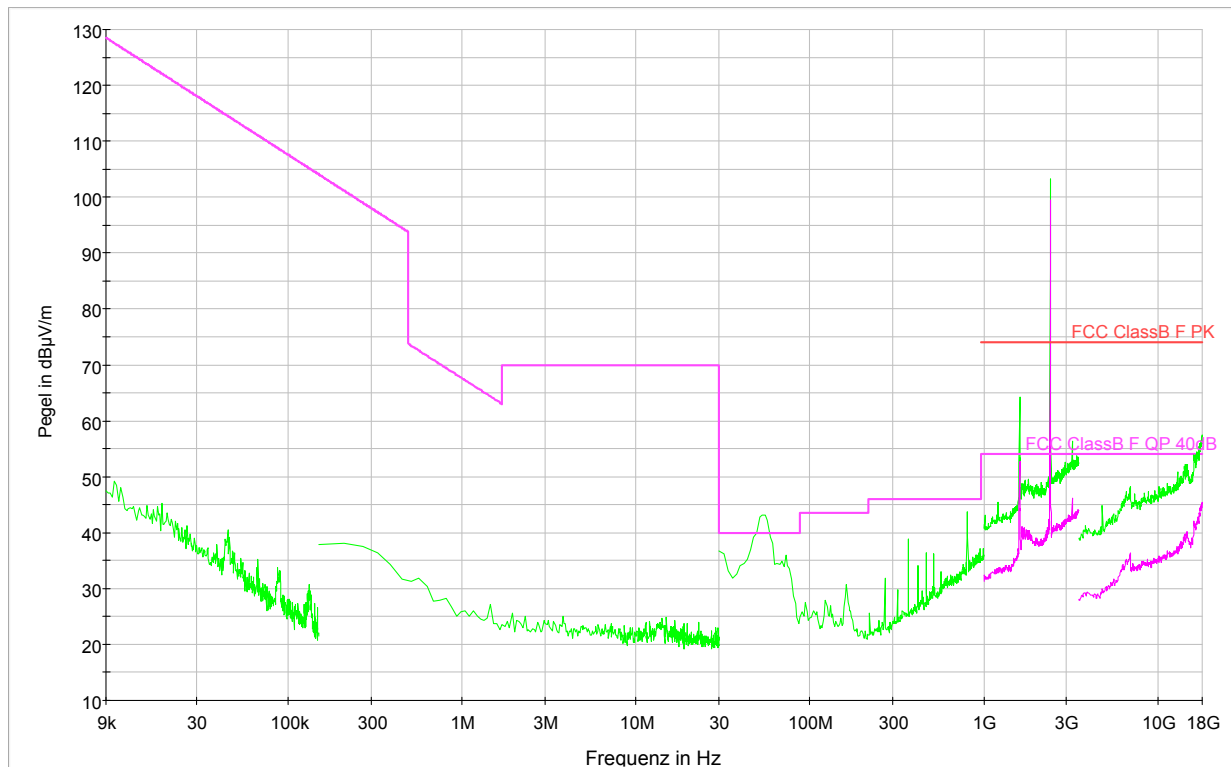
Test Equipment used: NT-207

4.7. Emissions in restricted bands
Emissions falling within restricted frequency bands

§ 15.209(a)
RSS-Gen

Measurement with Peak-Detector (green line) and Average detector (magenta line):

Setup: CH 1: 2412 MHz – DSSS – Antenna 1



- PK+_MAXH(1):DSSS_F0
- AVG_MAXH(1):DSSS_CH1_Ant1_F2
- PK+_MAXH(1):DSSS_CH1_Ant1_F4
- PK+_MAXH
- PK+_MAXH(1):DSSS_CH1_Ant1_F1a
- FCC ClassB F PK
- AVG_MAXH(1):DSSS_CH1_Ant1_F4
- AVG_CLRWR
- PK+_MAXH(1):DSSS_CH1_Ant1_F2
- FCC ClassB F QP 40dB
- PK+_CLRWR
- AVG_MAXH

Worst case emission: Quasipeak @ 54,0 MHz 38,5 dBµV/m; 53,2 dBµV/m @ 1608 MHz

Remark: Although the measurement above ends at 18 GHz, all measurements were performed up to the tenth harmonics of the transmitter frequency.

LIMIT SUBCLAUSE 15.209(a) – RSS-Gen

Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100**	3
88-216	150**	3
216-960	200**	3
Above 960	500	3

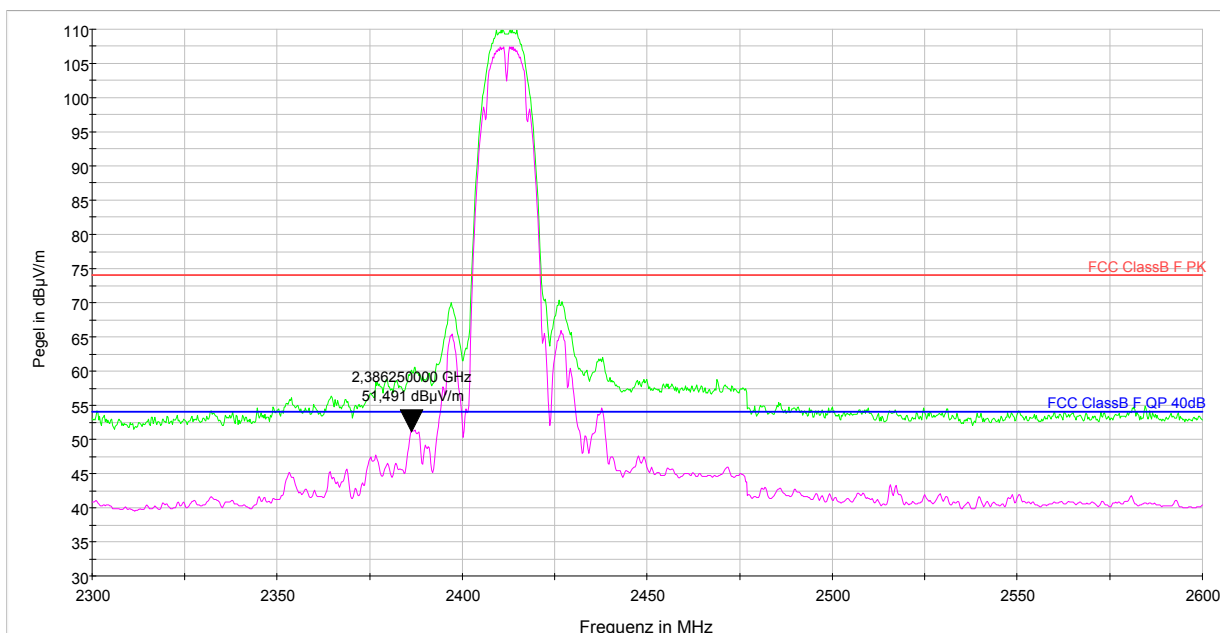
Test Equipment used: EMV-100; EMV-101; EMV-102; EMV-103; EMV-105; EMV-110; EMV-111; EMV-112; EMV-114; EMV-200; EMV-205; NT-122; NT-126; NT-416

Emissions in restricted bands
Emissions falling within restricted frequency bands

§ 15.209(a)
RSS-Gen

Measurement with Peak-Detector (green line) and Average detector (magenta line): Band Edge requirement

Setup: CH 1: 2412 MHz – DSSS – Antenna 1



- PK+_MAXH(1):Stream1832_CH1_DSSS_Ant1 [Stream1832_CH1_DSSS_Ant1.Result:2]
- AVG_MAXH(1):Stream1832_CH1_DSSS_Ant1 [Stream1832_CH1_DSSS_Ant1.Result:4]
- FCC ClassB F PK [..\EMI radiated]
- FCC ClassB F QP 40dB [..\EMI radiated]
- PK+_CLRWR [Ergebnistabelle.Result:1]
- PK+_MAXH [Ergebnistabelle.Result:2]
- AVG_CLRWR [Ergebnistabelle.Result:3]
- AVG_MAXH [Ergebnistabelle.Result:4]

LIMIT SUBCLAUSE 15.209(a) – RSS-Gen

Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100**	3
88-216	150**	3
216-960	200**	3
Above 960	500	3

Band edges of the nearest restricted bands: 2390 MHz and 2483,5 MHz.

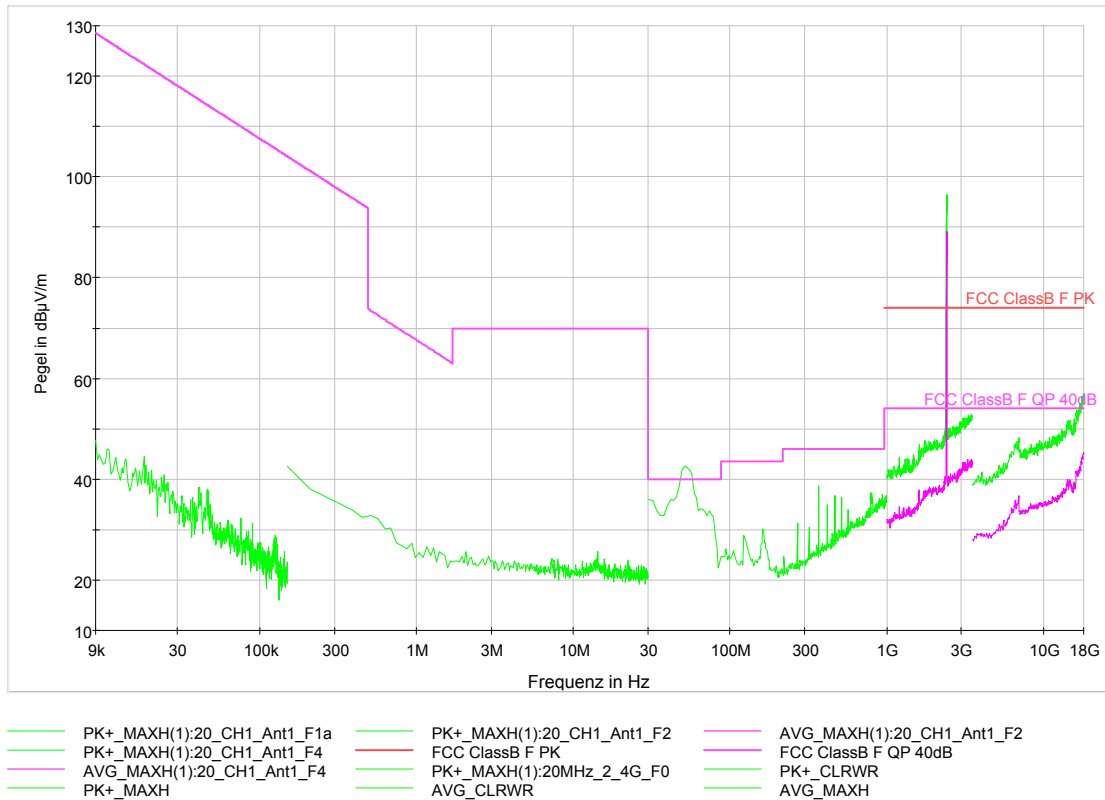
Test Equipment used: EMV-100; EMV-101; EMV-102; EMV-103; EMV-105; EMV-110; EMV-200

Emissions in restricted bands
Emissions falling within restricted frequency bands

§ 15.209(a)
RSS-Gen

Measurement with Peak-Detector (green line) and Average detector (magenta line):

Setup: CH 1: 2412 MHz – OFDM – Antenna 1



Worst case emission: Quasipeak @ 54,0 MHz 38,5 dBµV/m

Remark: Although the measurement above ends at 18 GHz, all measurements were performed up to the tenth harmonics of the transmitter frequency.

LIMIT SUBCLAUSE 15.209(a) – RSS-Gen

Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100**	3
88-216	150**	3
216-960	200**	3
Above 960	500	3

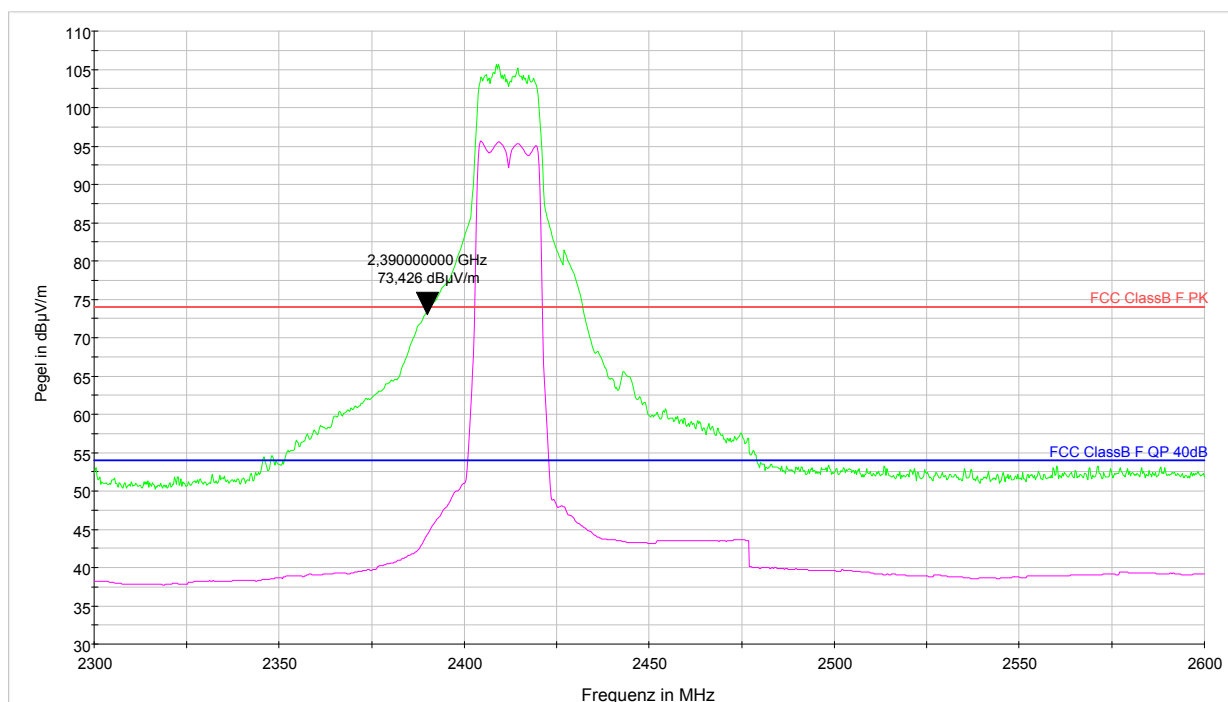
Test Equipment used: EMV-100; EMV-101; EMV-102; EMV-103; EMV-105; EMV-110; EMV-111; EMV-112; EMV-114; EMV-200; EMV-205; NT-122; NT-126; NT-416

Emissions in restricted bands
Emissions falling within restricted frequency bands

§ 15.209(a)
RSS-Gen

Measurement with Peak-Detector (green line) and Average detector (magenta line): Band Edge requirement

Setup: CH 1: 2412 MHz – OFDM – Antenna 1



— PK+ _MAXH(1):Stream1832_CH1_20_Ant1 [Stream1832_CH1_20_Ant1.Result:2]
 — AVG_MAXH(1):Stream1832_CH1_20_Ant1 [Stream1832_CH1_20_Ant1.Resu
— FCC ClassB F PK [.\EMI radiated]
 — FCC ClassB F QP 40dB [.\EMI radiated]
— PK+ _CLRWR [Ergebnistabelle.Result:1]
 — PK+ _MAXH [Ergebnistabelle.Result:2]
— AVG_CLRWR [Ergebnistabelle.Result:3]
 — AVG_MAXH [Ergebnistabelle.Result:4]

LIMIT SUBCLAUSE 15.209(a) – RSS-Gen

Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100**	3
88-216	150**	3
216-960	200**	3
Above 960	500	3

Band edges of the nearest restricted bands: 2390 MHz and 2483,5 MHz.

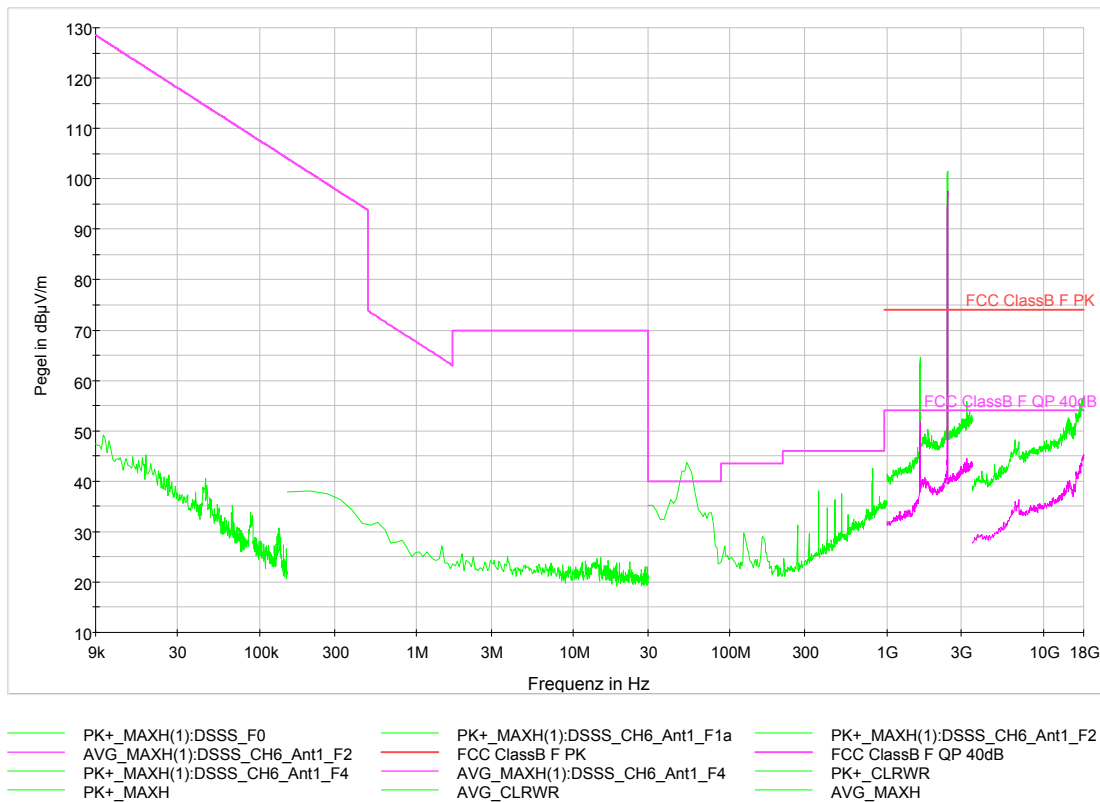
Test Equipment used: EMV-100; EMV-101; EMV-102; EMV-103; EMV-105; EMV-110; EMV-200

Emissions in restricted bands
Emissions falling within restricted frequency bands

§ 15.209(a)
RSS-Gen

Measurement with Peak-Detector (green line) and Average detector (magenta line):

Setup: CH 6: 2437 MHz – DSSS – Antenna 1



Worst case emission: Quasipeak @ 54,0 MHz 38,5 dBµV/m; 52,1 dBµV/m @ 1624,7 MHz

Remark: Although the measurement above ends at 18 GHz, all measurements were performed up to the tenth harmonics of the transmitter frequency.

LIMIT SUBCLAUSE 15.209(a) – RSS-Gen

Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100**	3
88-216	150**	3
216-960	200**	3
Above 960	500	3

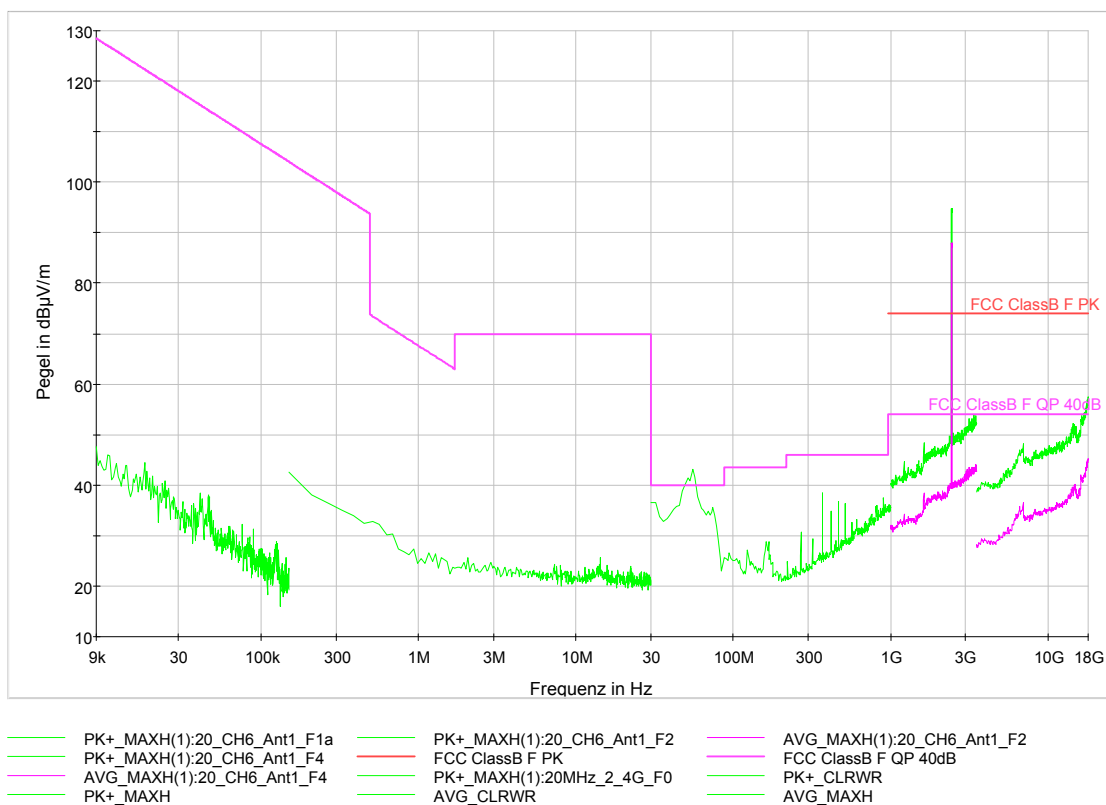
Test Equipment used: EMV-100; EMV-101; EMV-102; EMV-103; EMV-105; EMV-110; EMV-111; EMV-112; EMV-114; EMV-200; EMV-205; NT-122; NT-126; NT-416

Emissions in restricted bands
Emissions falling within restricted frequency bands

§ 15.209(a)
RSS-Gen

Measurement with Peak-Detector (green line) and Average detector (magenta line):

Setup: CH 6: 2437 MHz – OFDM – Antenna 1



Worst case emission: Quasipeak @ 54,0 MHz 38,5 dBµV/m

Remark: Although the measurement above ends at 18 GHz, all measurements were performed up to the tenth harmonics of the transmitter frequency.

LIMIT SUBCLAUSE 15.209(a) – RSS-Gen

Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100**	3
88-216	150**	3
216-960	200**	3
Above 960	500	3

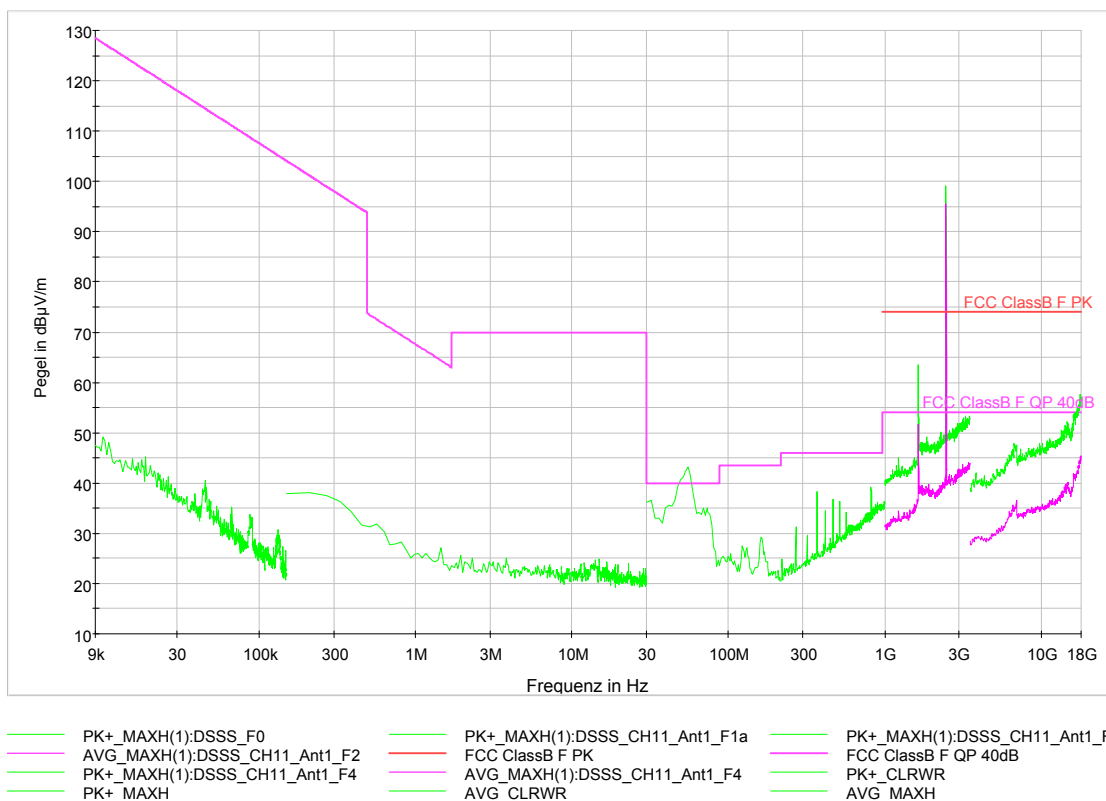
Test Equipment used: EMV-100; EMV-101; EMV-102; EMV-103; EMV-105; EMV-110; EMV-111; EMV-112; EMV-114; EMV-200; EMV-205; NT-122; NT-126; NT-416

Emissions in restricted bands
Emissions falling within restricted frequency bands

§ 15.209(a)
RSS-Gen

Measurement with Peak-Detector (green line) and Average detector (magenta line):

Setup: CH 11: 2462 MHz – DSSS – Antenna 1



Worst case emission: Quasipeak @ 54,0 MHz 38,5 dBµV/m; 51,9 dBµV/m @ 1641,3 MHz

Remark: Although the measurement above ends at 18 GHz, all measurements were performed up to the tenth harmonics of the transmitter frequency.

LIMIT SUBCLAUSE 15.209(a) – RSS-Gen

Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100**	3
88-216	150**	3
216-960	200**	3
Above 960	500	3

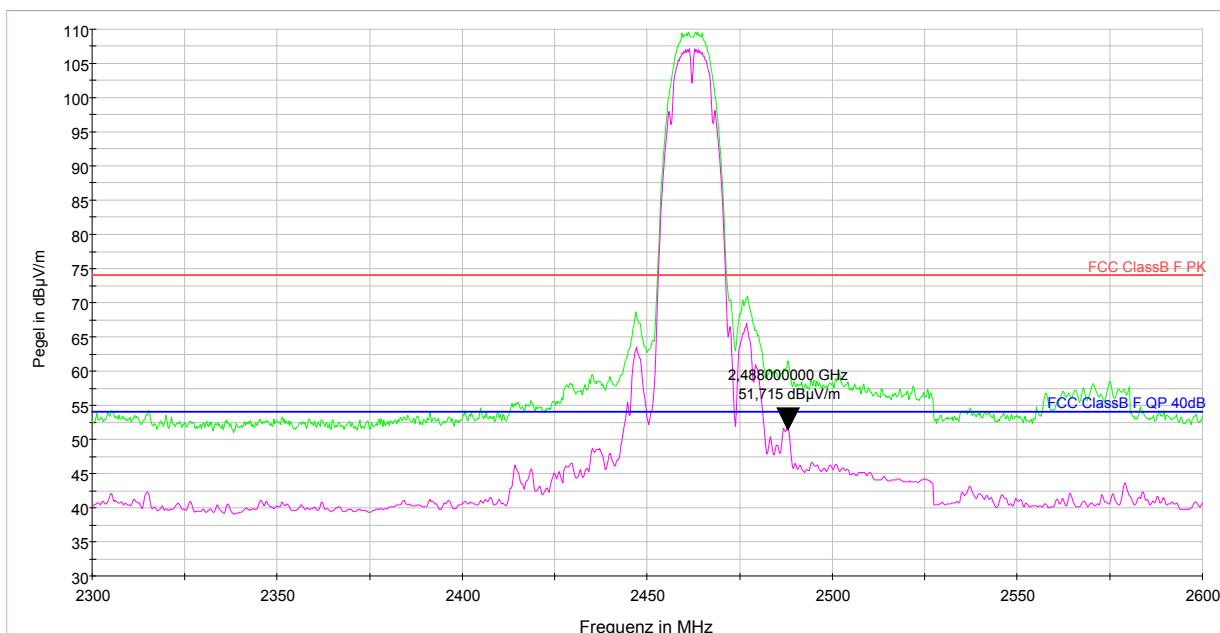
Test Equipment used: EMV-100; EMV-101; EMV-102; EMV-103; EMV-105; EMV-110; EMV-111; EMV-112;
EMV-114; EMV-200; EMV-205; NT-122; NT-126; NT-416

Emissions in restricted bands
Emissions falling within restricted frequency bands

§ 15.209(a)
RSS-Gen

Measurement with Peak-Detector (green line) and Average detector (magenta line): Band Edge requirement

Setup: CH 11: 2462 MHz – DSSS – Antenna 1



- PK+ _MAXH(1):Stream1832_CH11_DSSS_Ant1 [Stream1832_CH11_DSSS_Ant1.Result:2]
- AVG _MAXH(1):Stream1832_CH11_DSSS_Ant1 [Stream1832_CH11_DSSS_Ant1.Result:4]
- FCC ClassB F PK [..\EMI radiated]
- FCC ClassB F QP 40dB [..\EMI radiated]
- PK+ _CLRWR [Ergebnistabelle.Result:1]
- PK+ _MAXH [Ergebnistabelle.Result:2]
- AVG _CLRWR [Ergebnistabelle.Result:3]
- AVG _MAXH [Ergebnistabelle.Result:4]

LIMIT SUBCLAUSE 15.209(a) – RSS-Gen

Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100**	3
88-216	150**	3
216-960	200**	3
Above 960	500	3

Band edges of the nearest restricted bands: 2390 MHz and 2483,5 MHz.

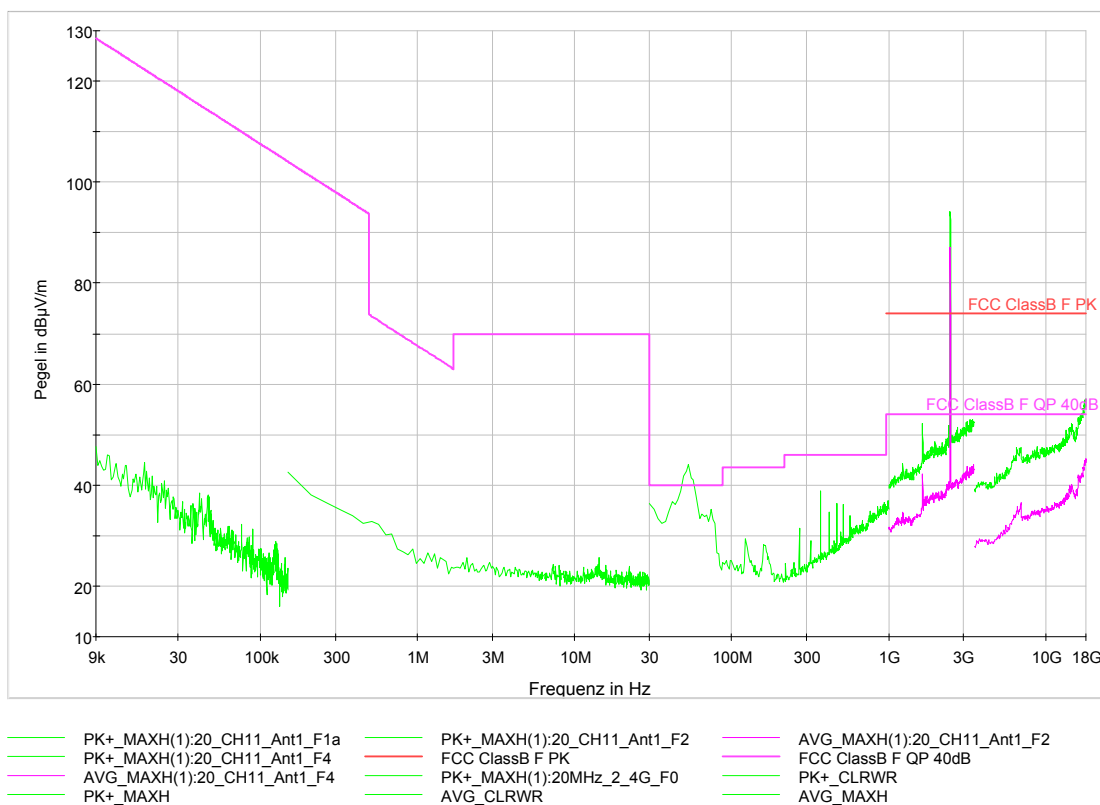
Test Equipment used: EMV-100; EMV-101; EMV-102; EMV-103; EMV-105; EMV-110; EMV-200

Emissions in restricted bands
Emissions falling within restricted frequency bands

§ 15.209(a)
RSS-Gen

Measurement with Peak-Detector (green line) and Average detector (magenta line):

Setup: CH 11: 2462 MHz – OFDM – Antenna 1



Worst case emission: Quasipeak @ 54,0 MHz 38,5 dBµV/m; 43,0 dBµV/m @ 1641,3 MHz

Remark: Although the measurement above ends at 18 GHz, all measurements were performed up to the tenth harmonics of the transmitter frequency.

LIMIT SUBCLAUSE 15.209(a) – RSS-Gen

Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100**	3
88-216	150**	3
216-960	200**	3
Above 960	500	3

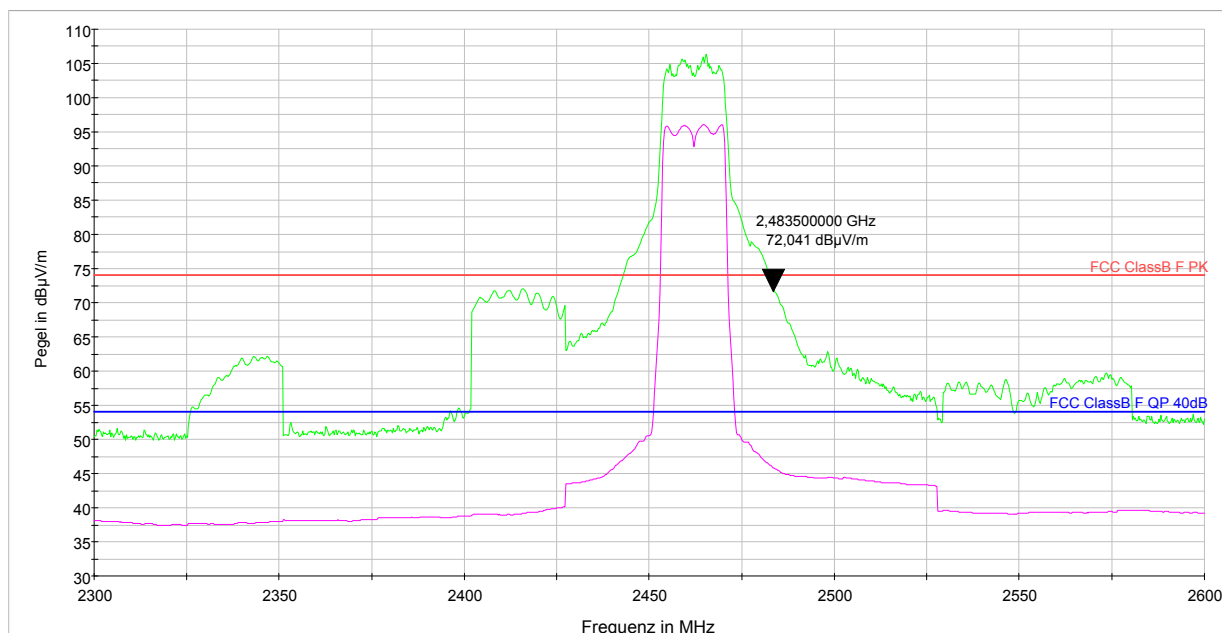
Test Equipment used: EMV-100; EMV-101; EMV-102; EMV-103; EMV-105; EMV-110; EMV-111; EMV-112; EMV-114; EMV-200; EMV-205; NT-122; NT-126; NT-416

Emissions in restricted bands
Emissions falling within restricted frequency bands

§ 15.209(a)
RSS-Gen

Measurement with Peak-Detector (green line) and Average detector (magenta line): Band Edge requirement

Setup: CH 11: 2462 MHz – OFDM – Antenna 1



- PK+ _MAXH(1):Stream1832_CH11_20_Ant1 [Stream1832_CH11_20_Ant1.Result:2]
- AVG _MAXH(1):Stream1832_CH11_20_Ant1 [Stream1832_CH11_20_Ant1.Result:4]
- FCC ClassB F PK [..\EMI radiated]
- FCC ClassB F QP 40dB [..\EMI radiated]
- PK+ _CLRWR [Ergebnistabelle.Result:1]
- PK+ _MAXH [Ergebnistabelle.Result:2]
- AVG _CLRWR [Ergebnistabelle.Result:3]
- AVG _MAXH [Ergebnistabelle.Result:4]

LIMIT SUBCLAUSE 15.209(a) – RSS-Gen

Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100**	3
88-216	150**	3
216-960	200**	3
Above 960	500	3

Band edges of the nearest restricted bands: 2390 MHz and 2483,5 MHz.

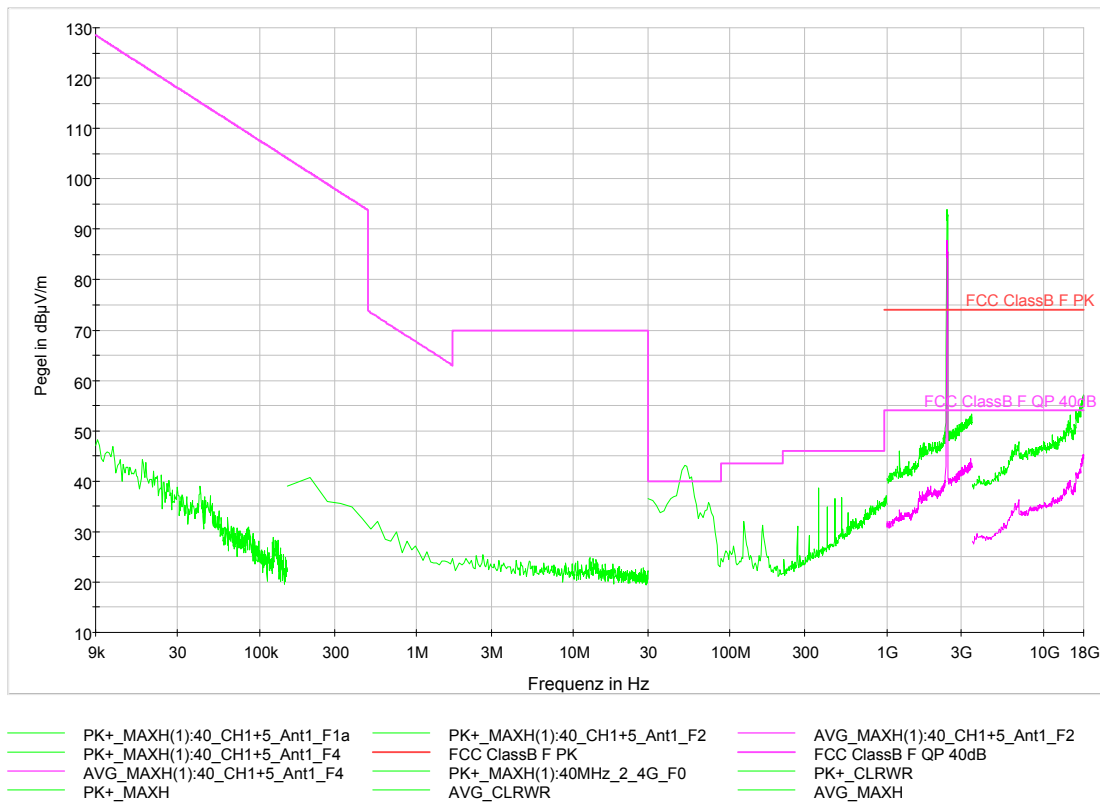
Test Equipment used: EMV-100; EMV-101; EMV-102; EMV-103; EMV-105; EMV-110; EMV-200

Emissions in restricted bands
Emissions falling within restricted frequency bands

§ 15.209(a)
RSS-Gen

Measurement with Peak-Detector (green line) and Average detector (magenta line):

Setup: CH 1 + 5: 2422 MHz – Antenna 1



Worst case emission: Quasipeak @ 54,0 MHz 38,5 dBµV/m

Remark: Although the measurement above ends at 18 GHz, all measurements were performed up to the tenth harmonics of the transmitter frequency.

LIMIT SUBCLAUSE 15.209(a) – RSS-Gen

Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100**	3
88-216	150**	3
216-960	200**	3
Above 960	500	3

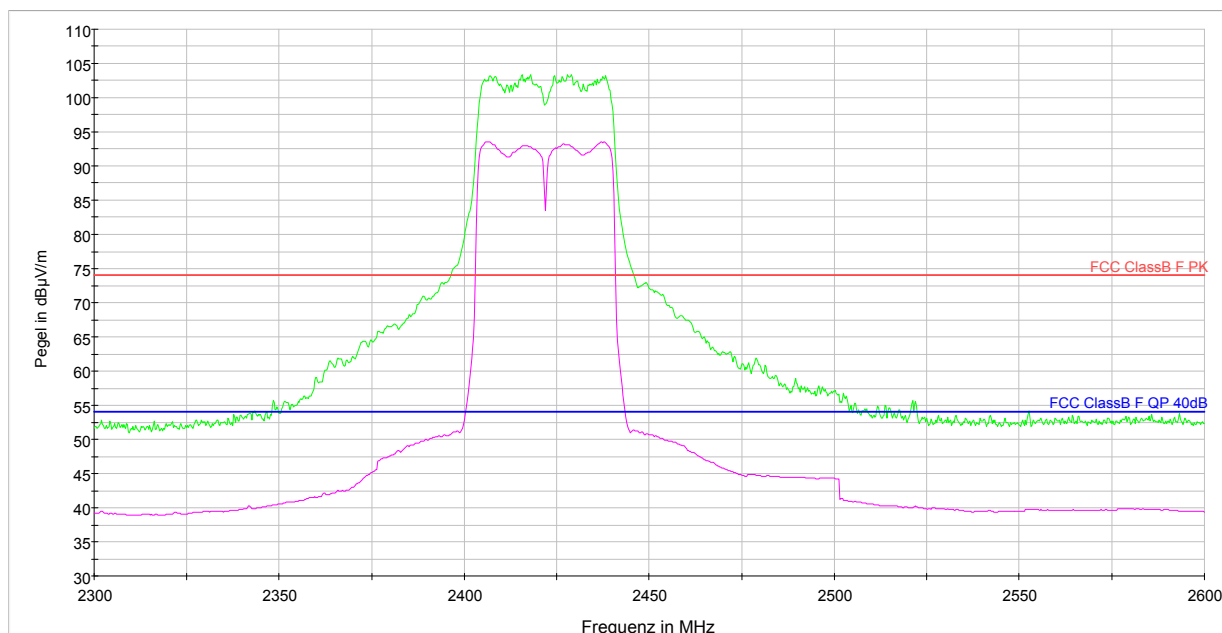
Test Equipment used: EMV-100; EMV-101; EMV-102; EMV-103; EMV-105; EMV-110; EMV-111; EMV-112; EMV-114; EMV-200; EMV-205; NT-122; NT-126; NT-416

Emissions in restricted bands
Emissions falling within restricted frequency bands

§ 15.209(a)
RSS-Gen

Measurement with Peak-Detector (green line) and Average detector (magenta line): Band Edge requirement

Setup: CH 1 + 5: 2422 MHz – Antenna 1



- PK+_MAXH(1):Stream1832_CH1+5_40_Ant1 [Stream1832_CH1+5_40_Ant1.Result:2]
- AVG_MAXH(1):Stream1832_CH1+5_40_Ant1 [Stream1832_CH1+5_40_Ant1.Result:4]
- FCC ClassB F PK [..\EMI radiated\]
- FCC ClassB F QP 40dB [..\EMI radiated\]
- PK+_CLRWR [Ergebnistabelle.Result:1]
- PK+_MAXH [Ergebnistabelle.Result:2]
- AVG_CLRWR [Ergebnistabelle.Result:3]
- AVG_MAXH [Ergebnistabelle.Result:4]

LIMIT SUBCLAUSE 15.209(a) – RSS-Gen

Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100**	3
88-216	150**	3
216-960	200**	3
Above 960	500	3

Band edges of the nearest restricted bands: 2390 MHz and 2483,5 MHz.

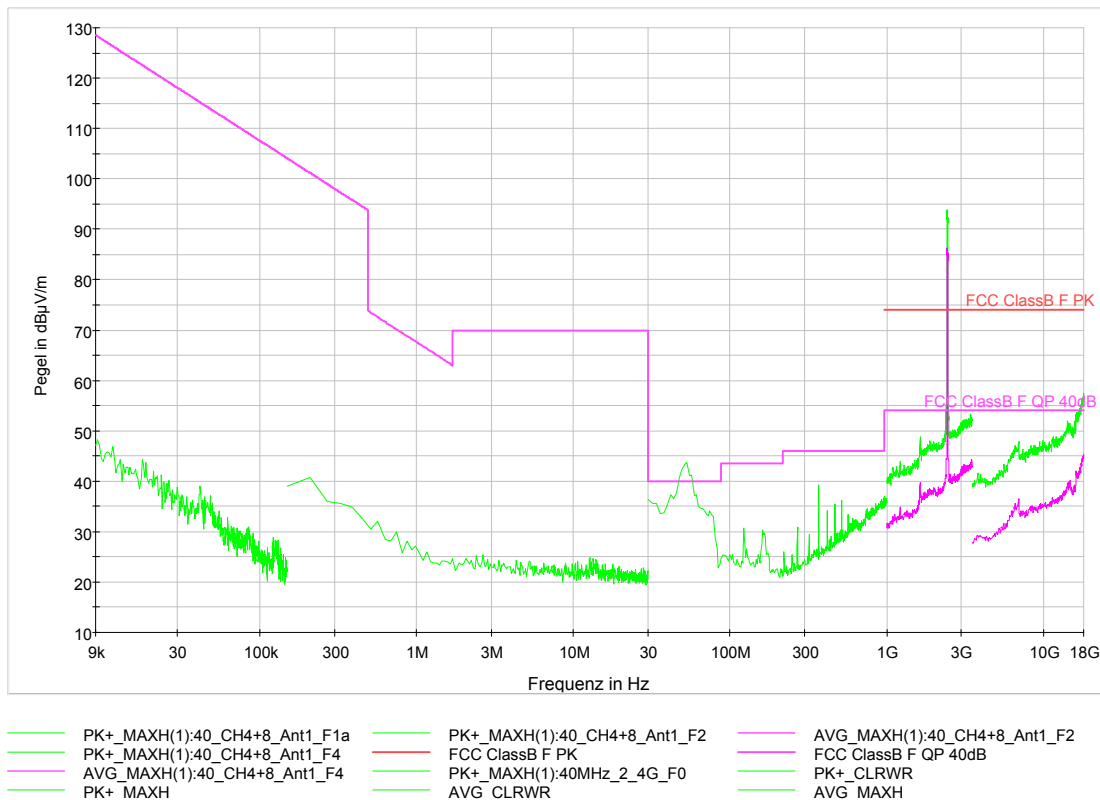
Test Equipment used: EMV-100; EMV-101; EMV-102; EMV-103; EMV-105; EMV-110; EMV-200

Emissions in restricted bands
Emissions falling within restricted frequency bands

§ 15.209(a)
RSS-Gen

Measurement with Peak-Detector (green line) and Average detector (magenta line):

Setup: CH 4 + 8: 2437 MHz – Antenna 1



Worst case emission: Quasipeak @ 54,0 MHz 38,5 dBµV/m

Remark: Although the measurement above ends at 18 GHz, all measurements were performed up to the tenth harmonics of the transmitter frequency.

LIMIT SUBCLAUSE 15.209(a) – RSS-Gen

Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100**	3
88-216	150**	3
216-960	200**	3
Above 960	500	3

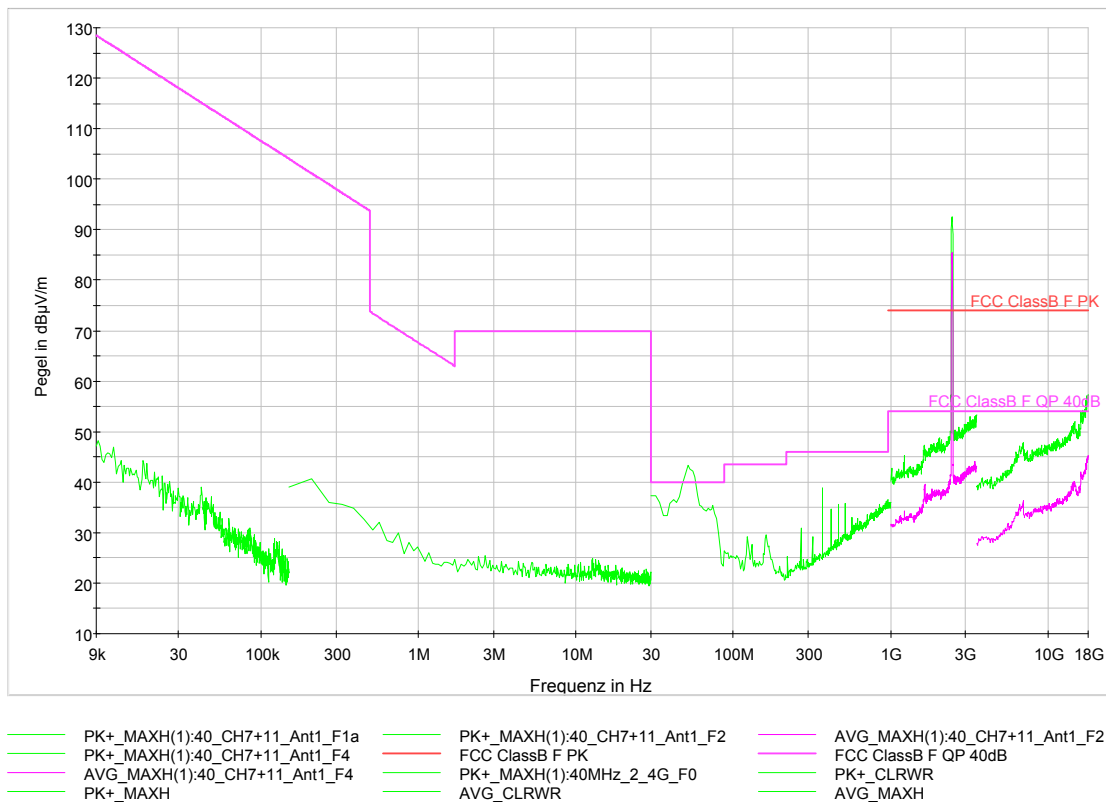
Test Equipment used: EMV-100; EMV-101; EMV-102; EMV-103; EMV-105; EMV-110; EMV-111; EMV-112; EMV-114; EMV-200; EMV-205; NT-122; NT-126; NT-416

Emissions in restricted bands
Emissions falling within restricted frequency bands

§ 15.209(a)
RSS-Gen

Measurement with Peak-Detector (green line) and Average detector (magenta line):

Setup: CH 7 + 11: 2452 MHz – Antenna 1



Worst case emission: Quasipeak @ 54,0 MHz 38,5 dBµV/m

Remark: Although the measurement above ends at 18 GHz, all measurements were performed up to the tenth harmonics of the transmitter frequency.

LIMIT SUBCLAUSE 15.209(a) – RSS-Gen

Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100**	3
88-216	150**	3
216-960	200**	3
Above 960	500	3

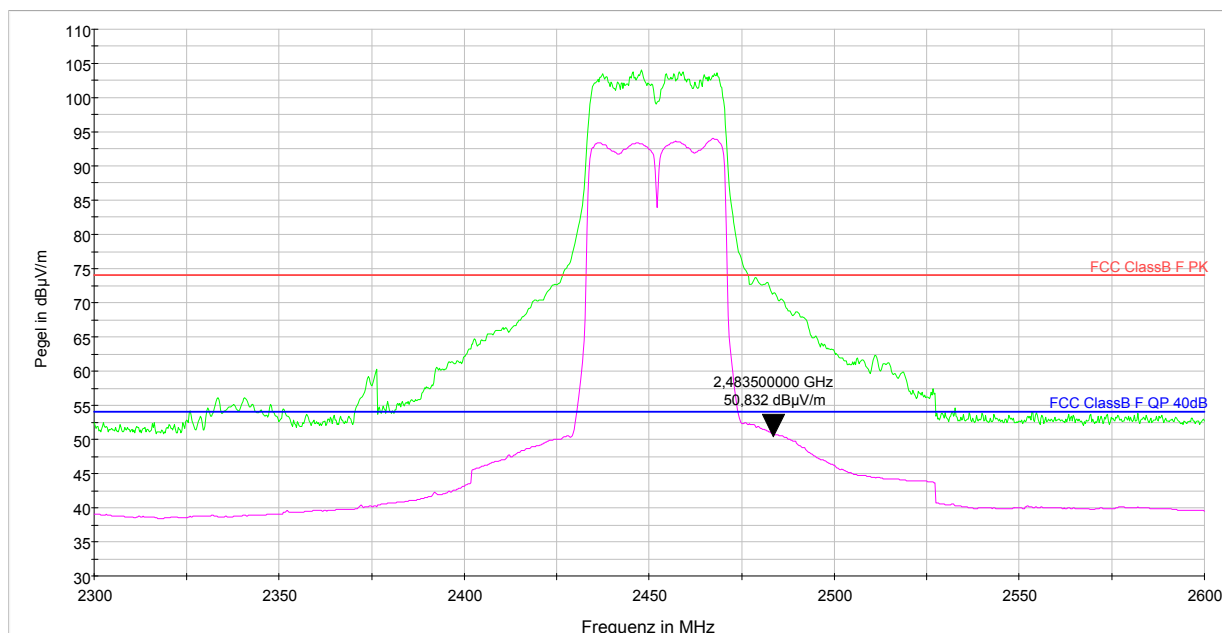
Test Equipment used: EMV-100; EMV-101; EMV-102; EMV-103; EMV-105; EMV-110; EMV-111; EMV-112; EMV-114; EMV-200; EMV-205; NT-122; NT-126; NT-416

Emissions in restricted bands
Emissions falling within restricted frequency bands

§ 15.209(a)
RSS-Gen

Measurement with Peak-Detector (green line) and Average detector (magenta line): Band Edge requirement

Setup: CH 7 + 11: 2452 MHz – Antenna 1



- PK+ _MAXH(1):Stream1832_CH7+11_40_Ant1 [Stream1832_CH7+11_40_Ant1.Result:2]
- AVG _MAXH(1):Stream1832_CH7+11_40_Ant1 [Stream1832_CH7+11_40_Ant1.Result:4]
- FCC ClassB F PK [..\EMI radiated]
- FCC ClassB F QP 40dB [..\EMI radiated]
- PK+ _CLRWR [Ergebnistabelle.Result:1]
- PK+ _MAXH [Ergebnistabelle.Result:2]
- AVG _CLRWR [Ergebnistabelle.Result:3]
- AVG _MAXH [Ergebnistabelle.Result:4]

LIMIT SUBCLAUSE 15.209(a) – RSS-Gen

Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100**	3
88-216	150**	3
216-960	200**	3
Above 960	500	3

Band edges of the nearest restricted bands: 2390 MHz and 2483,5 MHz.

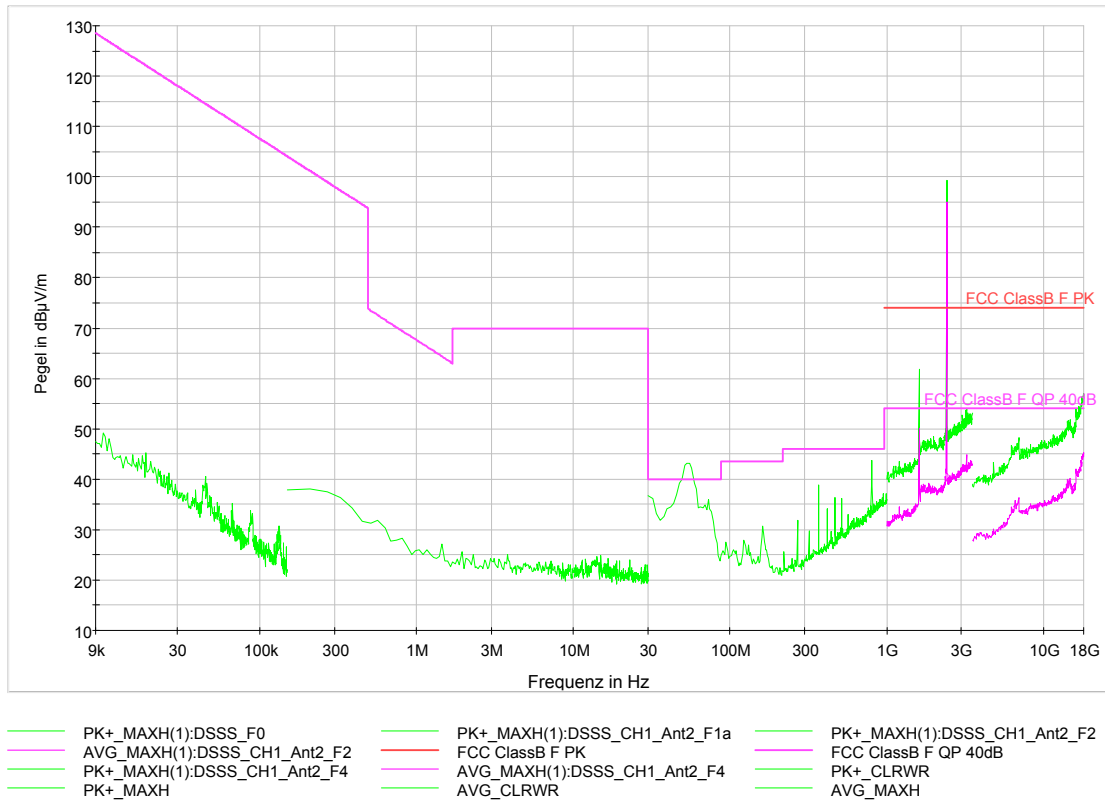
Test Equipment used: EMV-100; EMV-101; EMV-102; EMV-103; EMV-105; EMV-110; EMV-200

Emissions in restricted bands
Emissions falling within restricted frequency bands

§ 15.209(a)
RSS-Gen

Measurement with Peak-Detector (green line) and Average detector (magenta line):

Setup: CH 1: 2412 MHz – DSSS – Antenna 2



Worst case emission: Quasipeak @ 54,0 MHz 38,5 dBµV/m; 50,2 dBµV/m @ 4824 MHz

Remark: Although the measurement above ends at 18 GHz, all measurements were performed up to the tenth harmonics of the transmitter frequency.

LIMIT SUBCLAUSE 15.209(a) – RSS-Gen

Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100**	3
88-216	150**	3
216-960	200**	3
Above 960	500	3

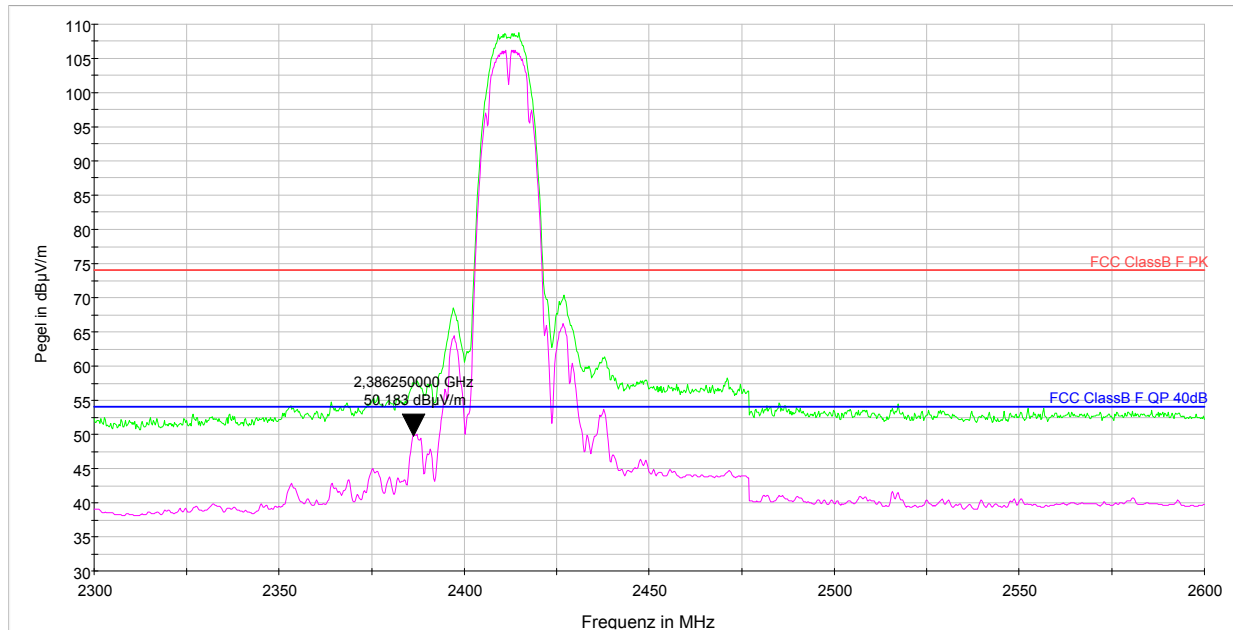
Test Equipment used: EMV-100; EMV-101; EMV-102; EMV-103; EMV-105; EMV-110; EMV-111; EMV-112; EMV-114; EMV-200; EMV-205; NT-122; NT-126; NT-416

Emissions in restricted bands
Emissions falling within restricted frequency bands

§ 15.209(a)
RSS-Gen

Measurement with Peak-Detector (green line) and Average detector (magenta line): Band Edge requirement

Setup: CH 1: 2412 MHz – DSSS – Antenna 2



- PK+ _MAXH(1):Stream1832_CH1_DSSS_Ant2 [Stream1832_CH1_DSSS_Ant2.Result:2]
- AVG _MAXH(1):Stream1832_CH1_DSSS_Ant2 [Stream1832_CH1_DSSS_Ant2.Result:4]
- FCC ClassB F PK [..\EMI radiated]
- FCC ClassB F QP 40dB [..\EMI radiated]
- PK+ _CLRWR [Ergebnistabelle.Result:1]
- PK+ _MAXH [Ergebnistabelle.Result:2]
- AVG _CLRWR [Ergebnistabelle.Result:3]
- AVG _MAXH [Ergebnistabelle.Result:4]

LIMIT SUBCLAUSE 15.209(a) – RSS-Gen

Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100**	3
88-216	150**	3
216-960	200**	3
Above 960	500	3

Band edges of the nearest restricted bands: 2390 MHz and 2483,5 MHz.

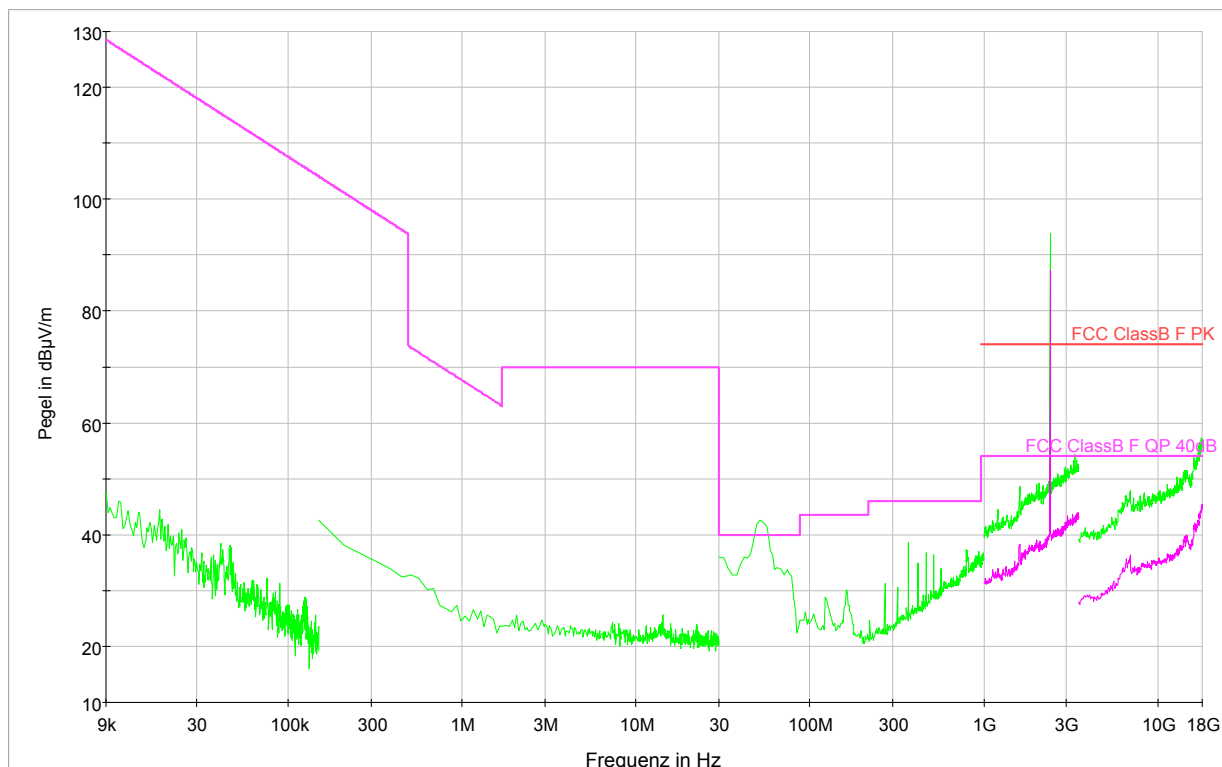
Test Equipment used: EMV-100; EMV-101; EMV-102; EMV-103; EMV-105; EMV-110; EMV-200

Emissions in restricted bands
Emissions falling within restricted frequency bands

§ 15.209(a)
RSS-Gen

Measurement with Peak-Detector (green line) and Average detector (magenta line):

Setup: CH 1: 2412 MHz – OFDM – Antenna 2



- PK+_MAXH(1):20_CH1_Ant2_F1a
- PK+_MAXH(1):20_CH1_Ant2_F2
- PK+_MAXH(1):20_CH1_Ant2_F4
- FCC ClassB F PK
- AVG_MAXH(1):20_CH1_Ant2_F4
- PK+_MAXH(1):20MHz_2_4G_F0
- PK+_CLRWR
- PK+_MAXH
- AVG_CLRWR
- AVG_MAXH(1):20_CH1_Ant2_F2
- FCC ClassB F QP 40dB
- AVG_MAXH

Worst case emission: Quasipeak @ 54,0 MHz 38,5 dBµV/m

Remark: Although the measurement above ends at 18 GHz, all measurements were performed up to the tenth harmonics of the transmitter frequency.

LIMIT SUBCLAUSE 15.209(a) – RSS-Gen

Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100**	3
88-216	150**	3
216-960	200**	3
Above 960	500	3

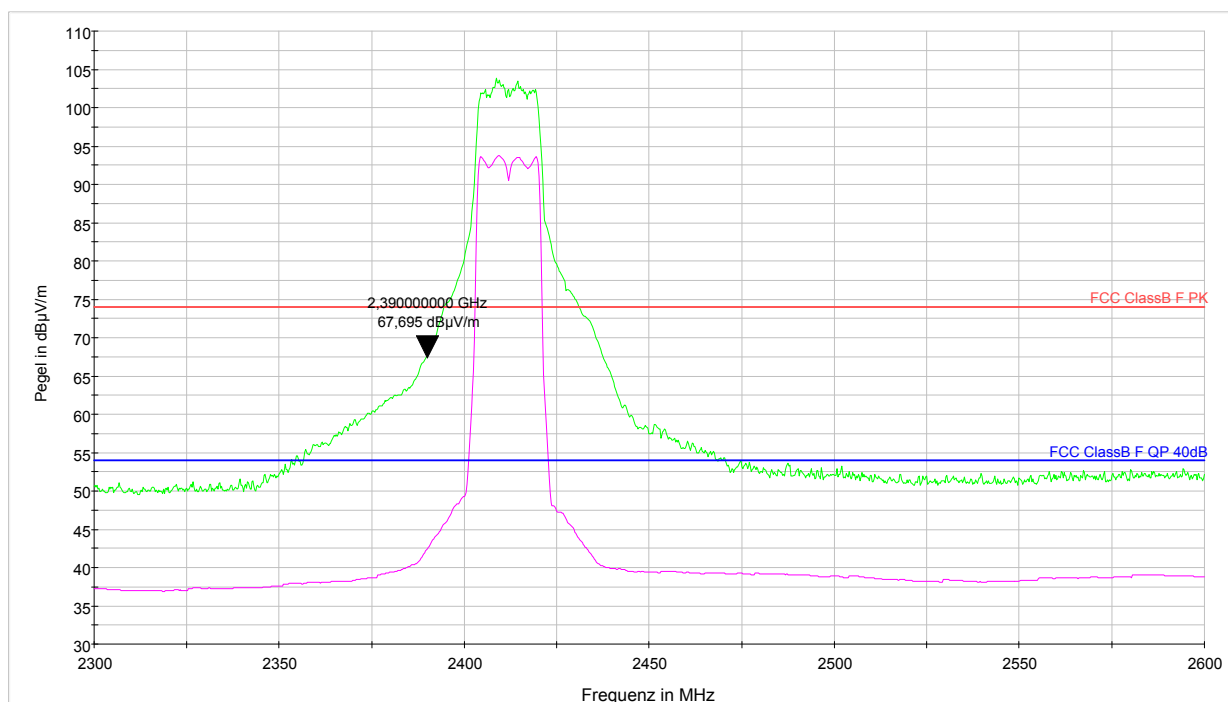
Test Equipment used: EMV-100; EMV-101; EMV-102; EMV-103; EMV-105; EMV-110; EMV-111; EMV-112;
EMV-114; EMV-200; EMV-205; NT-122; NT-126; NT-416

Emissions in restricted bands
Emissions falling within restricted frequency bands

§ 15.209(a)
RSS-Gen

Measurement with Peak-Detector (green line) and Average detector (magenta line): Band Edge requirement

Setup: CH 1: 2412 MHz – OFDM – Antenna 2



— PK+ _MAXH(1):Stream1832_CH1_20_Ant2 [Stream1832_CH1_20_Ant2.Result:2] — AVG _MAXH(1):Stream1832_CH1_20_Ant2 [Stream1832_CH1_20_Ant2.Resu
— FCC ClassB F PK [.\EMI radiated] — FCC ClassB F QP 40dB [.\EMI radiated]
— PK+ _CLRWR [Ergebnistabelle.Result:1] — PK+ _MAXH [Ergebnistabelle.Result:2]
— AVG _CLRWR [Ergebnistabelle.Result:3] — AVG _MAXH [Ergebnistabelle.Result:4]

LIMIT SUBCLAUSE 15.209(a) – RSS-Gen

Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100**	3
88-216	150**	3
216-960	200**	3
Above 960	500	3

Band edges of the nearest restricted bands: 2390 MHz and 2483,5 MHz.

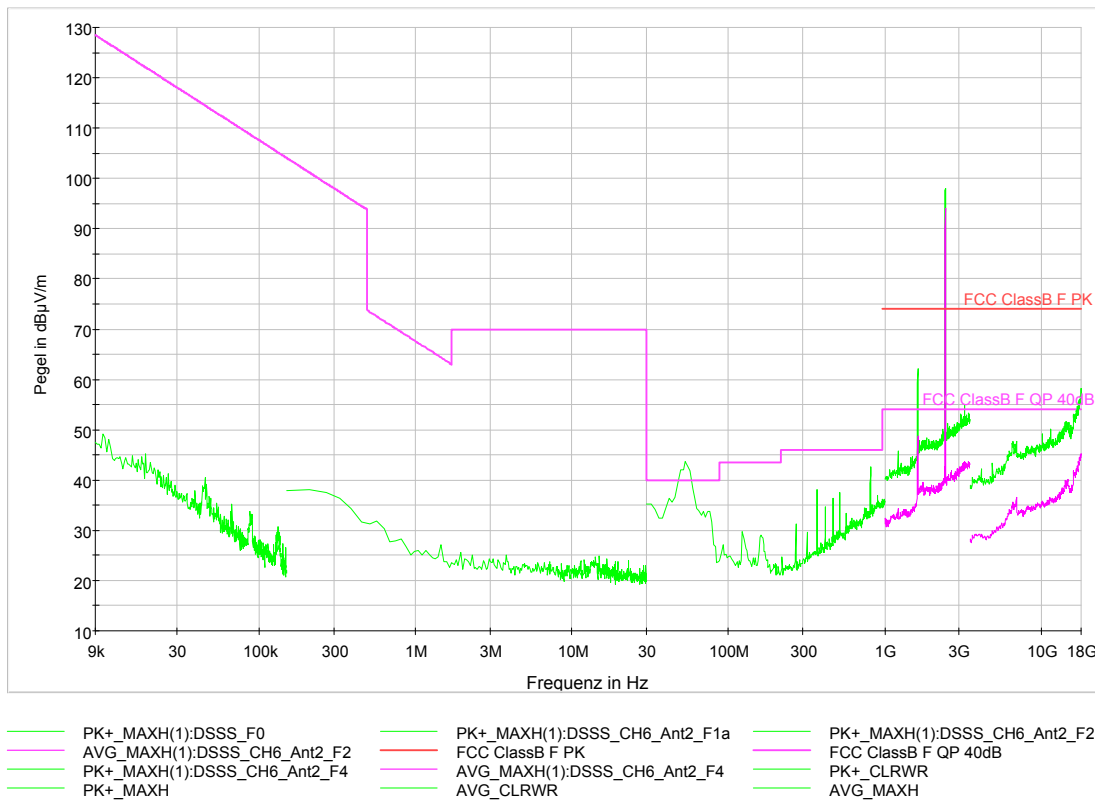
Test Equipment used: EMV-100; EMV-101; EMV-102; EMV-103; EMV-105; EMV-110; EMV-200

Emissions in restricted bands
Emissions falling within restricted frequency bands

§ 15.209(a)
RSS-Gen

Measurement with Peak-Detector (green line) and Average detector (magenta line):

Setup: CH 6: 2437 MHz – DSSS – Antenna 2



Worst case emission: Quasipeak @ 54,0 MHz 38,5 dBµV/m; 49,1 dBµV/m @ 1624,7 MHz

Remark: Although the measurement above ends at 18 GHz, all measurements were performed up to the tenth harmonics of the transmitter frequency.

LIMIT SUBCLAUSE 15.209(a) – RSS-Gen

Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100**	3
88-216	150**	3
216-960	200**	3
Above 960	500	3

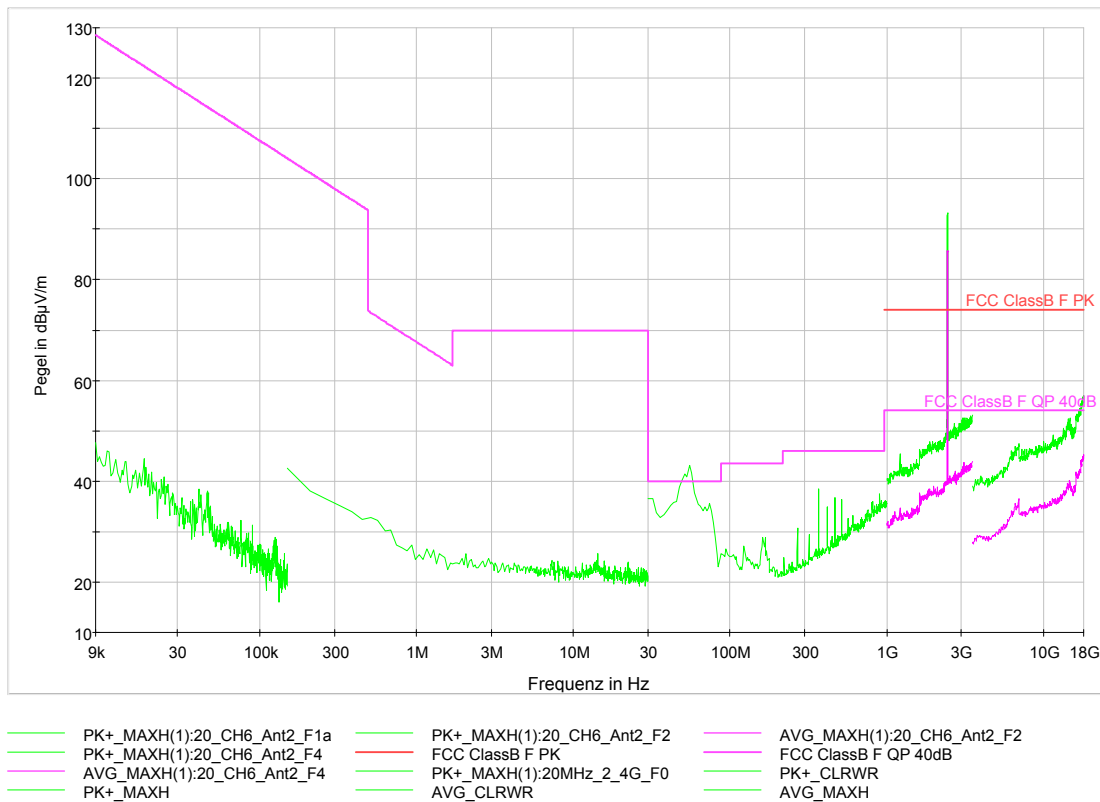
Test Equipment used: EMV-100; EMV-101; EMV-102; EMV-103; EMV-105; EMV-110; EMV-111; EMV-112;
EMV-114; EMV-200; EMV-205; NT-122; NT-126; NT-416

Emissions in restricted bands
Emissions falling within restricted frequency bands

§ 15.209(a)
RSS-Gen

Measurement with Peak-Detector (green line) and Average detector (magenta line):

Setup: CH 6: 2437 MHz – OFDM – Antenna 2



Worst case emission: Quasipeak @ 54,0 MHz 38,5 dBµV/m

Remark: Although the measurement above ends at 18 GHz, all measurements were performed up to the tenth harmonics of the transmitter frequency.

LIMIT SUBCLAUSE 15.209(a) – RSS-Gen

Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100**	3
88-216	150**	3
216-960	200**	3
Above 960	500	3

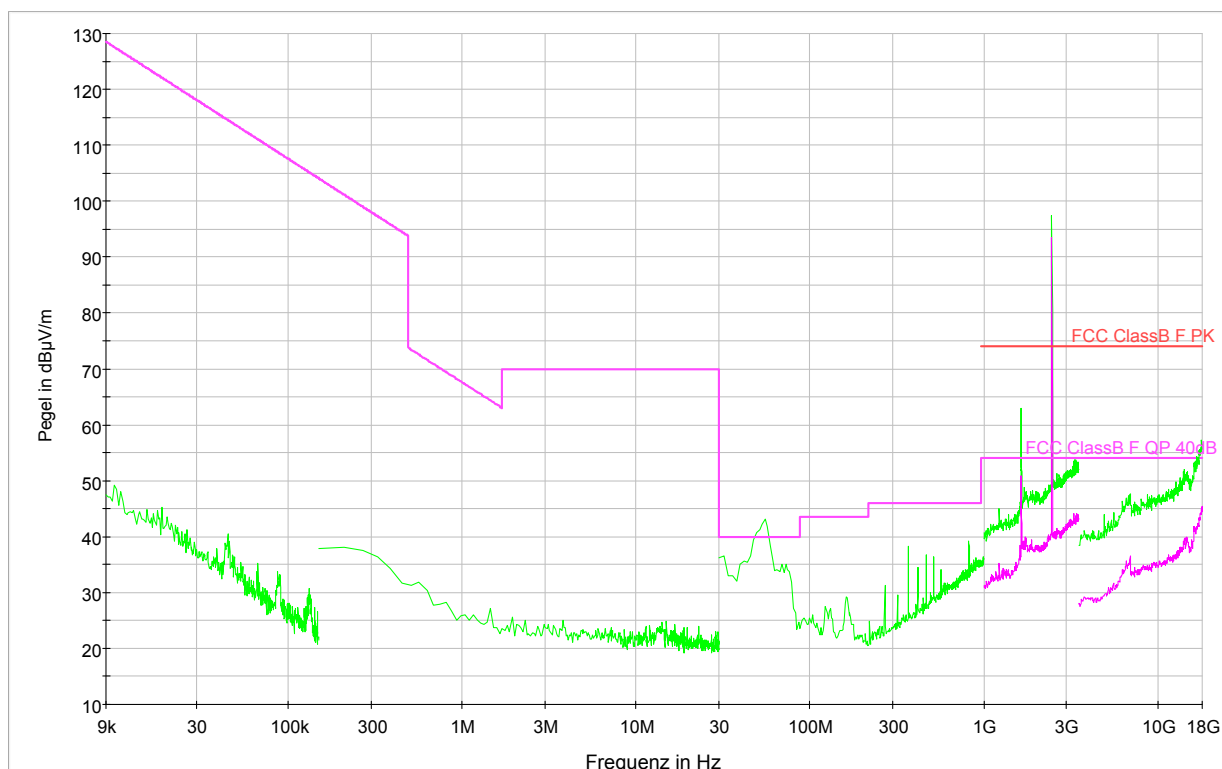
Test Equipment used: EMV-100; EMV-101; EMV-102; EMV-103; EMV-105; EMV-110; EMV-111; EMV-112; EMV-114; EMV-200; EMV-205; NT-122; NT-126; NT-416

Emissions in restricted bands
Emissions falling within restricted frequency bands

§ 15.209(a)
RSS-Gen

Measurement with Peak-Detector (green line) and Average detector (magenta line):

Setup: CH 11: 2462 MHz – DSSS – Antenna 2



- PK+_MAXH(1):DSSS_F0
- AVG_MAXH(1):DSSS_CH11_Ant2_F2
- PK+_MAXH(1):DSSS_CH11_Ant2_F4
- PK+_MAXH
- PK+_MAXH(1):DSSS_CH11_Ant2_F1a
- FCC ClassB F PK
- AVG_MAXH(1):DSSS_CH11_Ant2_F4
- AVG_CLRWR
- PK+_MAXH(1):DSSS_CH11_Ant2_F2
- FCC ClassB F QP 40dB
- PK+_CLRWR
- AVG_MAXH

Worst case emission: Quasipeak @ 54,0 MHz 38,5 dBµV/m; 50,9 dBµV/m @ 1641,3 MHz

Remark: Although the measurement above ends at 18 GHz, all measurements were performed up to the tenth harmonics of the transmitter frequency.

LIMIT SUBCLAUSE 15.209(a) – RSS-Gen

Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100**	3
88-216	150**	3
216-960	200**	3
Above 960	500	3

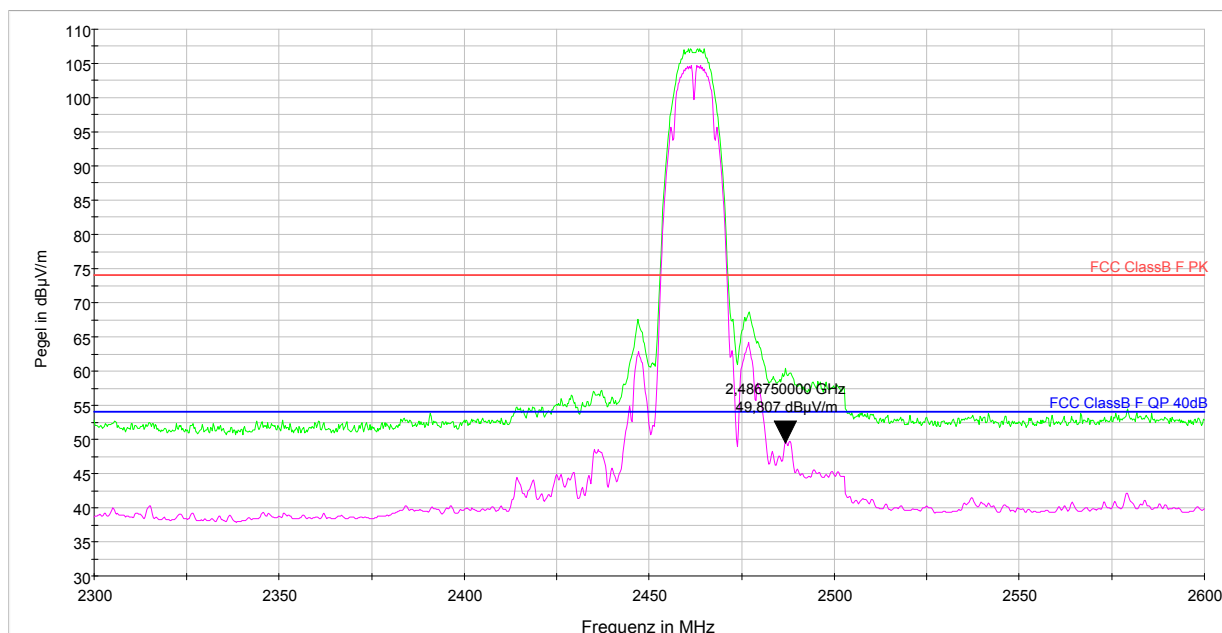
Test Equipment used: EMV-100; EMV-101; EMV-102; EMV-103; EMV-105; EMV-110; EMV-111; EMV-112; EMV-114; EMV-200; EMV-205; NT-122; NT-126; NT-416

Emissions in restricted bands
Emissions falling within restricted frequency bands

§ 15.209(a)
RSS-Gen

Measurement with Peak-Detector (green line) and Average detector (magenta line): Band Edge requirement

Setup: CH 11: 2462 MHz – DSSS – Antenna 2



- PK+ _MAXH(1):Stream1832_CH11_DSSS_Ant2 [Stream1832_CH11_DSSS_Ant2.Result:2]
- AVG _MAXH(1):Stream1832_CH11_DSSS_Ant2 [Stream1832_CH11_DSSS_Ant2.Result:4]
- FCC ClassB F PK [..EMI radiated]
- FCC ClassB F QP 40dB [..EMI radiated]
- PK+ _CLRWR [Ergebnistabelle.Result:1]
- PK+ _MAXH [Ergebnistabelle.Result:2]
- AVG _CLRWR [Ergebnistabelle.Result:3]
- AVG _MAXH [Ergebnistabelle.Result:4]

LIMIT SUBCLAUSE 15.209(a) – RSS-Gen

Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100**	3
88-216	150**	3
216-960	200**	3
Above 960	500	3

Band edges of the nearest restricted bands: 2390 MHz and 2483,5 MHz.

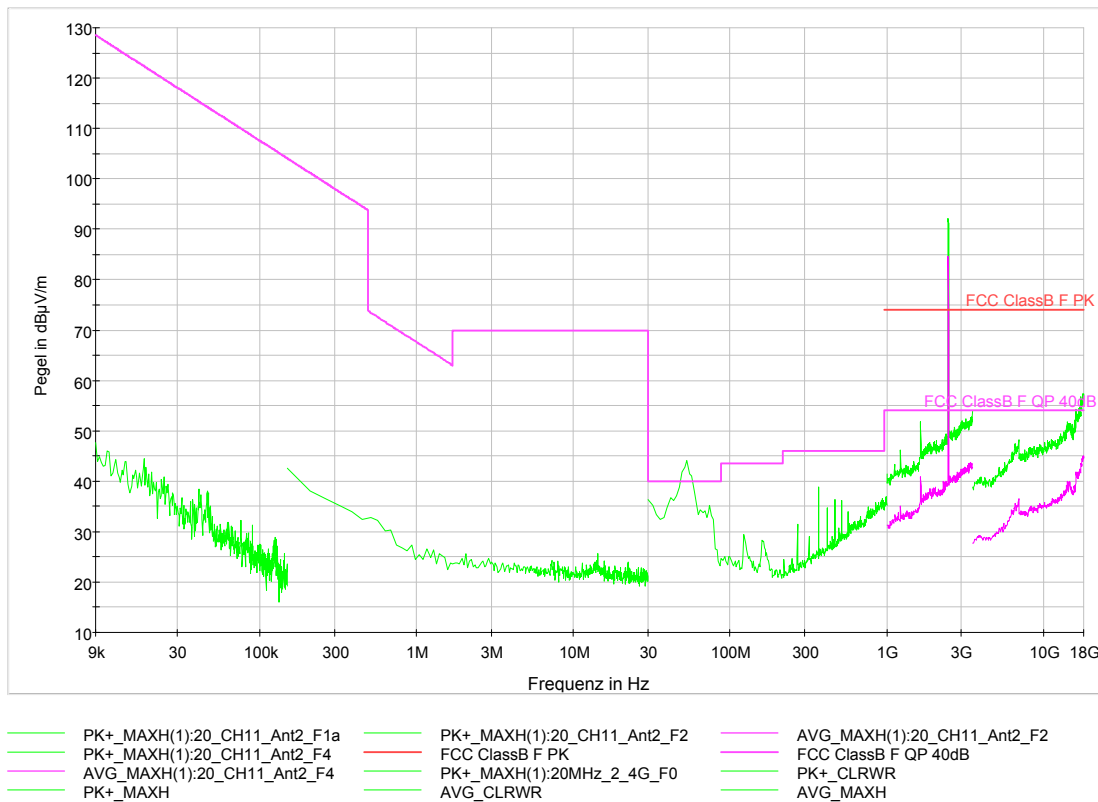
Test Equipment used: EMV-100; EMV-101; EMV-102; EMV-103; EMV-105; EMV-110; EMV-200

Emissions in restricted bands
Emissions falling within restricted frequency bands

§ 15.209(a)
RSS-Gen

Measurement with Peak-Detector (green line) and Average detector (magenta line):

Setup: CH 11: 2462 MHz – OFDM – Antenna 2



Worst case emission: Quasipeak @ 54,0 MHz 38,5 dBµV/m

Remark: Although the measurement above ends at 18 GHz, all measurements were performed up to the tenth harmonics of the transmitter frequency.

LIMIT SUBCLAUSE 15.209(a) – RSS-Gen

Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100**	3
88-216	150**	3
216-960	200**	3
Above 960	500	3

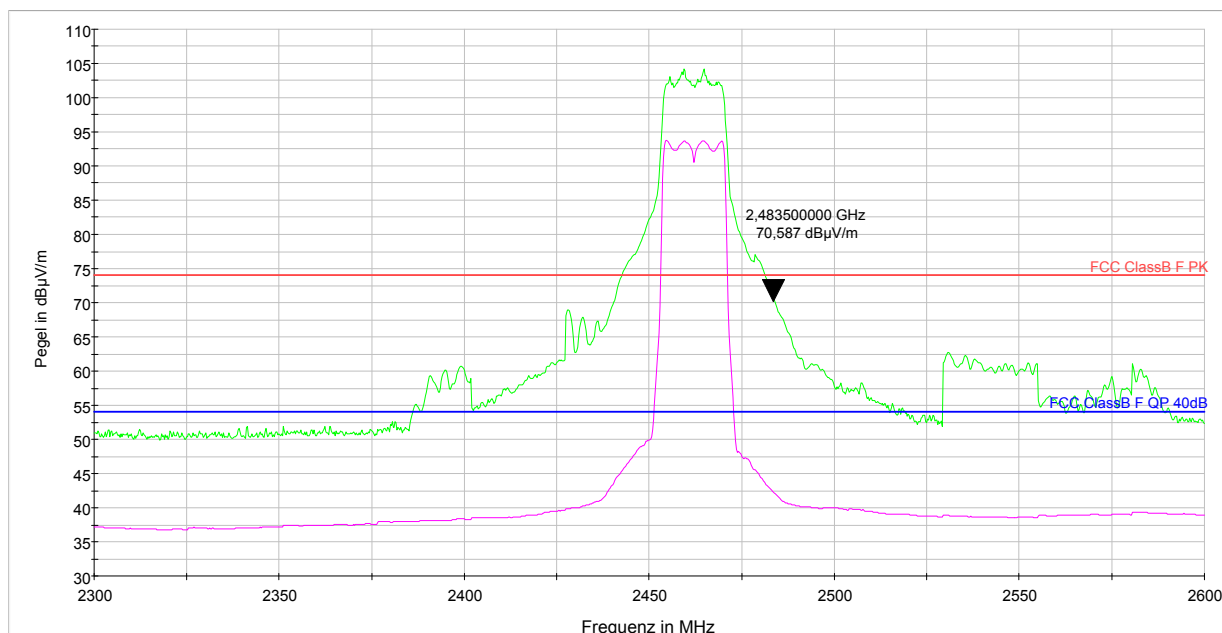
Test Equipment used: EMV-100; EMV-101; EMV-102; EMV-103; EMV-105; EMV-110; EMV-111; EMV-112; EMV-114; EMV-200; EMV-205; NT-122; NT-126; NT-416

Emissions in restricted bands
Emissions falling within restricted frequency bands

§ 15.209(a)
RSS-Gen

Measurement with Peak-Detector (green line) and Average detector (magenta line): Band Edge requirement

Setup: CH 11: 2462 MHz – OFDM – Antenna 2



- PK+ _MAXH(1):Stream1832_CH11_20_Ant2 [Stream1832_CH11_20_Ant2.Result:2]
- AVG _MAXH(1):Stream1832_CH11_20_Ant2 [Stream1832_CH11_20_Ant2.Result:4]
- FCC ClassB F PK [..\EMI radiated]
- FCC ClassB F QP 40dB [..\EMI radiated]
- PK+ _CLRWR [Ergebnistabelle.Result:1]
- PK+ _MAXH [Ergebnistabelle.Result:2]
- AVG _CLRWR [Ergebnistabelle.Result:3]
- AVG _MAXH [Ergebnistabelle.Result:4]

LIMIT SUBCLAUSE 15.209(a) – RSS-Gen

Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100**	3
88-216	150**	3
216-960	200**	3
Above 960	500	3

Band edges of the nearest restricted bands: 2390 MHz and 2483,5 MHz.

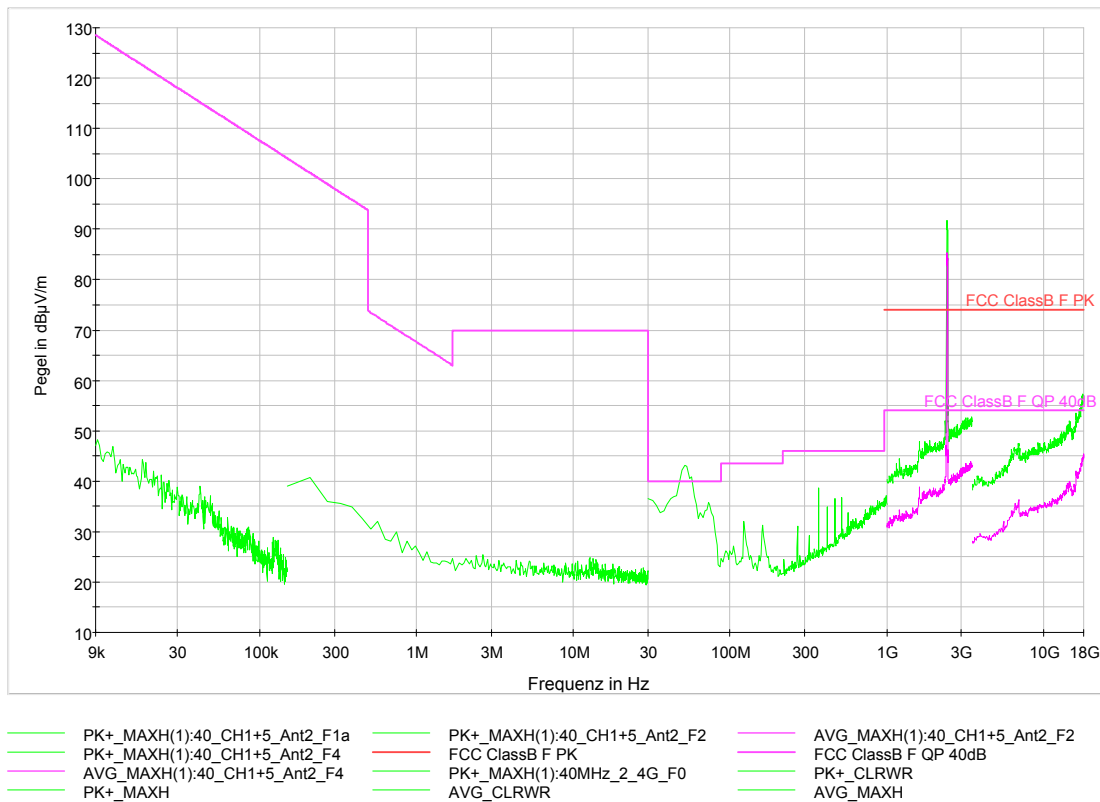
Test Equipment used: EMV-100; EMV-101; EMV-102; EMV-103; EMV-105; EMV-110; EMV-200

Emissions in restricted bands
Emissions falling within restricted frequency bands

§ 15.209(a)
RSS-Gen

Measurement with Peak-Detector (green line) and Average detector (magenta line):

Setup: CH 1 + 5: 2422 MHz – Antenna 2



Worst case emission: Quasipeak @ 54,0 MHz 38,5 dBµV/m

Remark: Although the measurement above ends at 18 GHz, all measurements were performed up to the tenth harmonics of the transmitter frequency.

LIMIT SUBCLAUSE 15.209(a) – RSS-Gen

Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100**	3
88-216	150**	3
216-960	200**	3
Above 960	500	3

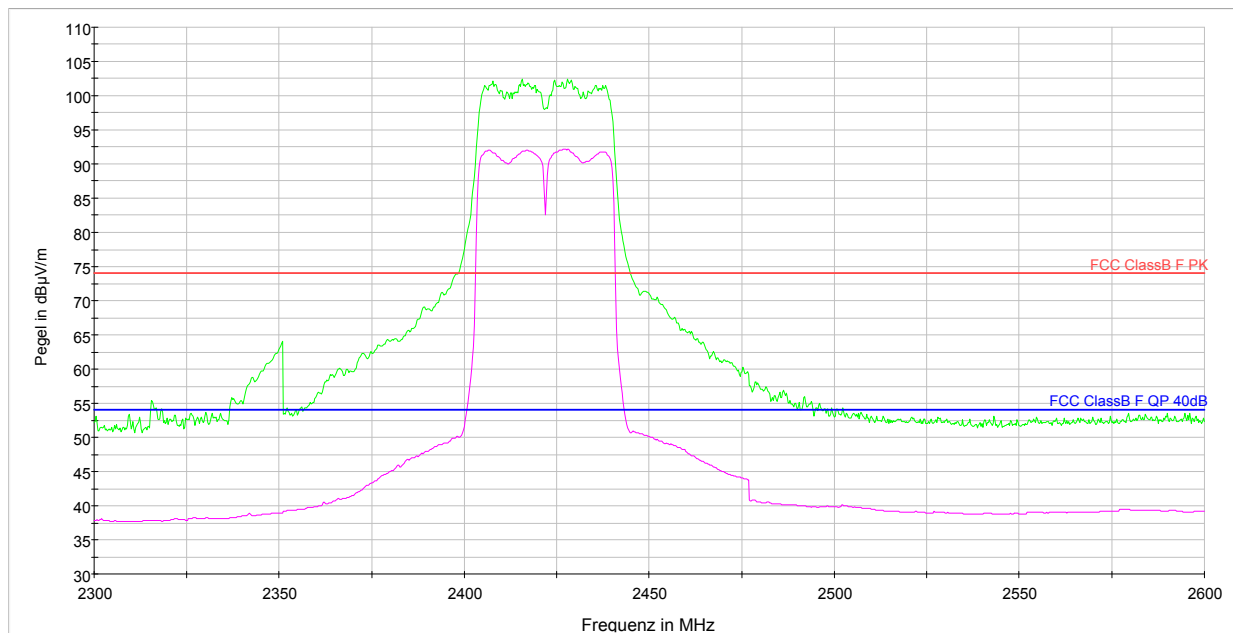
Test Equipment used: EMV-100; EMV-101; EMV-102; EMV-103; EMV-105; EMV-110; EMV-111; EMV-112; EMV-114; EMV-200; EMV-205; NT-122; NT-126; NT-416

Emissions in restricted bands
Emissions falling within restricted frequency bands

§ 15.209(a)
RSS-Gen

Measurement with Peak-Detector (green line) and Average detector (magenta line): Band Edge requirement

Setup: CH 1 + 5: 2422 MHz – Antenna 2



- PK+ _MAXH(1):Stream1832_CH1+5_40_Ant2 [Stream1832_CH1+5_40_Ant2.Result:2]
- AVG _MAXH(1):Stream1832_CH1+5_40_Ant2 [Stream1832_CH1+5_40_Ant2.Result:4]
- FCC ClassB F PK [..\EMI radiated\]
- FCC ClassB F QP 40dB [..\EMI radiated\]
- PK+ _CLRWR [Ergebnistabelle.Result:1]
- PK+ _MAXH [Ergebnistabelle.Result:2]
- AVG _CLRWR [Ergebnistabelle.Result:3]
- AVG _MAXH [Ergebnistabelle.Result:4]

LIMIT SUBCLAUSE 15.209(a) – RSS-Gen

Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100**	3
88-216	150**	3
216-960	200**	3
Above 960	500	3

Band edges of the nearest restricted bands: 2390 MHz and 2483,5 MHz.

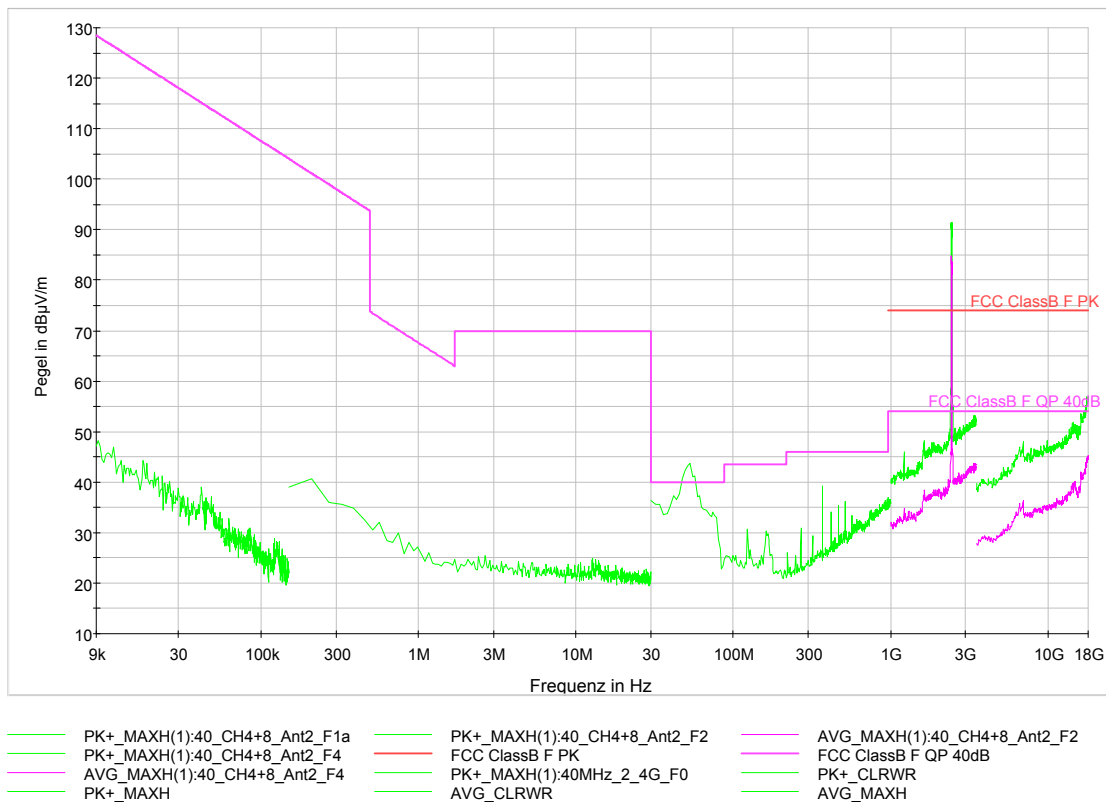
Test Equipment used: EMV-100; EMV-101; EMV-102; EMV-103; EMV-105; EMV-110; EMV-200

Emissions in restricted bands
Emissions falling within restricted frequency bands

§ 15.209(a)
RSS-Gen

Measurement with Peak-Detector (green line) and Average detector (magenta line):

Setup: CH 4 + 8: 2437 MHz – Antenna 2



Worst case emission: Quasipeak @ 54,0 MHz 38,5 dBµV/m

Remark: Although the measurement above ends at 18 GHz, all measurements were performed up to the tenth harmonics of the transmitter frequency.

LIMIT SUBCLAUSE 15.209(a) – RSS-Gen

Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100**	3
88-216	150**	3
216-960	200**	3
Above 960	500	3

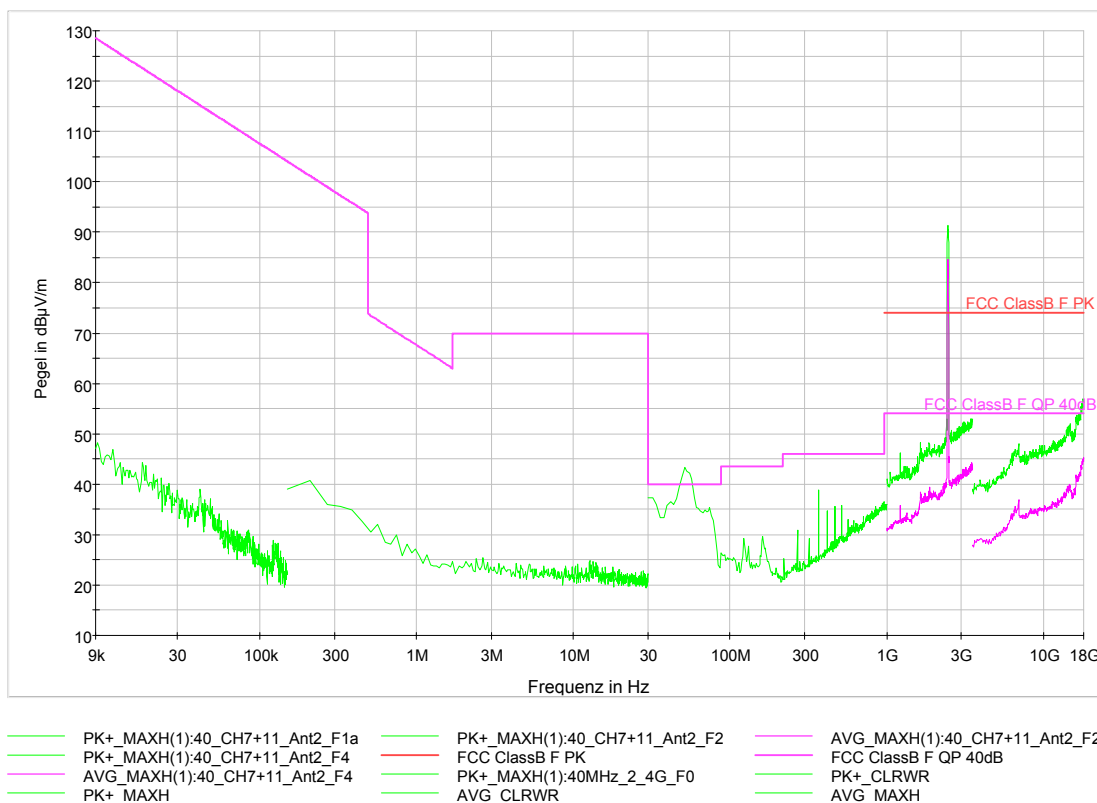
Test Equipment used: EMV-100; EMV-101; EMV-102; EMV-103; EMV-105; EMV-110; EMV-111; EMV-112; EMV-114; EMV-200; EMV-205; NT-122; NT-126; NT-416

Emissions in restricted bands
Emissions falling within restricted frequency bands

§ 15.209(a)
RSS-Gen

Measurement with Peak-Detector (green line) and Average detector (magenta line):

Setup: CH 7 + 11: 2452 MHz – Antenna 2



Worst case emission: Quasipeak @ 54,0 MHz 38,5 dBµV/m

Remark: Although the measurement above ends at 18 GHz, all measurements were performed up to the tenth harmonics of the transmitter frequency.

LIMIT SUBCLAUSE 15.209(a) – RSS-Gen

Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100**	3
88-216	150**	3
216-960	200**	3
Above 960	500	3

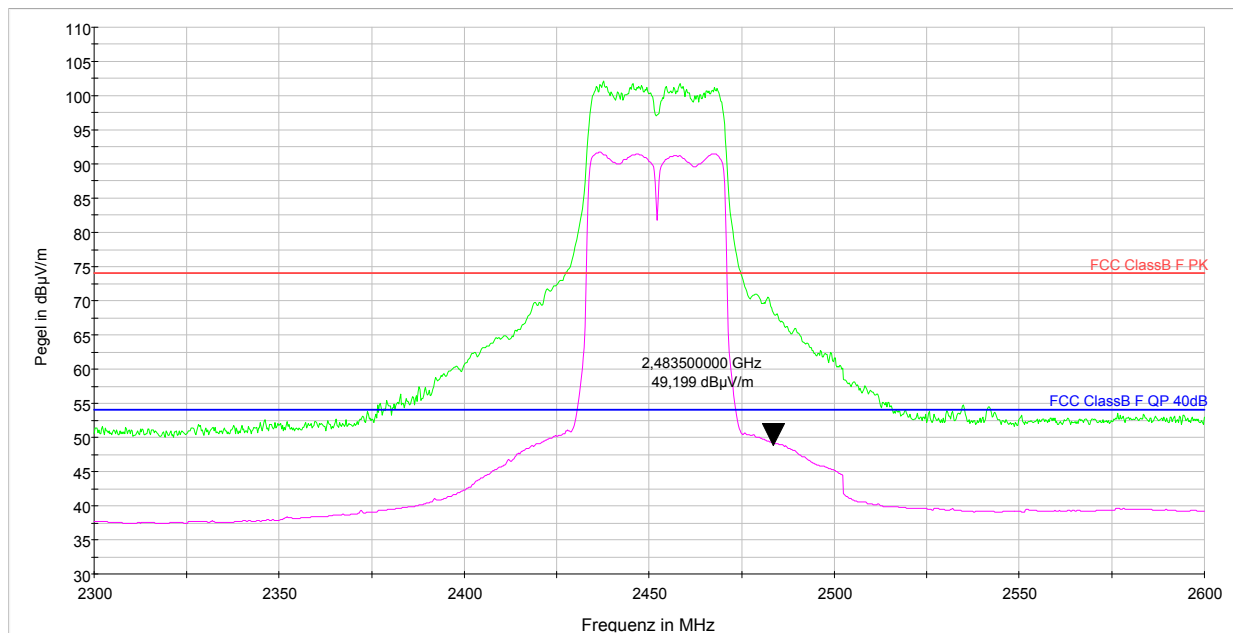
Test Equipment used: EMV-100; EMV-101; EMV-102; EMV-103; EMV-105; EMV-110; EMV-111; EMV-112; EMV-114; EMV-200; EMV-205; NT-122; NT-126; NT-416

Emissions in restricted bands
Emissions falling within restricted frequency bands

§ 15.209(a)
RSS-Gen

Measurement with Peak-Detector (green line) and Average detector (magenta line): Band Edge requirement

Setup: CH 7 + 11: 2452 MHz – Antenna 2



- PK+ _MAXH(1):Stream1832_CH7+11_40_Ant2 [Stream1832_CH7+11_40_Ant2.Result:2]
- AVG _MAXH(1):Stream1832_CH7+11_40_Ant2 [Stream1832_CH7+11_40_Ant2.Result:4]
- FCC ClassB F PK [..\EMI radiated]
- FCC ClassB F QP 40dB [..\EMI radiated]
- PK+ _CLRWR [Ergebnistabelle.Result:1]
- PK+ _MAXH [Ergebnistabelle.Result:2]
- AVG _CLRWR [Ergebnistabelle.Result:3]
- AVG _MAXH [Ergebnistabelle.Result:4]

LIMIT SUBCLAUSE 15.209(a) – RSS-Gen

Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100**	3
88-216	150**	3
216-960	200**	3
Above 960	500	3

Band edges of the nearest restricted bands: 2390 MHz and 2483,5 MHz.

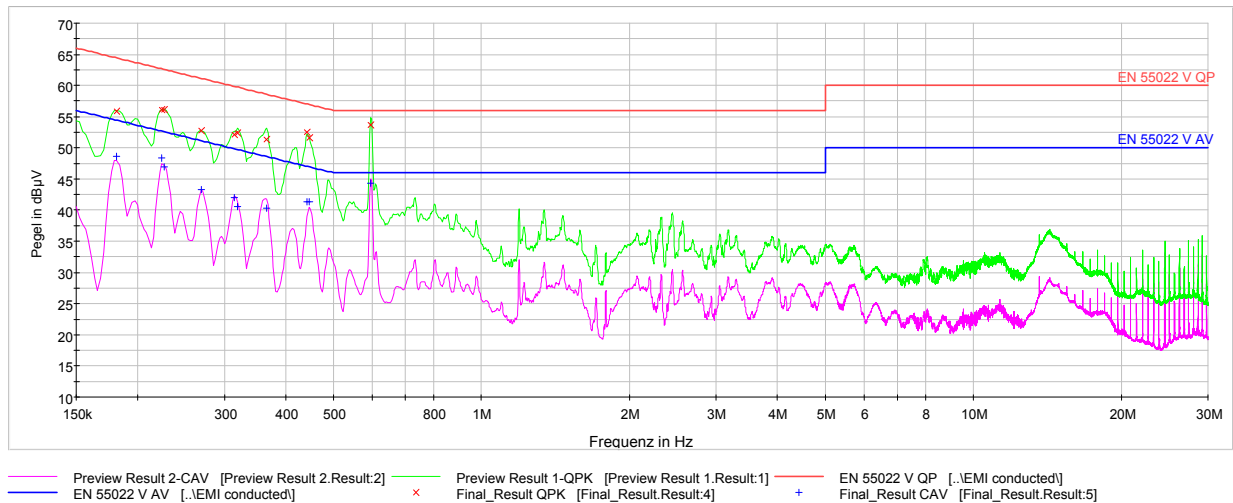
Test Equipment used: EMV-100; EMV-101; EMV-102; EMV-103; EMV-105; EMV-110; EMV-200

4.8. Conducted Limits

**§ 15.207
RSS-Gen 8.8**

Measurement with Peak-Detector (green line) and Average detector (magenta line):

Setup: CH 1: 2412 MHz – DSSS



LIMIT

SUBCLAUSE 15.207(a) – RSS-Gen 8.8

Frequency of emission (MHz)	Conducted limit (dBµV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

*Decreases with the logarithm of the frequency.

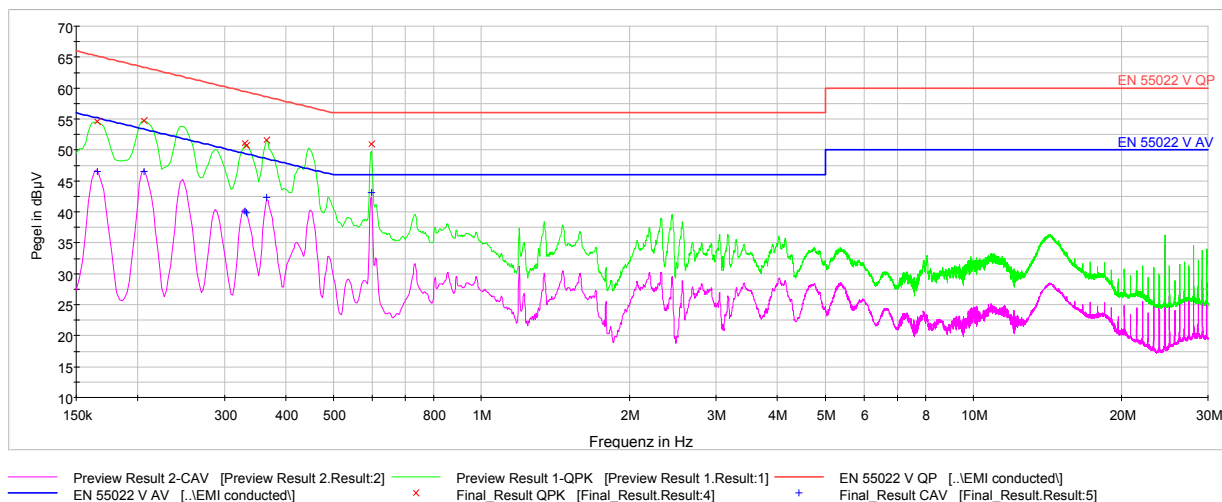
Test Equipment used: EMV-105; EMV-151; EMV-200; EMV-405

Conducted Limits

**§ 15.207
RSS-Gen 8.8**

Measurement with Peak-Detector (green line) and Average detector (magenta line):

Setup: CH 1: 2412 MHz – OFDM



LIMIT

SUBCLAUSE 15.207(a) – RSS-Gen 8.8

Frequency of emission (MHz)	Conducted limit (dBµV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

*Decreases with the logarithm of the frequency.

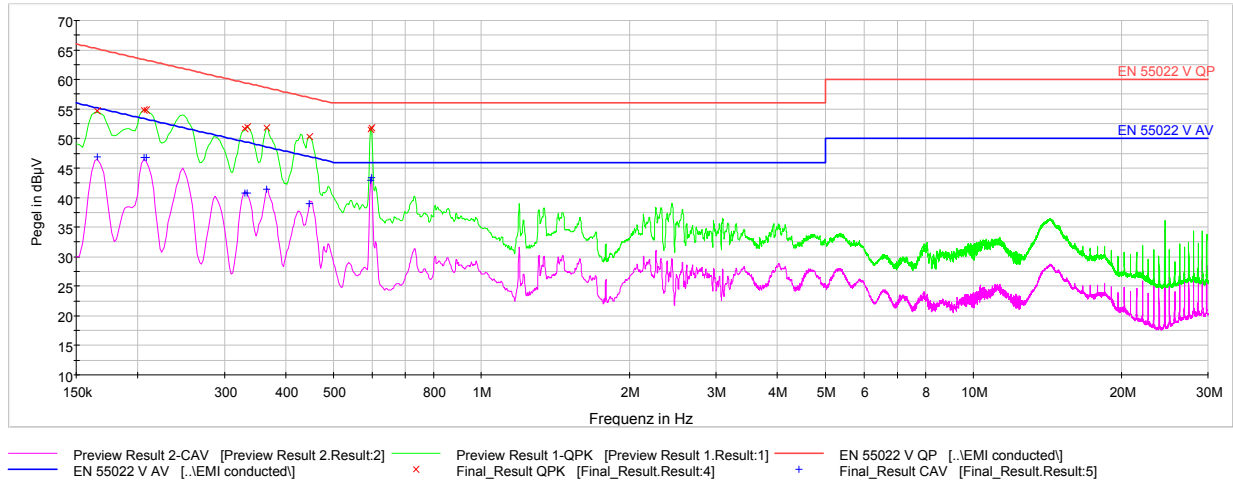
Test Equipment used: EMV-105; EMV-151; EMV-200; EMV-405

Conducted Limits

**§ 15.207
RSS-Gen 8.8**

Measurement with Peak-Detector (green line) and Average detector (magenta line):

Setup: CH 1 + 5: 2422 MHz – OFDM



LIMIT

SUBCLAUSE 15.207(a) – RSS-Gen 8.8

Frequency of emission (MHz)	Conducted limit (dBµV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

*Decreases with the logarithm of the frequency.

Test Equipment used: EMV-105; EMV-151; EMV-200; EMV-405

Test Report Reference:
INE-AT/FG-18/155

Ambient temperature: 23°C

Relative humidity: 21%

4.9. Maximum permissible Exposure

§ 15.247(i)

This kind of radio equipment is categorically excluded from routine environmental evaluation.

Appendix 1

Test equipment used

<input type="checkbox"/>	Anechoic Chamber with 3m measurement distance	NT-100	<input type="checkbox"/>	Spectrum analyzer – FSP7 9 kHz – 7 GHz	NT-200
<input type="checkbox"/>	Stripline according to ISO 11452-5	NT-108	<input type="checkbox"/>	ESCI - Test receiver 9 kHz - 7 GHz	NT-203/1
<input type="checkbox"/>	MA4000 - Antenna mast 1 - 4 m height	NT-110/1	<input type="checkbox"/>	ESI26 – Test receiver 20 Hz – 26,5 GHz	NT-207
<input type="checkbox"/>	DS - Turntable 0 - 400 ° Azimuth	NT-111/1	<input type="checkbox"/>	Digital Radio Tester CTS55	NT-208
<input type="checkbox"/>	CO3000 Controller Mast+Turntable	NT-112/1	<input type="checkbox"/>	Noise-gen., ITU-R 559-2 20 Hz – 20 kHz	NT-209
<input type="checkbox"/>	HUF-Z3 - Log. Per. Antenna 200 - 1000 MHz	NT-121	<input type="checkbox"/>	CMTA - Radiocommunication analyzer ; 0,1 - 1000 MHz	NT-210
<input type="checkbox"/>	FMZB1513 - Loop Antenna 9 kHz - 30 MHz	NT-122/1	<input type="checkbox"/>	3271 - Spectrum analyzer 100 Hz - 26,5 GHz	NT-211
<input type="checkbox"/>	HFH-Z6 - Rod Antenna 9 kHz - 30 MHz	NT-123	<input type="checkbox"/>	Digital Radio Tester Aeroflex 3920	NT-212/1
<input type="checkbox"/>	3121C - Dipole Antenna 28 - 1000 MHz	NT-124	<input type="checkbox"/>	Mixer M28HW 26,5 GHz - 40 GHz	NT-214
<input type="checkbox"/>	3115 - Horn Antenna 1 - 18 GHz (immunity)	NT-125	<input type="checkbox"/>	RubiSource T&M Timing reference	NT-216
<input type="checkbox"/>	3116 - Horn Antenna 18 - 40 GHz	NT-126	<input type="checkbox"/>	Radiocommunication analyzer SWR 1180 MD	NT-217
<input type="checkbox"/>	SAS-200/543 - Bicon. Antenna 20 MHz - 300 MHz	NT-127	<input type="checkbox"/>	Mixer M19HWD 40 GHz – 60 GHz	NT-218
<input type="checkbox"/>	AT-1080 - Log. Per. Antenna 80 - 1000 MHz	NT-128	<input type="checkbox"/>	Mixer M12HWD 60 GHz – 90 GHz	NT-219
<input type="checkbox"/>	HK-116 - bicon. Antenna 20 MHz - 300 MHz	NT-129	<input type="checkbox"/>	DSO9104 Digital scope	NT-220/1
<input type="checkbox"/>	HK-116 - bicon. Antenna 20 MHz - 300 MHz	NT-130	<input type="checkbox"/>	TPS 2014 Digital scope	NT-222
<input type="checkbox"/>	3146 - Log. Per. Antenna 200 – 1000 MHz	NT-131	<input type="checkbox"/>	Artificial Ear according to IEC 60318	NT-224
<input type="checkbox"/>	VULB 9163 Trilog Antenna 30 – 3000 MHz	NT-131/1	<input type="checkbox"/>	1 kHz Sound calibrator	NT-225
<input type="checkbox"/>	Loop Antenna H-Field	NT-132	<input type="checkbox"/>	B10 - Harmonics and flicker analyzer	NT-232
<input type="checkbox"/>	Horn Antenna 500 MHz - 2900 MHz	NT-133	<input type="checkbox"/>	SRM-3006 Spectrum analyzer	NT-233/1a
<input type="checkbox"/>	Horn Antenna 500 MHz - 6000 MHz	NT-133/1	<input type="checkbox"/>	E-field probe SRM 75 MHz – 3 GHz	NT-234
<input type="checkbox"/>	Log. per. Antenna 800 MHz - 2500 MHz	NT-134	<input type="checkbox"/>	Field Meter NBM-500 incl. E- and H-Field probes	NT-240a-e
<input type="checkbox"/>	Log. per. Antenna 800 MHz - 2500 MHz	NT-135	<input type="checkbox"/>	Hall-Teslameter ETM-1	NT-241
<input type="checkbox"/>	BiConiLog Antenna 26 MHz – 2000 MHz	NT-137	<input type="checkbox"/>	EFA-3 H-field- / E-field probe	NT-243
<input type="checkbox"/>	Conical Dipol Antenna PCD8250	NT-138	<input type="checkbox"/>	EHP-50F H-field- / E-field probe	NT-243/1
<input type="checkbox"/>	HF 906 - Horn Antenna 1 - 18 GHz (emission)	NT-139	<input type="checkbox"/>	Field Meter EMR-200 100 kHz – 3 GHz	NT-244
<input type="checkbox"/>	HZ-1 Antenna tripod	NT-150	<input type="checkbox"/>	E-field probe 100 kHz – 3 GHz	NT-245
<input type="checkbox"/>	BN 1500 Antenna tripod	NT-151	<input type="checkbox"/>	H-field probe 300 kHz – 30 MHz	NT-246
<input type="checkbox"/>	Ant. tripod for EN61000-4-3 Model TP1000A	NT-156			
<input type="checkbox"/>	Power quality analyzer Fluke 1760 (complete set)	NT-160 - NT-173			

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Appendix 1 (continued)

Test equipment used

<input type="checkbox"/>	E-field probe 3 MHz – 18 GHz	NT-247	<input type="checkbox"/>	500W1000M7 - RF-Amplifier 80 - 1000 MHz / 500 W	NT-332
<input type="checkbox"/>	H-field probe 27 MHz – 1 GHz	NT-248	<input type="checkbox"/>	AS0102-65R - RF-Amplifier 1 GHz - 2 GHz	NT-333
<input type="checkbox"/>	ELT-400 1 Hz – 400 kHz	NT-249	<input type="checkbox"/>	APA01 – RF-Amplifier 0,5 GHz – 2,5 GHz	NT-334
<input type="checkbox"/>	MDS 21 - Absorbing clamp 30 - 1000 MHz	NT-250	<input type="checkbox"/>	Preamplifier 1 GHz - 4 GHz	NT-335
<input type="checkbox"/>	FCC-203I EM Injection clamp	NT-251	<input type="checkbox"/>	Preamplifier for GPS MKU 152 A	NT-336
<input type="checkbox"/>	FCC-203I-DCN Ferrite decoupling network	NT-252	<input type="checkbox"/>	Preamplifier 100 MHz – 23 GHz	NT-337
<input type="checkbox"/>	PR50 Current Probe	NT-253	<input type="checkbox"/>	DC Block 10 MHz – 18 GHz Model 8048	NT-338
<input type="checkbox"/>	i310s Current Probe	NT-254/1	<input type="checkbox"/>	2-97201 Electronic load	NT-341
<input type="checkbox"/>	Fluke 87 V True RMS Multimeter	NT-260	<input type="checkbox"/>	TSX3510P - Power supply 0-30 V / 0 - 10 A	NT-344
<input type="checkbox"/>	Model 2000 Digital Multimeter	NT-261	<input type="checkbox"/>	TSX3510P - Power supply 0-30 V / 0 - 10 A	NT-345
<input type="checkbox"/>	Fluke 87 V Digital Multimeter	NT-262/1	<input type="checkbox"/>	VDS 200 Mobil-impuls-generator	NT-350
<input type="checkbox"/>	ESH2-Z5-U1 Artificial mains network 4x25A	NT-300	<input type="checkbox"/>	LD 200 Mobil-impuls-generator	NT-351
<input type="checkbox"/>	ESH3-Z5-U1 Artificial mains network 2x10A	NT-301	<input type="checkbox"/>	MPG 200 Mobil-Impuls-Generators	NT-352
<input type="checkbox"/>	ESH3-Z6-U1 Artificial mains network 1x100A	NT-302	<input type="checkbox"/>	EFT 200 Mobil-impuls-generator	NT-353
<input type="checkbox"/>	ESH3-Z6-U1 Artificial mains network 1x100A	NT-302a	<input type="checkbox"/>	AN 200 S1 Artificial Network	NT-354
<input type="checkbox"/>	PHE 4500/B Power amplifier	NT-304	<input type="checkbox"/>	FP-EFT 32M 3 ph. Coupling filter (Burst)	NT-400/1
<input type="checkbox"/>	EZ10 T-Artificial Network	NT-305	<input type="checkbox"/>	PHE 4500 - Mains impedance network	NT-401
<input type="checkbox"/>	SMG - Signal generator 0,1 - 1000 MHz	NT-310	<input type="checkbox"/>	IP 6.2 Coupling filter for data lines (Surge)	NT-403
<input type="checkbox"/>	SMA100A - Signal generator 9 kHz - 6 GHz	NT-310/1	<input type="checkbox"/>	TK 9421 High Power Volt. Probe 150 kHz - 30 MHz	NT-409
<input type="checkbox"/>	RefRad Reference generator	NT-312	<input type="checkbox"/>	ESH2-Z3 - Probe 9 kHz - 30 MHz	NT-410
<input type="checkbox"/>	SMP 02 Signal generator 10 MHz - 20 GHz	NT-313	<input type="checkbox"/>	IP 4 - Capacitive clamp (Burst)	NT-411
<input type="checkbox"/>	40 MHz Arbitrary Generator TGA1241	NT-315	<input type="checkbox"/>	Highpass-Filter 100 MHz – 3 GHz	NT-412
<input type="checkbox"/>	Artificial mains network NSLK 8127-PLC	NT-316	<input type="checkbox"/>	Highpass-Filter 600 MHz – 4 GHz	NT-413
<input type="checkbox"/>	ESD 30 System up to 25 kV	NT-321	<input type="checkbox"/>	Highpass-Filter 1250 MHz – 4 GHz	NT-414
<input type="checkbox"/>	PSURGE 4.1 Surge generator	NT-324	<input type="checkbox"/>	Highpass-Filter 1800 MHz – 16 GHz	NT-415
<input type="checkbox"/>	IMU4000 Immunity test system	NT-325/1			
<input type="checkbox"/>	VCS 500-M6 Surge-Generator	NT-326			
<input type="checkbox"/>	Oscillatory Wave Simulator incl. Coupling networks	NT-328a+b+c			
<input type="checkbox"/>	BTA-250 - RF-Amplifier 9 kHz - 220 MHz / 250 W	NT-330			
<input type="checkbox"/>	T82-50 RF-Amplifier 2 GHz – 8 GHz	NT-331			

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Appendix 1 (continued)

Test equipment used

<input type="checkbox"/>	Highpass-Filter 3500 MHz – 18 GHz	NT-416	<input type="checkbox"/>	FCC-801-AF10 Coupling decoupling network	NT-461
<input type="checkbox"/>	RF-Attenuator 10 dB DC – 18 GHz / 50 W	NT-417	<input type="checkbox"/>	FCC-801-S25 Coupling decoupling network	NT-462
<input type="checkbox"/>	RF-Attenuator 6 dB DC – 18 GHz / 50 W	NT-418	<input type="checkbox"/>	FCC-801-T4 Coupling decoupling network	NT-463
<input type="checkbox"/>	RF-Attenuator 3 dB DC – 18 GHz / 50 W	NT-419	<input type="checkbox"/>	FCC-801-C1 Coupling decoupling network	NT-464
<input type="checkbox"/>	RF-Attenuator 20 dB DC - 1000 MHz / 25 W	NT-421	<input type="checkbox"/>	SW 9605 - Current probe 150 kHz – 30 MHz	NT-465/1
<input type="checkbox"/>	RF-Attenuator 30 dB DC - 1000 MHz / 1 W	NT-423	<input type="checkbox"/>	95242-1 – Current probe 1 MHz – 400 MHz	NT-468
<input type="checkbox"/>	RF-Attenuator 30 dB	NT-424	<input type="checkbox"/>	94106-1L-1 – Current probe 100 kHz – 450 MHz	NT-471
<input type="checkbox"/>	RF-Attenuator 6 dB DC - 1000 MHz / 1 W	NT-425	<input type="checkbox"/>	GA 1240 Power amplifier according to EN 61000-4-16	NT-480
<input type="checkbox"/>	RF-Attenuator 6 dB DC - 1000 MHz / 1 W	NT-426	<input type="checkbox"/>	Coupling networks according to EN 61000-4-16	NT-481 - NT-483
<input type="checkbox"/>	RF-Attenuator 6 dB	NT-428	<input type="checkbox"/>	Van der Hoofden Test Head	NT-484
<input type="checkbox"/>	RF-Attenuator 0 dB - 81 dB	NT-429	<input type="checkbox"/>	EMC Video/Audiosystem	NT-511/1
<input type="checkbox"/>	WRU 27 - Band blocking 27 MHz	NT-430	<input type="checkbox"/>	ES-K1 Version 1.71 SP2 Test software	NT-520
<input type="checkbox"/>	WHJ450C9 AA - High pass 450 MHz	NT-431	<input type="checkbox"/>	EMC32 Version 10.40.00 Test software	NT-520/1
<input type="checkbox"/>	WHJ250C9 AA - High pass 250 MHz	NT-432	<input type="checkbox"/>	SRM-TS Version 1.3 software for SRM-3000	NT-522
<input type="checkbox"/>	RF-Load 150 W	NT-433	<input type="checkbox"/>	SRM-TS Version 1.3.1 software for SRM-3006	NT-522/1
<input type="checkbox"/>	Impedance transducer 1:4 ; 1:9 ; 1:16	NT-435	<input type="checkbox"/>	Spitzenberger und Spies Test software V4.1	NT-525
<input type="checkbox"/>	RF-Attenuator DC – 18 GHz 6 dB	NT-436	<input type="checkbox"/>	Noise power test apparatus according to EN 55014	NT-530
<input type="checkbox"/>	RF-Attenuator DC – 18 GHz 6 dB	NT-437	<input type="checkbox"/>	Vertical coupling plane (ESD)	NT-531
<input type="checkbox"/>	RF-Attenuator DC – 18 GHz 10 dB	NT-438	<input type="checkbox"/>	Test cable #4 for EN 61000-4-6	NT-553
<input type="checkbox"/>	RF-Attenuator DC – 18 GHz 20 dB	NT-439	<input type="checkbox"/>	Test cable #3 for conducted emission	NT-554
<input type="checkbox"/>	I+P 7780 Directional coupler 100 - 2000 MHz	NT-440	<input type="checkbox"/>	Test cable #5+#6 ESD-cable (2x470k)	NT-555 + NT-556
<input type="checkbox"/>	ESH3-Z2 - Pulse limiter 9 kHz - 30 MHz	NT-441	<input type="checkbox"/>	Test cable #8 Sucoflex 104EA	NT-559
<input type="checkbox"/>	Power Divider 6 dB/1 W/50 Ohm	NT-443	<input type="checkbox"/>	Test cable #9 (for outdoor measurements)	NT-580
<input type="checkbox"/>	Directional coupler 0,1 MHz – 70 MHz	NT-444	<input type="checkbox"/>	Test cable #10 (for outdoor measurements)	NT-581
<input type="checkbox"/>	Directional coupler 0,1 MHz – 70 MHz	NT-445	<input type="checkbox"/>	Test cable #13 Sucoflex 104PE	NT-584
<input type="checkbox"/>	Tube imitations according to EN 55015	NT-450	<input type="checkbox"/>	Test cable #21 for SRM-3000	NT-592
<input type="checkbox"/>	FCC-801-M3-16A Coupling decoupling network	NT-458	<input type="checkbox"/>	Shield chamber	NT-600
<input type="checkbox"/>	FCC-801-M2-50A Coupling decoupling network	NT-459	<input type="checkbox"/>	Climatic chamber	M-1200
<input type="checkbox"/>	FCC-801-M5-25 Coupling decoupling network	NT-460			

Division:
Industry & Energy

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Date: 06.11.2018

Checked by: _____

Appendix 1 (continued)

Test equipment used

<input type="checkbox"/>	Anechoic Chamber 3 m / 5 m measuring distance	EMV-100	<input type="checkbox"/>	Log.per Antenna 0,7 – 9 GHz STLP9149	EMV-305	Division: Industry & Energy
<input type="checkbox"/>	Turntabel 6 m diameter	EMV-101	<input type="checkbox"/>	HF- Amplifier 9 kHz-250 MHz BBA150 (low noise)	EMV-306	Department: FG
<input type="checkbox"/>	Antenna mast 1 – 4 m	EMV-102	<input type="checkbox"/>	Load Dump Generator LD 200N	EMV-350	Test report number: INE-AT/FG-18/155
<input type="checkbox"/>	Mast and Turntable controller FC-06	EMV-103	<input type="checkbox"/>	Ultra Compact Symulator UCS 200N100	EMV-351	Page: 4 of 4
<input type="checkbox"/>	EMC Video/Audiosystem	EMV-104	<input type="checkbox"/>	Automotive Power fail module PFM 200N100.1	EMV-352	Date: 06.11.2018
<input type="checkbox"/>	EMC Software EMC32 Version 10.40.00	EMV-105	<input type="checkbox"/>	Voltage Drop Symulator VDS 200Q100	EMV-353	Checked by: _____
<input type="checkbox"/>	Hornantenna 1 – 18 GHz HF 907	EMV-110	<input type="checkbox"/>	Arb. Generator AutoWave	EMV-354	
<input type="checkbox"/>	Antennapre.amp. 1 – 18 GHz ERZ-LNA0200-1800-30-2	EMV-111	<input type="checkbox"/>	Ultra Compact Symulator UCS 500N7	EMV-355	
<input type="checkbox"/>	Trilog Antenna 30-3000 MHz VULB9163	EMV-112	<input type="checkbox"/>	Coupling decoupling network CNI 503B7 / 32 A	EMV-356	
<input type="checkbox"/>	Monopol 9 kHz – 30 MHz VAMP 9243	EMV-113	<input type="checkbox"/>	Coupling decoupling network CNI 503B7 / 63 A	EMV-357	
<input type="checkbox"/>	Antennapre.amp 18 – 40 GHz BBV 9721	EMV-114	<input type="checkbox"/>	Telecom Surge Generator TSurge 7	EMV-358	
<input type="checkbox"/>	Hornantenna 200 – 2000 MHz AH-220	EMV-115	<input type="checkbox"/>	Coupling decoupling network CNI 508N2	EMV-359	
<input type="checkbox"/>	DC Artificial Network PVDC 8300	EMV-150	<input type="checkbox"/>	Coupling decoupling network CNV 504N2.2	EMV-360	
<input type="checkbox"/>	AC Artificial Network NNLK 8121 RC	EMV-151	<input type="checkbox"/>	Immunity generator NSG4060/NSG4060-1	EMV-361	
<input type="checkbox"/>	EMI Receiver ESR26	EMV-200	<input type="checkbox"/>	Coupling network CDND M316-2	EMV-362	
<input type="checkbox"/>	Signalgenerator 9 kHz – 40 GHz N5173B	EMV-201	<input type="checkbox"/>	Coupling network CT419-5	EMV-363	
<input type="checkbox"/>	GPS Frequency normal B-88	EMV-202	<input type="checkbox"/>	ESD Generator NSG 437	EMV-364	
<input type="checkbox"/>	DC Power supply N5745A	EMV-203	<input type="checkbox"/>	Pulse Limiter VTSD 9561-F BNC	EMV-405	
<input type="checkbox"/>	Spektrum Analyzator FSV40	EMV-205	<input type="checkbox"/>	Transient emission BSM200N40+BS200N100	EMV- 450+451	
<input type="checkbox"/>	Thd Multimeter Model 2015	EMV-206	<input type="checkbox"/>	Cap. Coupling Clamp HFK	EMV-455	
<input type="checkbox"/>	Poweramplifier PAS15000	EMV- 207/abc	<input type="checkbox"/>	Mag. Field System MS100N+MC26100+MC2630	EMV- 456-458	
<input type="checkbox"/>	Inrush Current Source	EMV- 208/abc	<input type="checkbox"/>	Coupling network CDN M2-100A	EMV-459	
<input type="checkbox"/>	Arb.-generator Sycore	EMV-209	<input type="checkbox"/>	Coupling network CDN M3-32A	EMV-460	
<input type="checkbox"/>	Harmonics/Flicker analyzer ARS 16/3	EMV-210	<input type="checkbox"/>	Coupling network CDN M5-100A	EMV-461	
<input type="checkbox"/>	HF- Amplifier 9 kHz-250 MHz BBA150	EMV-300	<input type="checkbox"/>	Current Clamp CIP 9136A	EMV-462	
<input type="checkbox"/>	HF- Amplifier 80 -1000 MHz BBA150	EMV-301	<input type="checkbox"/>	DC Artificial Network HV-AN 150	EMV- 464+465	
<input type="checkbox"/>	HF- Amplifier 0,8 - 6 GHz BBA150	EMV-302	<input type="checkbox"/>	Coupling Clamp EM 101	EMV-466	
<input type="checkbox"/>	High Power Ant. 20-200 MHz VHBD 9134	EMV-303	<input type="checkbox"/>	Decoupling Clamp FTC 101	EMV-467	
<input type="checkbox"/>	Log.per Antenna 80-2700 MHz STLP 9128 E special	EMV-304	<input type="checkbox"/>	Power attenuator 10 dB / 250 Watt	EMV-469/2	