

# TEST REPORT

of the accredited test laboratory

**TÜV Nr.:INE-AT/FG-19/195**

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

**Tested Product:** STREAM1955 Bluetooth / BLE / WIFI streaming module  
Test report for Bluetooth part only

**FCC-ID:** 2AJYB-S1955

**IC-ID:** 20504-S1955

**Manufacturer:** See applicant

**Output power / field strength:** 4,57 mW conducted  
**power supply:** 12 VDC

**Frequency range:** 2402 - 2480 MHz **Channel separation:** 1 MHz

**Standard:** FCC: 47 CFR Part 15 (October 1, 2018 edition)  
RSS-247 Issue 2, February 2017

Testing Laboratory,  
Inspection Body,  
Certification Body,  
Calibration Laboratory,  
Verifizierungsstelle**Notified Body 0408**  
**IC 2932K-1****Non-executive**  
**Board of Directors:**  
KR DI Johann  
Marhart**Management:**  
DI Dr. Stefan Haas  
Mag. Christoph  
Wenninger**Registered Office:**  
Deutschstrasse 10  
1230 Vienna/Austria**Branch Offices:**  
www.tuv.at/standorte**Company Register**  
**Court / - Number:**  
Vienna / FN 288476 f**Bank Details:**  
IBAN  
AT131200052949001066  
BIC BKAUATWWIBAN  
AT153100000104093282  
BIC RZBAATWWVAT ATU63240488  
DVR 3002476**TUV Austria Services GmbH**  
**Test laboratory for EMC**

Supervisor of EMC-laboratory:

Ing. Wilhelm Seier



02.12.2019

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:** 20.05.2019

**Tests were performed on:** 27.05. till 17.09.2019

## 2. Description of EUT

**EUT:** Bluetooth / BLE / WIFI module "STREAM1955"

**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: 5VDC  
Rated current: 450mA  
Rated frequency: DC

Mains voltage during the tests: 5VDC

**Climatic conditions in the emc laboratory:** Relative humidity: 39%  
Temperature: 23°C

### 3. Standards / Final result

Name	Title	Deviation	Result
Title 47 CFR Part 15 October 1 <sup>st</sup> 2018 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 Bluetooth part. See additional test reports:

INE-AT/FG-19/196 for BLE

INE-AT/FG-19/197 for 2,4 GHz WIFI and

INE-AT/FG-19/198 for 5 GHz WIFI measurement results including photodocumentation.

2.1033 (c) Technical description

2.1033 (4) Type of emission: Basic datarate: 976KF1D – Channel spacing 1 MHz  
Enhanced datarate: 1M40F1D – Channel spacing 1 MHz > 2/3 of channel  
bandwidth - > maximum power should be 125 mW.

2.1033 (5) Frequency range: 2402 to 2480 MHz (channel center frequencies).

2.1033 (6) Power range and Controls: The maximum peak output power is 4,57 mW and there is no power regulation.

2.1033 (7) Maximum output power rating: 4,57 mW conducted.

2.1033 (8) DC Voltage and Current: 5V DC  
maximum current consumption: 450 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: 45,6 dBµV/m Average at 4 GHz.

Tests were performed May 27<sup>th</sup> till September 17<sup>th</sup> 2019.

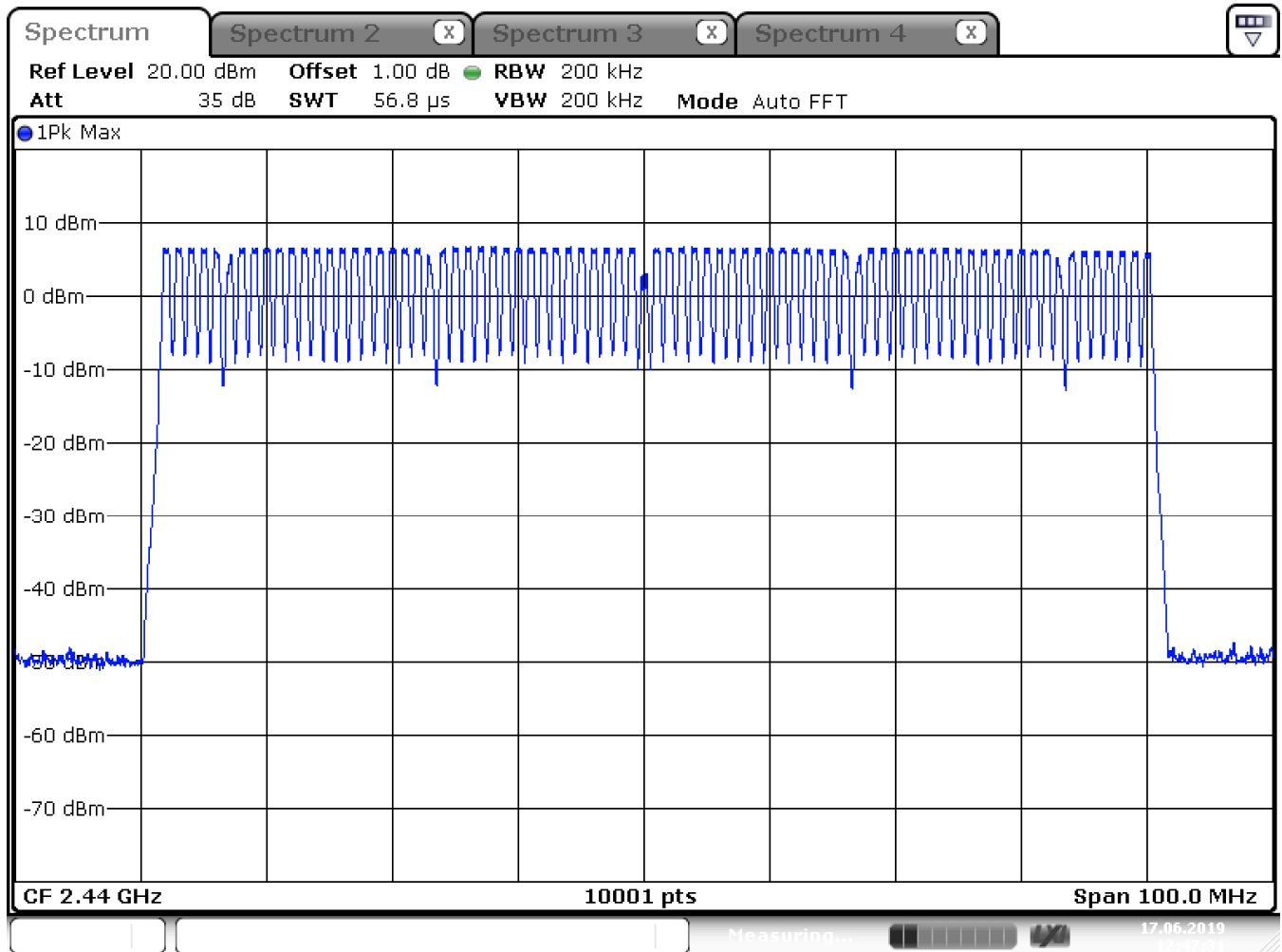
#### 4.2. Number of channels and channel spacing

§ 15.247 (a) (1)  
5.1 (2) (4)

Mode: Bluetooth

Conducted Measurement

Rated output power: 4,57 mW



Date: 17.JUN.2019 12:47:31

There are 79 Channels used, starting at 2402 till 2480 each spaced by 1 MHz channel spacing.

#### LIMIT SUBCLAUSE 15.247(a) (1) – 5.1(4)

Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater.

Frequency hopping systems in the 2400–2483.5 MHz band shall use at least 15 channels.

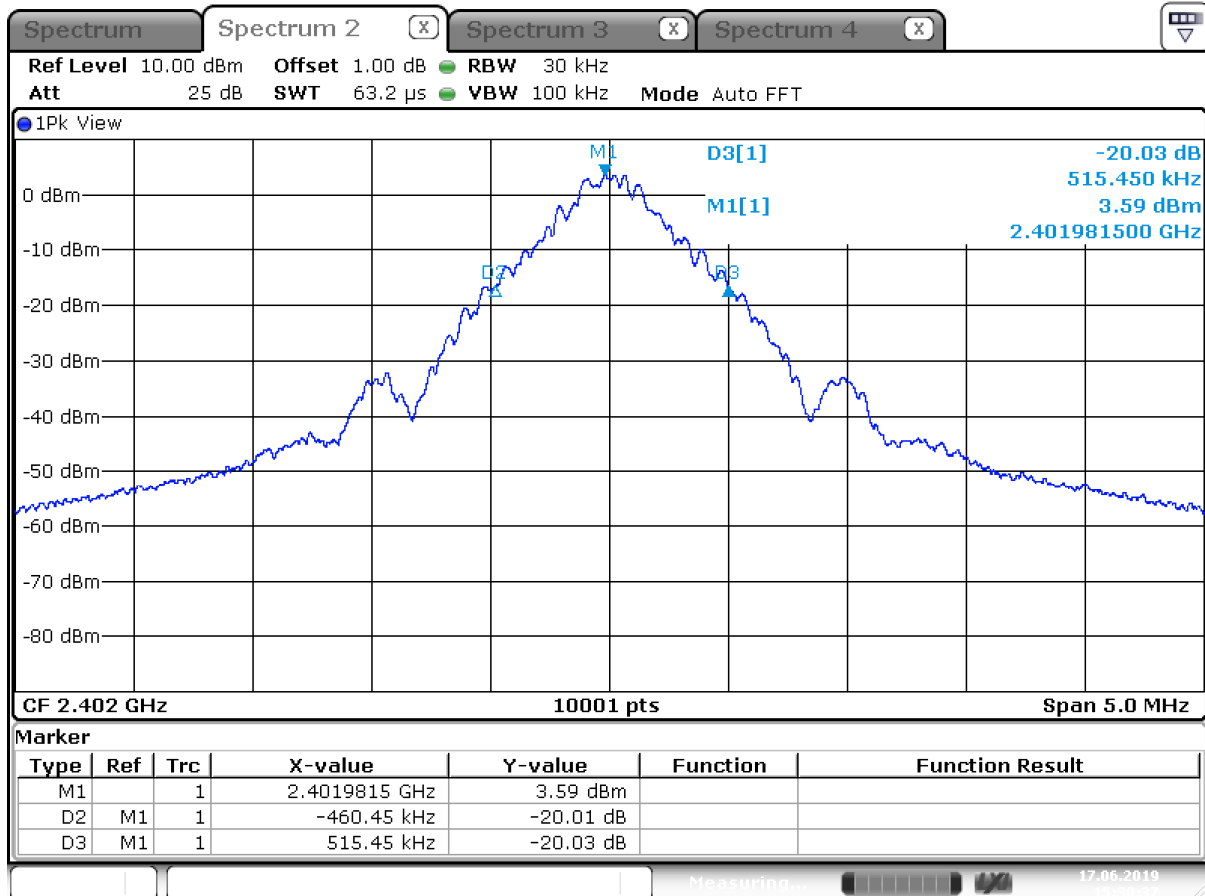
Test Equipment used: EMV-205

### 4.3. 20dB Bandwidth

§ 15.247 (a) (1)  
5.1 (2)

Conducted Measurement - Mode: Bluetooth BDR

Rated output power: 4,57 mW 2402 MHz



Date: 17.JUN.2019 15:30:38

20dB Bandwidth: 975,9 kHz

### LIMIT SUBCLAUSE 15.247(a) (1) – 5.1(2)

Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater. Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW.

Frequency hopping systems in the 2400–2483.5 MHz band shall use at least 15 channels.

Test Equipment used: EMV-205

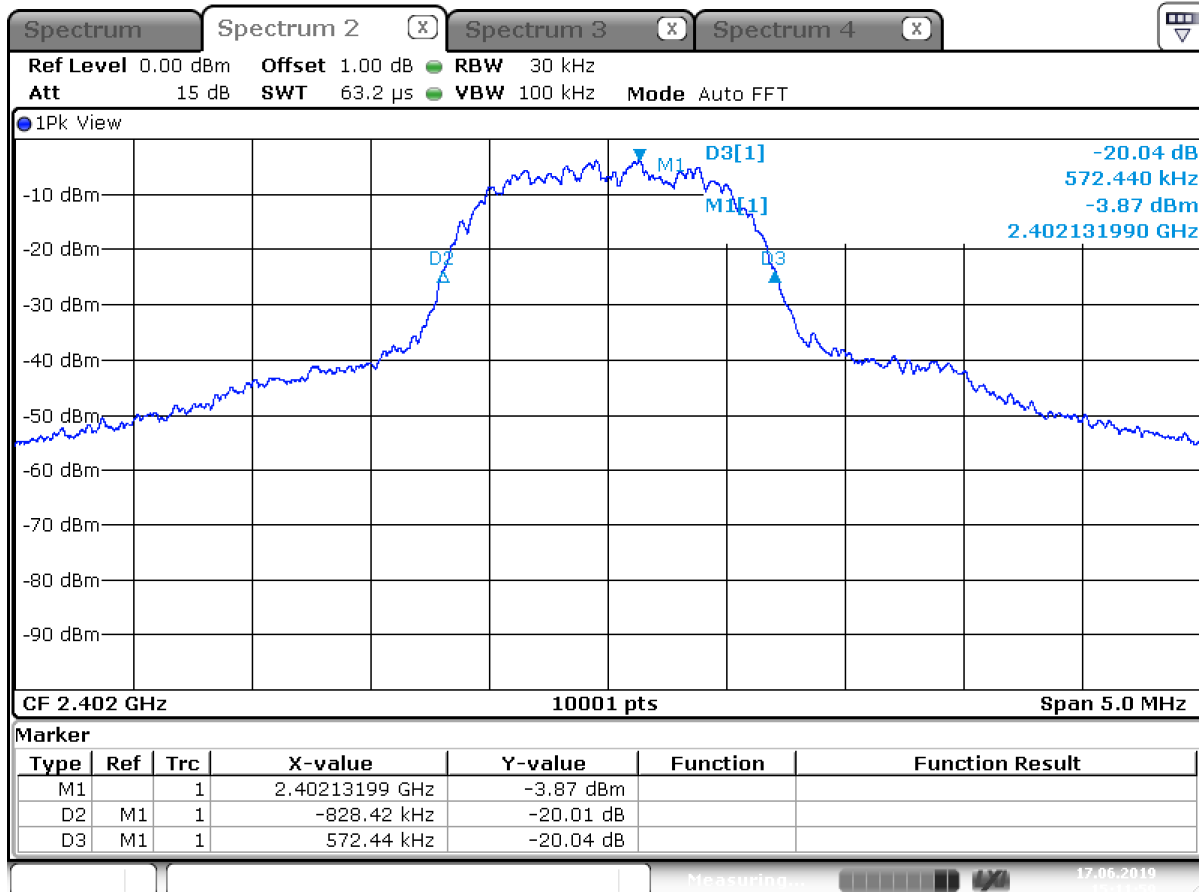


**20dB Bandwidth**

§ 15.247 (a) (1)  
5.1 (2)

Conducted Measurement - Mode: Bluetooth EDR

Rated output power: 4,57 mW 2402 MHz



Date: 17.JUN.2019 15:12:00

20dB Bandwidth: 1401 kHz

**LIMIT SUBCLAUSE 15.247(a) (1) – 5.1(2)**

Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater. Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW.

Frequency hopping systems in the 2400–2483.5 MHz band shall use at least 15 channels.

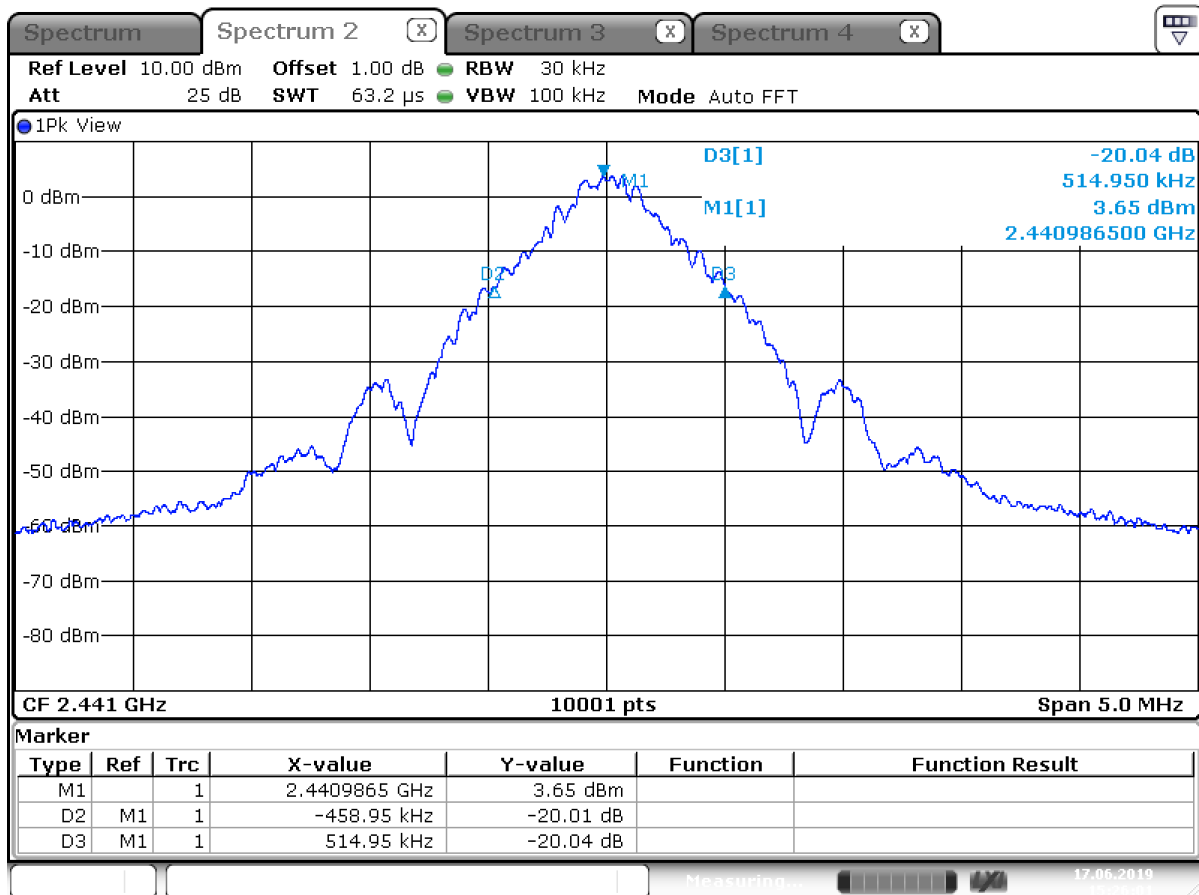
Test Equipment used: EMV-205

**20dB Bandwidth**

§ 15.247 (a) (1)  
5.1 (2)

Conducted Measurement - Mode: Bluetooth BDR

Rated output power: 4,57 mW 2441 MHz



Date: 17.JUN.2019 15:26:01

20dB Bandwidth: 973,9 kHz

**LIMIT SUBCLAUSE 15.247(a) (1) – 5.1(2)**

Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater. Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW.

Frequency hopping systems in the 2400–2483.5 MHz band shall use at least 15 channels.

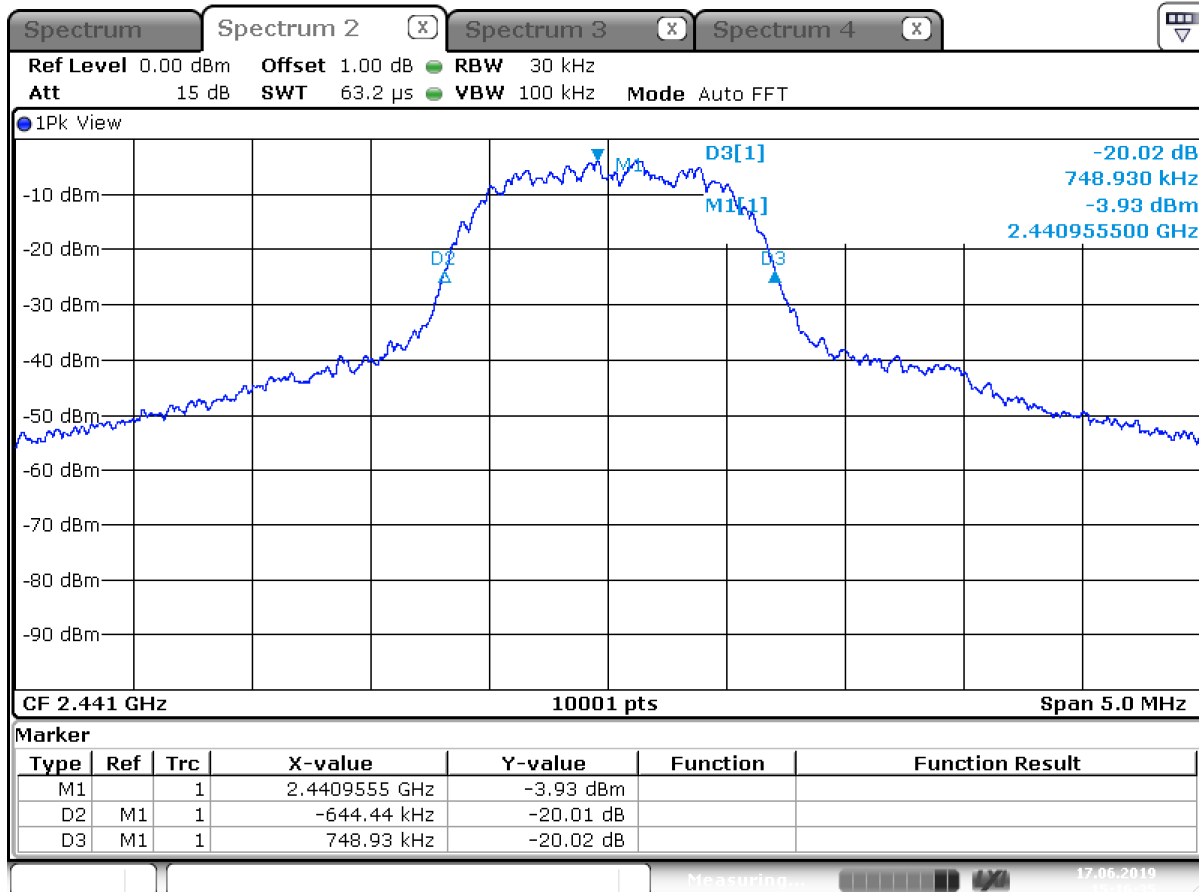
Test Equipment used: EMV-205

**20dB Bandwidth**

§ 15.247 (a) (1)  
5.1 (2)

Conducted Measurement - Mode: Bluetooth EDR

Rated output power: 4,57 mW 2441 MHz



Date: 17.JUN.2019 15:16:35

20dB Bandwidth: 1394 kHz

**LIMIT SUBCLAUSE 15.247(a) (1) – 5.1(2)**

Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater. Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW.

Frequency hopping systems in the 2400–2483.5 MHz band shall use at least 15 channels.

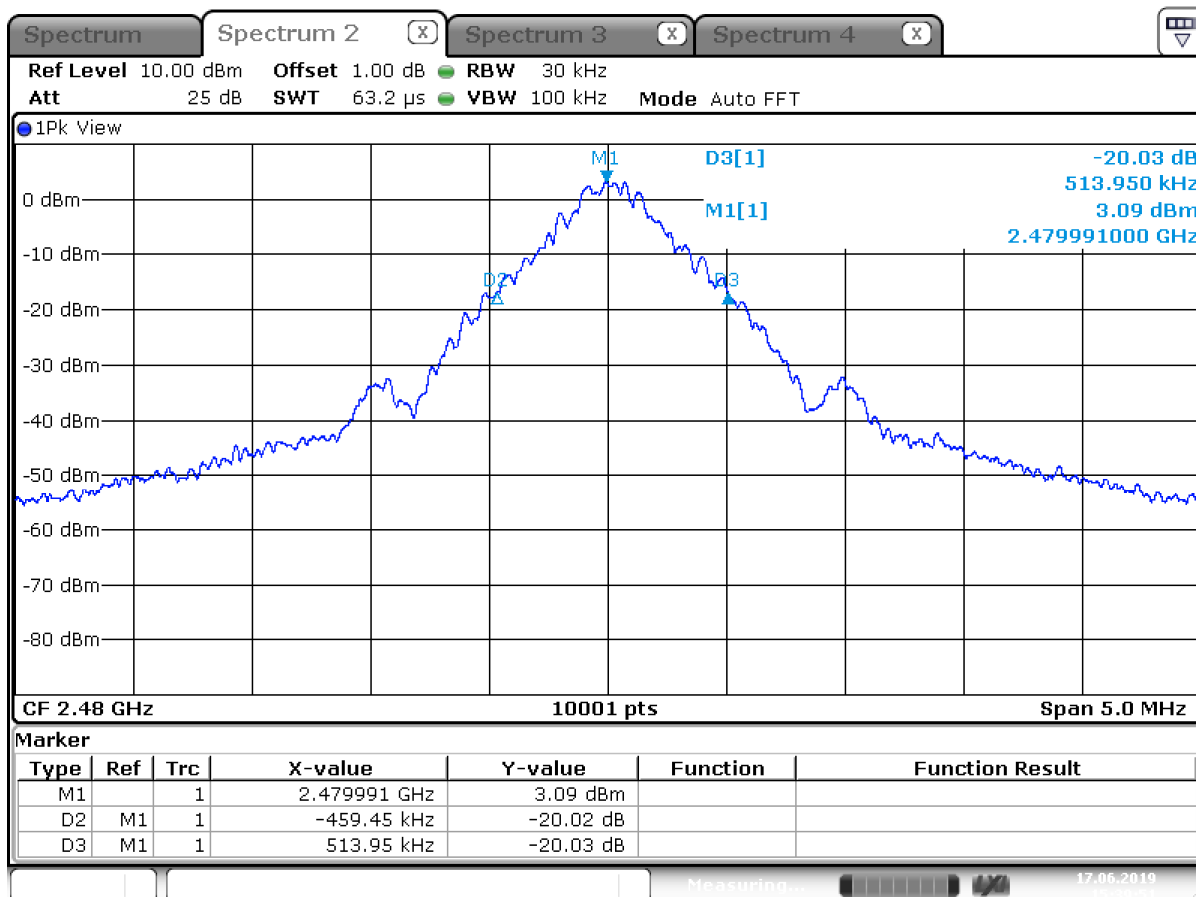
Test Equipment used: EMV-205

**20dB Bandwidth**

§ 15.247 (a) (1)  
5.1 (2)

Conducted Measurement - Mode: Bluetooth BDR

Rated output power: 4,57 mW 2480 MHz



Date: 17.JUN.2019 15:39:51

20dB Bandwidth: 973,4 kHz

**LIMIT SUBCLAUSE 15.247(a) (1) – 5.1(2)**

Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater. Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW.

Frequency hopping systems in the 2400–2483.5 MHz band shall use at least 15 channels.

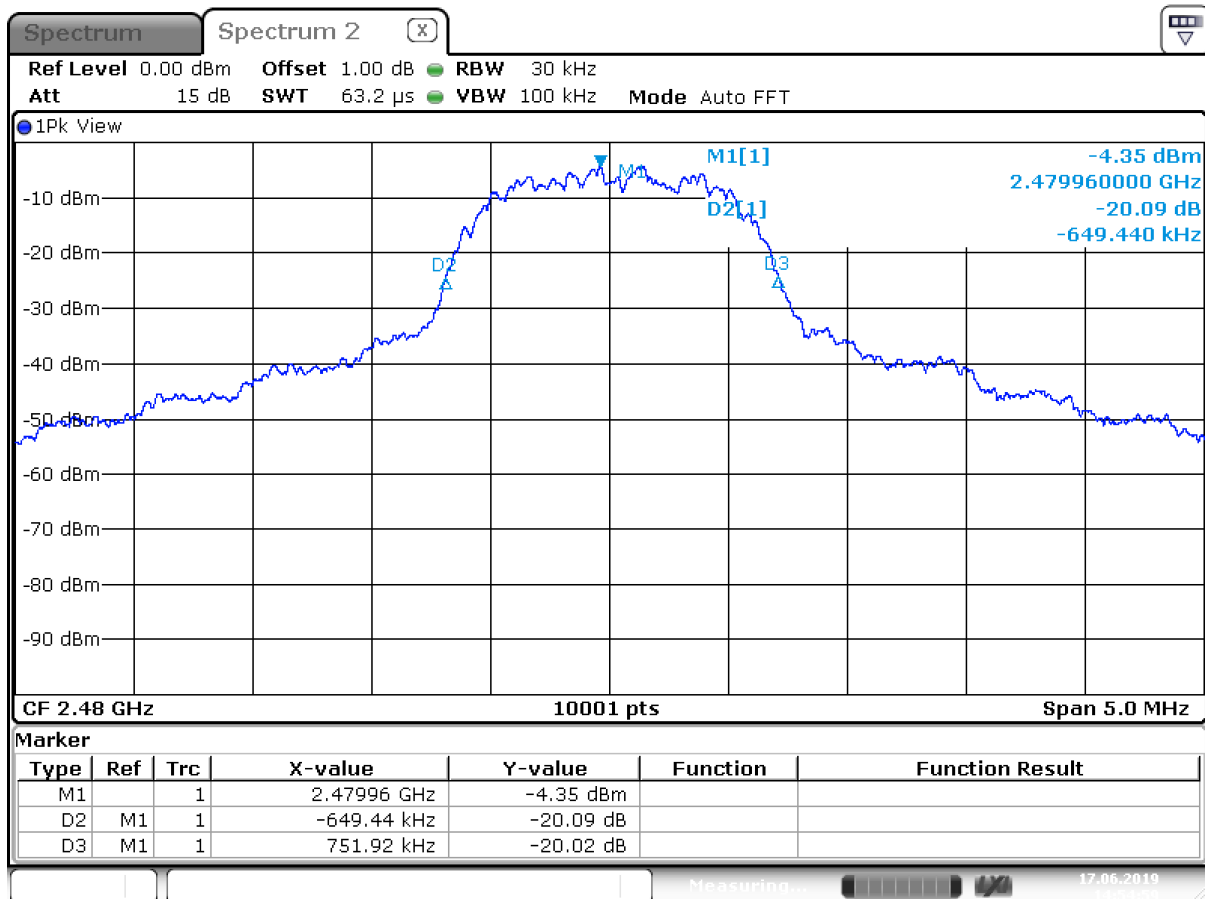
Test Equipment used: EMV-205

**20dB Bandwidth**

**§ 15.247 (a) (1)  
5.1 (2)**

Conducted Measurement - Mode: Bluetooth EDR

Rated output power: 4,57 mW 2480 MHz



Date: 17.JUN.2019 14:54:59

20dB Bandwidth: 1402 kHz

**LIMIT SUBCLAUSE 15.247(a) (1) – 5.1(2)**

Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater. Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW.

Frequency hopping systems in the 2400–2483.5 MHz band shall use at least 15 channels.

Test Equipment used: EMV-205

#### 4.4. Maximum Peak RF Power Output (EIRP)

§ 15.247(b)(1)  
5.4(2)

Conducted Measurement – Mode: Bluetooth BDR

Rated output power: 4,57 mW

Test conditions		Transmitter power (mW)		
		2402 MHz	2441 MHz	2480 MHz
T <sub>nom</sub> ( 23 ) °C	V <sub>nom</sub> ( 5 ) V	4,57	4,57	4,07
Maximum deviation from rated output power under normal test conditions (dB)		0	0	-0,5
Measurement uncertainty		± 0,75 dB		

#### LIMIT SUBCLAUSE 15.247(b)(1) – 5.4(2)

Under normal test conditons	1W conducted (4W eirp)
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Maximum Antenna Gain: 6dBi, eirp can be calculated by multiplying conducted value with factor 4.

Test Equipment used: EMV-205

**Maximum Peak RF Power Output (EIRP)**

**§ 15.247(b)(1)  
5.4(2)**

Conducted Measurement – Mode: Bluetooth EDR

Rated output power: 4,57 mW

Test conditions		Transmitter power (mW)		
		2402 MHz	2441 MHz	2480 MHz
T <sub>nom</sub> ( 23 )°C	V <sub>nom</sub> ( 5 ) V	1,74	1,70	1,48
Maximum deviation from rated output power under normal test conditions (dB)		-4,2	-4,3	-4,9
Measurement uncertainty		± 0,75 dB		

**LIMIT SUBCLAUSE 15.247(b)(1) – 5.4(2)**

Under normal test conditons	1W conducted (4W eirp)
-----------------------------	------------------------

Maximum Antenna Gain: 6dBi, eirp can be calculated by multiplying conducted value with factor 4.

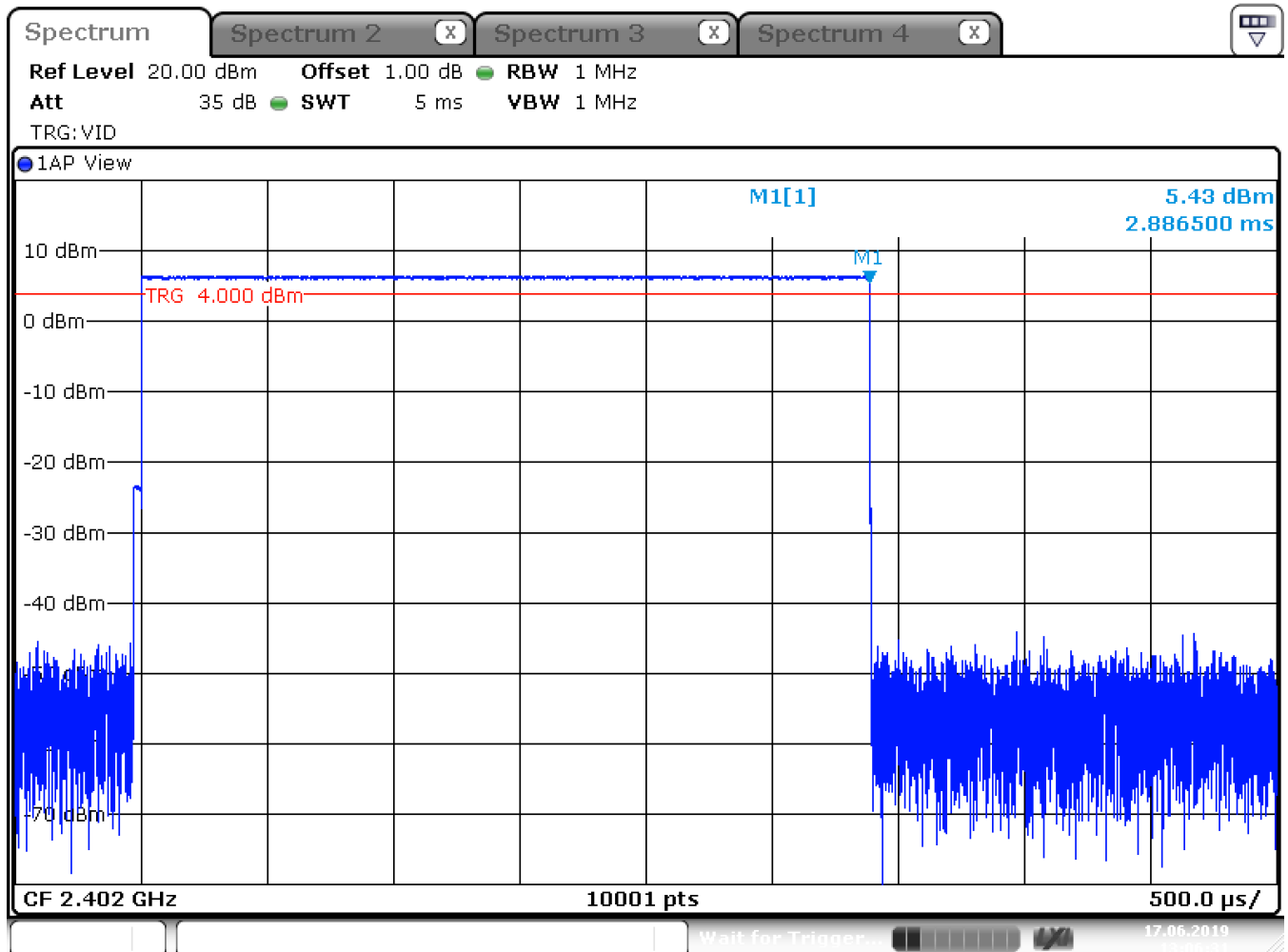
Test Equipment used: EMV-205

### 4.5. Average Time of Occupancy

§ 15.247(a)(1)(iii)  
5.1(4)

Conducted Measurement - Mode: Bluetooth BDR

Rated output power: 4,57 mW 2402 MHz



Date: 17.JUN.2019 13:06:31

The dwell time is constant 2,9 ms.

#### LIMIT SUBCLAUSE 15.247(a)(1)(iii) – 5.1(4)

The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed.

Test Equipment used: EMV-205

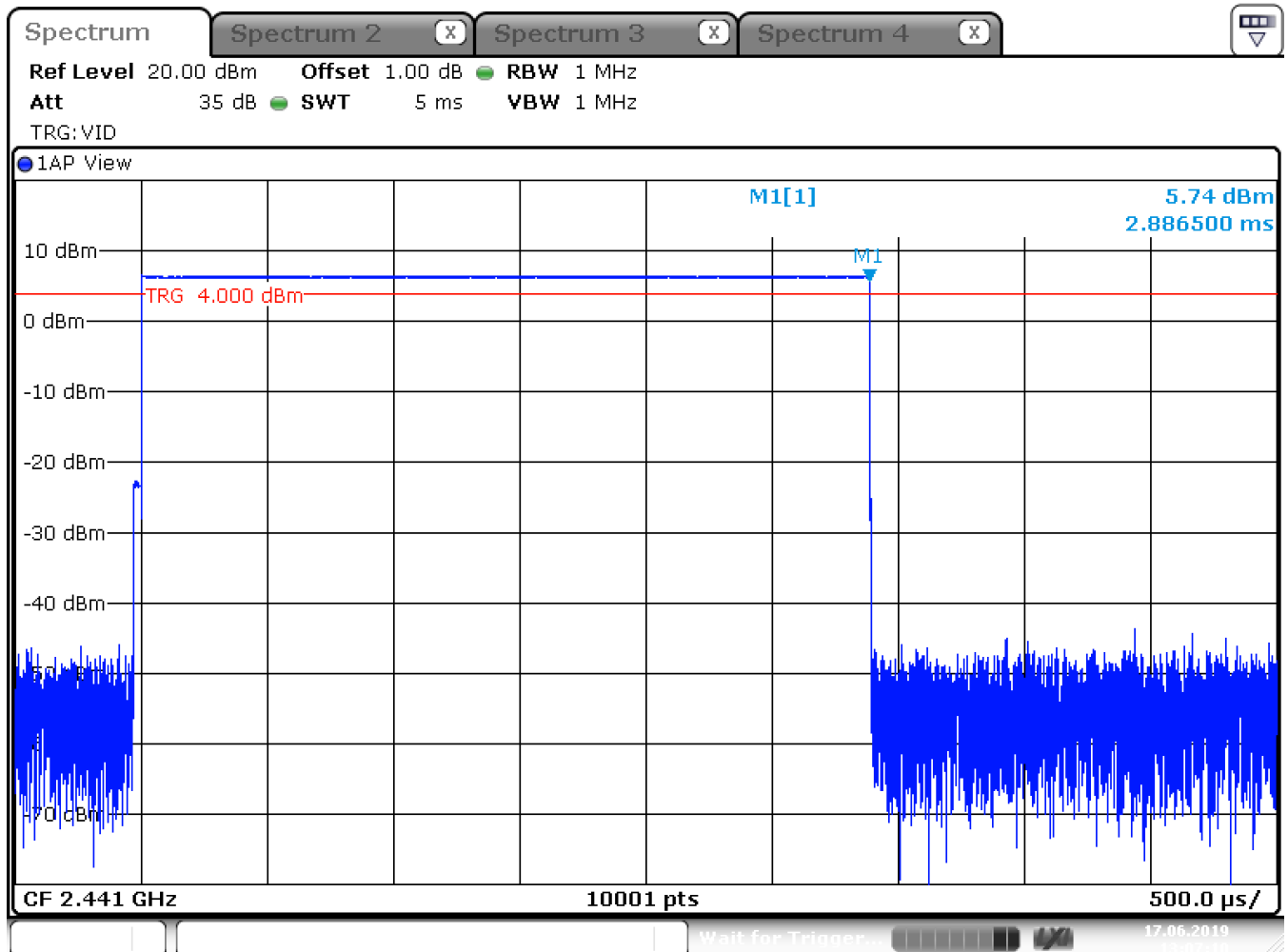


### Average Time of Occupancy

§ 15.247(a)(1)(iii)  
5.1(4)

Conducted Measurement - Mode: Bluetooth BDR

Rated output power: 4,57 mW 2441 MHz



Date: 17.JUN.2019 13:07:10

The dwell time is constant 2,9 ms.

### LIMIT SUBCLAUSE 15.247(a)(1)(iii) – 5.1(4)

The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed.

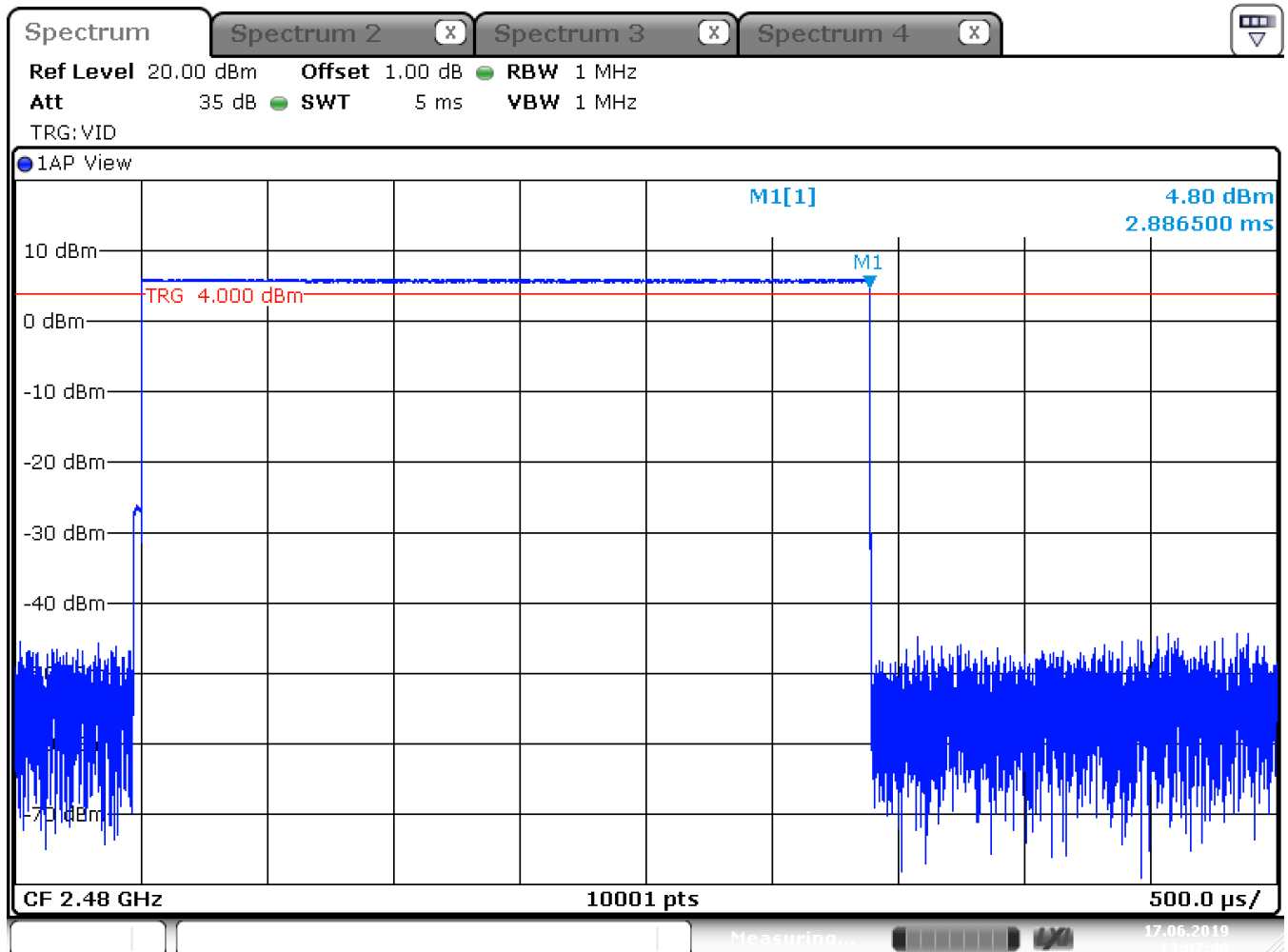
Test Equipment used: EMV-205

### Average Time of Occupancy

§ 15.247(a)(1)(iii)  
5.1(4)

Conducted Measurement - Mode: Bluetooth BDR

Rated output power: 4,57 mW 2480 MHz



Date: 17.JUN.2019 13:07:41

The dwell time is constant 2,9 ms.

### LIMIT SUBCLAUSE 15.247(a)(1)(iii) – 5.1(4)

The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed.

Test Equipment used: EMV-205

**Average Time of Occupancy**

**§ 15.247(a)(1)(iii)  
5.1(4)**

Conducted Measurement - Mode: Bluetooth BDR

Rated output power: 4,57 mW

	Channel 0 (2402 MHz)	Channel 39 (2441 MHz)	Channel 78 (2480 MHz)
Observed time period	79 times 0,4 Seconds = 31,6 seconds		
Time of each individual transmission	2,9 ms	2,9 ms	2,9 ms
Observed number of transmissions	118	122	110
Average time of occupancy	0,3422 seconds	0,3538 seconds	0,319 seconds

**LIMIT SUBCLAUSE 15.247(a)(1)(iii) – 5.1(4)**

The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed.

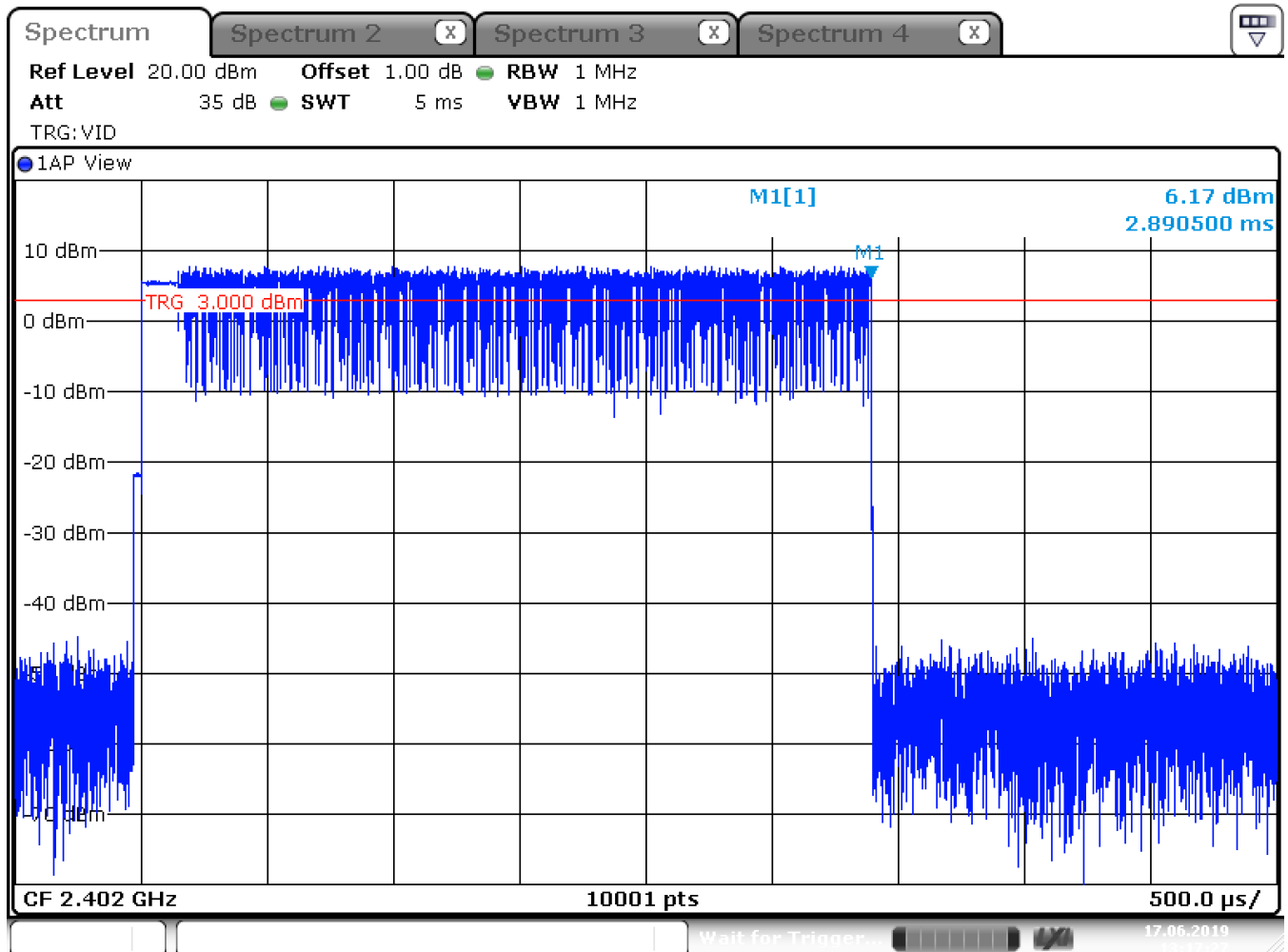
Test Equipment used: EMV-205

### Average Time of Occupancy

§ 15.247(a)(1)(iii)  
5.1(4)

Conducted Measurement - Mode: Bluetooth EDR

Rated output power: 4,57 mW 2402 MHz



Date: 17.JUN.2019 13:17:27

The dwell time is constant 2,9 ms.

### LIMIT SUBCLAUSE 15.247(a)(1)(iii) – 5.1(4)

The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed.

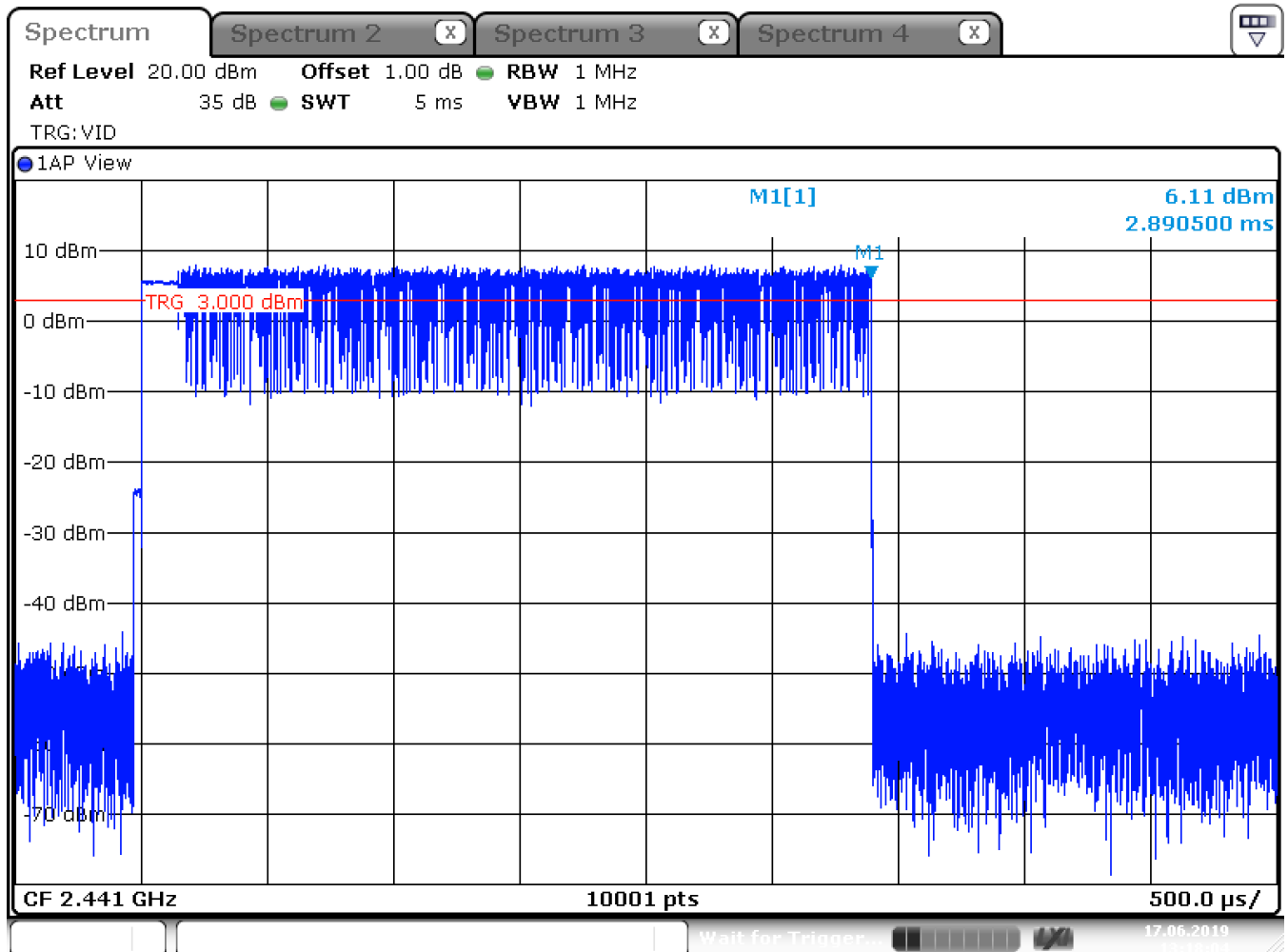
Test Equipment used: EMV-205

### Average Time of Occupancy

§ 15.247(a)(1)(iii)  
5.1(4)

Conducted Measurement - Mode: Bluetooth EDR

Rated output power: 4,57 mW 2441 MHz



Date: 17.JUN.2019 13:18:04

The dwell time is constant 2,9 ms.

### LIMIT SUBCLAUSE 15.247(a)(1)(iii) – 5.1(4)

The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed.

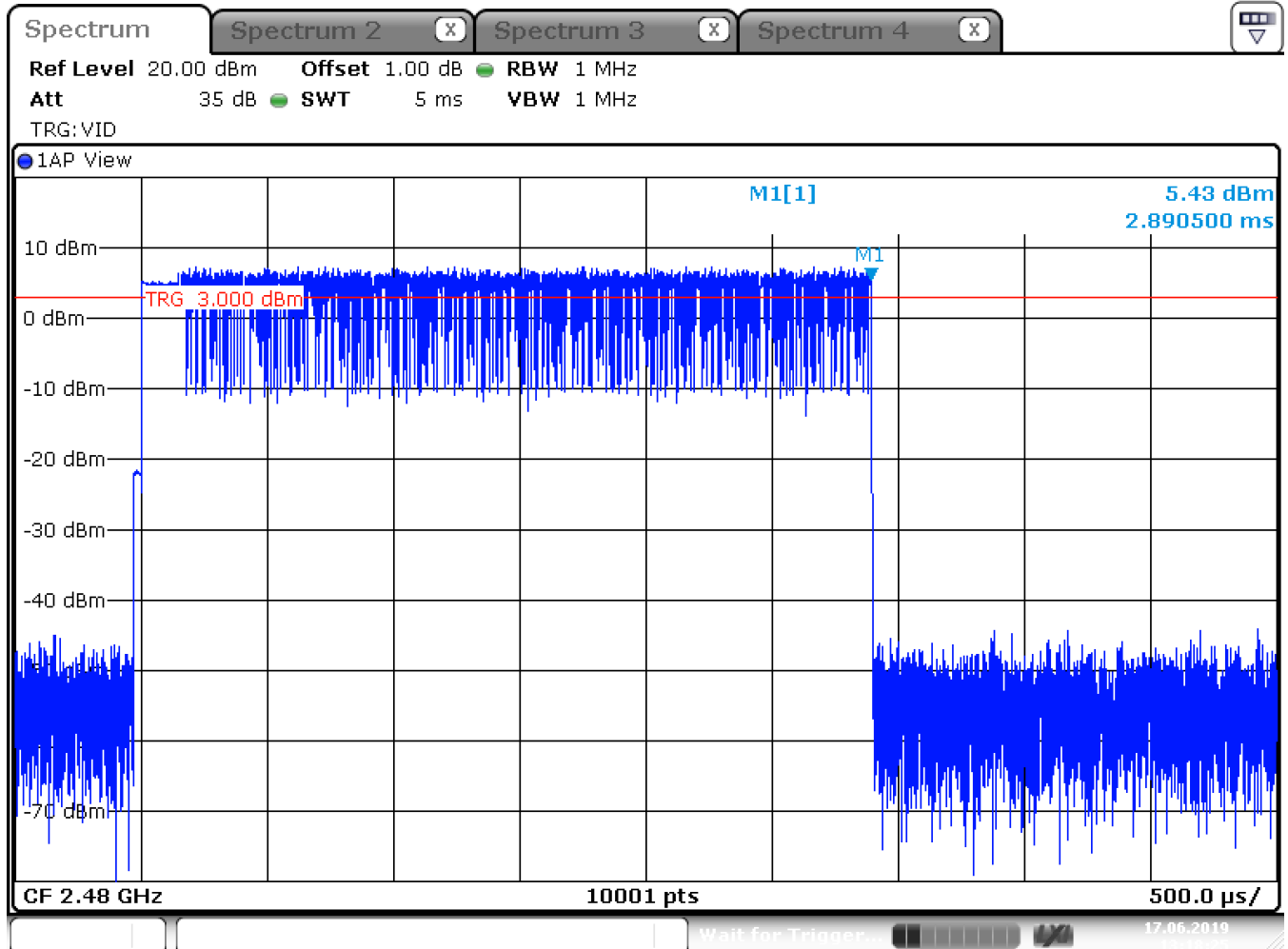
Test Equipment used: EMV-205

### Average Time of Occupancy

§ 15.247(a)(1)(iii)  
5.1(4)

Conducted Measurement - Mode: Bluetooth EDR

Rated output power: 4,57 mW 2480 MHz



Date: 17.JUN.2019 13:18:25

The dwell time is constant 2,9 ms.

### LIMIT SUBCLAUSE 15.247(a)(1)(iii) – 5.1(4)

The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed.

Test Equipment used: EMV-205

**Average Time of Occupancy**

**§ 15.247(a)(1)(iii)  
5.1(4)**

Conducted Measurement - Mode: Bluetooth EDR

Rated output power: 4,57 mW

	Channel 0 (2402 MHz)	Channel 39 (2441 MHz)	Channel 78 (2480 MHz)
Observed time period	79 times 0,4 Seconds = 31,6 seconds		
Time of each individual transmission	2,9 ms	2,9 ms	2,9 ms
Observed number of transmissions	112	107	107
Average time of occupancy	0,3248 seconds	0,3103 seconds	0,3103 seconds

**LIMIT SUBCLAUSE 15.247(a)(1)(iii) – 5.1(4)**

The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed.

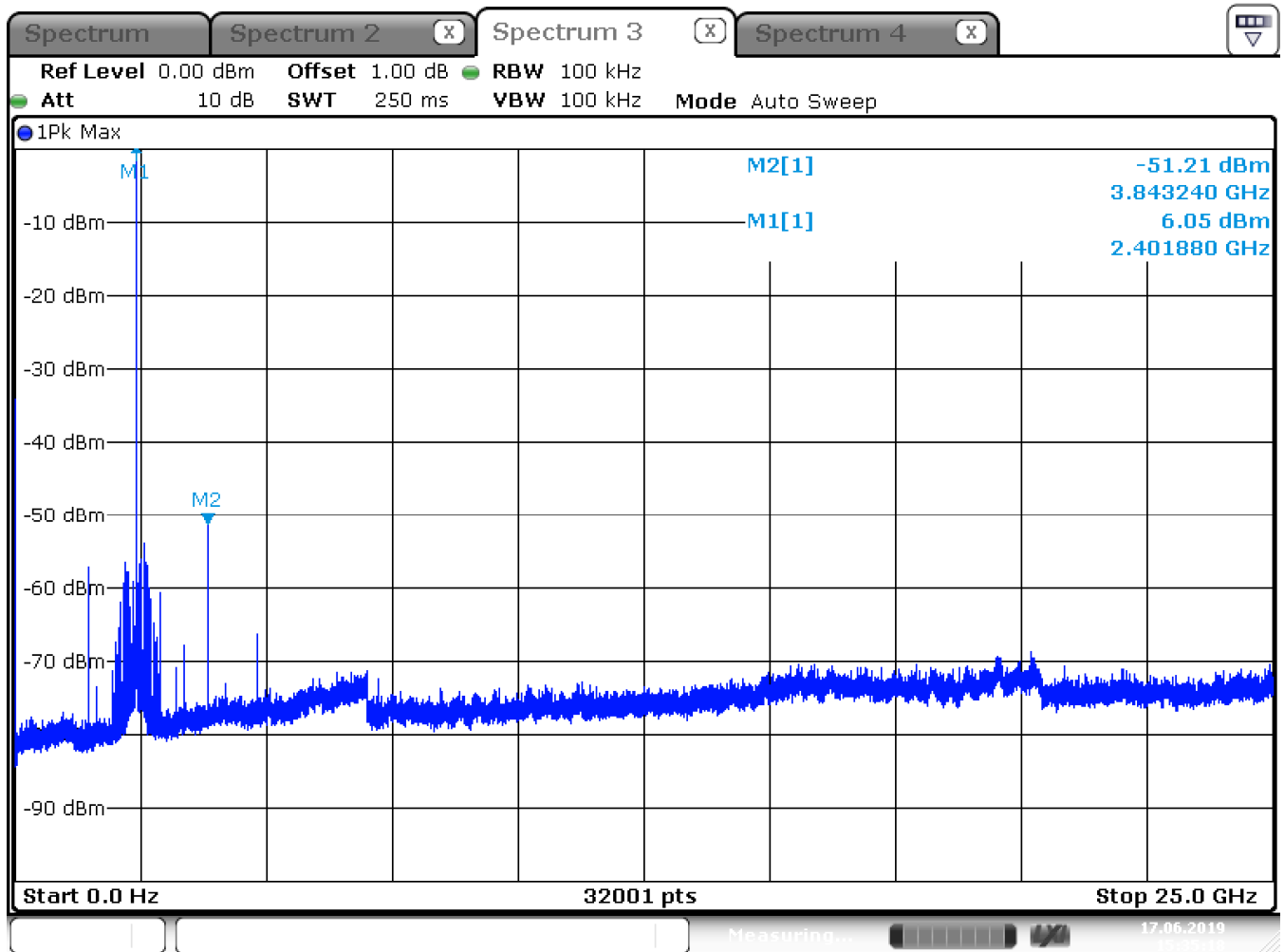
Test Equipment used: EMV-205

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

**§ 15.247(d)  
5.5**

Measurement conducted with Peak-Detector:

Mode: Bluetooth BDR – Channel 0 – 2402 MHz



Date: 17.JUN.2019 15:35:19

**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: EMV-205

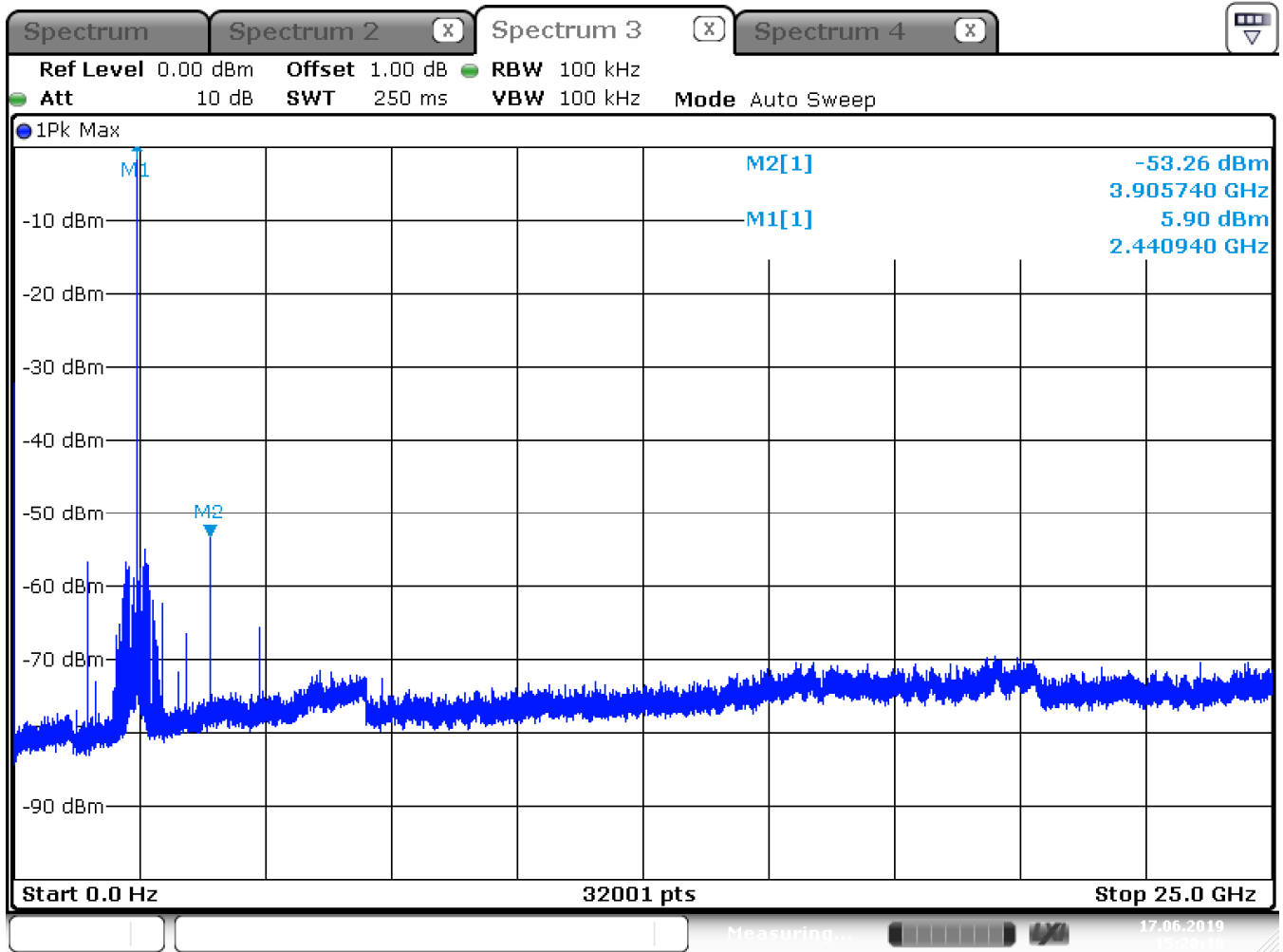


**Out-of-band Emission**

§ 15.247(d)  
5.5

Measurement conducted with Peak-Detector:

Mode: Bluetooth BDR – Channel 39 – 2441 MHz



Date: 17.JUN.2019 15:20:11

**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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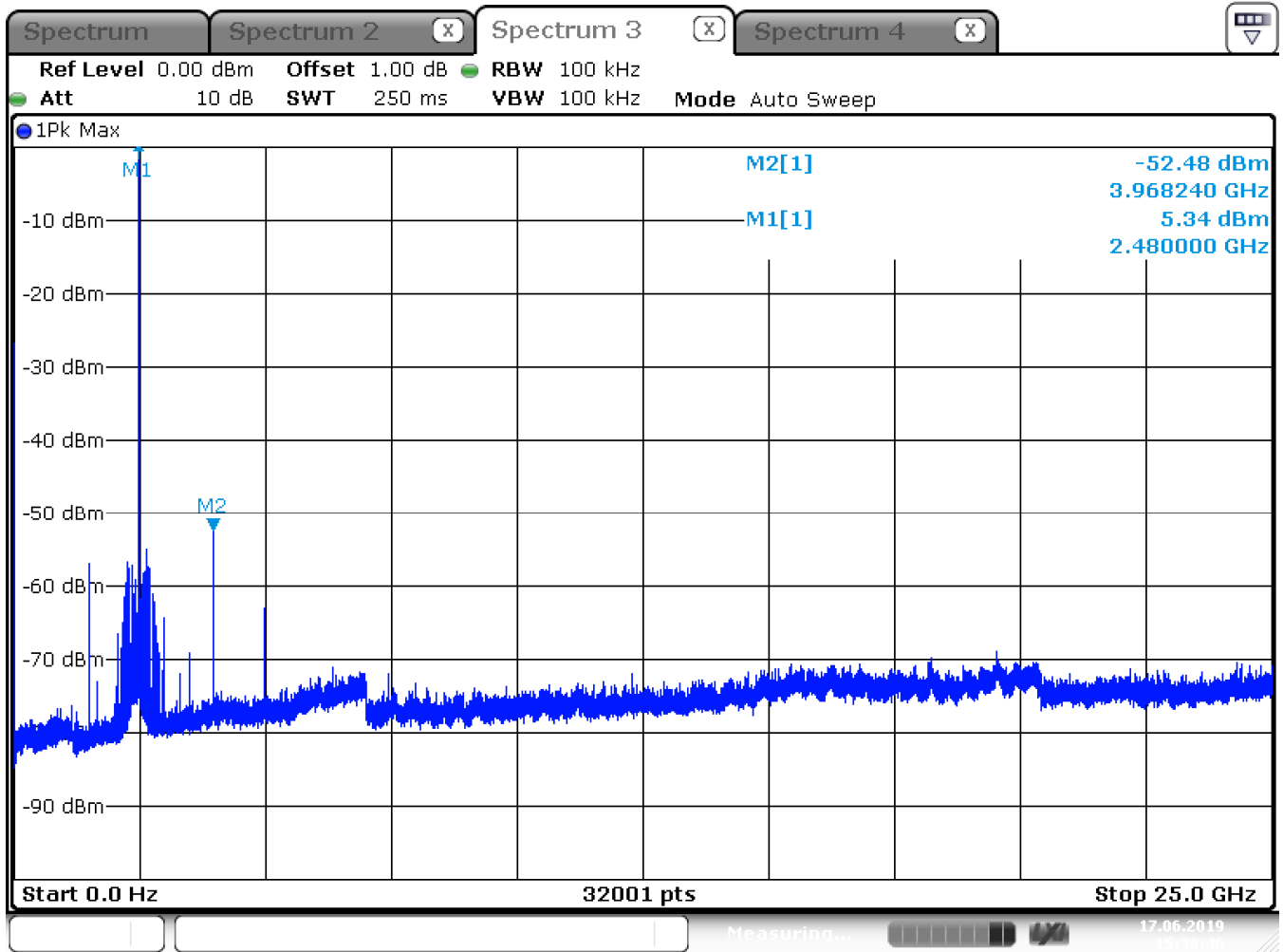
Test Equipment used: EMV-205

**Out-of-band Emission**

§ 15.247(d)  
5.5

Measurement conducted with Peak-Detector:

Mode: Bluetooth BDR – Channel 78 – 2480 MHz



Date: 17.JUN.2019 15:38:47

**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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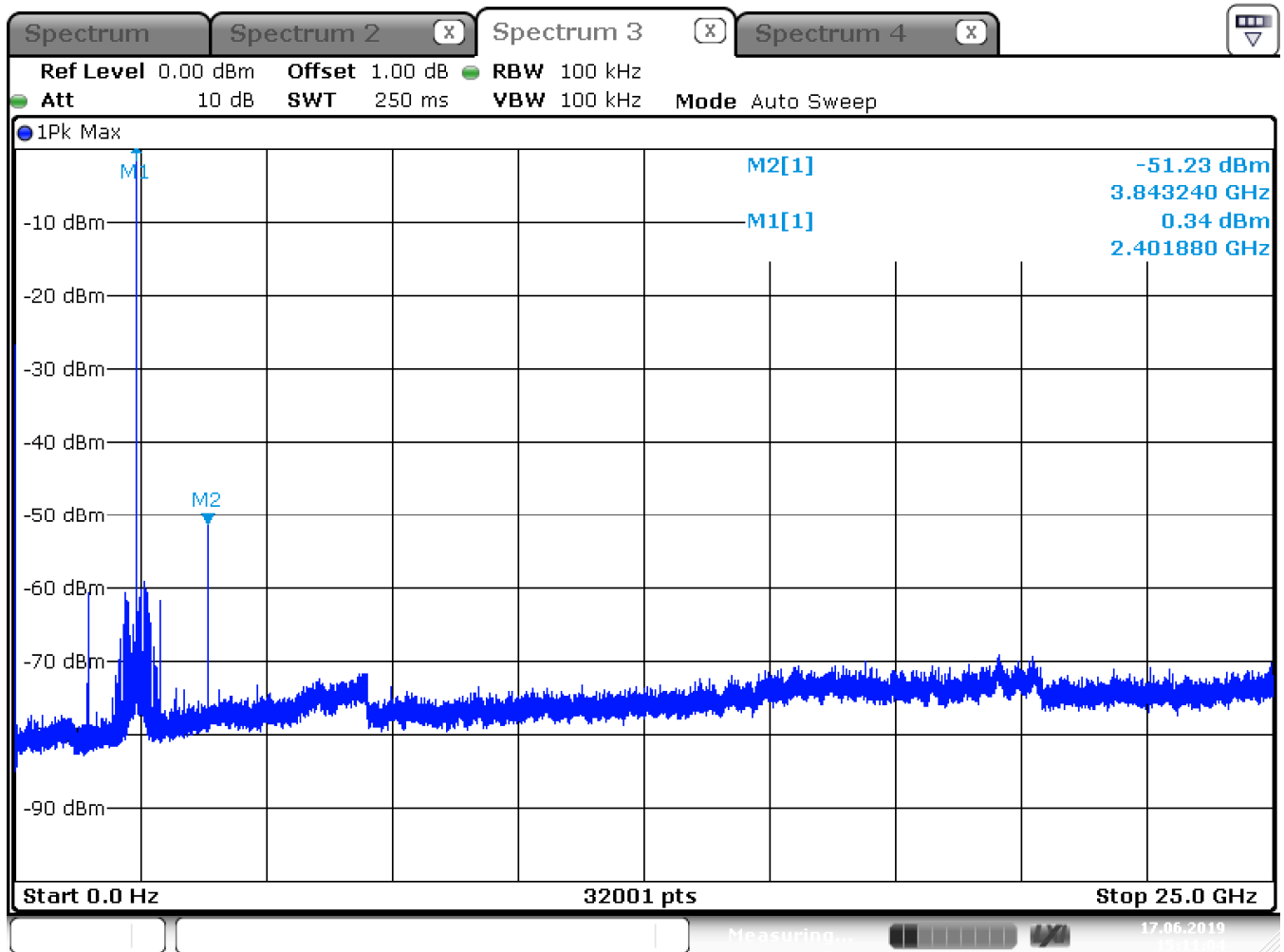
Test Equipment used: EMV-205

**Out-of-band Emission**

§ 15.247(d)  
5.5

Measurement conducted with Peak-Detector:

Mode: Bluetooth EDR – Channel 0 – 2402 MHz



Date: 17.JUN.2019 15:11:05

**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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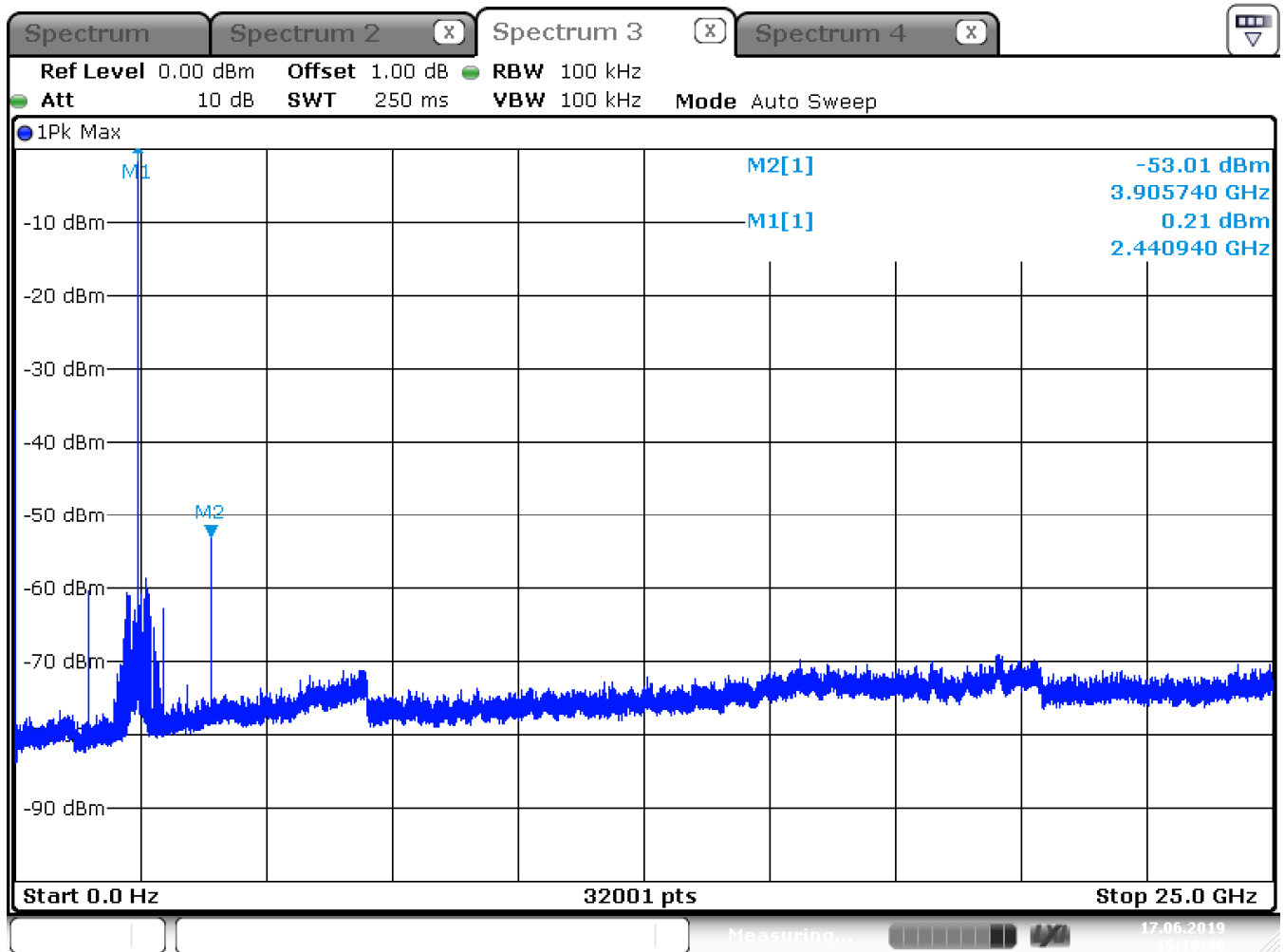
Test Equipment used: EMV-205

**Out-of-band Emission**

§ 15.247(d)  
5.5

Measurement conducted with Peak-Detector:

Mode: Bluetooth EDR – Channel 39 – 2441 MHz



Date: 17.JUN.2019 15:18:40

**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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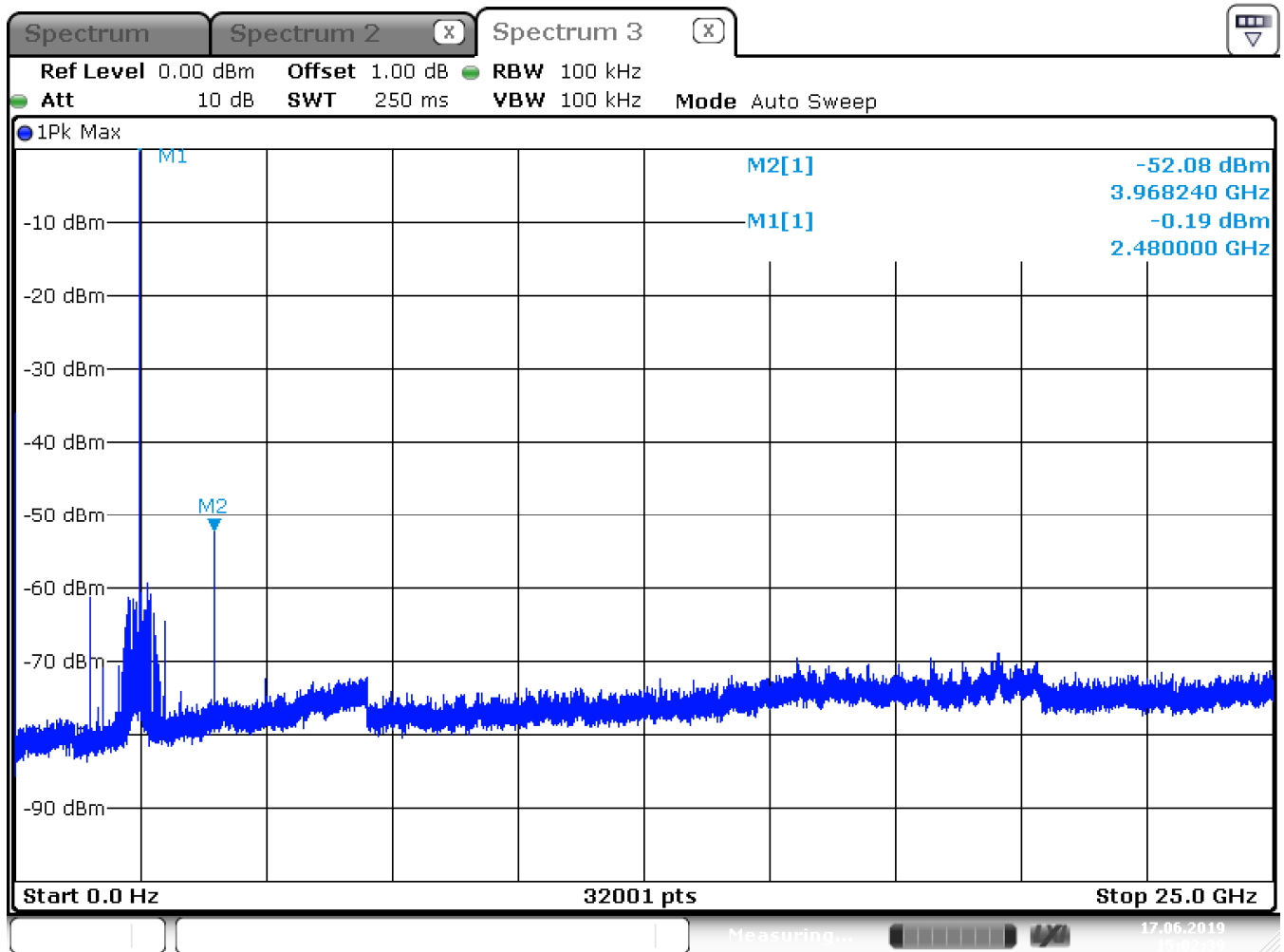
Test Equipment used: EMV-205

**Out-of-band Emission**

§ 15.247(d)  
5.5

Measurement conducted with Peak-Detector:

Mode: Bluetooth EDR – Channel 78 – 2480 MHz



Date: 17.JUN.2019 15:02:40

**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.
---	--

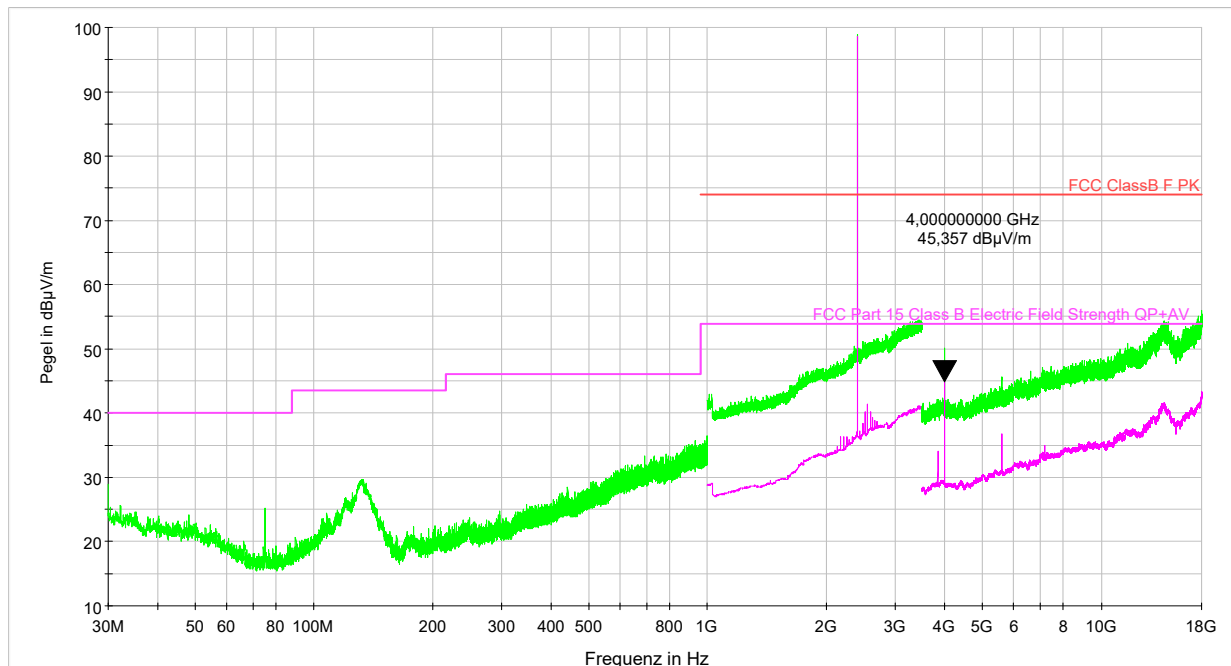
Test Equipment used: EMV-205

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

**§ 15.209(a)**  
**RSS-Gen**

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

Mode: Bluetooth BDR – Channel 0 – 2402 MHz



- PK+\_CLRWR(1);Stream1955\_BDR\_CH0\_F1
- AVG\_MAXH(1);Stream1955\_BDR\_CH0\_F2
- FCC ClassB F PK
- AVG\_MAXH(1);Stream1955\_BDR\_CH0\_F3
- PK+\_MAXH
- AVG\_MAXH
- PK+\_MAXH(1);Stream1955\_BDR\_CH0\_F2
- PK+\_MAXH(1);Stream1955\_BDR\_CH0\_F3
- FCC Part 15 Class B Electric Field Strength QP+AV
- PK+\_CLRWR
- AVG\_CLRWR

Worst case emission: Average @ 4000,0 MHz: 45,4 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

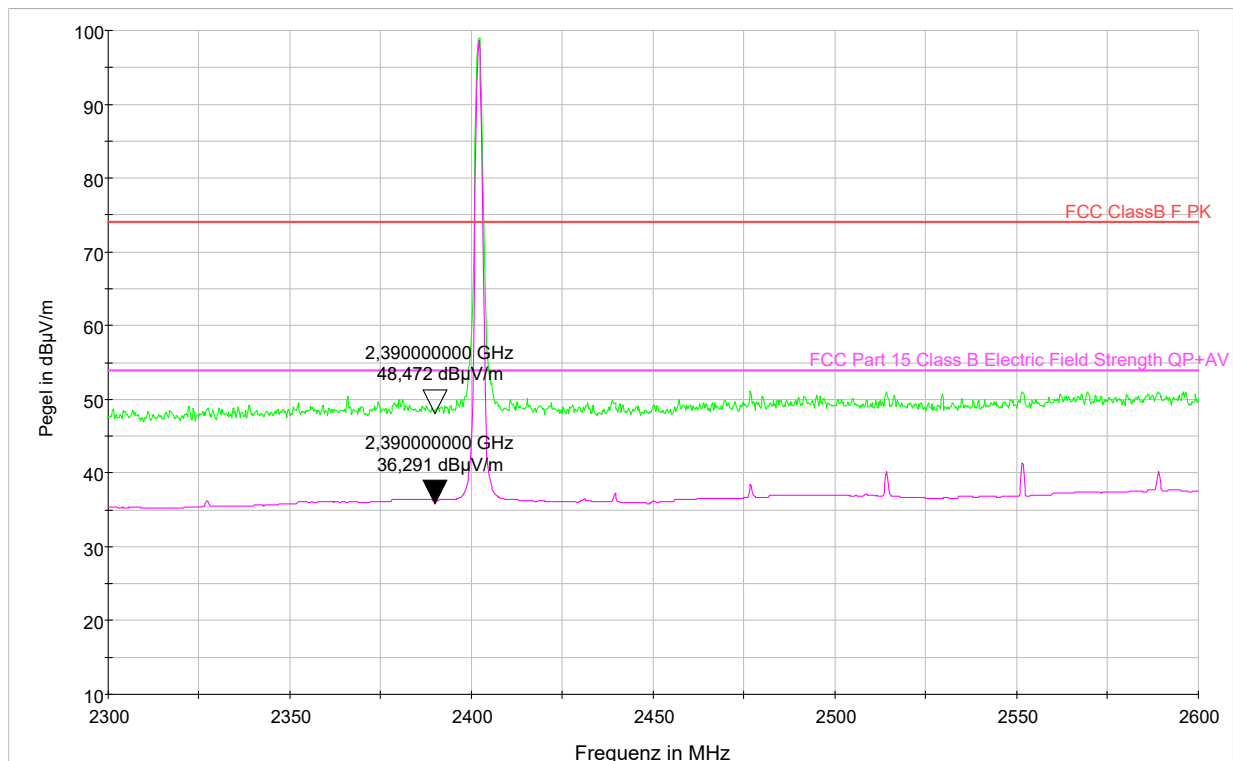
Test Equipment used: EMV-100; EMV-101; EMV-102; EMV-103; EMV-105; EMV-110; EMV-111; EMV-112; EMV-114; EMV-200; EMV-205; NT-122; NT-126; NT-416

**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: Bluetooth BDR – CH 0: 2402 MHz



- FCC Part 15 Class B Electric Field Strength QP+AV
- AVG\_MAXH(1):Stream1955\_BDR\_CH0\_F2
- PK+\_CLRWR
- AVG\_CLRWR
- PK+\_MAXH(1):Stream1955\_BDR\_CH0\_F2
- FCC ClassB F PK
- PK+\_MAXH
- AVG\_MAXH

**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.

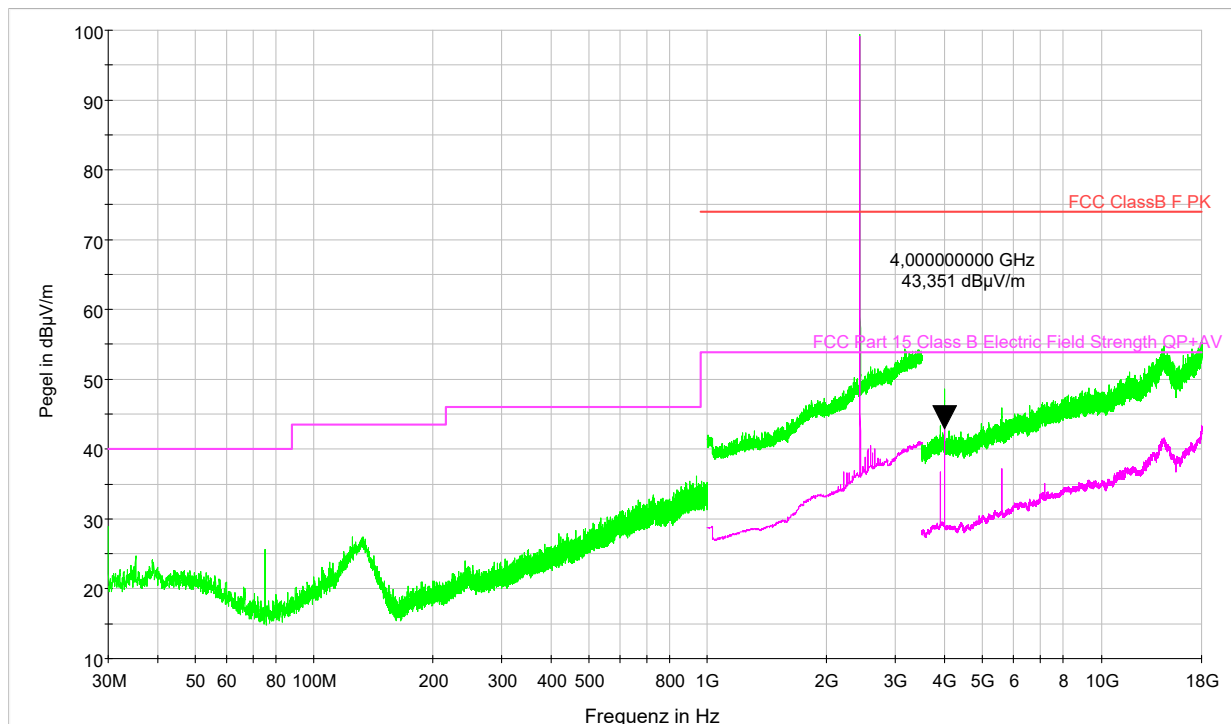
Test Equipment used: EMV-100; EMV-101; EMV-102; EMV-103; EMV-105; EMV-110; EMV-200

**Emissions in restricted bands**  
**Emissions falling within restricted frequency bands**

**§ 15.209(a)**  
**RSS-Gen**

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

Mode: Bluetooth BDR – Channel 39 – 2441 MHz



- PK+\_CLRWR(1);Stream1955\_BDR\_CH39\_F1
- AVG\_MAXH(1);Stream1955\_BDR\_CH39\_F2
- FCC ClassB F PK
- AVG\_MAXH(1);Stream1955\_BDR\_CH39\_F3
- PK+\_MAXH
- AVG\_MAXH
- PK+\_MAXH(1);Stream1955\_BDR\_CH39\_F2
- PK+\_MAXH(1);Stream1955\_BDR\_CH39\_F3
- FCC Part 15 Class B Electric Field Strength QP+AV
- PK+\_CLRWR
- AVG\_CLRWR

Worst case emission: Average @ 4000,0 MHz: 43,4 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

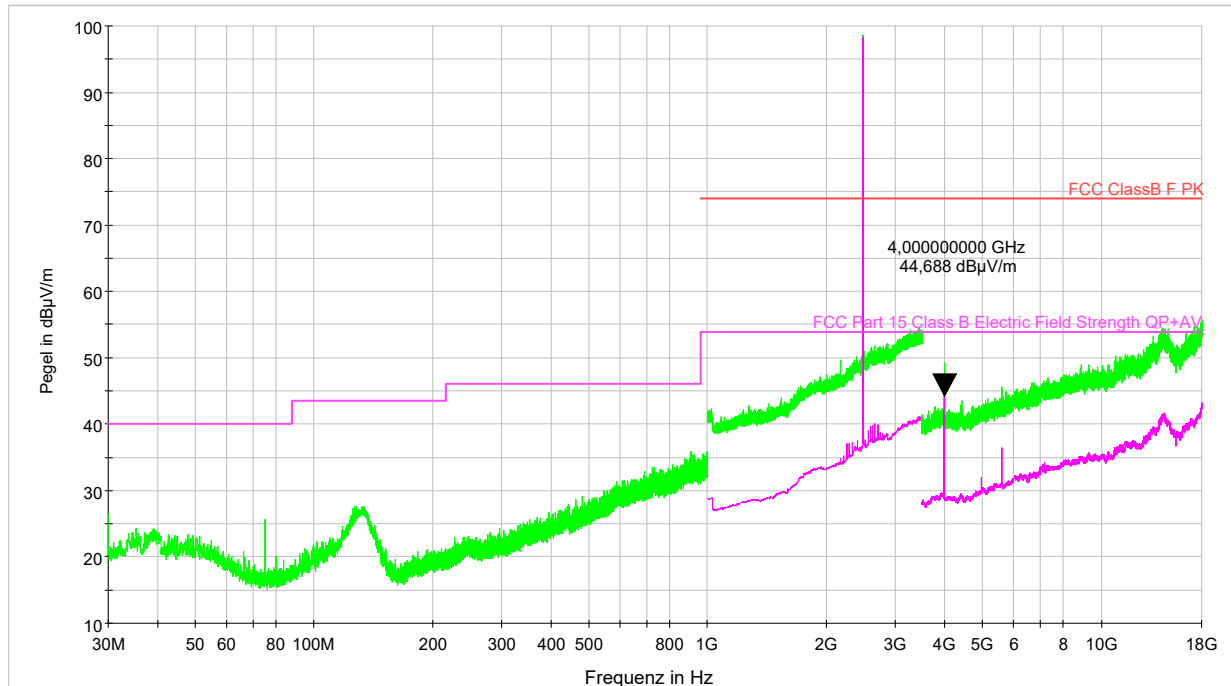


**Emissions in restricted bands**  
**Emissions falling within restricted frequency bands**

**§ 15.209(a)**  
**RSS-Gen**

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

Mode: Bluetooth BDR – Channel 78 – 2480 MHz



- PK+\_CLRWR(1):Stream1955\_BDR\_CH78\_F1
- AVG\_MAXH(1):Stream1955\_BDR\_CH78\_F2
- FCC ClassB F PK
- AVG\_MAXH(1):Stream1955\_BDR\_CH78\_F3
- PK+\_MAXH
- AVG\_MAXH
- PK+\_MAXH(1):Stream1955\_BDR\_CH78\_F2
- PK+\_MAXH(1):Stream1955\_BDR\_CH78\_F3
- FCC Part 15 Class B Electric Field Strength QP+AV
- PK+\_CLRWR
- AVG\_CLRWR

Worst case emission: Average @ 4000,0 MHz: 44,7 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

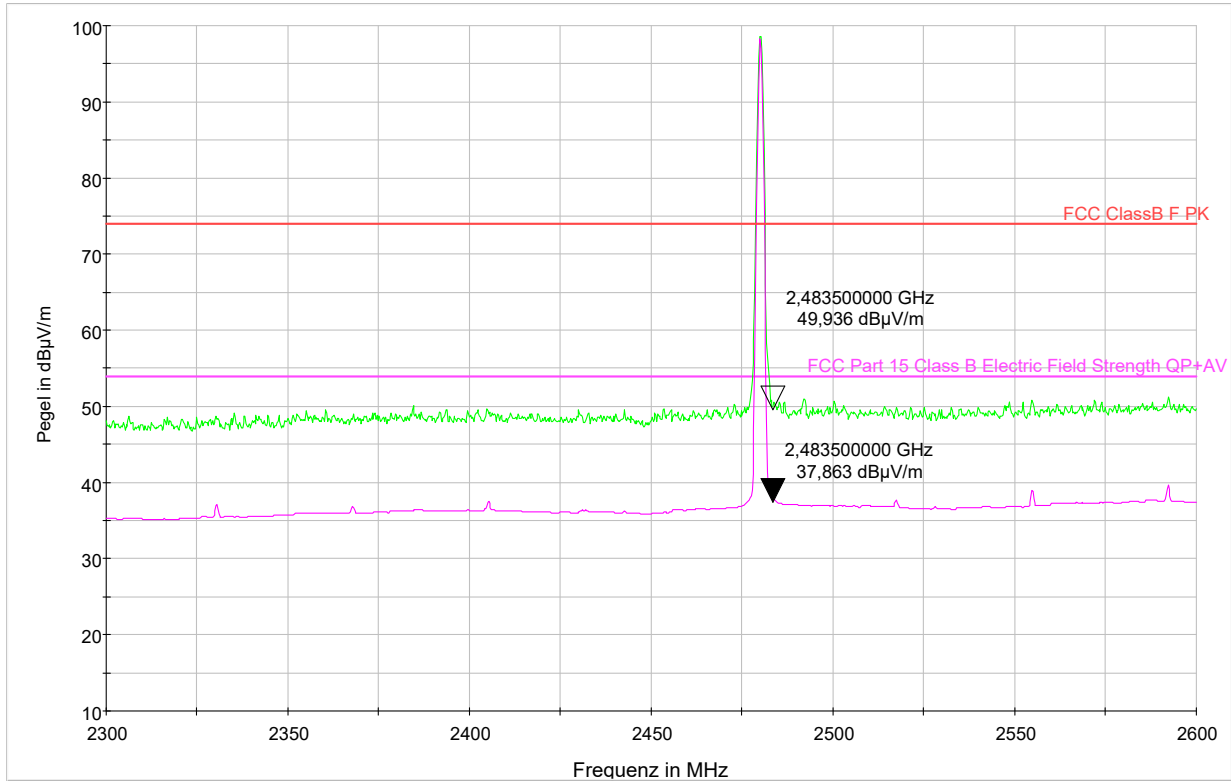
Test Equipment used: EMV-100; EMV-101; EMV-102; EMV-103; EMV-105; EMV-110; EMV-111; EMV-112; EMV-114; EMV-200; EMV-205; NT-122; NT-126; NT-416

**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: Bluetooth BDR – CH 78: 2480 MHz



- FCC Part 15 Class B Electric Field Strength QP+AV
- PK+\_MAXH(1):Stream1955\_BDR\_CH78\_F2
- AVG\_MAXH(1):Stream1955\_BDR\_CH78\_F2
- PK+\_CLRWR
- AVG\_CLRWR
- FCC ClassB F PK
- PK+\_MAXH
- AVG\_MAXH

**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.

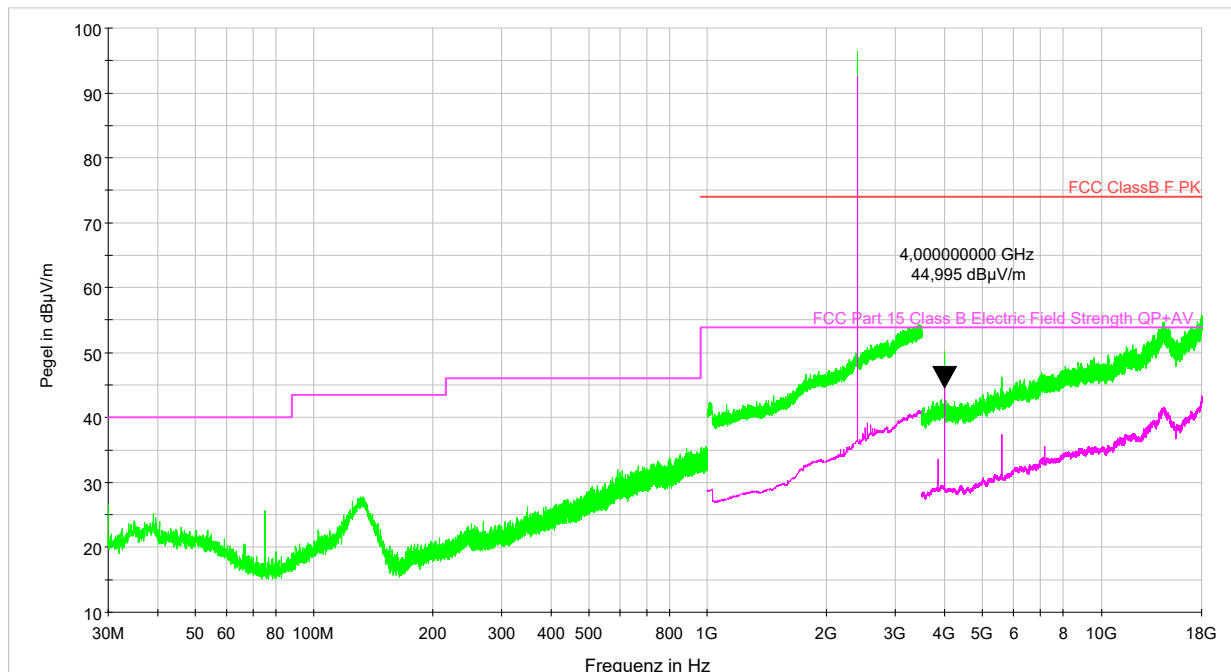
Test Equipment used: EMV-100; EMV-101; EMV-102; EMV-103; EMV-105; EMV-110; EMV-200

**Emissions in restricted bands**  
**Emissions falling within restricted frequency bands**

**§ 15.209(a)**  
**RSS-Gen**

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

Mode: Bluetooth EDR – Channel 0 – 2402 MHz



- PK+ CLRWR(1):Stream1955\_EDR\_CH0\_F1
- AVG\_MAXH(1):Stream1955\_EDR\_CH0\_F2
- FCC ClassB F PK
- AVG\_MAXH(1):Stream1955\_EDR\_CH0\_F3
- PK+ MAXH
- AVG\_MAXH
- PK+ MAXH(1):Stream1955\_EDR\_CH0\_F2
- PK+ MAXH(1):Stream1955\_EDR\_CH0\_F3
- FCC Part 15 Class B Electric Field Strength QP+AV
- PK+ CLRWR
- AVG\_CLRWR

Worst case emission: Average @ 4000,0 MHz: 45,0 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

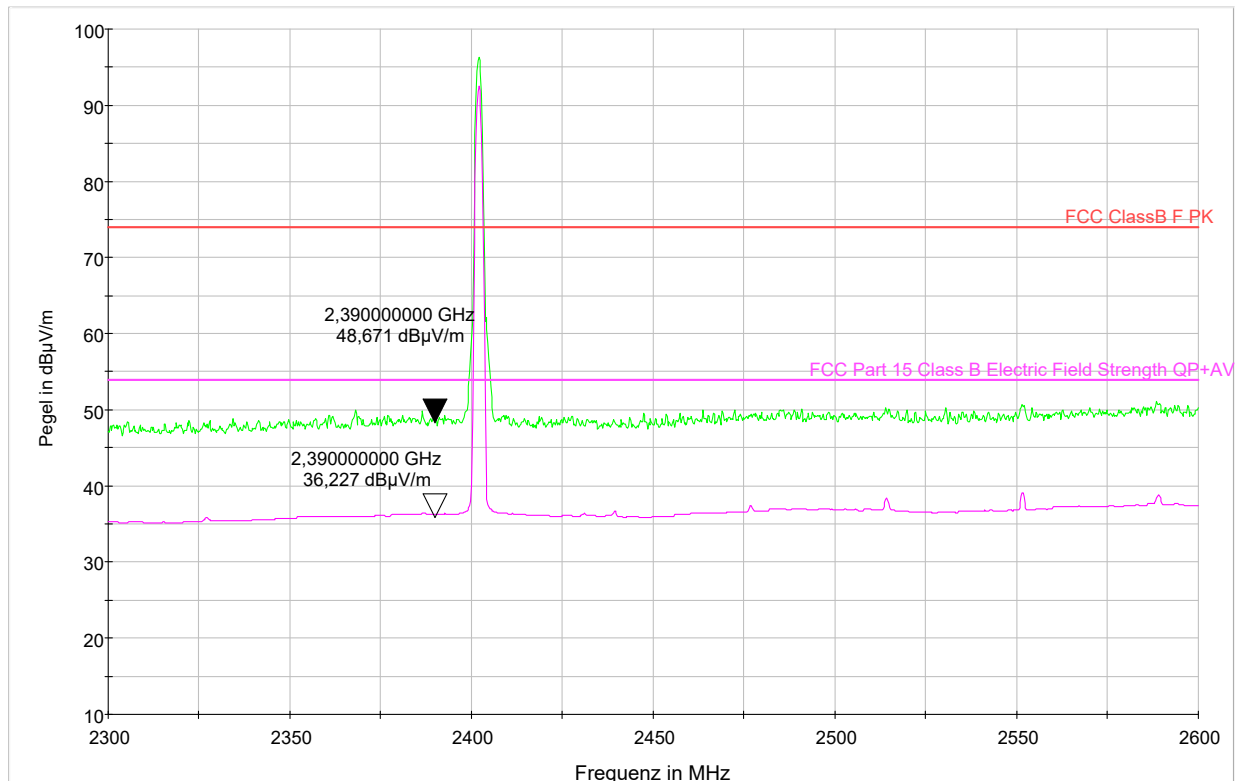
Test Equipment used: EMV-100; EMV-101; EMV-102; EMV-103; EMV-105; EMV-110; EMV-111; EMV-112; EMV-114; EMV-200; EMV-205; NT-122; NT-126; NT-416

**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: Bluetooth EDR – CH 0: 2402 MHz



- PK+ \_MAXH(1):Stream1955\_EDR\_CH0\_F2
- FCC ClassB F PK
- PK+ \_CLRWR
- AVG \_CLRWR
- AVG \_MAXH(1):Stream1955\_EDR\_CH0\_F2
- FCC Part 15 Class B Electric Field Strength QP+AV
- PK+ \_MAXH
- AVG \_MAXH

**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.

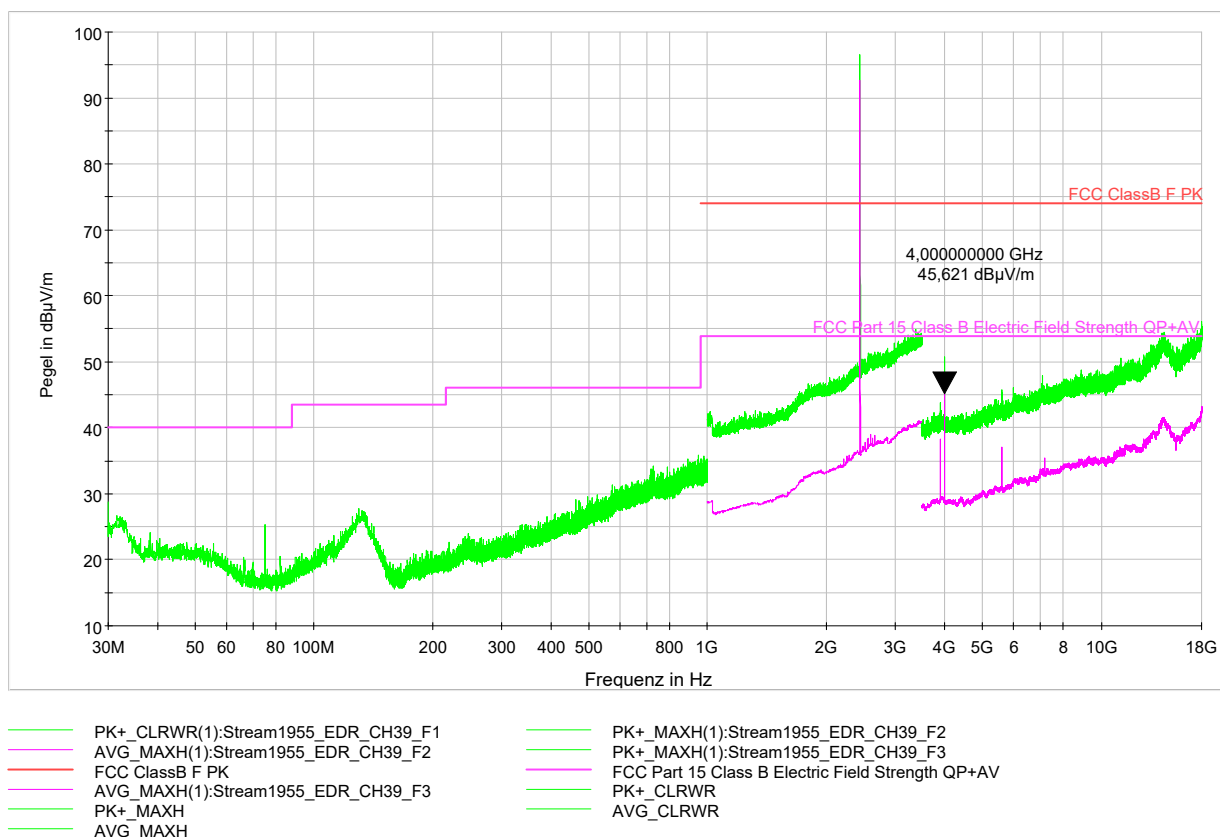
Test Equipment used: EMV-100; EMV-101; EMV-102; EMV-103; EMV-105; EMV-110; EMV-200

**Emissions in restricted bands**  
**Emissions falling within restricted frequency bands**

**§ 15.209(a)**  
**RSS-Gen**

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

Mode: Bluetooth EDR – Channel 39 – 2441 MHz



Worst case emission: Average @ 4000,0 MHz: 45,6 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

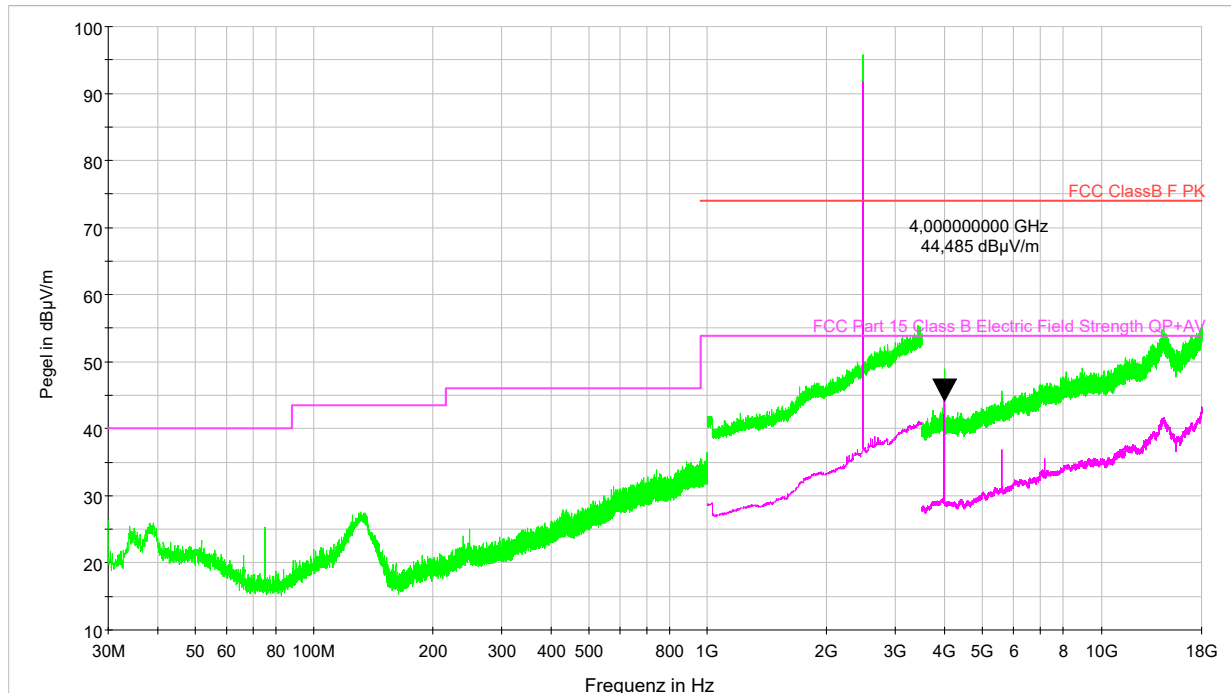
Test Equipment used: EMV-100; EMV-101; EMV-102; EMV-103; EMV-105; EMV-110; EMV-111; EMV-112; EMV-114; EMV-200; EMV-205; NT-122; NT-126; NT-416

**Emissions in restricted bands**  
**Emissions falling within restricted frequency bands**

**§ 15.209(a)**  
**RSS-Gen**

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

Mode: Bluetooth EDR – Channel 78 – 2480 MHz



- PK+ \_CLRWR(1):Stream1955\_EDR\_CH78\_F1
- AVG \_MAXH(1):Stream1955\_EDR\_CH78\_F2
- FCC ClassB F PK
- AVG \_MAXH(1):Stream1955\_EDR\_CH78\_F3
- PK+ \_MAXH
- AVG \_MAXH
- PK+ \_MAXH(1):Stream1955\_EDR\_CH78\_F2
- PK+ \_MAXH(1):Stream1955\_EDR\_CH78\_F3
- FCC Part 15 Class B Electric Field Strength QP+AV
- PK+ \_CLRWR
- AVG \_CLRWR

Worst case emission: Average @ 4000,0 MHz: 44,5 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

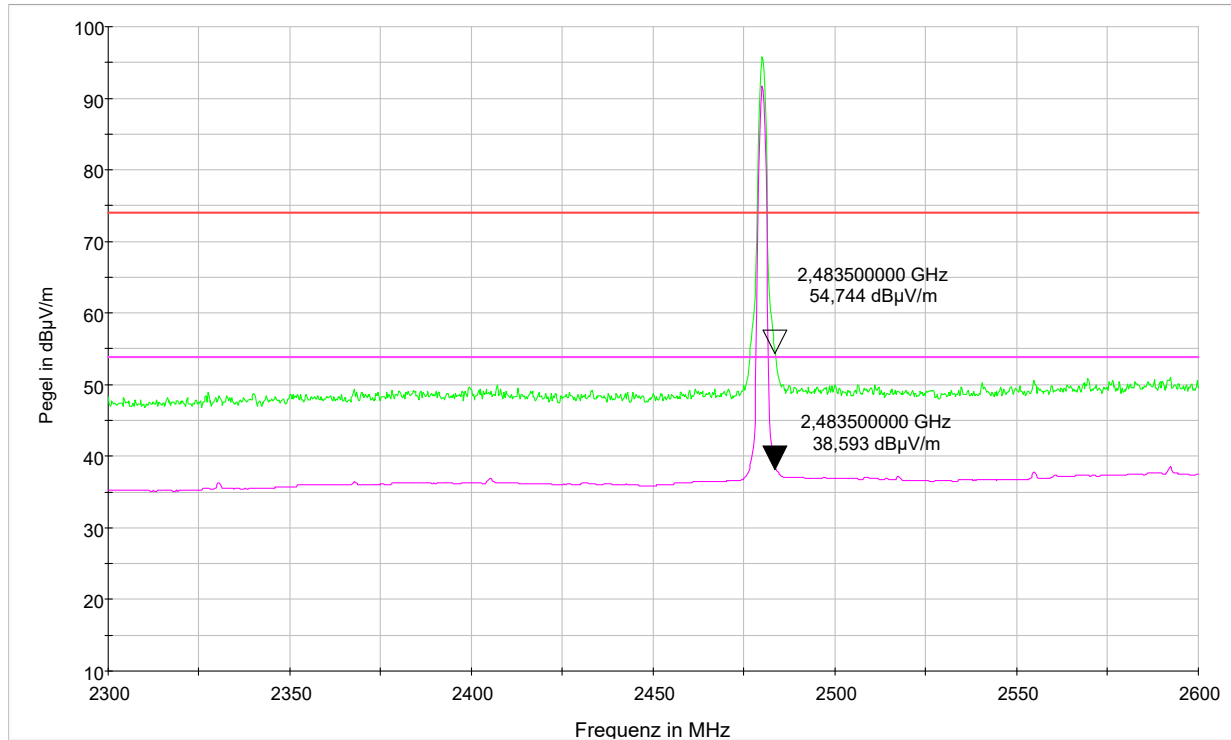
Test Equipment used: EMV-100; EMV-101; EMV-102; EMV-103; EMV-105; EMV-110; EMV-111; EMV-112; EMV-114; EMV-200; EMV-205; NT-122; NT-126; NT-416

**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: Bluetooth EDR – CH 78: 2480 MHz



- PK+\_MAXH(1);Stream1955\_EDR\_CH78\_F2
- FCC ClassB F PK
- PK+\_CLRWR
- AVG\_CLRWR
- AVG\_MAXH(1);Stream1955\_EDR\_CH78\_F2
- FCC Part 15 Class B Electric Field Strength QP+AV
- PK+\_MAXH
- AVG\_MAXH

**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.

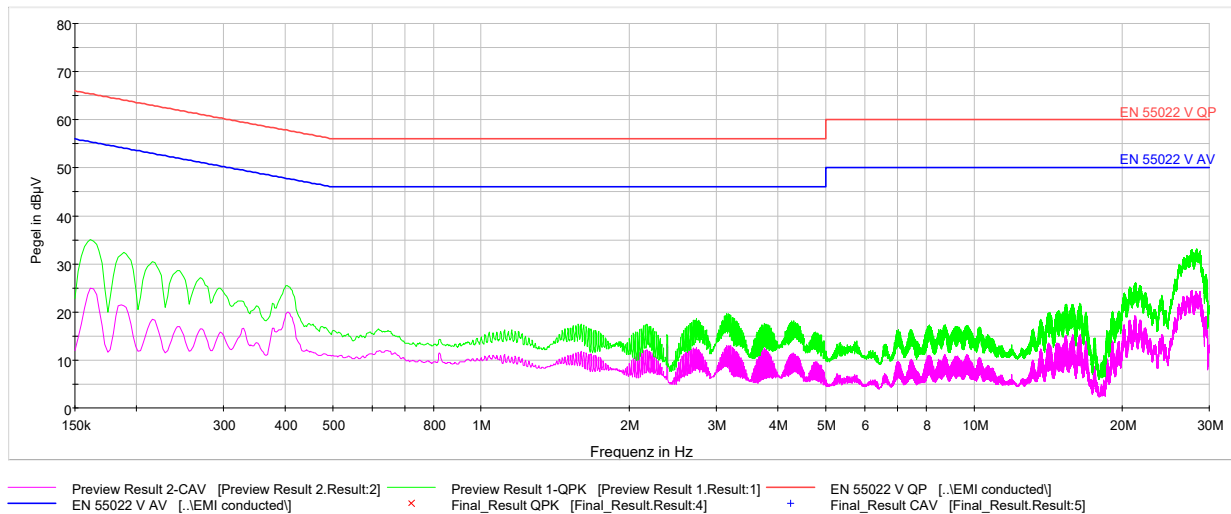
Test Equipment used: EMV-100; EMV-101; EMV-102; EMV-103; EMV-105; EMV-110; EMV-200

#### 4.8. Conducted Limits

#### § 15.207 RSS-Gen 8.8

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

Setup: Bluetooth BDR, Frequency hopping active



#### 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

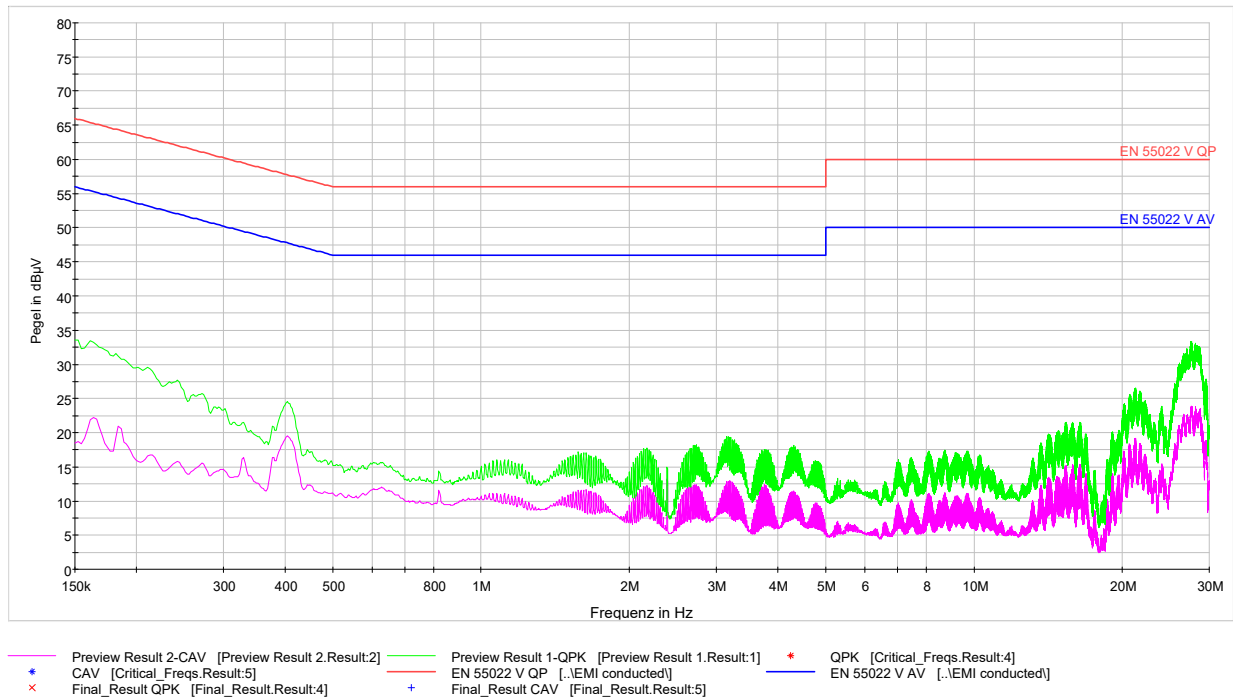


**Conducted Limits**

**§ 15.207  
RSS-Gen 8.8**

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

Setup: Bluetooth EDR, Frequency hopping active



**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

#### **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"/>	Power quality analyzer Fluke 1760 (complete set)	NT-160 - NT-173
<input type="checkbox"/>	Stripline according to ISO 11452-5	NT-108	<input type="checkbox"/>	Spectrumalyzer – FSP7 9 kHz – 7 GHz	NT-200
<input type="checkbox"/>	MA4000 - Antenna mast 1 - 4 m height	NT-110/1	<input type="checkbox"/>	ESCI - Test receiver 9 kHz - 7 GHz	NT-203/1
<input type="checkbox"/>	DS - Turntable 0 - 400 ° Azimuth	NT-111/1	<input type="checkbox"/>	ESI26 – Test receiver 20 Hz – 26,5 GHz	NT-207
<input type="checkbox"/>	CO3000 Controller Mast+Turntable	NT-112/1	<input type="checkbox"/>	Digital Radio Tester CMW500	NT-208/1
<input type="checkbox"/>	HUF-Z3 - Log. Per. Antenna 200 - 1000 MHz	NT-121	<input type="checkbox"/>	Noise-gen., ITU-R 559-2 20 Hz – 20 kHz	NT-209
<input type="checkbox"/>	FMZB1513 - Loop Antenna 9 kHz - 30 MHz	NT-122/1	<input type="checkbox"/>	CMTA - Radiocommunication analyzer ; 0,1 - 1000 MHz	NT-210
<input type="checkbox"/>	HFH-Z6 - Rod Antenna 9 kHz - 30 MHz	NT-123	<input type="checkbox"/>	3271 - Spectrum analyzer 100 Hz - 26,5 GHz	NT-211
<input type="checkbox"/>	3121C - Dipole Antenna 28 - 1000 MHz	NT-124	<input type="checkbox"/>	Digital Radio Tester Aeroflex 3920	NT-212/1
<input type="checkbox"/>	3115 - Horn Antenna 1 - 18 GHz (immunity)	NT-125	<input type="checkbox"/>	Mixer M28HW 26,5 GHz - 40 GHz	NT-214
<input type="checkbox"/>	3116 - Horn Antenna 18 - 40 GHz	NT-126	<input type="checkbox"/>	RubiSource T&M Timing reference	NT-216
<input type="checkbox"/>	SAS-200/543 - Bicon. Antenna 20 MHz - 300 MHz	NT-127	<input type="checkbox"/>	Radiocommunicationanalyzer SWR 1180 MD	NT-217
<input type="checkbox"/>	AT-1080 - Log. Per. Antenna 80 - 1000 MHz	NT-128	<input type="checkbox"/>	Mixer M19HWD 40 GHz – 60 GHz	NT-218
<input type="checkbox"/>	HK-116 - bicon. Antenna 20 MHz - 300 MHz	NT-129	<input type="checkbox"/>	Mixer M12HWD 60 GHz – 90 GHz	NT-219
<input type="checkbox"/>	HK-116 - bicon. Antenna 20 MHz - 300 MHz	NT-130	<input type="checkbox"/>	DSO9104 Digital scope	NT-220/1
<input type="checkbox"/>	3146 - Log. Per. Antenna 200 – 1000 MHz	NT-131	<input type="checkbox"/>	TPS 2014 Digital scope	NT-222
<input type="checkbox"/>	VULB 9163 Trilog Antenna 30 – 3000 MHz	NT-131/1	<input type="checkbox"/>	Artificial Ear according to IEC 60318	NT-224
<input type="checkbox"/>	Loop Antenna H-Field	NT-132	<input type="checkbox"/>	1 kHz Sound calibrator	NT-225
<input type="checkbox"/>	Horn Antenna 500 MHz - 2900 MHz	NT-133	<input type="checkbox"/>	B10 - Harmonics and flicker analyzer	NT-232
<input type="checkbox"/>	Horn Antenna 500 MHz - 6000 MHz	NT-133/1	<input type="checkbox"/>	SRM-3006 Spectrumalyzer	NT-233/1a
<input type="checkbox"/>	Log. per. Antenna 800 MHz - 2500 MHz	NT-134	<input type="checkbox"/>	E-field probe SRM 75 MHz – 3 GHz	NT-234
<input type="checkbox"/>	Log. per. Antenna 800 MHz - 2500 MHz	NT-135	<input type="checkbox"/>	Field Meter NBM-500 incl. E- and H-Field probes	NT-240a-e
<input type="checkbox"/>	BiConiLog Antenna 26 MHz – 2000 MHz	NT-137	<input type="checkbox"/>	Hall-Teslameter ETM-1	NT-241
<input type="checkbox"/>	Conical Dipol Antenna PCD8250	NT-138	<input type="checkbox"/>	EFA-3 H-field- / E-field probe	NT-243
<input type="checkbox"/>	HF 906 - Horn Antenna 1 - 18 GHz (emission)	NT-139	<input type="checkbox"/>	EHP-50F H-field- / E-field probe	NT-243/1
<input type="checkbox"/>	HZ-1 Antenna tripod	NT-150	<input type="checkbox"/>	Field Meter EMR-200 100 kHz – 3 GHz	NT-244
<input type="checkbox"/>	BN 1500 Antenna tripod	NT-151	<input type="checkbox"/>	E-field probe 100 kHz – 3 GHz	NT-245
<input type="checkbox"/>	Ant. tripod for EN61000-4-3 Model TP1000A	NT-156	<input type="checkbox"/>	H-field probe 300 kHz – 30 MHz	NT-246

**Division:**  
Industry & Energy

Department: FG

Test report number:  
INE-AT/FG-19/195

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Date: 02.12.2019

## Appendix 1 (continued)

### Test equipment used

**Division:**  
Industry & Energy

Department: FG

Test report number:  
INE-AT/FG-19/195

Page: 2 of 4

Date: 02.12.2019

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

## 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 10.50.40 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			

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## 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
<input type="checkbox"/>	Turntabel 6 m diameter	EMV-101	<input type="checkbox"/>	HF- Amplifier 9 kHz-250 MHz BBA150 (low noise)	EMV-306
<input type="checkbox"/>	Antenna mast + controller	EMV-102+ EMV-103	<input type="checkbox"/>	ISO11451-2 TLS 10 kHz – 30 MHz	EMV-307
<input type="checkbox"/>	EMC Video/Audiosystem	EMV-104	<input type="checkbox"/>	Load Dump Generator LD 200N	EMV-350
<input type="checkbox"/>	EMC Software EMC32 Version 10.50.40	EMV-105	<input type="checkbox"/>	Ultra Compact Symulator UCS 200N100	EMV-351
<input type="checkbox"/>	Hornantenna 1 – 18 GHz HF 907	EMV-110	<input type="checkbox"/>	Automotive Power fail module PFM 200N100.1	EMV-352
<input type="checkbox"/>	Antennapre.amp. 1 – 18 GHz ERZ-LNA0200-1800-30-2	EMV-111	<input type="checkbox"/>	Voltage Drop Symulator VDS 200Q100	EMV-353
<input type="checkbox"/>	Trilog Antenna 30-3000 MHz VULB9163	EMV-112	<input type="checkbox"/>	Arb. Generator AutoWave	EMV-354
<input type="checkbox"/>	Monopol 9 kHz – 30 MHz VAMP 9243	EMV-113	<input type="checkbox"/>	Ultra Compact Symulator UCS 500N7	EMV-355
<input type="checkbox"/>	Antennapre.amp 18 – 40 GHz BBV 9721	EMV-114	<input type="checkbox"/>	Coupling decoupling network CNI 503B7 / 32 A	EMV-356
<input type="checkbox"/>	Hornantenna 200 – 2000 MHz AH-220	EMV-115	<input type="checkbox"/>	Coupling decoupling network CNI 503B7 / 63 A	EMV-357
<input type="checkbox"/>	DC Artificial Network PVDC 8300	EMV-150	<input type="checkbox"/>	Telecom Surge Generator TSurge 7	EMV-358
<input type="checkbox"/>	AC Artificial Network NNLK 8121 RC	EMV-151	<input type="checkbox"/>	Coupling decoupling network CNI 508N2	EMV-359
<input type="checkbox"/>	EMI Receiver ESR26	EMV-200	<input type="checkbox"/>	Coupling decoupling network CNV 504N2.2	EMV-360
<input type="checkbox"/>	Signalgenerator 9 kHz – 40 GHz N5173B	EMV-201	<input type="checkbox"/>	Immunity generator NSG4060/NSG4060-1	EMV-361
<input type="checkbox"/>	GPS Frequency normal B-88	EMV-202	<input type="checkbox"/>	Coupling network CDND M316-2	EMV-362
<input type="checkbox"/>	DC Power supply N5745A	EMV-203	<input type="checkbox"/>	Coupling network CT419-5	EMV-363
<input type="checkbox"/>	Spektrum Analyzator FSV40	EMV-205	<input type="checkbox"/>	ESD Generator NSG 437	EMV-364
<input type="checkbox"/>	Thd Multimeter Model 2015	EMV-206	<input type="checkbox"/>	Pulse Limiter VTSD 9561-F BNC	EMV-405
<input type="checkbox"/>	Poweramplifier PAS15000	EMV- 207/abc	<input type="checkbox"/>	Transient emission BSM200N40+BS200N100	EMV- 450+451
<input type="checkbox"/>	Inrush Current Source	EMV- 208/abc	<input type="checkbox"/>	Cap. Coupling Clamp HFK	EMV-455
<input type="checkbox"/>	Arb.-generator Sycore	EMV-209	<input type="checkbox"/>	Mag. Field System MS100N+MC26100+MC2630	EMV- 456-458
<input type="checkbox"/>	Harmonics/Flicker analyzer ARS 16/3	EMV-210	<input type="checkbox"/>	Coupling network CDN M2-100A	EMV-459
<input type="checkbox"/>	HF- Amplifier 9 kHz-250 MHz BBA150	EMV-300	<input type="checkbox"/>	Coupling network CDN M3-32A	EMV-460
<input type="checkbox"/>	HF- Amplifier 80 -1000 MHz BBA150	EMV-301	<input type="checkbox"/>	Coupling network CDN M5-100A	EMV-461
<input type="checkbox"/>	HF- Amplifier 0,8 - 6 GHz BBA150	EMV-302	<input type="checkbox"/>	Current Clamp CIP 9136A	EMV-462
<input type="checkbox"/>	High Power Ant. 20-200 MHz HPBA-2510	EMV-303/1	<input type="checkbox"/>	DC Artificial Network HV-AN 150	EMV- 464+465
<input type="checkbox"/>	Log.per Antenna 80-2700 MHz STLP 9128 E special	EMV-304	<input type="checkbox"/>	Coupling Clamp EM 101	EMV-466
			<input type="checkbox"/>	Decoupling Clamp FTC 101	EMV-467
			<input type="checkbox"/>	Power attenuator 10 dB / 250 Watt	EMV-469/2

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