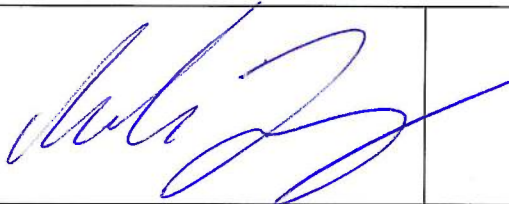
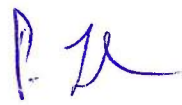


Report No. 332888-03-002

## FCC TEST REPORT / IC TEST REPORT

|                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                             |                                                                                                                                                                                     |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Product</b>                                                                                                                                                                                                                                                                                                                                                                                                                     | KleerNet Transceiver Module                                                                                                                                                                                 |                                                                                                                                                                                     |
| <b>Name and address of the applicant</b>                                                                                                                                                                                                                                                                                                                                                                                           | AUDIVO GmbH<br>Irrenloher Damm 30<br>92521 Schwarzenfeld<br>GERMANY                                                                                                                                         |                                                                                                                                                                                     |
| <b>Name and address of the manufacturer</b>                                                                                                                                                                                                                                                                                                                                                                                        | AUDIVO GmbH<br>Irrenloher Damm 30<br>92521 Schwarzenfeld<br>GERMANY                                                                                                                                         |                                                                                                                                                                                     |
| <b>Model</b>                                                                                                                                                                                                                                                                                                                                                                                                                       | DWAM83-TB                                                                                                                                                                                                   |                                                                                                                                                                                     |
| <b>Rating</b>                                                                                                                                                                                                                                                                                                                                                                                                                      | 3.3Vdc                                                                                                                                                                                                      |                                                                                                                                                                                     |
| <b>Trademark</b>                                                                                                                                                                                                                                                                                                                                                                                                                   | KleerNet                                                                                                                                                                                                    |                                                                                                                                                                                     |
| <b>Serial number</b>                                                                                                                                                                                                                                                                                                                                                                                                               | /                                                                                                                                                                                                           |                                                                                                                                                                                     |
| <b>Additional information</b>                                                                                                                                                                                                                                                                                                                                                                                                      | The tested device contains radio module operates in 5725 – 5875MHz band.                                                                                                                                    |                                                                                                                                                                                     |
| <b>Tested according to</b>                                                                                                                                                                                                                                                                                                                                                                                                         | <b>FCC Part 15.207 and 15.209</b><br>Conducted limits / Radiated emission limits; general requirements<br><b>Industry Canada RSS-GEN, Issue 5</b><br>General Requirements for Compliance of Radio Apparatus |                                                                                                                                                                                     |
| <b>Report number</b>                                                                                                                                                                                                                                                                                                                                                                                                               | 332888-03-002                                                                                                                                                                                               |                                                                                                                                                                                     |
| <b>Tested in period</b>                                                                                                                                                                                                                                                                                                                                                                                                            | 2018-03-07 - 2018-03-09                                                                                                                                                                                     |                                                                                                                                                                                     |
| <b>Issue date</b>                                                                                                                                                                                                                                                                                                                                                                                                                  | 2018-08-01                                                                                                                                                                                                  |                                                                                                                                                                                     |
| <b>Name and address of the testing laboratory</b>                                                                                                                                                                                                                                                                                                                                                                                  | <p>Nemko GmbH &amp; Co. KG<br/>Reetzstraße 58<br/>D-76327 Pfinztal</p> <p>Tel.: + 49 (0) 7240 – 63 - 0<br/>Fax: + 49 (0) 7240 – 63 - 11</p>                                                                 | <p> Bundesnetzagentur</p> <p>FCC No: 973501<br/>IC OATS: 10921A-1</p> <p>BNetzA-CAB-17/21-17</p> |
| <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> <br/> Prepared by [Dipl.-Ing. M. Korny] </div> <div style="text-align: center;"> <br/> Approved by [Dipl.-Ing. P. Lukas] </div> </div> |                                                                                                                                                                                                             |                                                                                                                                                                                     |

Template version: B

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# 1 INFORMATION

## 1.1 Test Item

|                                           |                                                    |
|-------------------------------------------|----------------------------------------------------|
| <b>Name :</b>                             | KleerNet Transceiver Module                        |
| <b>Model/version :</b>                    | DWAM83-TB                                          |
| <b>Serial number :</b>                    | SMSC 2011                                          |
| <b>Hardware identity and/or version:</b>  | SMSC 2011                                          |
| <b>Software identity and/or version :</b> | V1.31 (for Tx power test), V2.00 (product release) |
| <b>Frequency Range :</b>                  | 5725 - 5850 MHz                                    |
| <b>Number of Channels :</b>               | 3                                                  |
| <b>Channel BW :</b>                       | 20 MHz                                             |
| <b>Type of Modulation :</b>               | DARR-83: QPSK (Digital modulation)                 |
| <b>Maximum data rate :</b>                | 22 Mbps                                            |
| <b>User Frequency Adjustment :</b>        | None                                               |
| <b>Type of Power Supply :</b>             | USB power 5Vdc                                     |
| <b>Antenna Connector :</b>                | No, Integral antenna                               |
| <b>No of Antennas :</b>                   | 2                                                  |
| <b>Antenna Diversity Supported :</b>      | Yes                                                |
| <b>Declared Antenna Gain :</b>            | Antenna A: 3dBi , Antenna B: 3dBi                  |
| <b>Receiver category :</b>                | 3                                                  |

### Description of Test Item

The DWAM83 module provides a wireless digital audio link between one central unit (CU), that is usually a transmitter, and one or more mobile units (MU), usually configured as receivers.

The digital audio link allows transportation of up to 4 audio streams. The streams can consist of any combination of up- and downstreams between CU and one or more MU. A CU can serve multiple MU simultaneously. All MUs have access to the same audio streams of the CU, to which they are paired to. On MU side it could be selected whether all or just a specific audio stream is presented on the digital audio outputs (SPDIF or I<sup>2</sup>S).

For applications using 1 Stereo stream audio data of up to 96kHz/24Bit is supported. For applications using 4 stereo streams sample rate is limited to 48kHz. Audio sample rate for wireless link is always using 48kHz or 96kHz. Other sample rates on input interfaces are converted by internal SRC.

## 1.2 Normal test conditions

Temperature: 20 - 26 °C  
Relative humidity: 45 - 55 %  
Normal test voltage: 5 V dc

The values are the limit registered during the test period.  
The measurements were done with the EUT powered by 5Vdc. It was checked that power variations between 85% and 115% did not have any influence on the measurements.

## 1.3 Test Engineer(s)

Markus Korny

## 1.4 Description of modification for Modification Filing

Not applicable.

## 1.5 Family List Rational

Not Applicable.

## 1.6 Antenna Requirement

Is the antenna detachable?

☐ Yes ☒ No

If detachable, is the antenna connector non-standard?

☐ Yes ☐ No

Type of antenna connector: N/A

Ref. FCC §15.203

## 1.7 Worst-Case Configuration and Mode

Radiated Emissions was performed with the EUT set to transmit at the channel with the highest output power as worst-case scenario.

## 1.8 Comments

The output level is set to maximum in the software.

The radiated measurements are tested on three axes.

Test adapter with evaluation board.

All ports were populated during spurious emission measurements.

## 2 TEST REPORT SUMMARY

### 2.1 General

All measurements are traceable to national standards.

The tests were conducted for the purpose of demonstrating compliance with FCC Part 15.207 and 15.209 and Industry Canada RSS-GEN, Issue 5

Tests were performed in accordance with ANSI C63.4-2014 and ANSI C63.10-2013.

Radiated tests were performed in a semi-anechoic shielded room ( $f < 1$  GHz) and a fully-anechoic shielded room ( $f > 1$  GHz) at a measuring distance of 3m and 1m.

A description of the test facility is on file with the FCC and Industry Canada.

☒ New Submission

☒ Production Unit

☐ Class II Permissive Change

☐ Pre-production Unit

☐ Family Listing



#### **THIS TEST REPORT APPLIES ONLY TO THE ITEM(S) AND CONFIGURATIONS TESTED.**

Deviations from, additions to, or exclusions from the test specifications are described in "Summary of Test Data".

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## 2.2 Test Summary

| Name of test                  | FCC Part 15 reference  | RSS-GEN Issue 5 reference       | Result                |
|-------------------------------|------------------------|---------------------------------|-----------------------|
| Supply Voltage Variations     | 15.31(e)               | 6.11 (RSS-GEN)                  | Complies              |
| Power Line Conducted Emission | 15.107(a)<br>15.207(a) | 8.8 (RSS-GEN)                   | Complies <sup>2</sup> |
| Spurious Emissions (Radiated) | 15.109(a)<br>15.209(a) | 6.13 (RSS-GEN)<br>8.9 (RSS-GEN) | Complies              |

<sup>2</sup> EUT is powered with DC

### 3 TEST RESULTS

#### 3.1 Power Line Conducted Emissions

Para. No.: 15.207 (a)/8.8

Test Performed By: Markus Korny

Date of Test: 2018-03-09

Measurement procedure: ANSI C63.4-2014 using 50  $\mu$ H/50 ohms LISN.

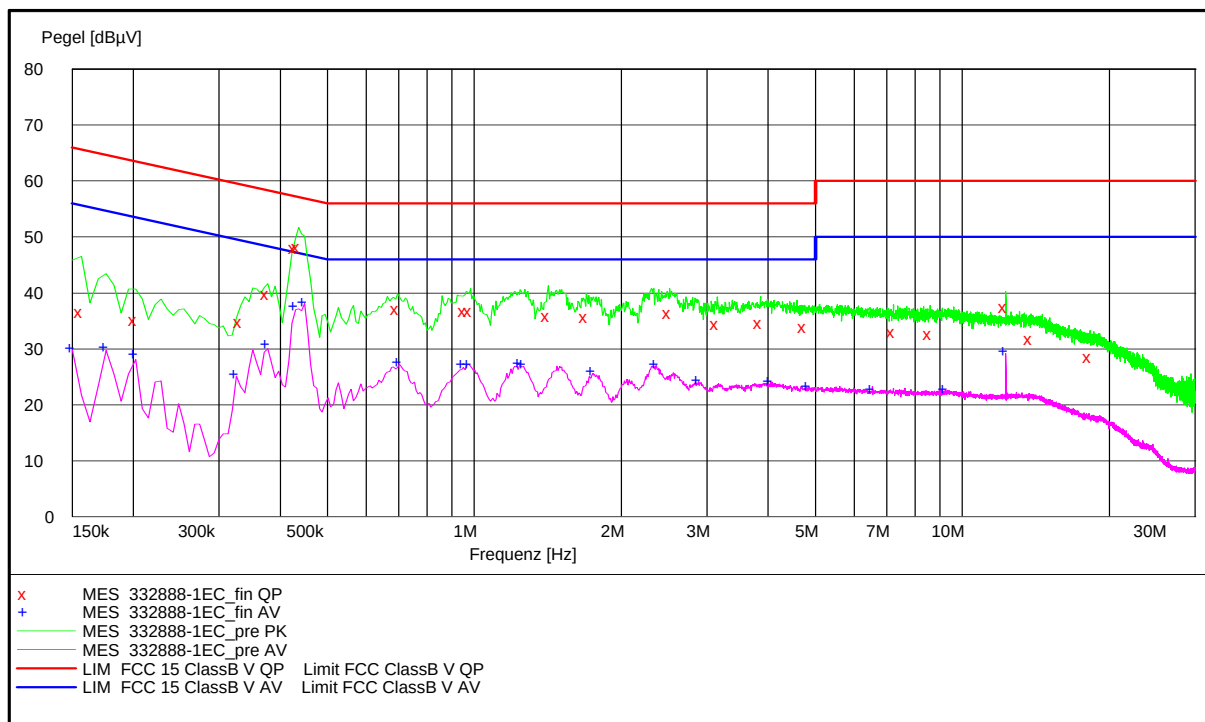
Test Results: Complies.

Measurement Data: See attached graph.

AC/DC adapter type: AQUIL STAR PRECISION, Model: ASUC31e-050100

Input voltage to AC/DC adapter: 115V/60Hz

Highest measured value (L1 and N):



Diagram

Final measurements QP with Quasi-Peak-Detector

| Frequenz<br>MHz | Pegel<br>dBµV | Transd<br>dB | Limit<br>dBµV | Margin<br>dB | Line | PE  |
|-----------------|---------------|--------------|---------------|--------------|------|-----|
| 0.156500        | 36.70         | 10.00        | 65.60         | 28.90        | N    | FLO |
| 0.202000        | 35.20         | 10.00        | 63.50         | 28.40        | N    | FLO |
| 0.332000        | 34.80         | 10.00        | 59.40         | 24.60        | L1   | FLO |
| 0.377500        | 39.90         | 10.00        | 58.30         | 18.50        | L1   | FLO |
| 0.429500        | 48.00         | 10.00        | 57.30         | 9.30         | L1   | FLO |
| 0.436000        | 48.30         | 10.00        | 57.10         | 8.90         | L1   | FLO |
| 0.696000        | 37.10         | 10.00        | 56.00         | 18.90        | L1   | FLO |
| 0.956000        | 36.80         | 10.00        | 56.00         | 19.20        | L1   | FLO |
| 0.982000        | 36.90         | 10.00        | 56.00         | 19.10        | L1   | FLO |
| 1.417500        | 35.90         | 10.00        | 56.00         | 20.10        | L1   | FLO |
| 1.697000        | 35.70         | 10.10        | 56.00         | 20.30        | L1   | FLO |
| 2.516000        | 36.40         | 10.10        | 56.00         | 19.60        | L1   | FLO |
| 3.146500        | 34.50         | 10.20        | 56.00         | 21.50        | L1   | FLO |
| 3.861500        | 34.60         | 10.20        | 56.00         | 21.40        | L1   | FLO |
| 4.758500        | 34.00         | 10.20        | 56.00         | 22.00        | L1   | FLO |
| 7.228500        | 33.10         | 10.40        | 60.00         | 26.90        | L1   | FLO |
| 8.593500        | 32.70         | 10.40        | 60.00         | 27.30        | L1   | FLO |
| 12.285500       | 37.50         | 10.70        | 60.00         | 22.50        | L1   | FLO |
| 13.845500       | 31.70         | 10.80        | 60.00         | 28.30        | L1   | FLO |
| 18.298000       | 28.60         | 11.00        | 60.00         | 31.40        | L1   | FLO |

Final measurements AV with Average-Detector

| Frequenz<br>MHz | Pegel<br>dBµV | Transd<br>dB | Limit<br>dBµV | Margin<br>dB | Line | PE  |
|-----------------|---------------|--------------|---------------|--------------|------|-----|
| 0.150000        | 30.20         | 10.00        | 56.00         | 25.80        | L1   | FLO |
| 0.176000        | 30.30         | 10.00        | 54.70         | 24.40        | L1   | FLO |
| 0.202000        | 29.10         | 10.00        | 53.50         | 24.40        | L1   | FLO |
| 0.325500        | 25.60         | 10.00        | 49.60         | 23.90        | L1   | FLO |
| 0.377500        | 31.00         | 10.00        | 48.30         | 17.40        | L1   | FLO |
| 0.429500        | 37.70         | 10.00        | 47.30         | 9.50         | L1   | FLO |
| 0.449000        | 38.40         | 10.00        | 46.90         | 8.50         | L1   | FLO |
| 0.702500        | 27.60         | 10.00        | 46.00         | 18.40        | L1   | FLO |
| 0.949500        | 27.20         | 10.00        | 46.00         | 18.80        | L1   | FLO |
| 0.975500        | 27.30         | 10.00        | 46.00         | 18.70        | L1   | FLO |
| 1.242000        | 27.40         | 10.00        | 46.00         | 18.60        | L1   | FLO |
| 1.261500        | 27.20         | 10.00        | 46.00         | 18.80        | L1   | FLO |
| 1.749000        | 26.10         | 10.10        | 46.00         | 19.90        | L1   | FLO |
| 2.360000        | 27.30         | 10.10        | 46.00         | 18.70        | L1   | FLO |
| 2.880000        | 24.40         | 10.10        | 46.00         | 21.60        | L1   | FLO |
| 4.043500        | 24.20         | 10.20        | 46.00         | 21.80        | L1   | FLO |
| 4.843000        | 23.40         | 10.20        | 46.00         | 22.60        | L1   | FLO |
| 6.546000        | 22.90         | 10.30        | 50.00         | 27.10        | L1   | FLO |
| 9.237000        | 22.80         | 10.50        | 50.00         | 27.20        | L1   | FLO |
| 12.285500       | 29.60         | 10.70        | 50.00         | 20.40        | L1   | FLO |

### 3.2 Spurious Emissions (Radiated)

Para. No.: 15.209(a)/8.9

|                                 |                                       |
|---------------------------------|---------------------------------------|
| Test Performed By: Markus Korny | Date of Test: 2018-03-07 – 2018-03-08 |
|---------------------------------|---------------------------------------|

Test Results: Complies

#### Band-edge, @3m

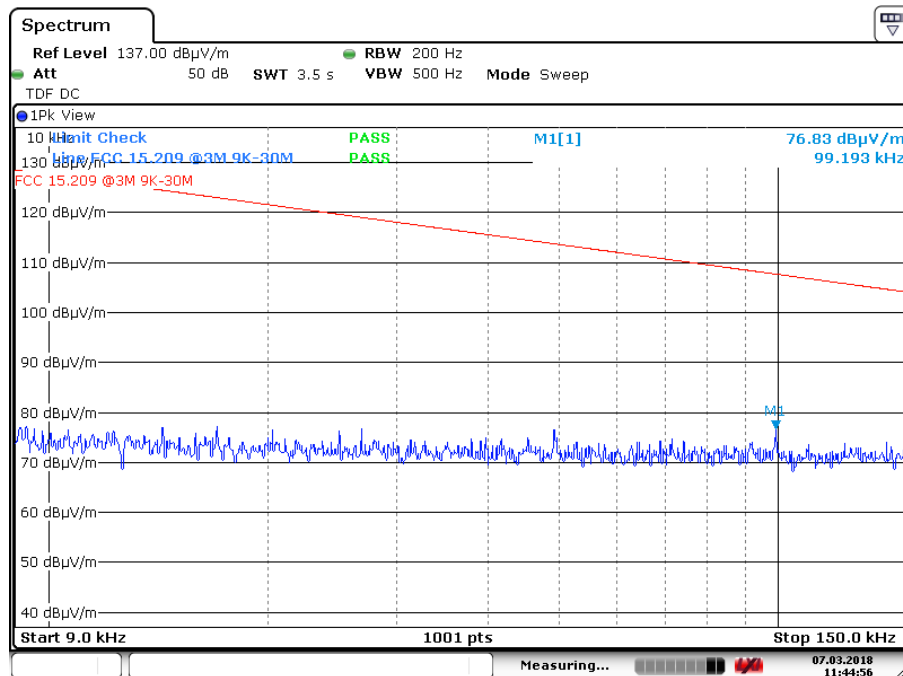
| Frequency | Measured Field Strength<br>@3m, dBμV/m | Detector | Limit<br>dBμV/m | Margin<br>dB |
|-----------|----------------------------------------|----------|-----------------|--------------|
| /         | /                                      | PK       | 74              | /            |
|           | /                                      | AV       | 54              | /            |
| /         | /                                      | PK       | 74              | /            |
|           | /                                      | AV       | 54              | /            |
| /         | /                                      | PK       | 74              | /            |
|           | /                                      | AV       | 54              | /            |

### Radiated emissions 10 kHz-30 MHz.

Measuring distance 3 m, measured with Peak detector.

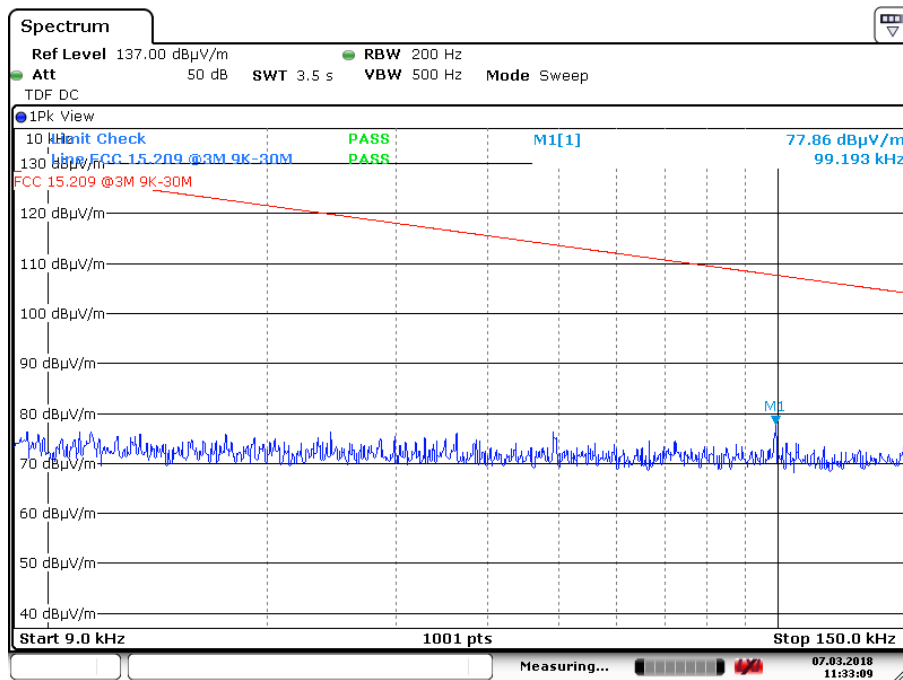
No spurious detected, see attached graph.

Limit is converted to 3 m using 40 dB/decade according to 15.31 (f) (2).



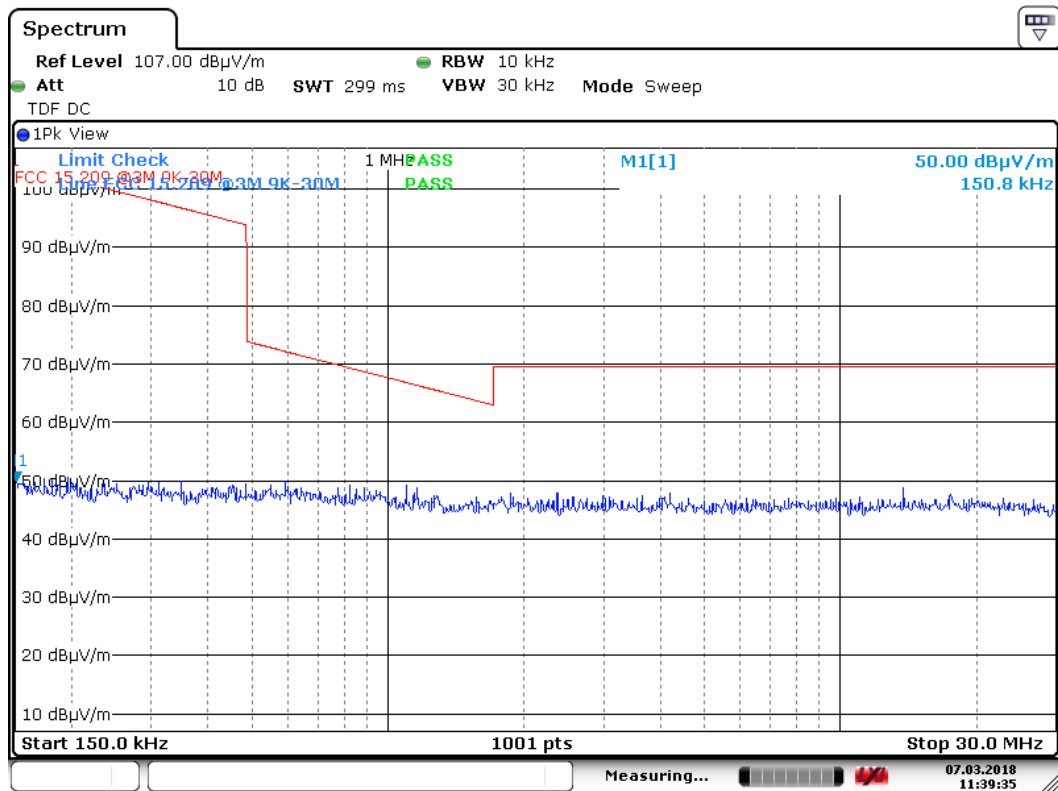
Date: 7. MAR. 2018 11:44:56

### Radiated Emissions, 9 kHz – 150 kHz @3m, all channels (port A)



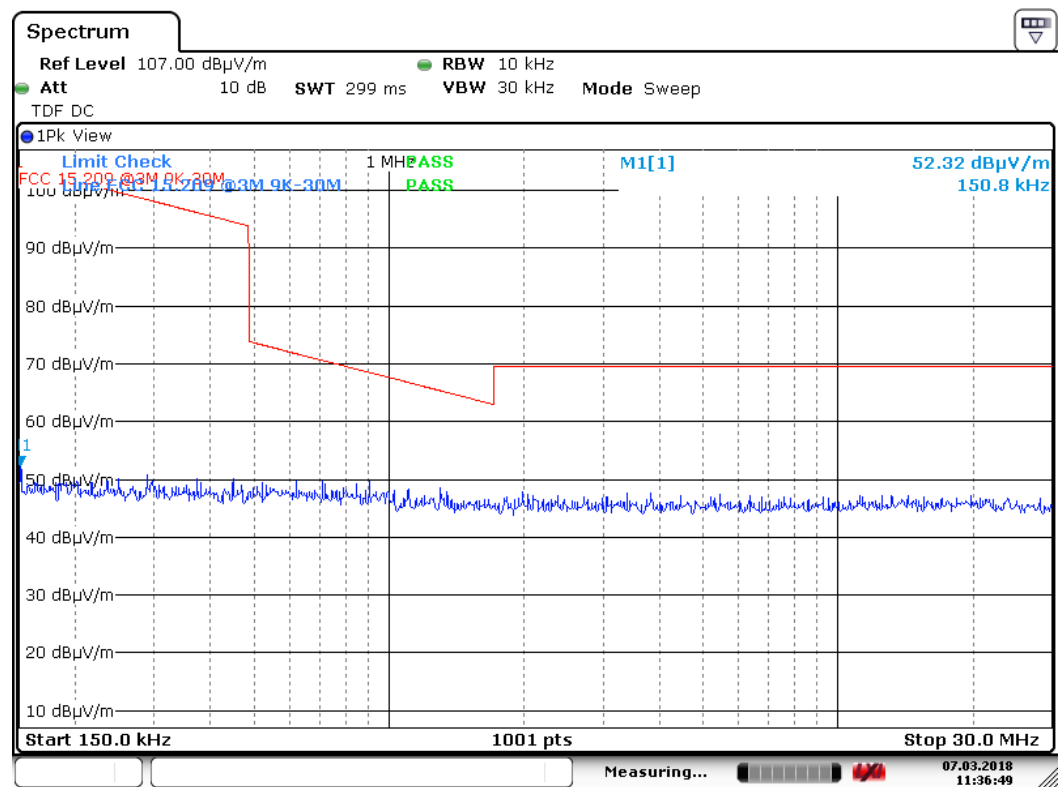
Date: 7. MAR. 2018 11:33:09

### Radiated Emissions, 9 kHz – 150 kHz @3m, all channels (port B)



Date: 7.MAR.2018 11:39:35

### Radiated Emissions, 150 kHz - 30MHz @3m, all channels (port A)



Date: 7.MAR.2018 11:36:49

### Radiated Emissions, 150 kHz - 30MHz @3m, all channels (port B)

#### Radiated emission 30 – 1000 MHz.

Detector: Quasi-Peak

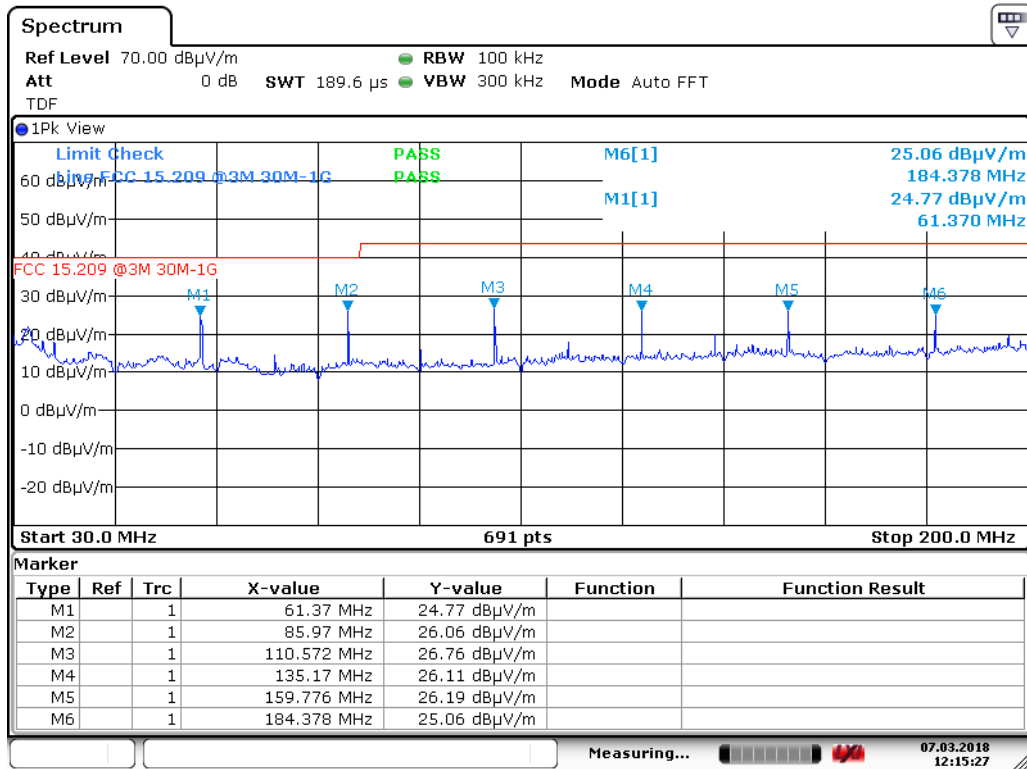
Measuring distance 3m .

| Frequency | Operational condition | Detector | Field strength | Measuring distance | Limit FCC15.209 | Margin |
|-----------|-----------------------|----------|----------------|--------------------|-----------------|--------|
| MHz       |                       |          | dB $\mu$ V/m   | metres             | dB $\mu$ V/m    | dB     |
| 36.77     | TX on                 | PK       | 25.07          | 3                  | 40.0            | 14.93  |
| 61.37     | TX on                 | PK       | 30.78          | 3                  | 40.0            | 9.22   |
| 85.97     | TX on                 | PK       | 26.68          | 3                  | 40.0            | 13.32  |
| 110.57    | TX on                 | PK       | 27.00          | 3                  | 43.5            | 16.5   |
| 135.17    | TX on                 | PK       | 27.60          | 3                  | 43.5            | 15.9   |
| 159.78    | TX on                 | PK       | 31.49          | 3                  | 43.5            | 12.01  |
| 184.38    | TX on                 | PK       | 25.06          | 3                  | 43.5            | 18.44  |
| 712.30    | TX on                 | PK       | 36.93          | 3                  | 46.0            | 9.07   |
| 725.00    | TX on                 | PK       | 39.00          | 3                  | 46.0            | 7.00   |
| 737.80    | TX on                 | PK       | 36.66          | 3                  | 46.0            | 9.34   |
| /         | TX on                 | PK       | /              | 3                  | -               | /      |

See attached graphs.

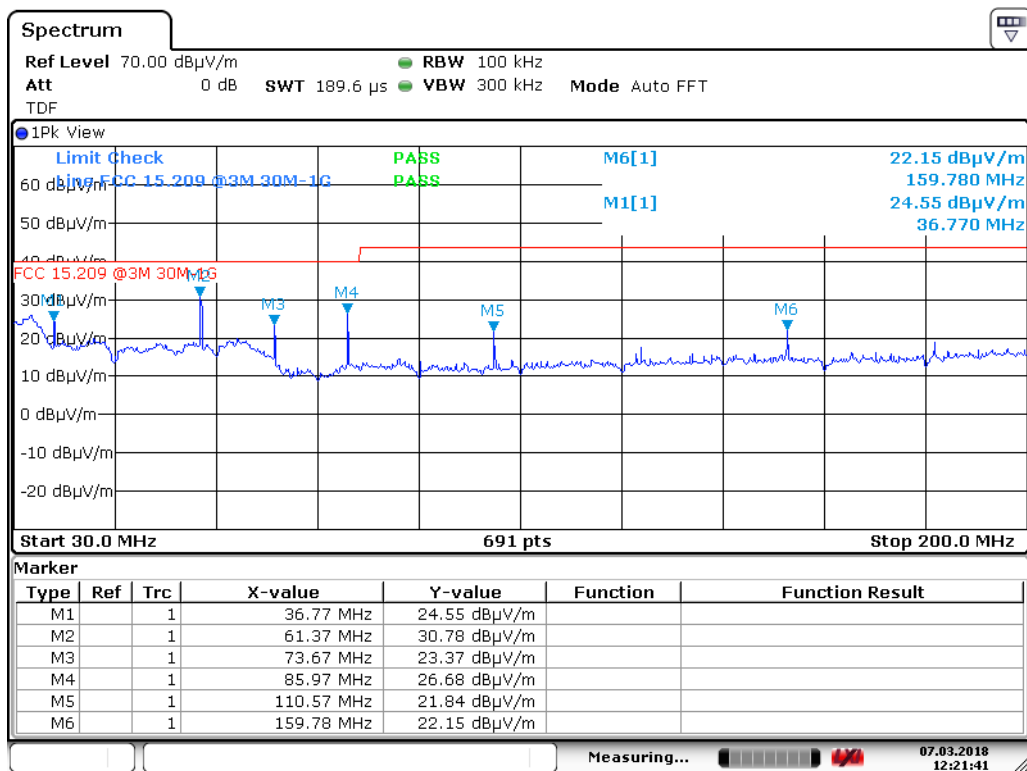
#### Requirements/Limit

|                        |                                                                  |                                           |
|------------------------|------------------------------------------------------------------|-------------------------------------------|
| <b>FCC</b>             | Part 15.209 @ frequencies defined in §15.205                     |                                           |
| <b>ISED</b>            | RSS-GEN Issue 5, Clause 8.9 @ frequencies defined in clause 8.10 |                                           |
|                        | <b>Radiated emission limit @3 meters</b>                         |                                           |
| <b>Frequency (MHz)</b> | <b>Quasi Peak (<math>\mu</math>V/m)</b>                          | <b>Quasi Peak (dB<math>\mu</math>V/m)</b> |
| <b>30 – 88</b>         | 100                                                              | 40.0                                      |
| <b>88 – 216</b>        | 150                                                              | 43.5                                      |
| <b>216 – 960</b>       | 200                                                              | 46.0                                      |
| <b>Above 960</b>       | 500                                                              | 54.0                                      |



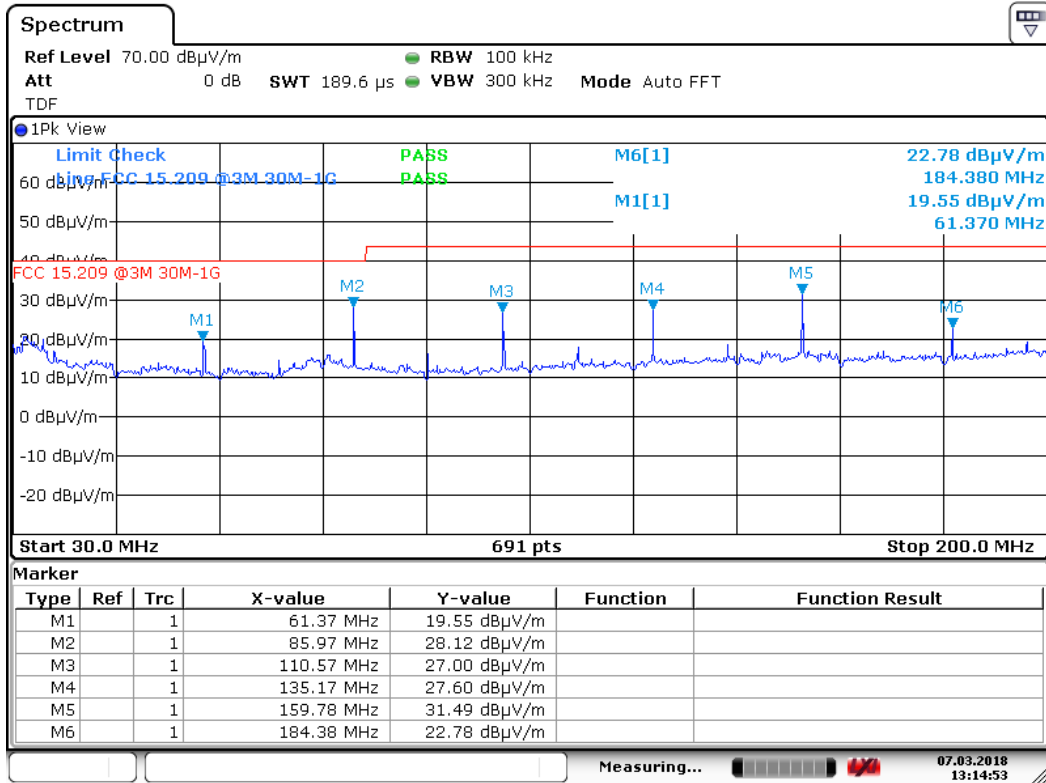
Date: 7.MAR.2018 12:15:26

### Radiated Emissions, 30 – 200 MHz, HP, @3m, PK scan, all channels (port A)



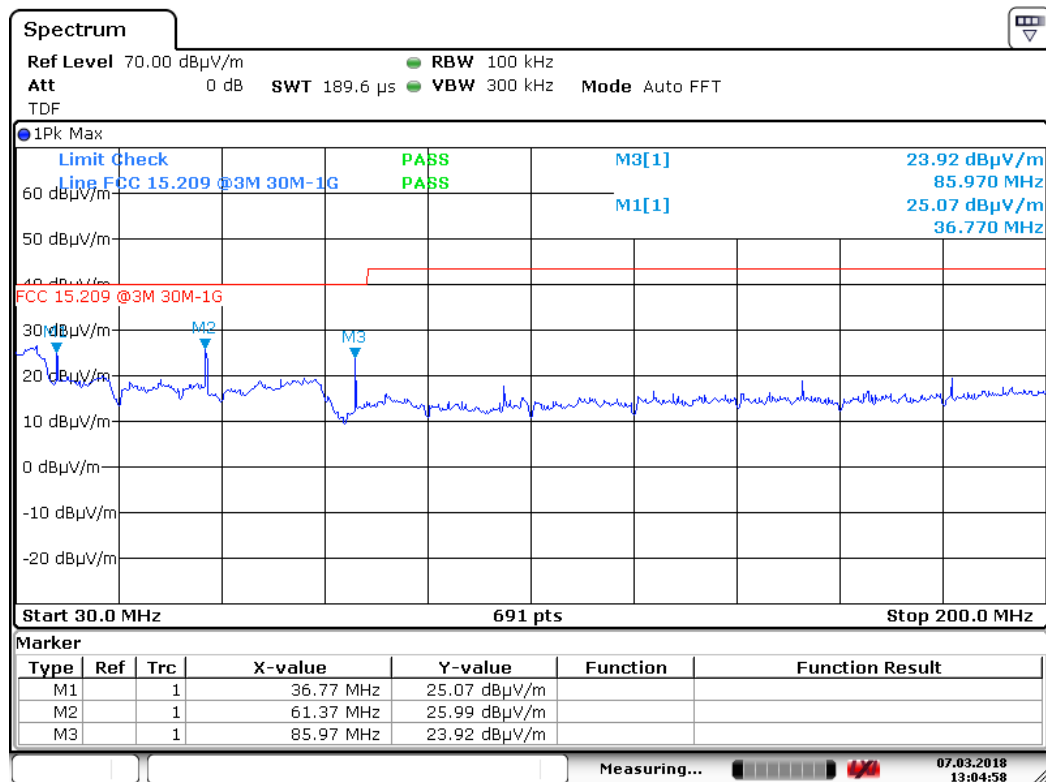
Date: 7.MAR.2018 12:21:41

### Radiated Emissions, 30 – 200 MHz, VP, @3m, PK scan, all channels (port A)



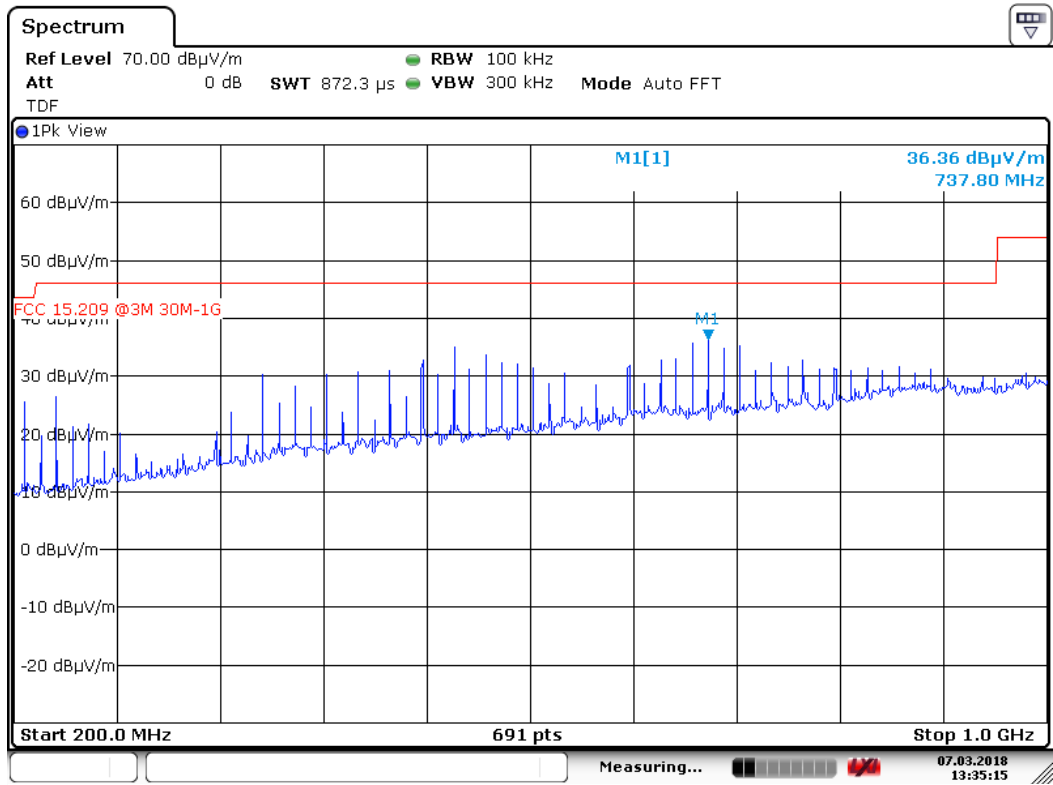
Date: 7.MAR.2018 13:14:53

### Radiated Emissions, 30 – 200 MHz, HP, @3m, PK scan, all channels (port B)



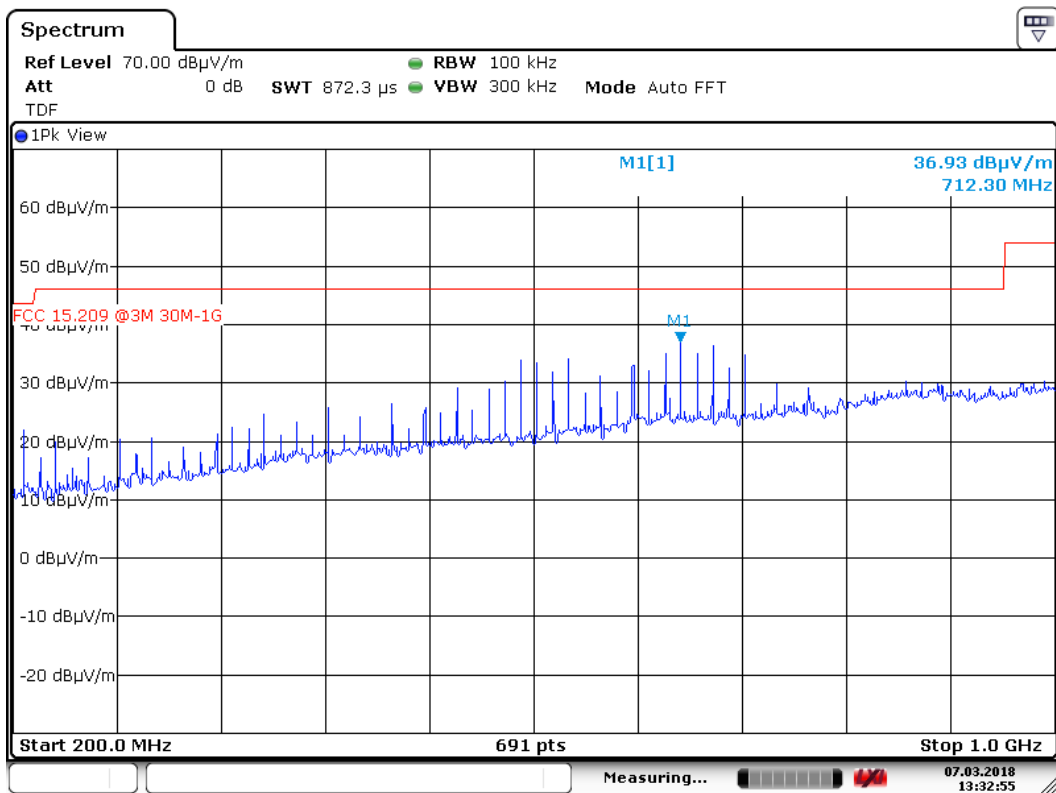
Date: 7.MAR.2018 13:04:58

### Radiated Emissions, 30 – 200 MHz, VP, @3m, PK scan, all channels (port B)



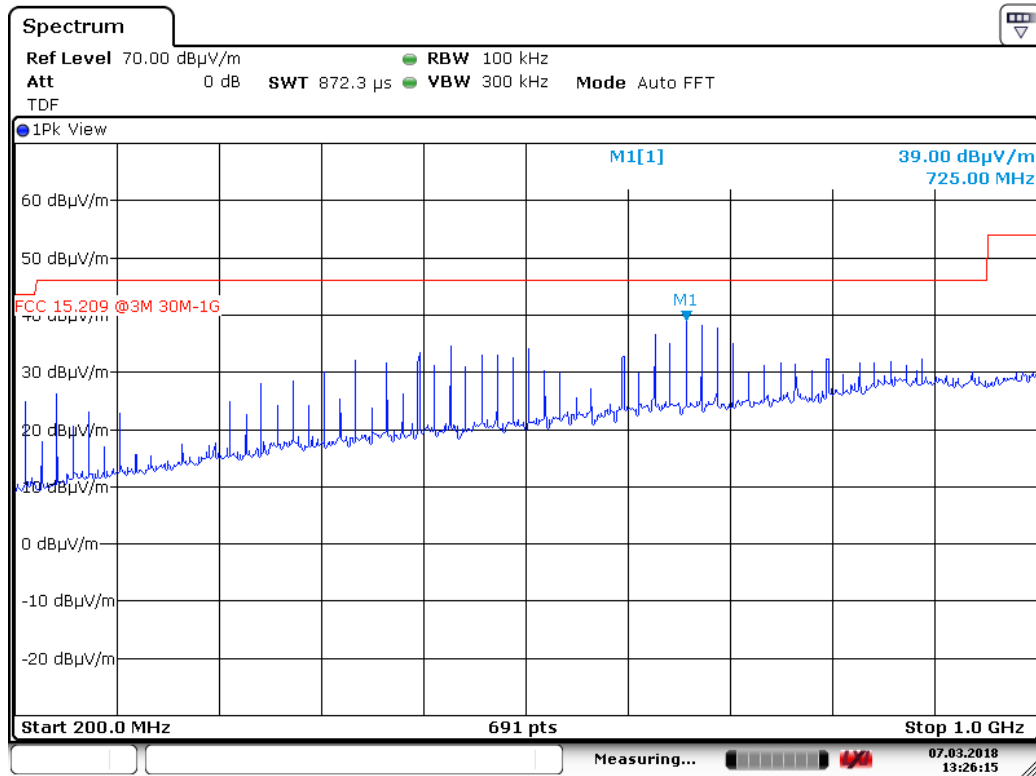
Date: 7.MAR.2018 13:35:15

### Radiated Emissions, 200 - 1000 MHz, HP , @3m, PK scan, all channels (port A)



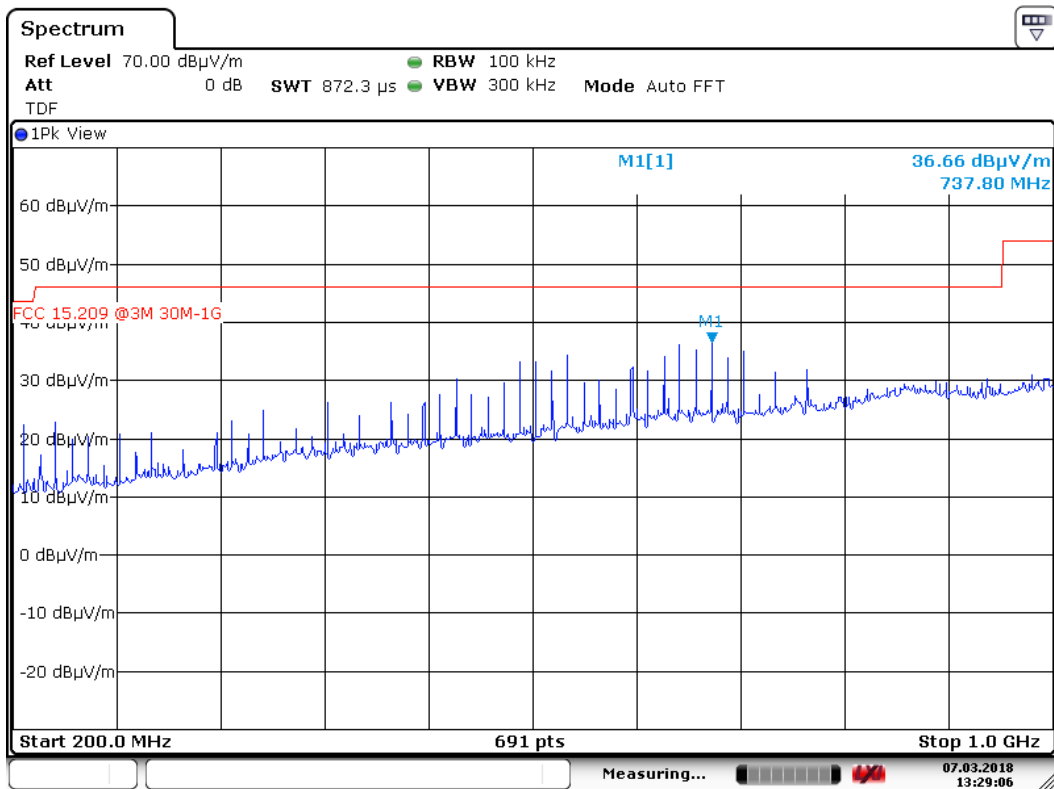
Date: 7.MAR.2018 13:32:55

### Radiated Emissions, 200 - 1000 MHz, VP , @3m, PK scan, all channels (port A)



Date: 7.MAR.2018 13:26:15

### Radiated Emissions, 200 - 1000 MHz, HP , @3m, PK scan, all channels (port B)



Date: 7.MAR.2018 13:29:06

### Radiated Emissions, 200 - 1000 MHz, VP , @3m, PK scan, all channels (port B)

### Radiated Emissions, 1-40 GHz

Measuring distance: 3m (1 – 8 GHz)  
Measuring distance: 1m (8 – 18 GHz)  
Measuring distance: 3m (18 – 40 GHz)

A pre-scan was performed above 18 GHz and no spurious emissions were detected.

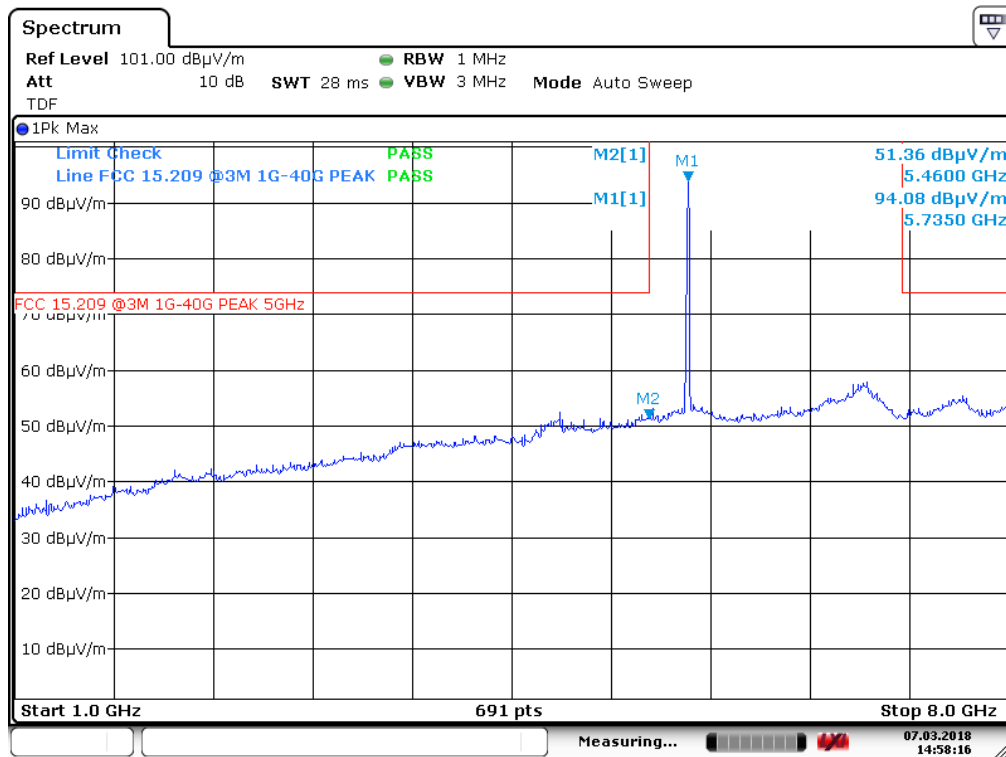
#### Peak Detector:

| Frequency   | RF channel | Dist. corr. factor | Field strength, Peak Detector | Duty cycle corr. factor | Limit        | Margin |
|-------------|------------|--------------------|-------------------------------|-------------------------|--------------|--------|
| GHz         | L,M,H      | dB                 | dB $\mu$ V/m                  | dB                      | dB $\mu$ V/m | dB     |
| 17.8340     | L,M,H      | 0                  | 60.83                         | 0                       | 74           | 13.17  |
| Other freqs | L,M,H      | /                  | < 54                          | 0                       | 74           | >20    |

#### Average Detector:

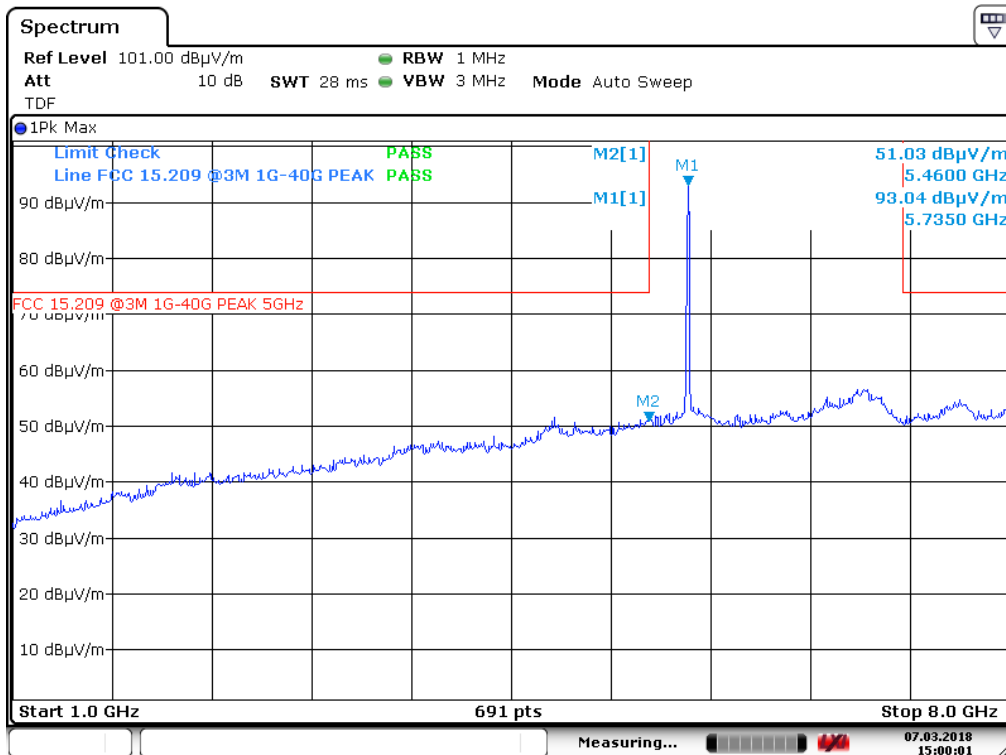
| Frequency   | RF channel | Dist. corr. factor | Field strength, Average Detector | Duty cycle corr. factor | Limit        | Margin |
|-------------|------------|--------------------|----------------------------------|-------------------------|--------------|--------|
| GHz         | L,M,H      | dB                 | dB $\mu$ V/m                     | dB                      | dB $\mu$ V/m | dB     |
| 17.8340     | L,M,H      | 0                  | 49.85                            | 0                       | 54           | 4.15   |
| Other freqs | L,M,H      | /                  | /                                | 0                       | 54           | /      |

Antenna factor, dist. corr. factor, amplifier gain and cable loss are included in spectrum analyzer "Transducer factor".  
See plots.



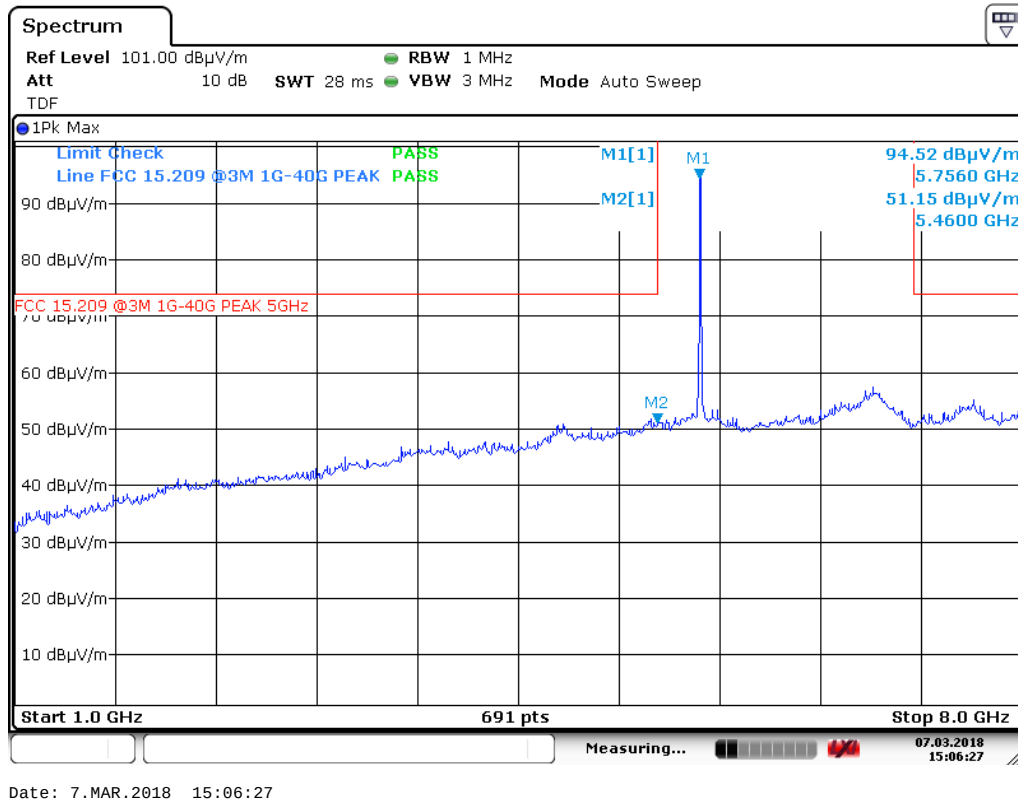
Date: 7.MAR.2018 14:58:16

### Radiated Emissions, 5736 MHz (port A), 1 – 8 GHz, HP, @3m – Pre-scan

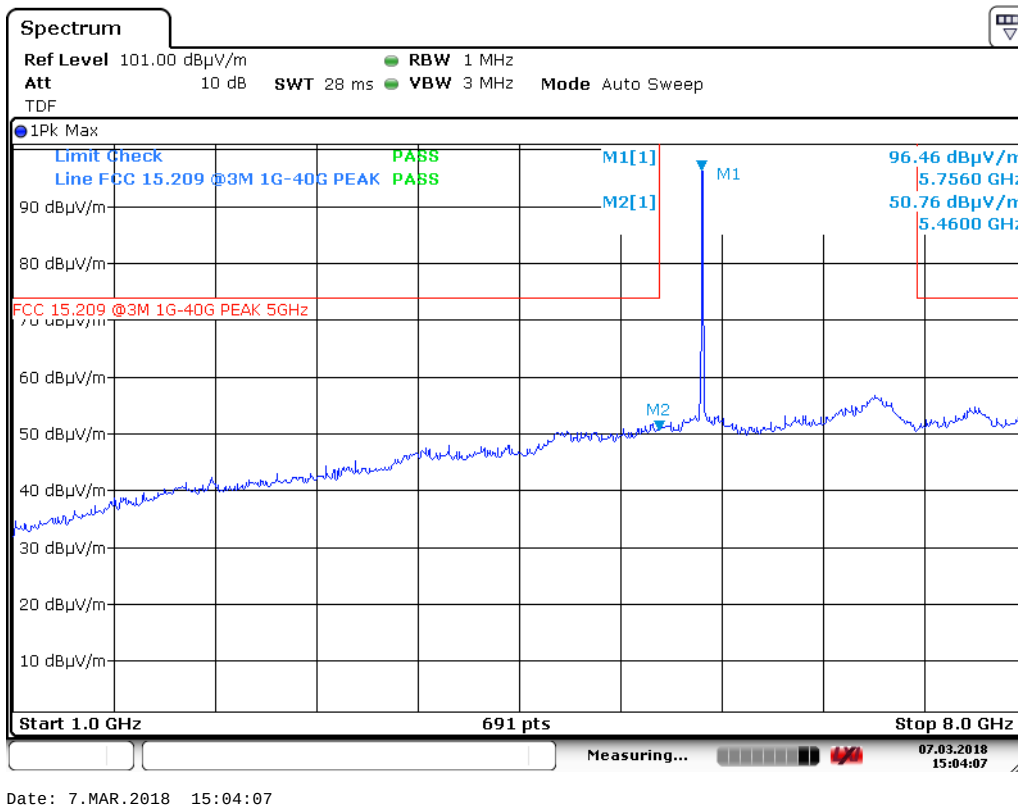


Date: 7.MAR.2018 15:00:01

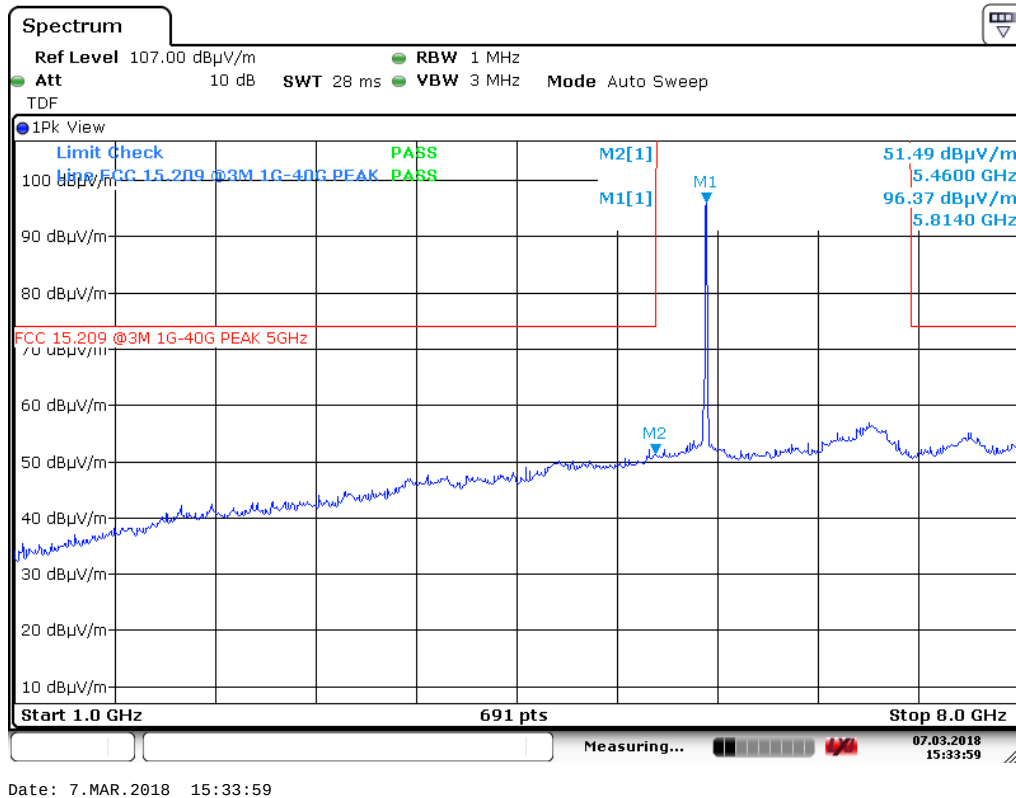
### Radiated Emissions, 5736 MHz (port A), 1 – 8 GHz, VP, @3m – Pre-scan



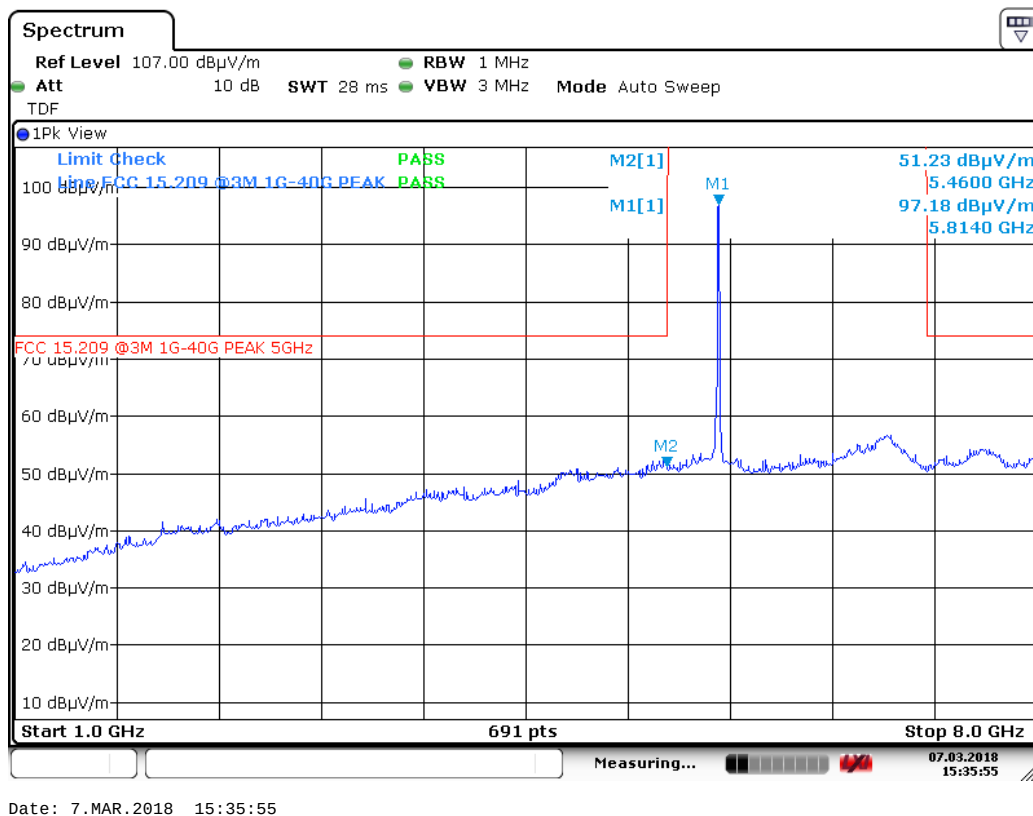
**Radiated Emissions, 5762 MHz (port A), 1 – 8 GHz, HP, @3m – Pre-scan**



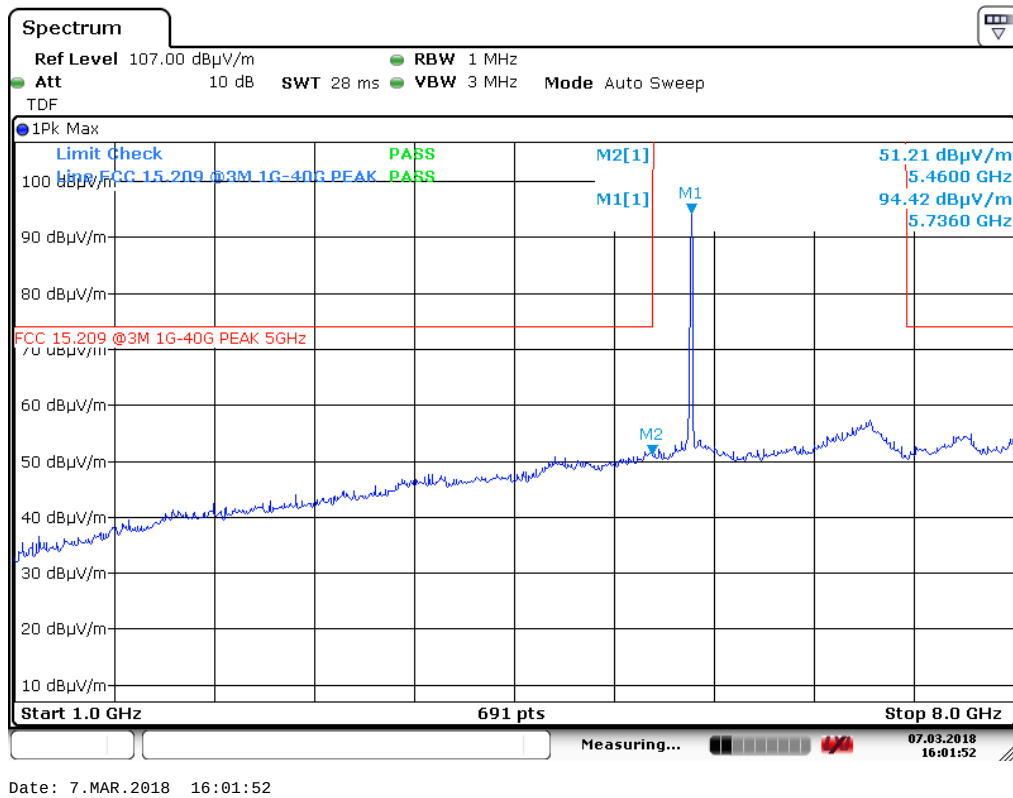
**Radiated Emissions, 5762 MHz (port A), 1 – 8 GHz, VP, @3m – Pre-scan**



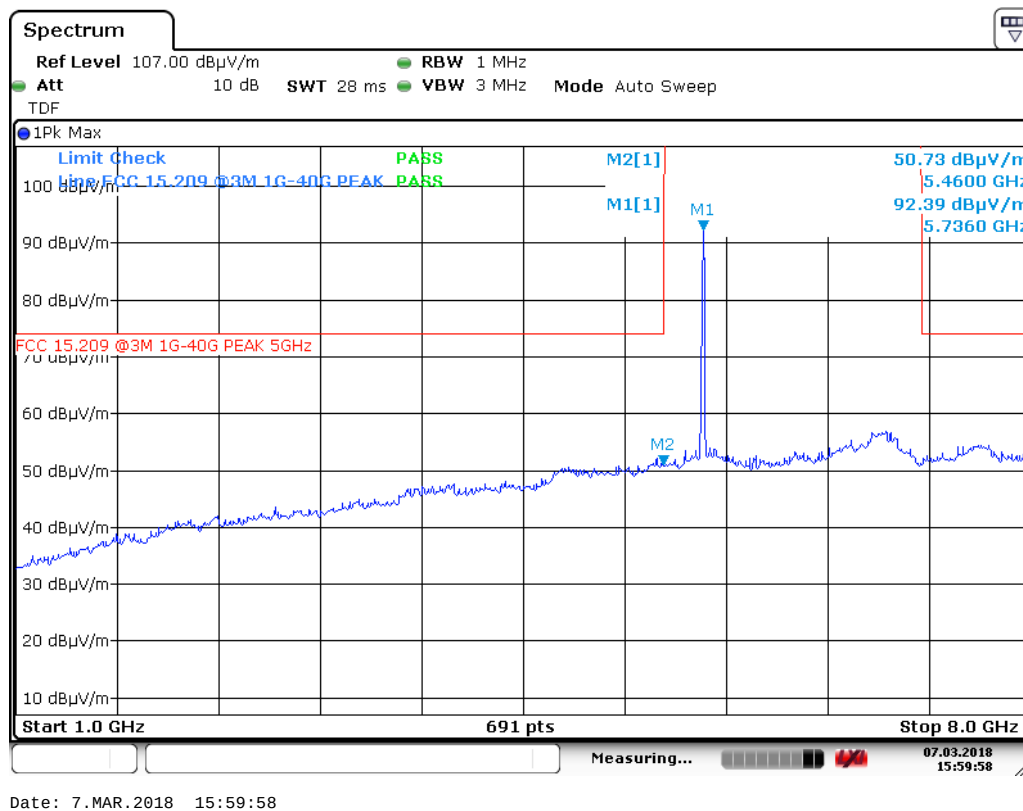
**Radiated Emissions, 5814 MHz (port A), 1 – 8 GHz, HP, @3m – Pre-scan**



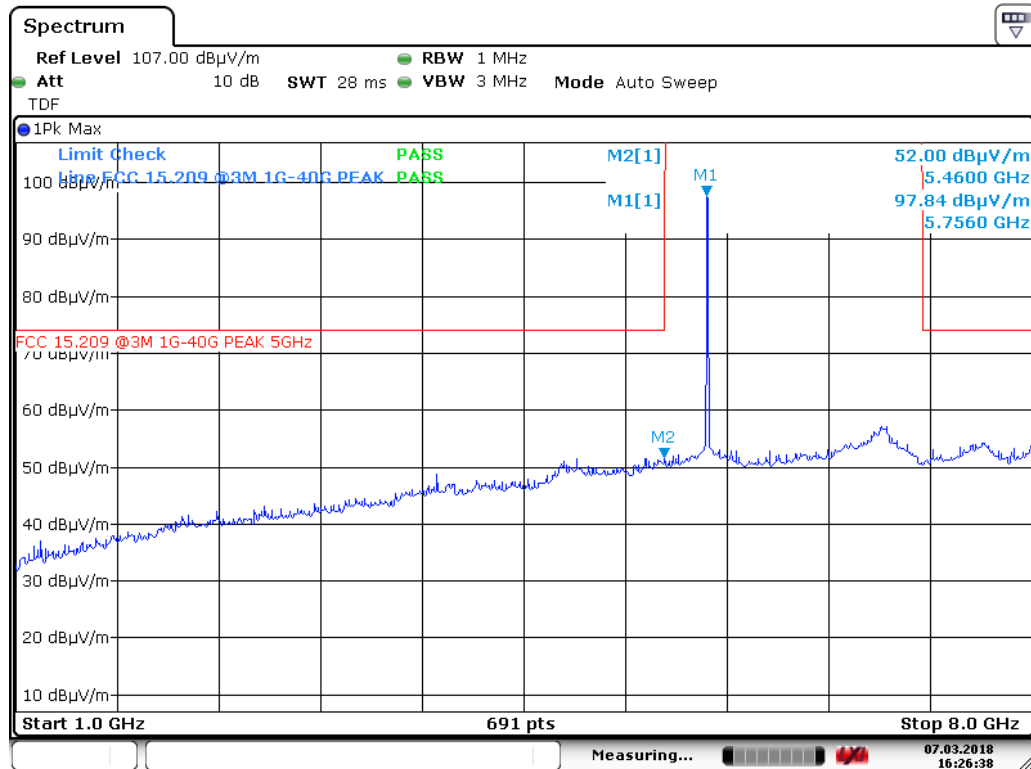
**Radiated Emissions, 5814 MHz (port A), 1 – 8 GHz, VP, @3m – Pre-scan**



### Radiated Emissions, 5736 MHz (port B), 1 – 8 GHz, HP, @3m – Pre-scan

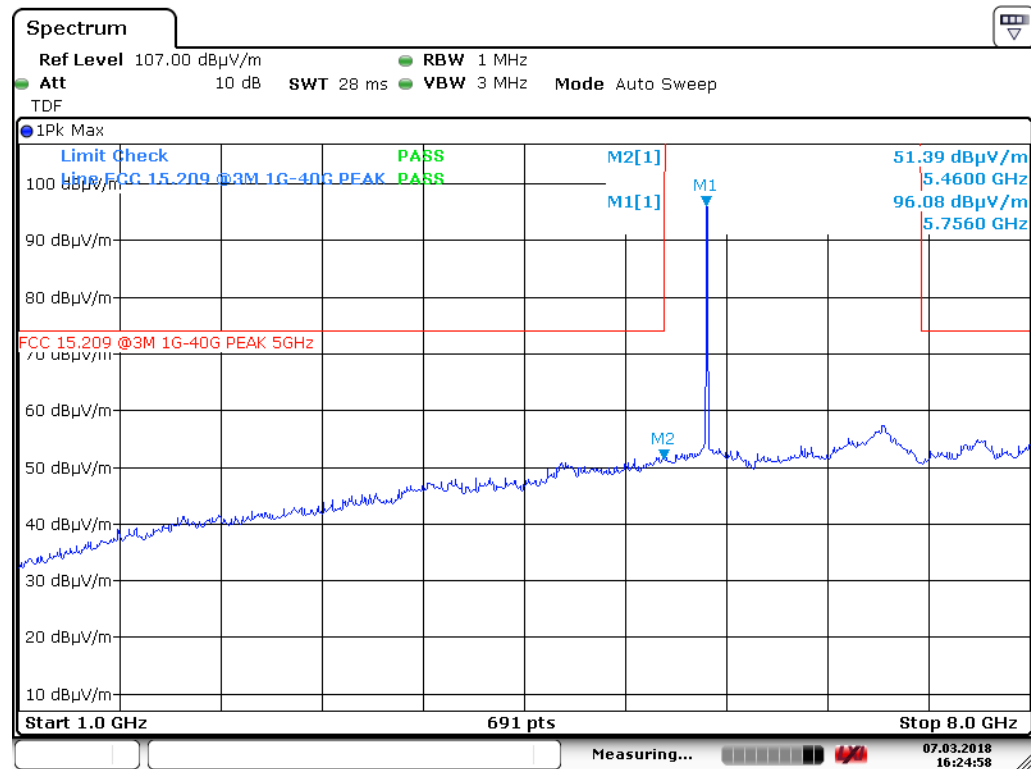


### Radiated Emissions, 5736 MHz (port B), 1 – 8 GHz, VP, @3m – Pre-scan



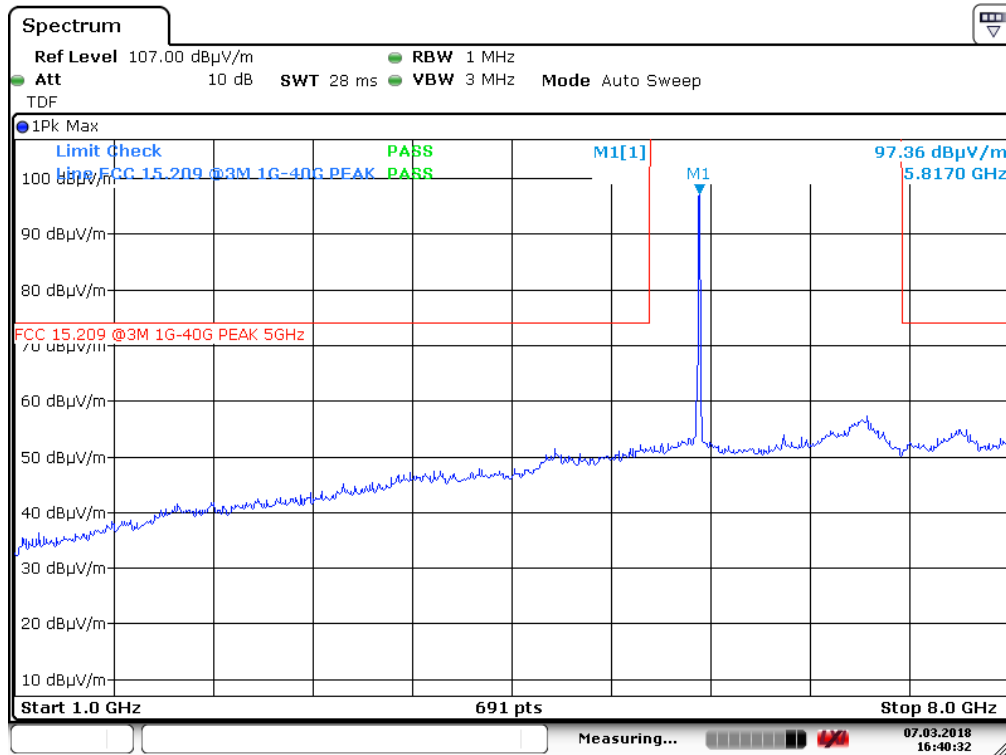
Date: 7.MAR.2018 16:26:38

### Radiated Emissions, 5762 MHz (port B), 1 – 8 GHz, HP, @3m – Pre-scan



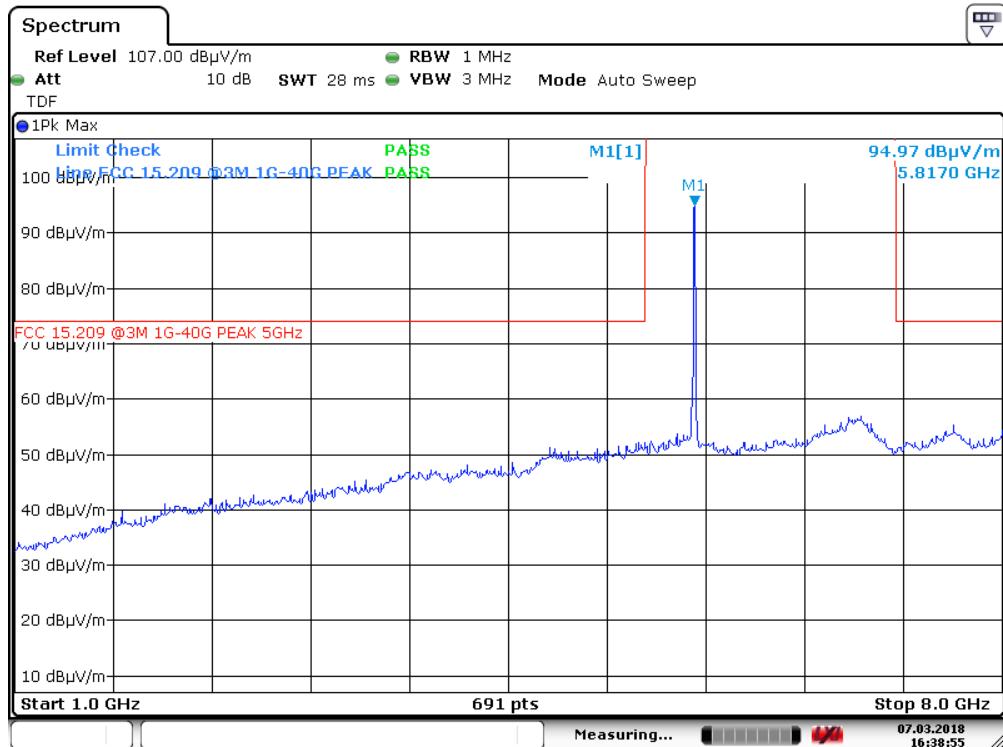
Date: 7.MAR.2018 16:24:58

### Radiated Emissions, 5762 MHz (port B), 1 – 8 GHz, VP, @3m – Pre-scan



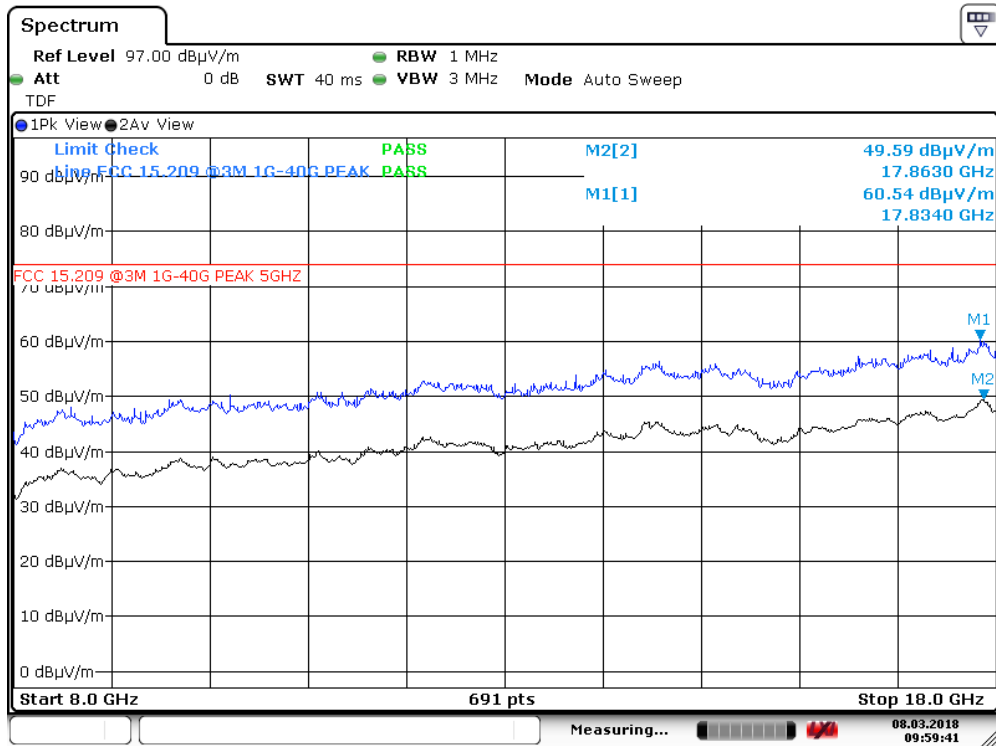
Date: 7.MAR.2018 16:40:32

### Radiated Emissions, 5814 MHz (port B), 1 – 8 GHz, HP, @3m – Pre-scan



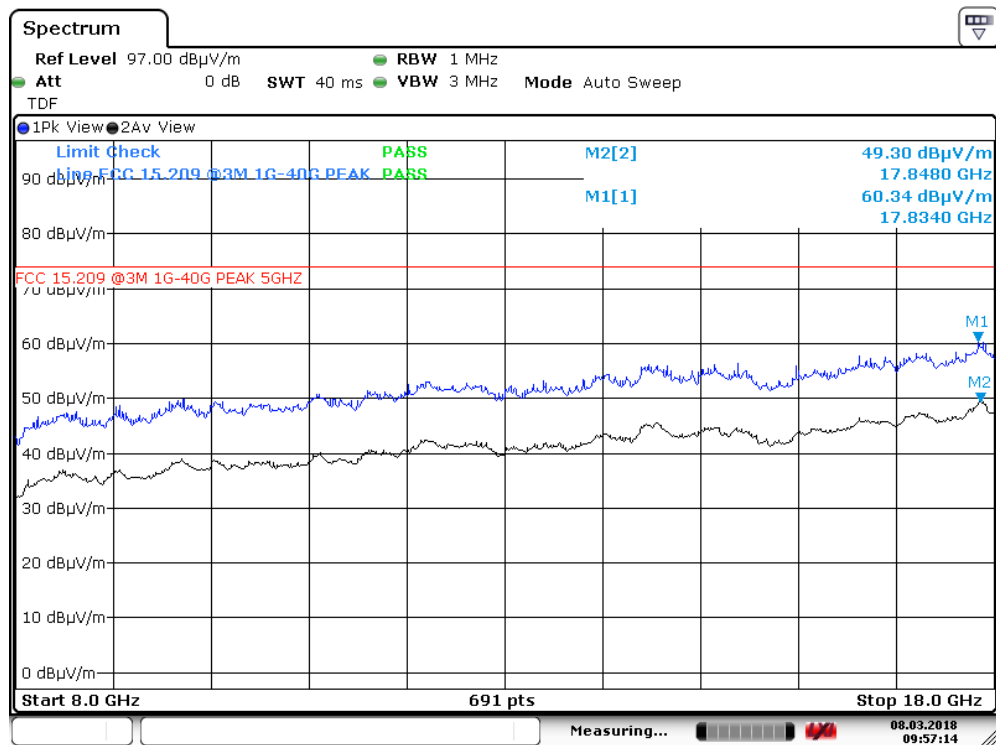
Date: 7.MAR.2018 16:38:55

### Radiated Emissions, 5814 MHz (port B), 1 – 8 GHz, VP, @3m – Pre-scan



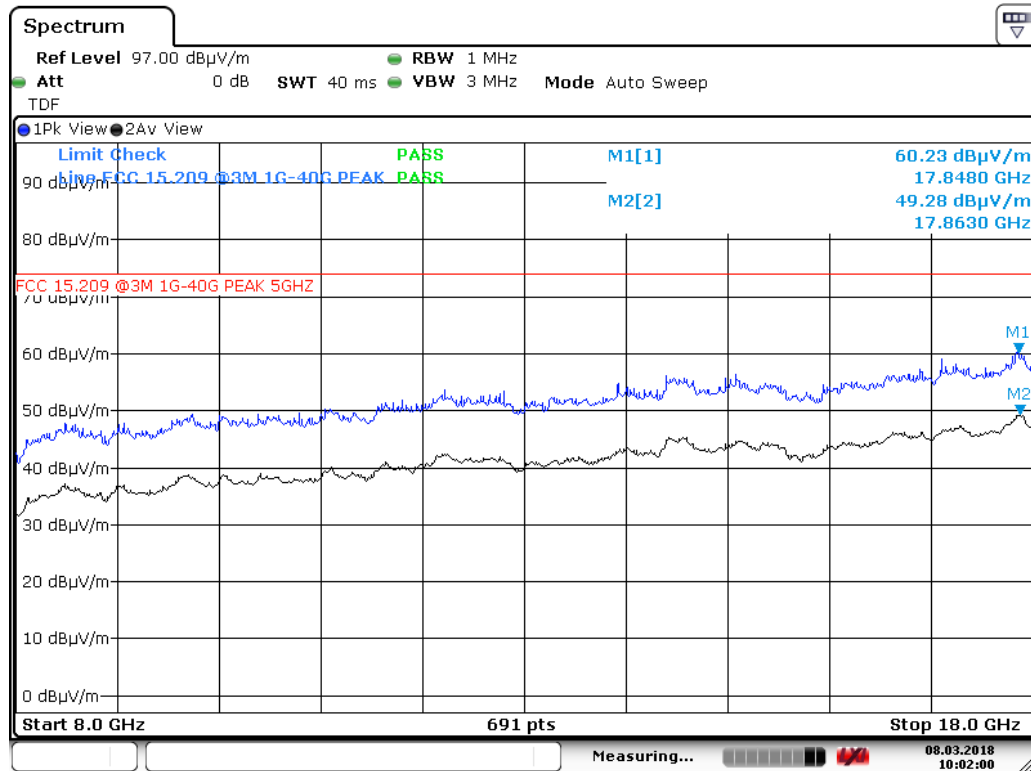
Date: 8.MAR.2018 09:59:42

### Radiated Emissions, 5736 MHz (port A), 8 – 18 GHz, HP, @3m – Pre-scan



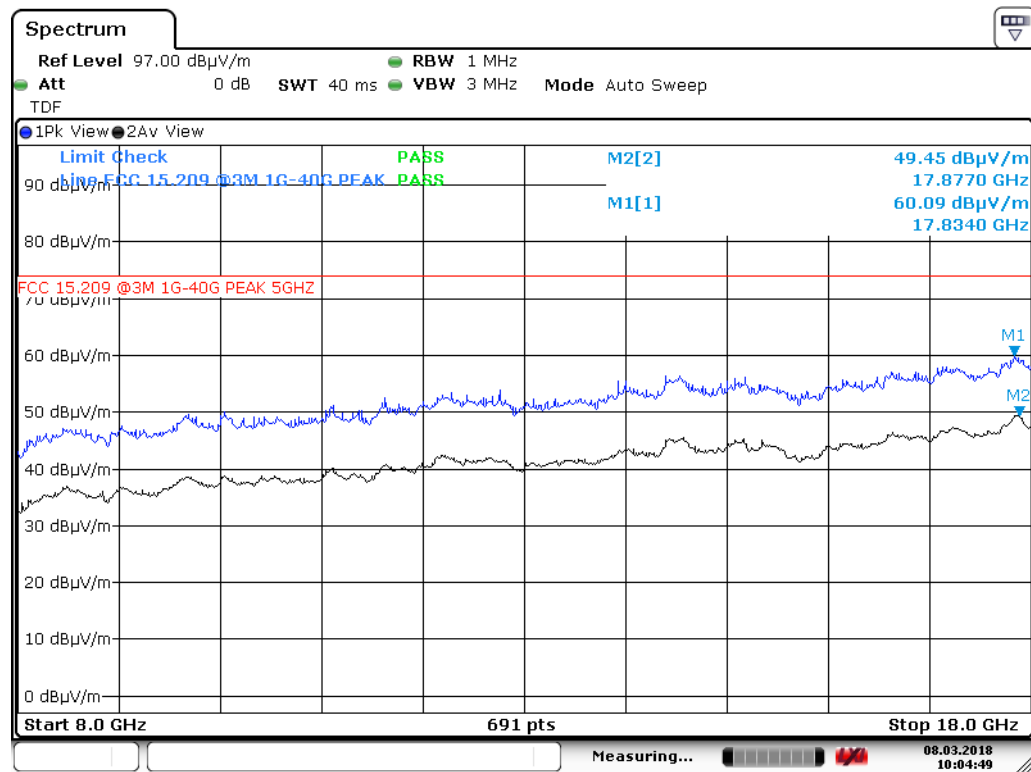
Date: 8.MAR.2018 09:57:15

### Radiated Emissions, 5736 MHz (port A), 8 – 18 GHz, VP, @3m – Pre-scan



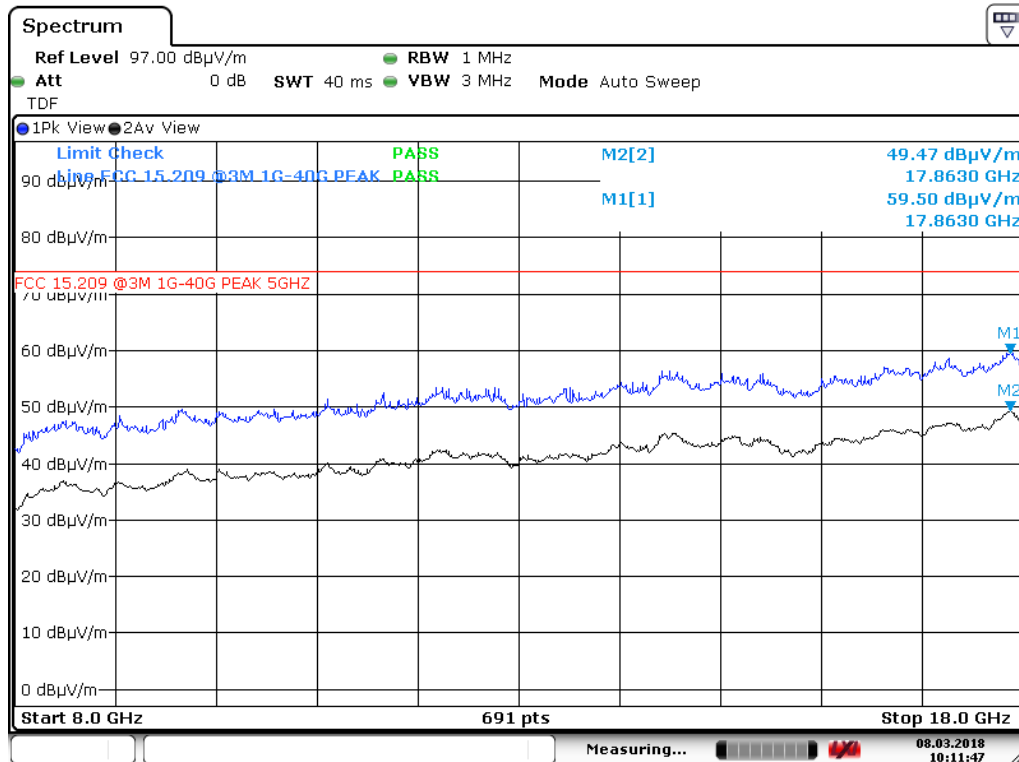
Date: 8.MAR.2018 10:02:01

### Radiated Emissions, 5762 MHz (port A), 8 – 18 GHz, HP, @3m – Pre-scan



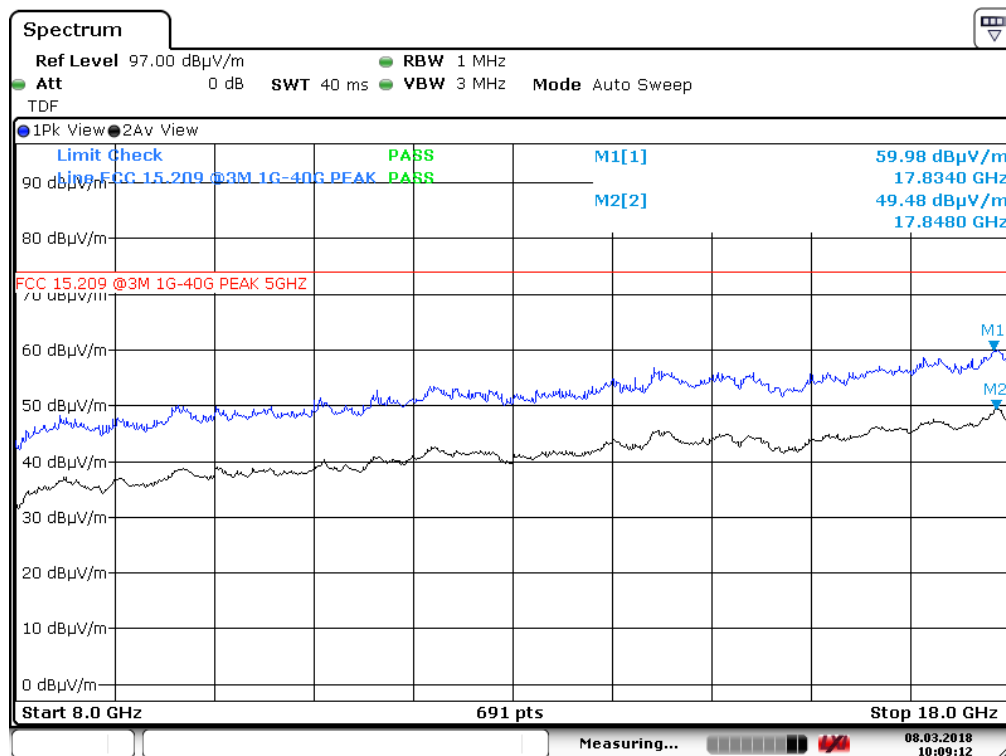
Date: 8.MAR.2018 10:04:49

### Radiated Emissions, 5762 MHz (port A), 8 – 18 GHz, VP, @3m – Pre-scan



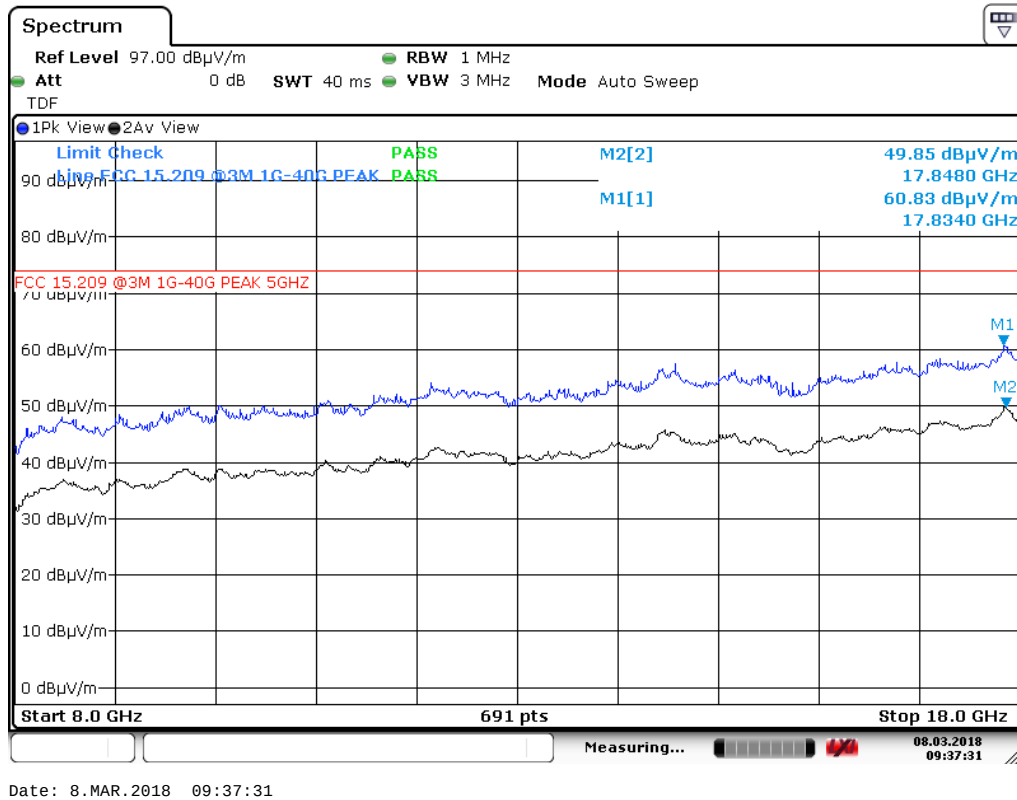
Date: 8.MAR.2018 10:11:48

### Radiated Emissions, 5814 MHz (port A), 8 – 18 GHz, HP, @3m – Pre-scan

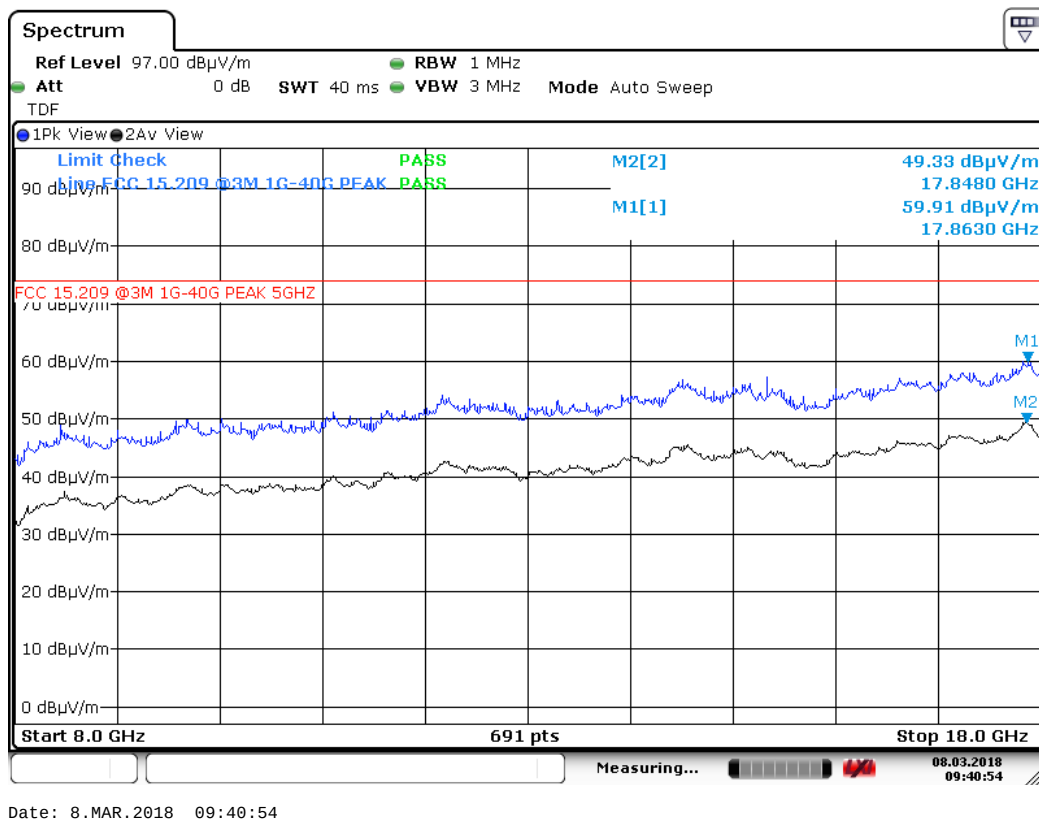


Date: 8.MAR.2018 10:09:13

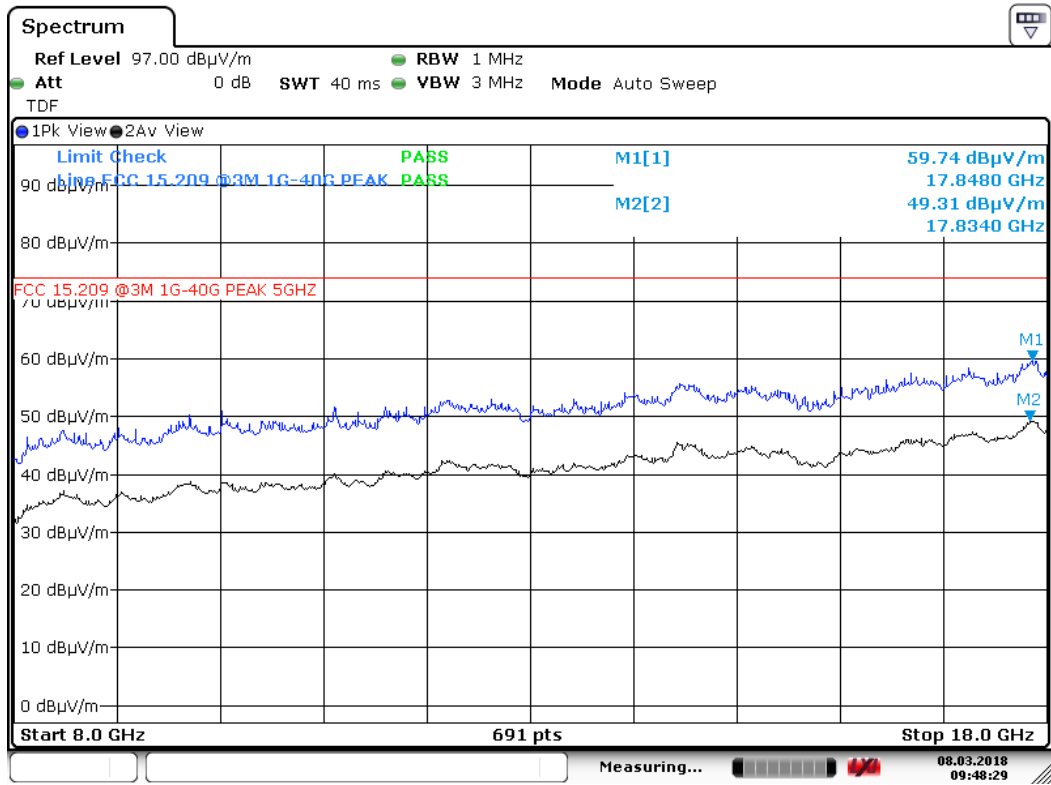
### Radiated Emissions, 5814 MHz (port A), 8 – 18 GHz, VP, @3m – Pre-scan



Radiated Emissions, 5736 MHz (port B), 8 – 18 GHz, HP, @3m – Pre-scan

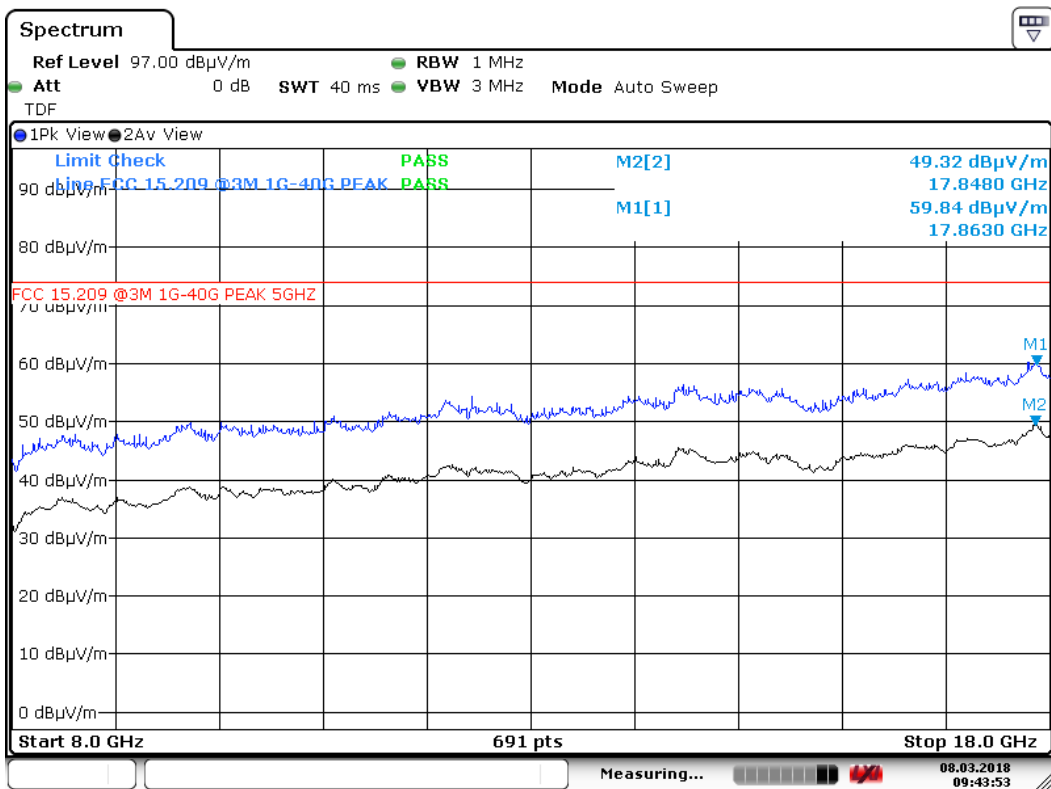


Radiated Emissions, 5736 MHz (port B), 8 – 18 GHz, VP, @3m – Pre-scan



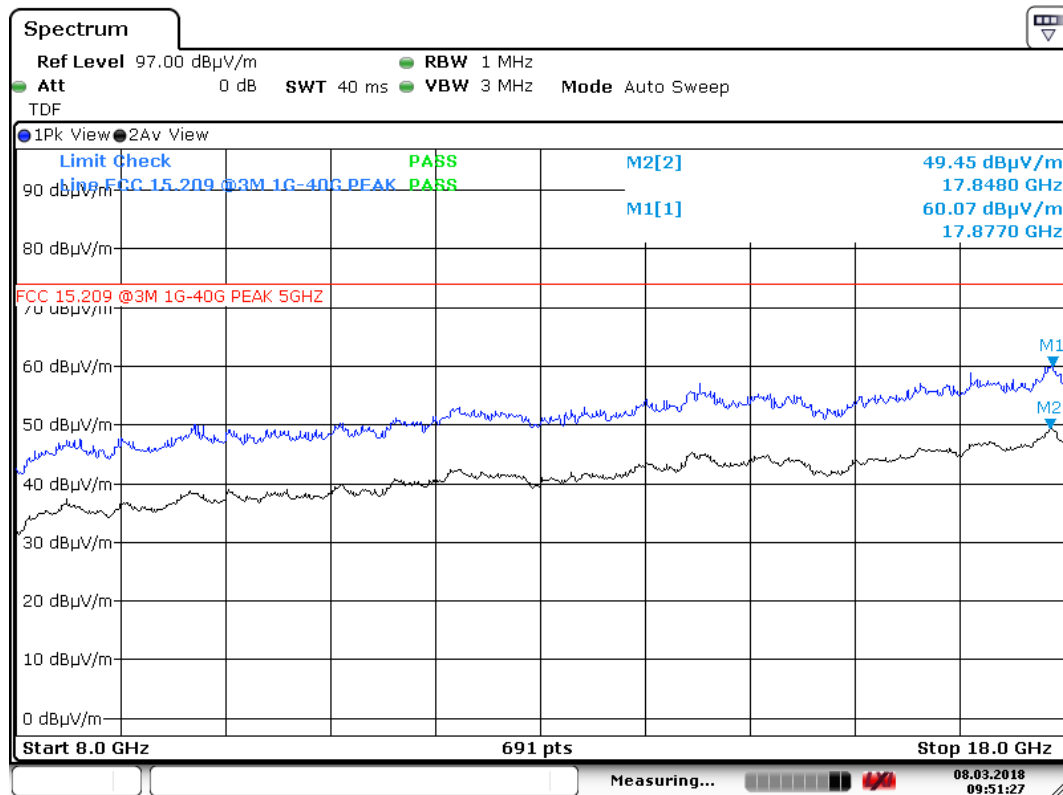
Date: 8.MAR.2018 09:48:30

### Radiated Emissions, 5762 MHz (port B), 8 – 18 GHz, HP, @3m – Pre-scan



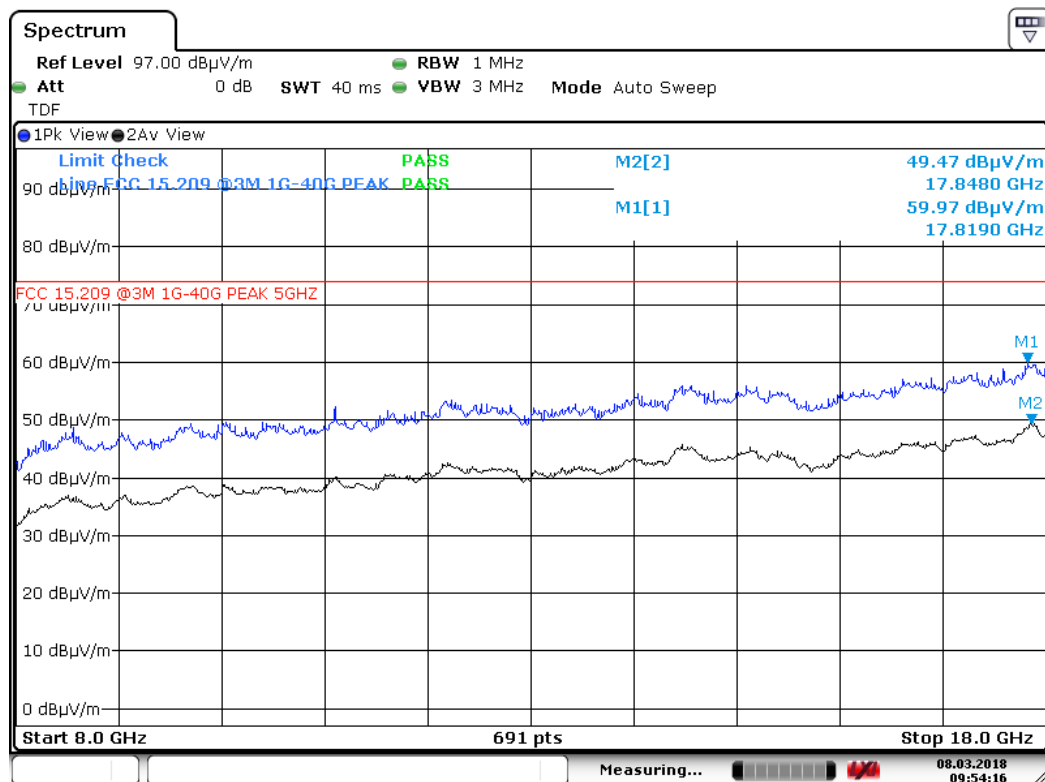
Date: 8.MAR.2018 09:43:53

### Radiated Emissions, 5762 MHz (port B), 8 – 18 GHz, VP, @3m – Pre-scan



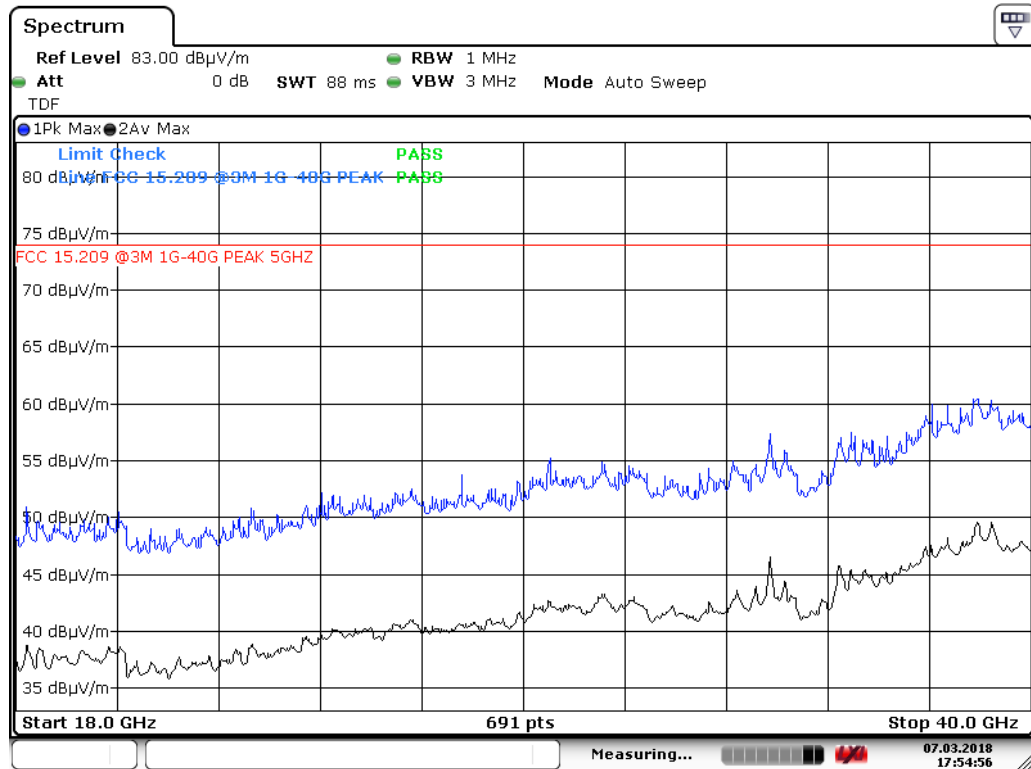
Date: 8.MAR.2018 09:51:28

### Radiated Emissions, 5814 MHz (port B), 8 – 18 GHz, HP, @3m – Pre-scan



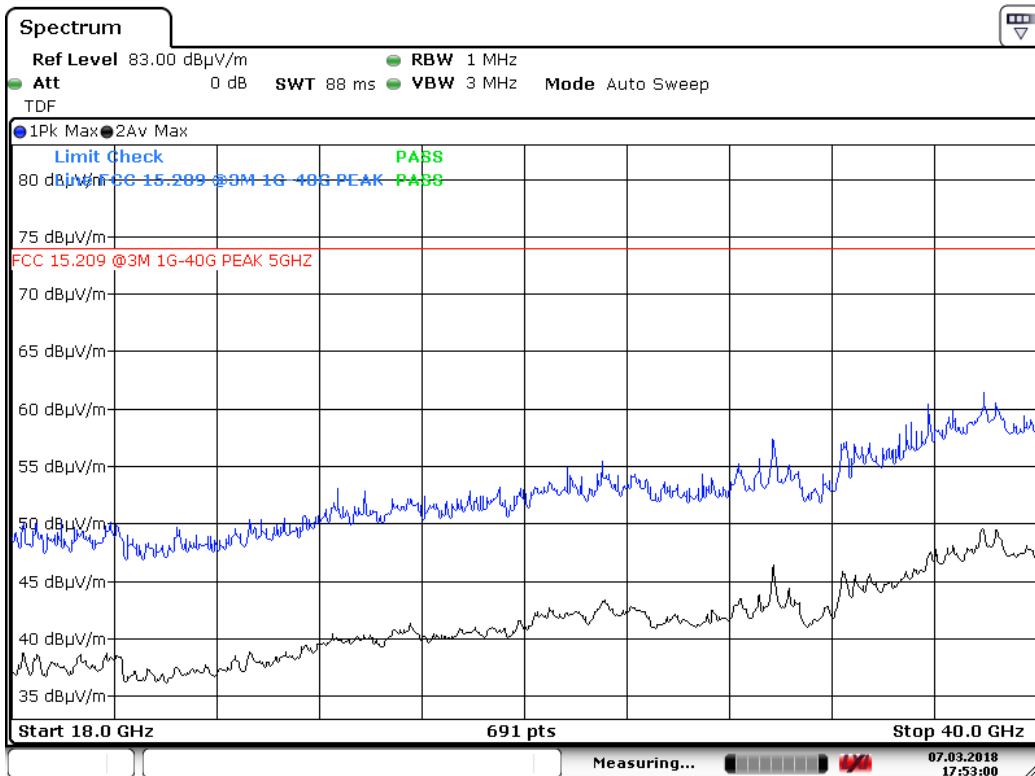
Date: 8.MAR.2018 09:54:16

### Radiated Emissions, 5814 MHz (port B), 8 – 18 GHz, VP, @3m – Pre-scan



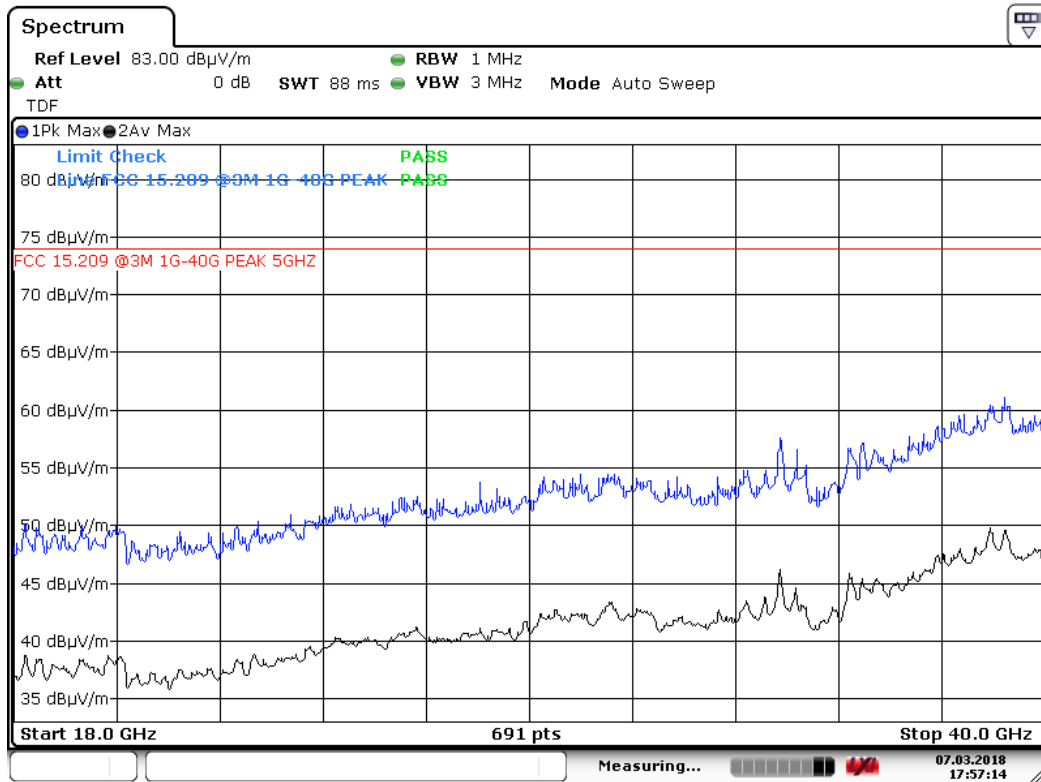
Date: 7.MAR.2018 17:54:56

### Radiated Emissions, 5736 MHz (port A), 18 – 40 GHz, HP, @3m – Pre-scan



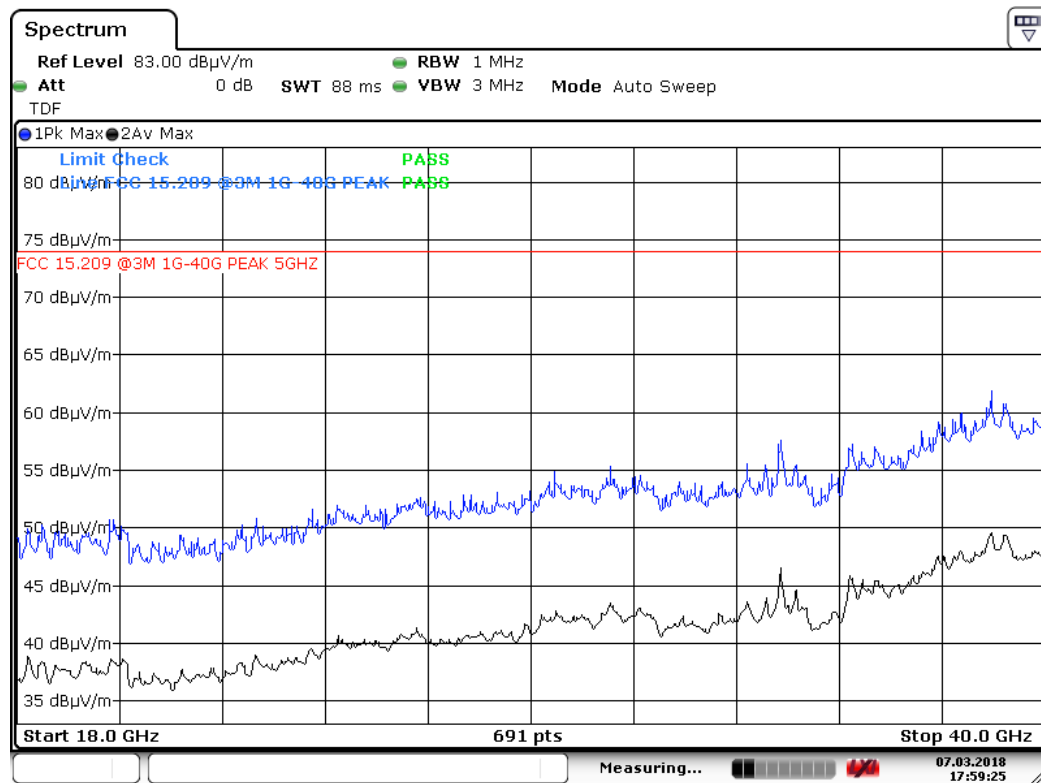
Date: 7.MAR.2018 17:53:00

### Radiated Emissions, 5736 MHz (port A), 18 – 40 GHz, HP, @3m – Pre-scan



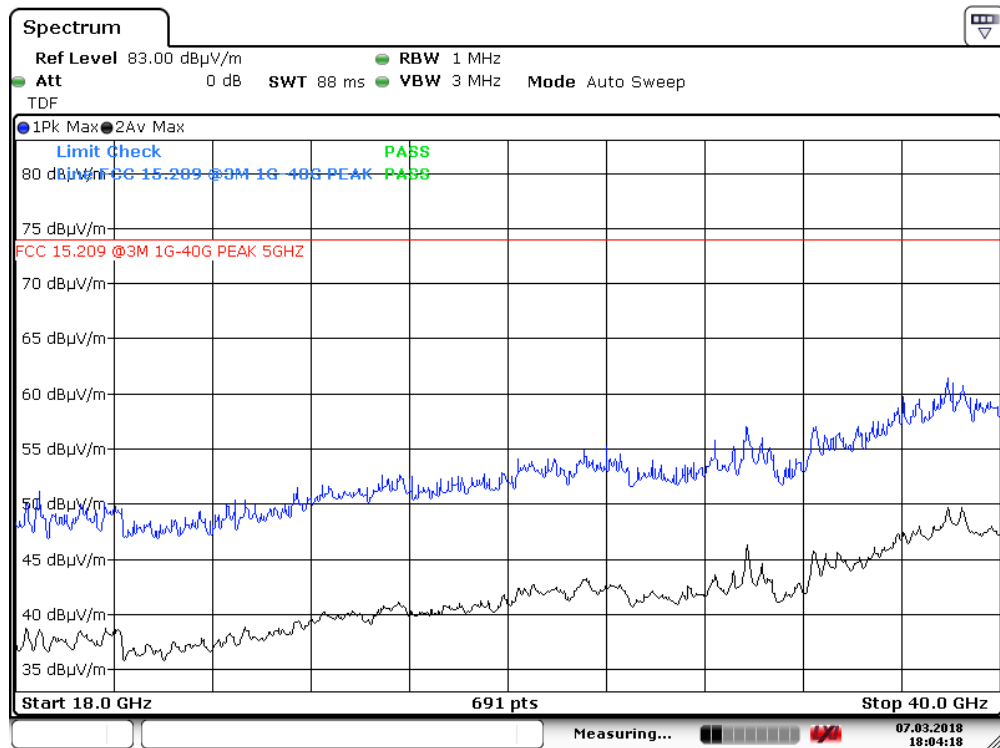
Date: 7.MAR.2018 17:57:14

### Radiated Emissions, 5762 MHz (port A), 18 – 40 GHz, HP, @3m – Pre-scan



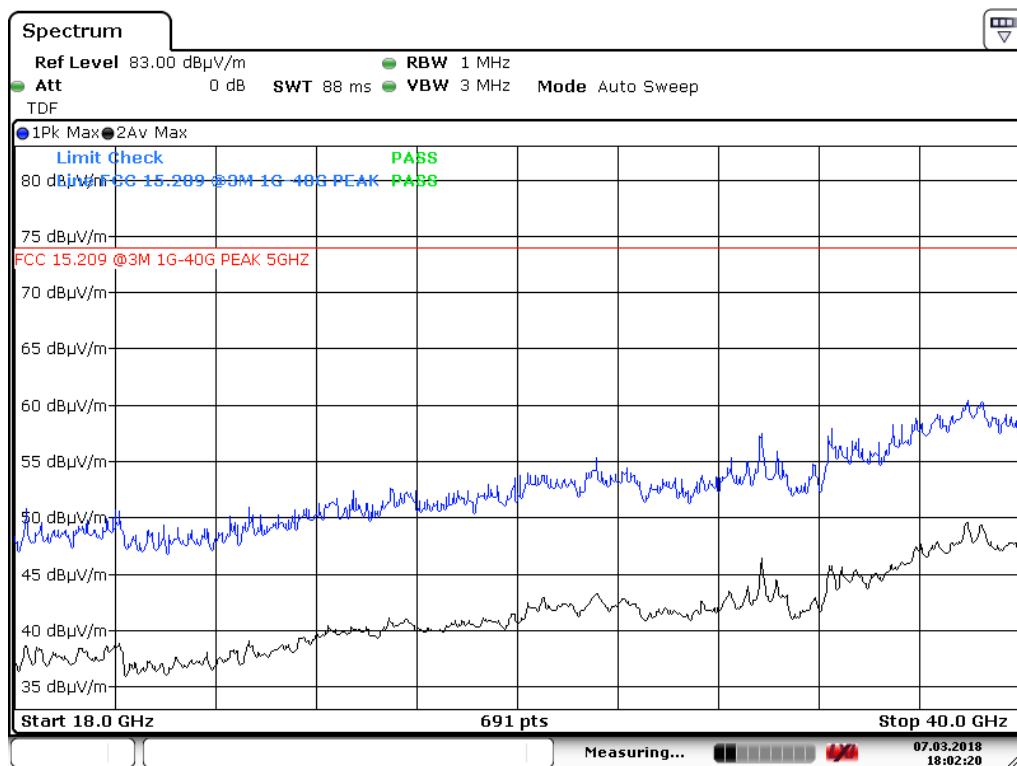
Date: 7.MAR.2018 17:59:25

### Radiated Emissions, 5762 MHz (port A), 18 – 40 GHz, VP, @3m – Pre-scan



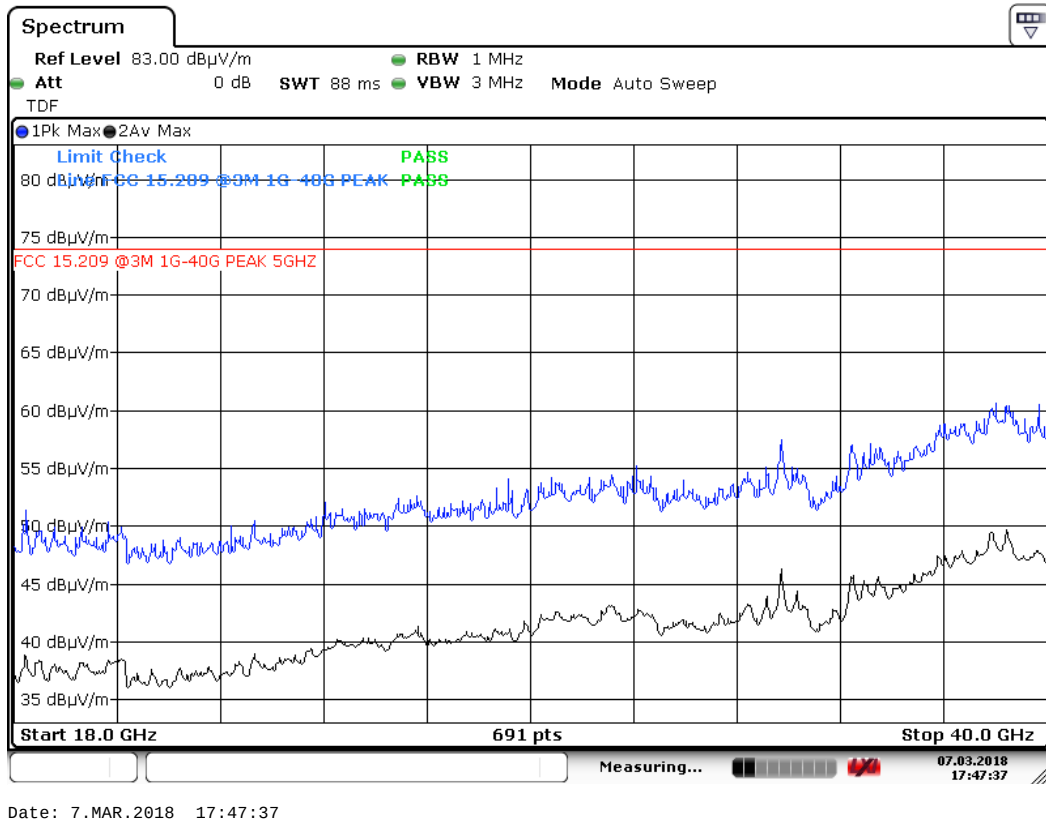
Date: 7.MAR.2018 18:04:18

### Radiated Emissions, 5814 MHz (port A), 18 – 40 GHz, HP, @3m – Pre-scan

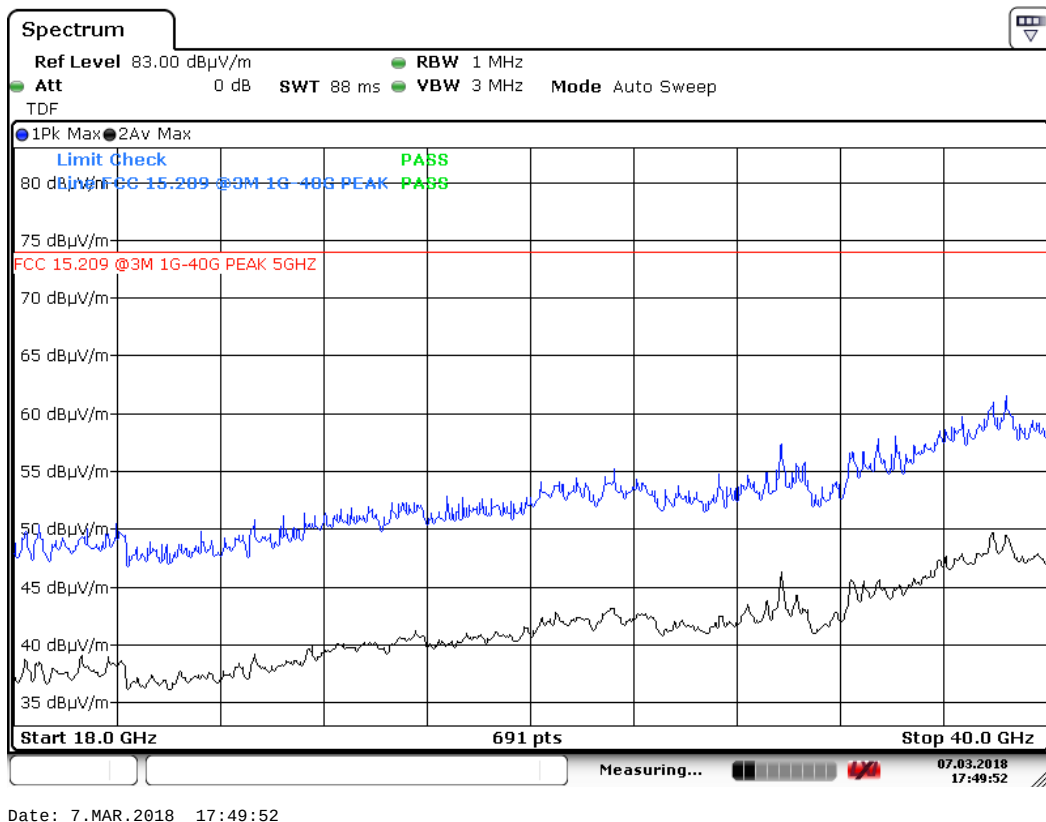


Date: 7.MAR.2018 18:02:20

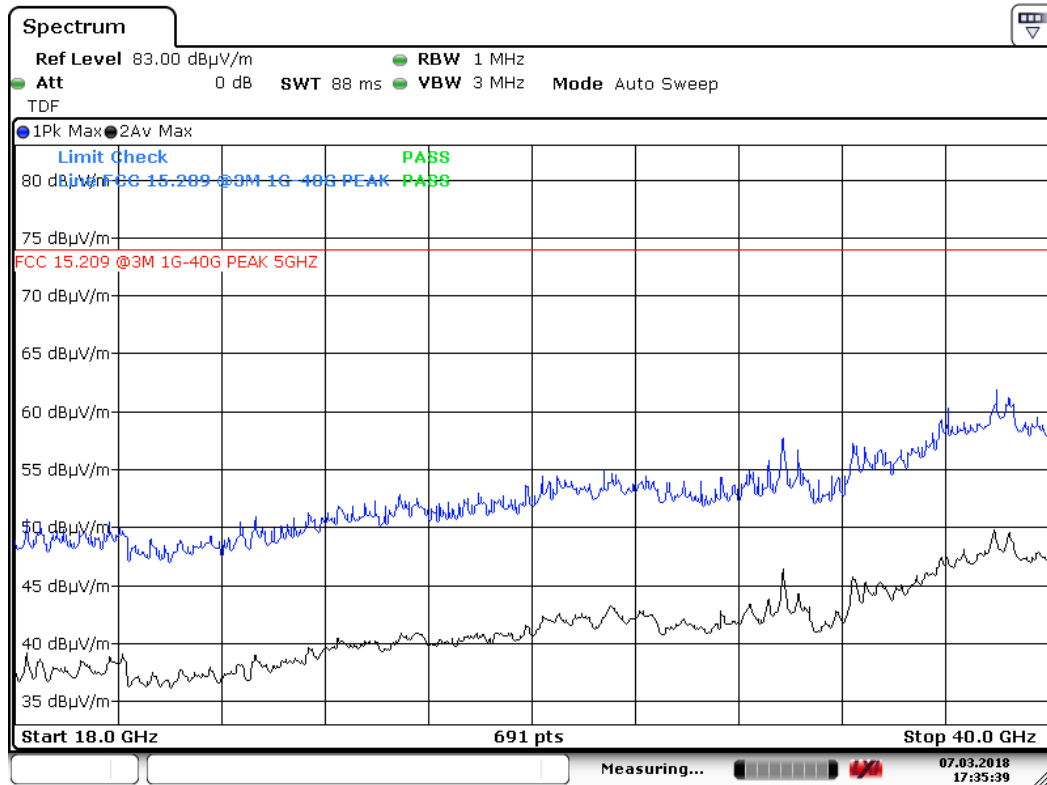
### Radiated Emissions, 5814 MHz (port A), 18 – 40 GHz, VP, @3m – Pre-scan



### Radiated Emissions, 5736 MHz (port B), 18 – 40 GHz, HP, @3m – Pre-scan

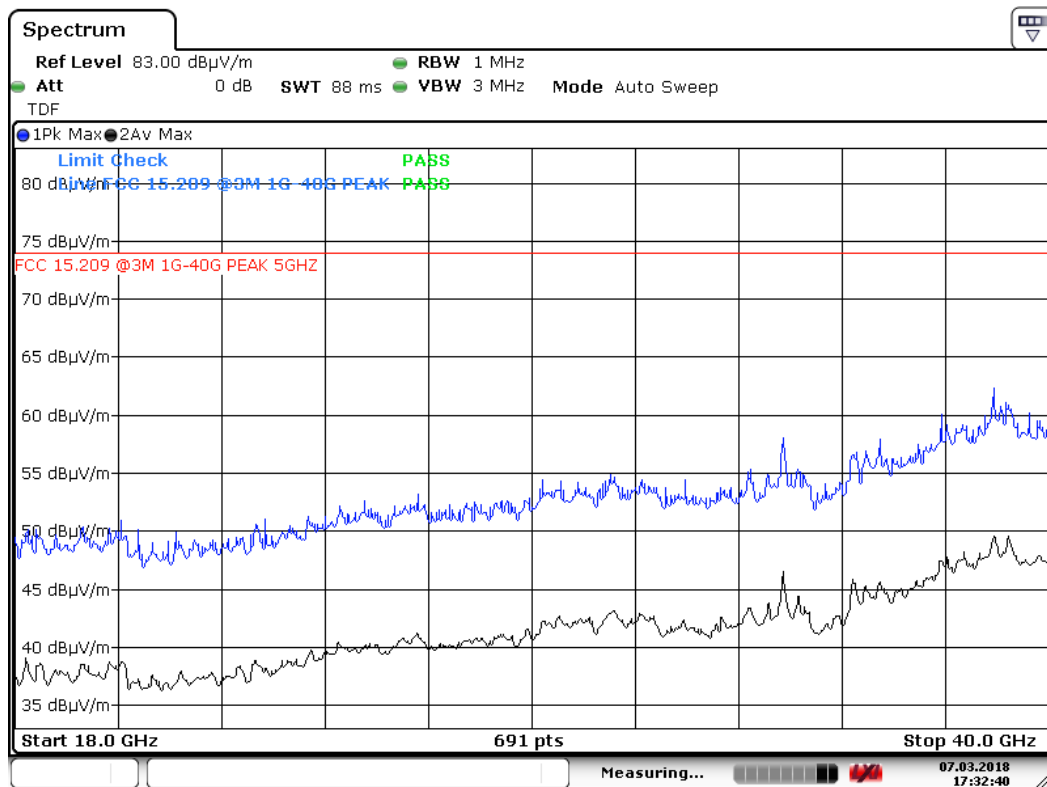


### Radiated Emissions, 5736 MHz (port B), 18 – 40 GHz, VP, @3m – Pre-scan



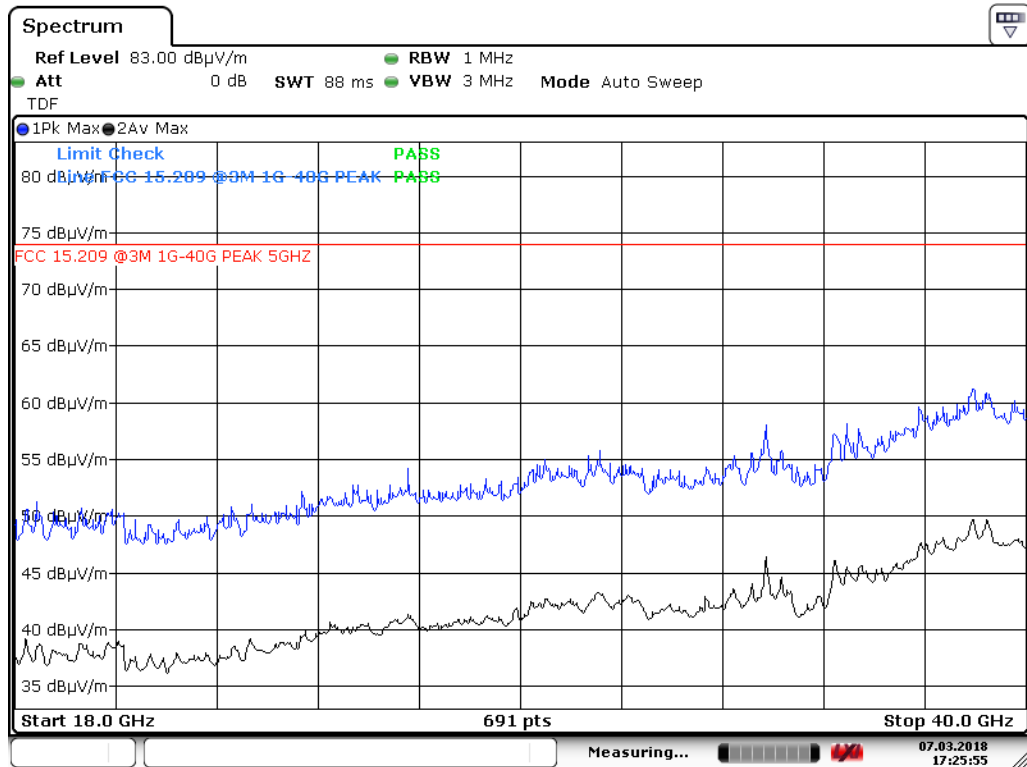
Date: 7.MAR.2018 17:35:39

### Radiated Emissions, 5762 MHz (port B), 18 – 40 GHz, HP, @3m – Pre-scan



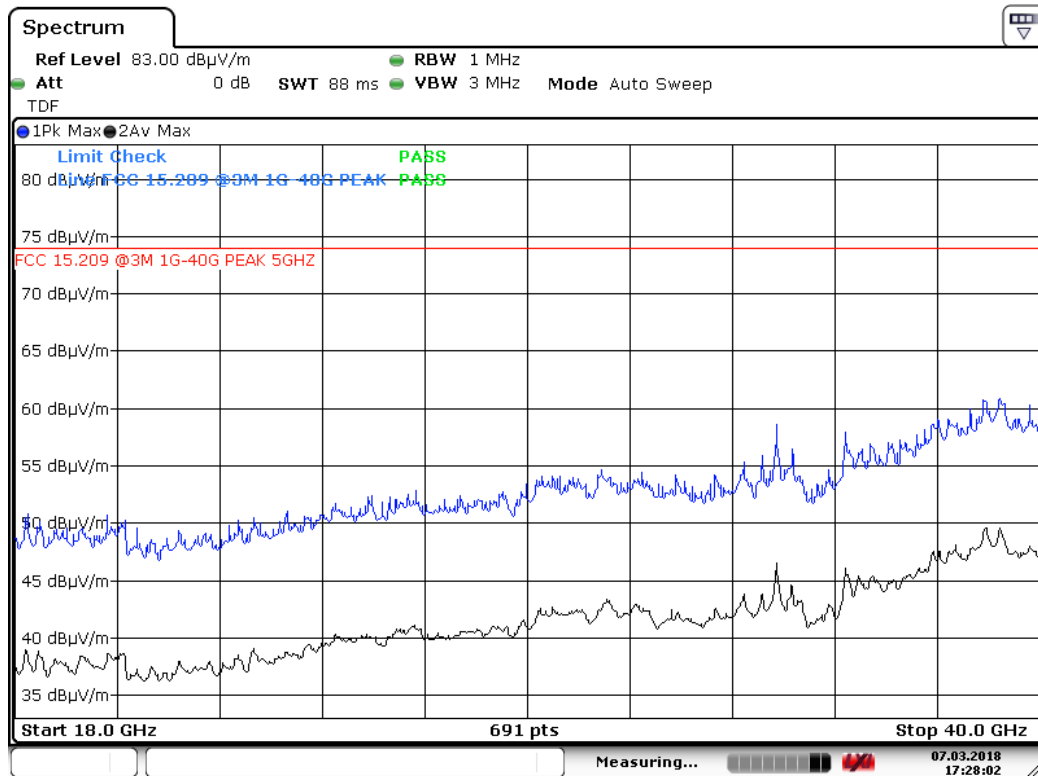
Date: 7.MAR.2018 17:32:40

### Radiated Emissions, 5762 MHz (port B), 18 – 40 GHz, VP, @3m – Pre-scan



Date: 7.MAR.2018 17:25:55

### Radiated Emissions, 5814 MHz (port B), 18 – 40 GHz, HP, @3m – Pre-scan



Date: 7.MAR.2018 17:28:02

### Radiated Emissions, 5814 MHz (port B), 18 – 40 GHz, VP, @3m – Pre-scan

## 4 Measurement Uncertainty

| Measurement Uncertainty Values   |                 |             |
|----------------------------------|-----------------|-------------|
| Test Item                        |                 | Uncertainty |
| Output Power                     |                 | ±0.8 dB     |
| Power Spectral Density           |                 | ±0.8 dB     |
| Out of Band Emissions, Conducted | < 3.6 GHz       | ±0.8 dB     |
|                                  | > 3.6 GHz       | ±1.2 dB     |
| Spurious Emissions, Radiated     | < 200 MHz       | ±4.77 dB    |
|                                  | 200 MHz - 1 GHz | ±5.02 dB    |
|                                  | 1 GHz – 18 GHz  | ±4.94 dB    |
|                                  | > 18 GHz        | ±5.91 dB    |
| Emission Bandwidth               |                 | ±4 %        |
| Power Line Conducted Emissions   |                 | ±3.58 %     |
| Spectrum Mask Measurements       | Frequency       | ±5 %        |
|                                  | Amplitude       | ±1.0 dB     |
| Frequency Error                  |                 | ±0.6 ppm    |
| Temperature Uncertainty          |                 | ±1 °C       |

All uncertainty values are expanded standard uncertainty to give a confidence level of 95%, based on coverage factor k=2

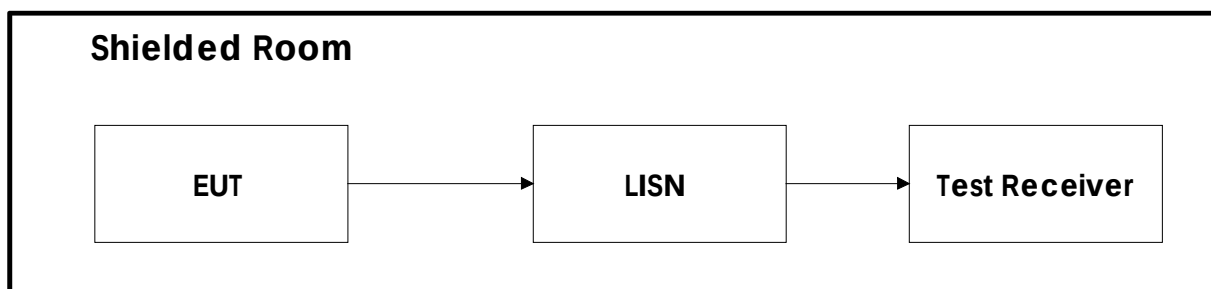
## 5 LIST OF TEST EQUIPMENT

To facilitate inclusion on each page of the test equipment used for related tests, each item of test equipment and ancillaries are identified (numbered) by the Test Laboratory.

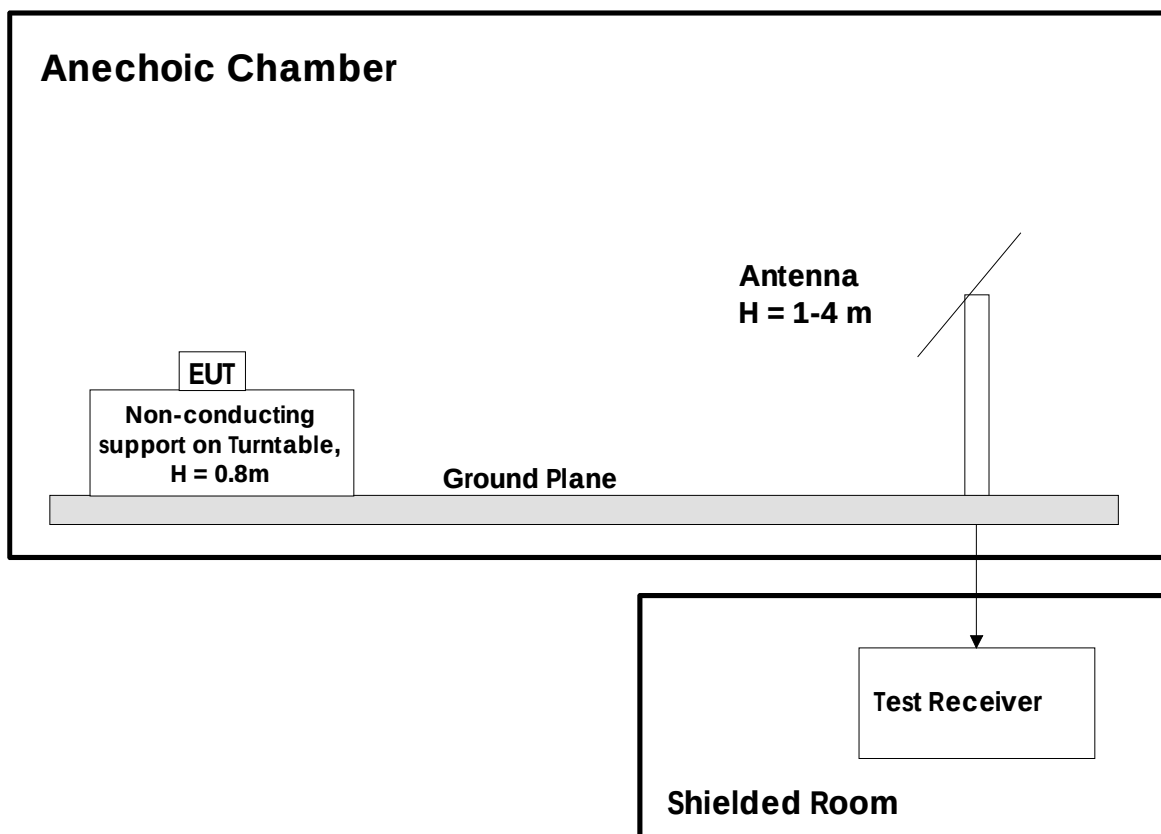
| Ref No | Instrument/ ancillary  | Manufacturer                | Type of instrument/ ancillary       | Cal. Date | Cal. Due |
|--------|------------------------|-----------------------------|-------------------------------------|-----------|----------|
| 1-0039 | Loop antenna           | Rohde & Schwarz             | HFH2-Z2                             | 2017-09   | 2018-09  |
| 1-0040 | Biconical antenna      | Rohde & Schwarz             | HK116                               | 2015-08   | 2018-08  |
| 1-0055 | LopPer antenna         | Rohde & Schwarz             | HL223                               | 2015-08   | 2018-08  |
| 1-0080 | Turntable              | H. Deisel                   | DS 420                              | --        | --       |
| 1-0256 | Horn antenna           | Schwarzbeck Mess-Elektronik | BBHA 9120                           | --        | --       |
| 1-0361 | Semi anechoic chamber  | Reinhold & Mahla            | 3m                                  | 2017-06   | 2020-06  |
| 1-0364 | Antenna cable 2        | Kabelwerk Eupen             | RF/Cord CMS / RG 214-N/7            | 2016-09   | 2019-09  |
| 1-0604 | EMI test receiver      | Rohde & Schwarz             | ESU8                                | 2017-09   | 2018-09  |
| 1-0611 | Signal analyzer        | Rohde & Schwarz             | FSV 40                              | 2017-09   | 2018-09  |
| 1-0614 | Log.-per. antenna      | Schwarzbeck Mess-Elektronik | STLP 9148 Stacked Log.-Per. Antenne | 2016-11   | 2019-11  |
| 1-0615 | Pre amplifier          | Schwarzbeck Mess-Elektronik | BBV-9718 Broadband Preamplifier     | 2017-09   | 2018-09  |
| 1-0619 | Coaxial cable (to SAC) | Huber+Suhner                | SF106/2x11N-651/2m                  | 2016-09   | 2019-09  |
| 1-0620 | Antenna cable 3        | Huber+Suhner                | SF106/2x11N-651/3m                  | 2016-09   | 2019-09  |
| 1-0771 | Broadband Horn antenna | Schwarzbeck Mess-Elektronik | SHF-EHF Horn, 15-40GHz              | 2015-02   | 2018-03  |
| 1-0781 | Pre amplifier          | Schwarzbeck Mess-Elektronik | BBV 9721                            | 2017-09   | 2018-09  |
| 1-0782 | Antenna cable          | Huber & Suhner              | FB142A                              | 2015-07   | 2018-07  |
| 1-0789 | High Pass Filter       | Mini Circuits               | VHF-1320+ 1700-3800 MHz             | 2016-09   | 2019-09  |
| 1-0790 | High Pass Filter       | Mini Circuits               | VHF-3100+ 3400-9900MHz              | 2016-09   | 2019-09  |
| 1-0791 | High Pass Filter       | Mini Circuits               | VHF-740+ 900-2200MHz                | 2016-09   | 2019-09  |
| 1-0870 | 10 dB Attenuator       | Mini Circuits               | BW-N10W5+                           | 2016-09   | 2019-09  |
| 1-0924 | Cable 1m               | ---                         | SMA                                 | 2016-09   | 2019-09  |
| 1-0925 | Cable 1m               | ---                         | SMA                                 | 2016-09   | 2019-09  |
| 1-0926 | Cable 1m               | Harbour Industries          | SMA                                 | 2016-09   | 2019-09  |
| 1-0927 | Cable 1m               | Harbour Industries          | SMA                                 | 2016-09   | 2019-09  |
| 1-0966 | RF power meter         | DARE                        | RPR3006W                            | 2017-07   | 2018-07  |

## 6 BLOCK DIAGRAM

### 6.1 Power Line Conducted Emission



### 6.2 Test Site Radiated Emission



Measurements at 1GHz and above were performed with turntable height 1.5m and with the ground plane covered by absorbers.

## Revision history

| Version | Date       | Comment                              | Sign |
|---------|------------|--------------------------------------|------|
| 02      | 2018-08-01 | FCC Part 15.247 and RSS-247 removed. | mk   |
| 01      | 2018-03-14 | Additional calculation for TX power. | mk   |
| 00      | 2018-03-09 | First version                        | mk   |