



## 11 CONDUCTED SPURIOUS EMISSIONS

The following tests were performed to demonstrate compliance.

### **RF Antenna Conducted Test**

The EUT antenna port was fitted with an SMA connector and directly connected to the input of the spectrum analyzer.

#### **11.1 Requirements:**

All Spurious Emissions must be at least 20dB down from the highest emission level measured within the authorized band up through the tenth harmonic.

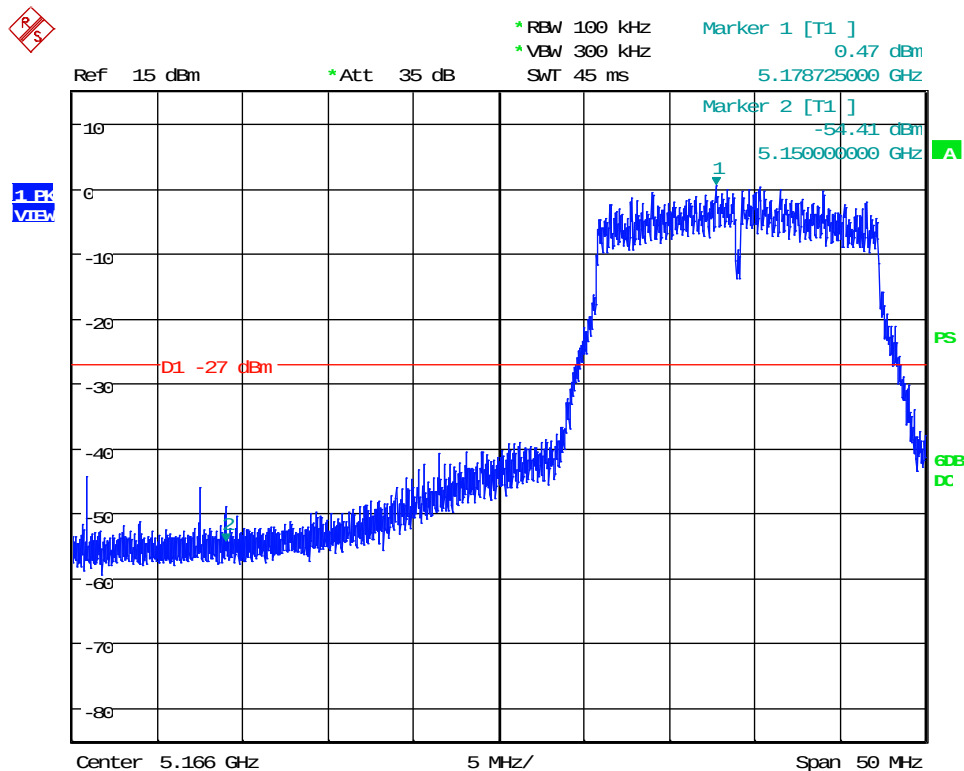
Spurious emissions measurements were made at the low, mid, and upper channels with the appropriate spectrum analyzer impulse bandwidth. Additionally, 20dB down points were measured for the low and high channels to verify band edge compliance.



## 11.2 Conducted Spurious Emissions Test Data

|            |                            |                    |            |
|------------|----------------------------|--------------------|------------|
| Test Date: | 2021-02-08                 | Test Engineer:     | J. Chiller |
| Standards: | CFR 47 Part 15.407(b)(1,4) | Air Temperature:   | 17.5°C     |
|            |                            | Relative Humidity: | 23%        |

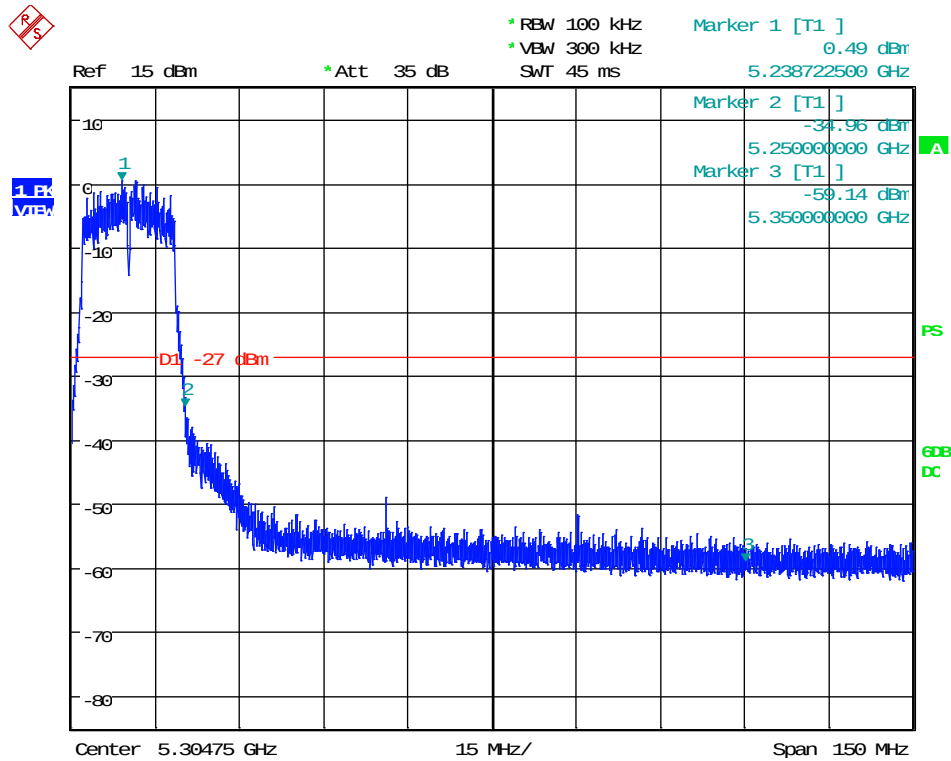
## Lower Band Edge, UNII 1, OFDM54 20M



Date: 8.FEB.2021 10:16:05



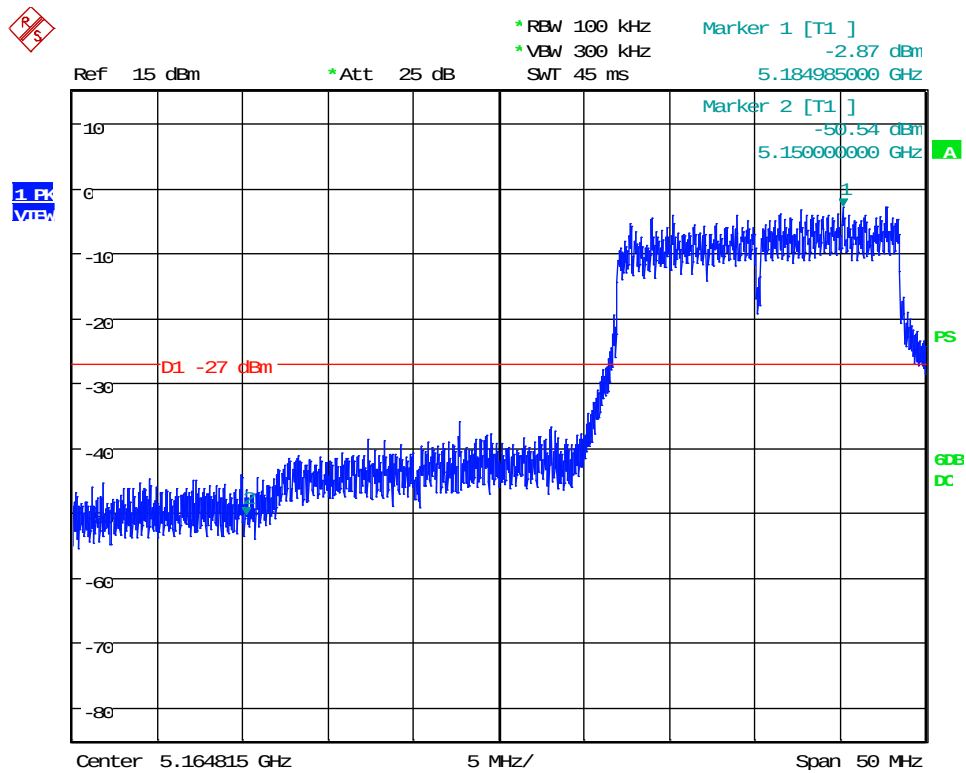
### Upper Band Edge, UNII 1, OFDM54 20M



Date: 8.FEB.2021 10:35:56



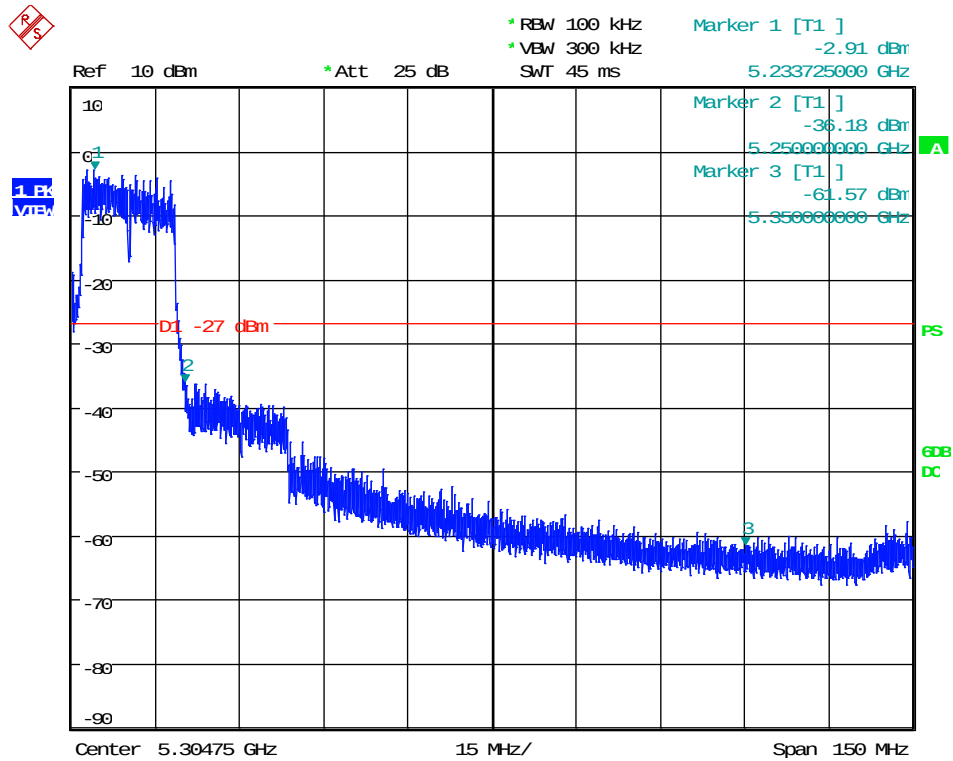
### Lower Band Edge, UNII 1, OFDM54 40M



Date: 8.FEB.2021 10:57:31



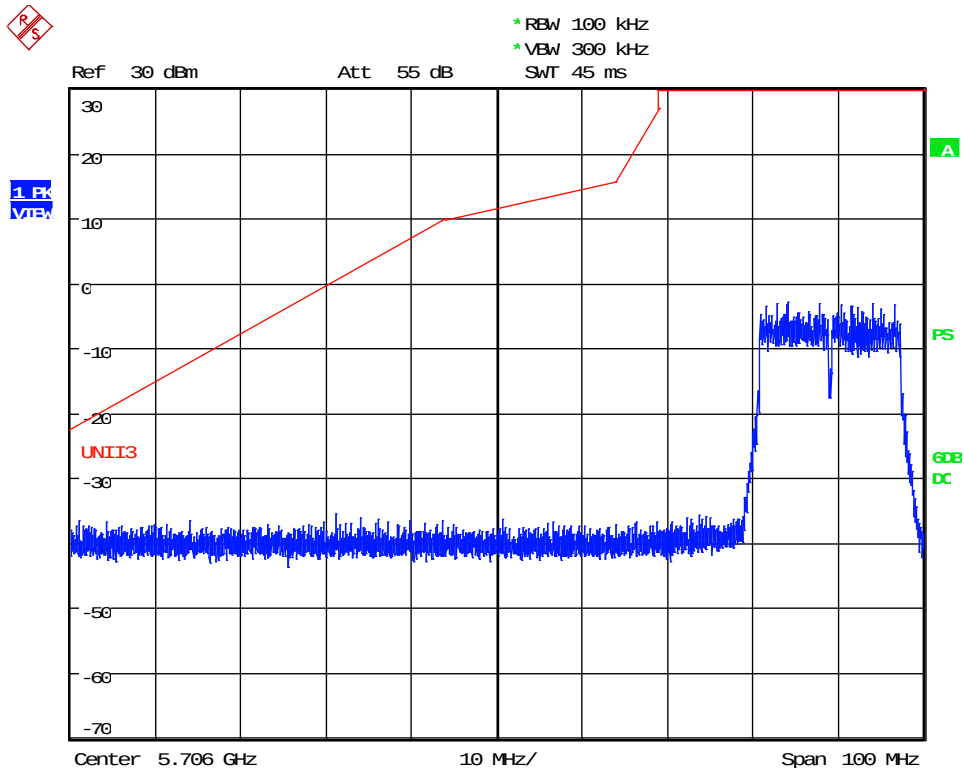
### Upper Band Edge, UNII 1, OFDM54 40M



Date: 8.FEB.2021 10:40:06



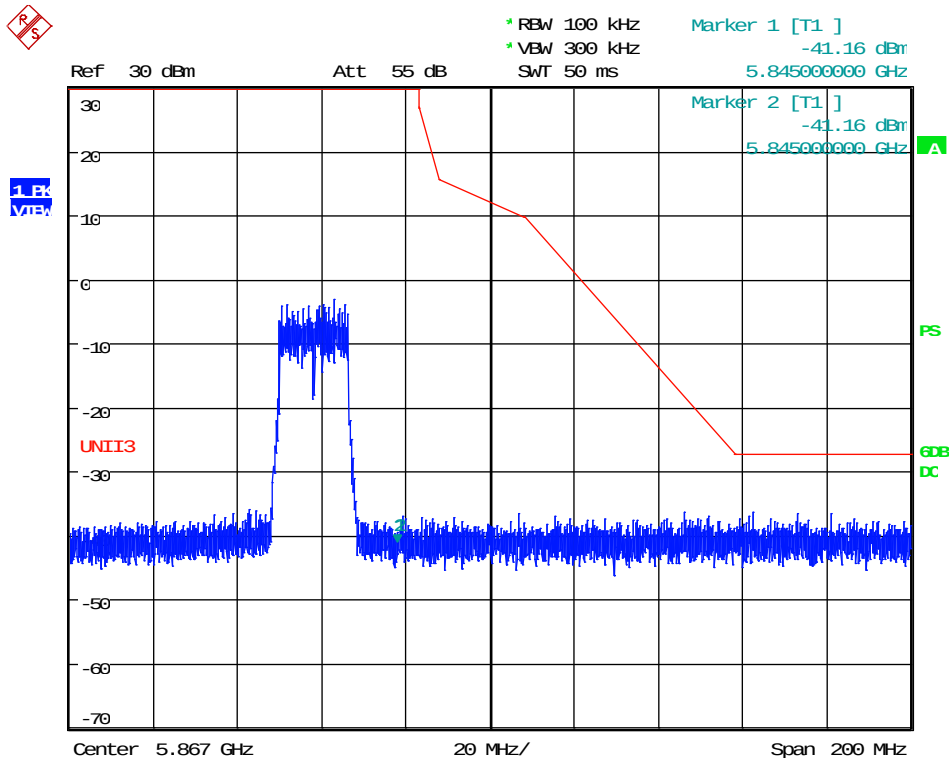
### Lower Band Edge, UNII 3, OFDM54 20M



Date: 8.FEB.2021 11:32:18



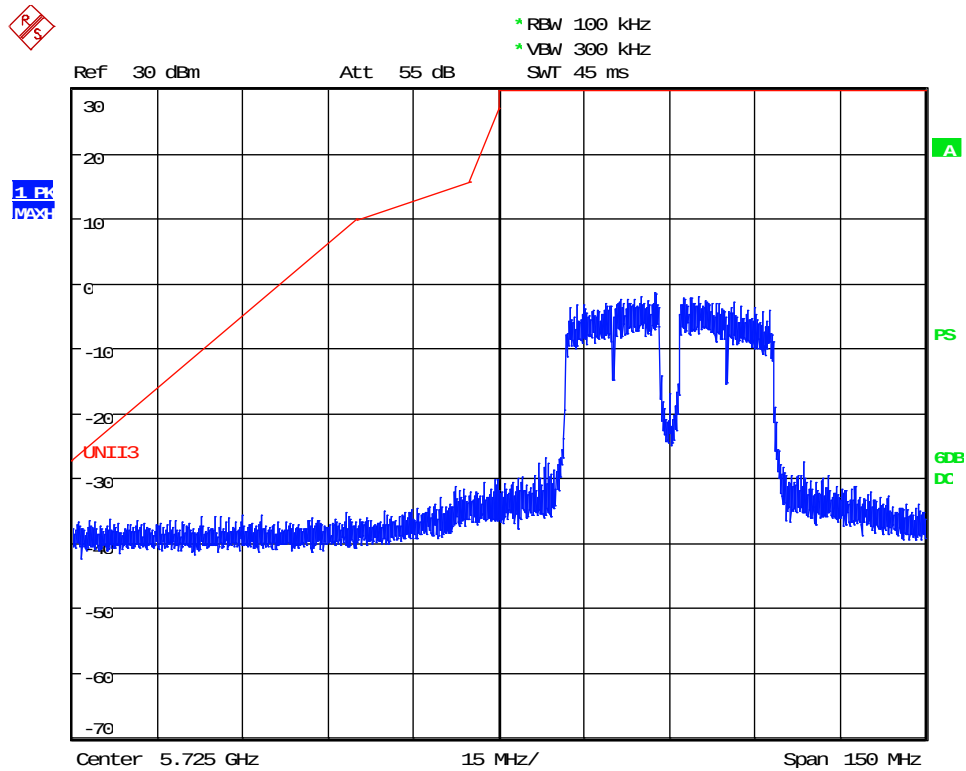
### Upper Band Edge, UNII 3, OFDM54 20M



Date: 8.FEB.2021 12:31:43



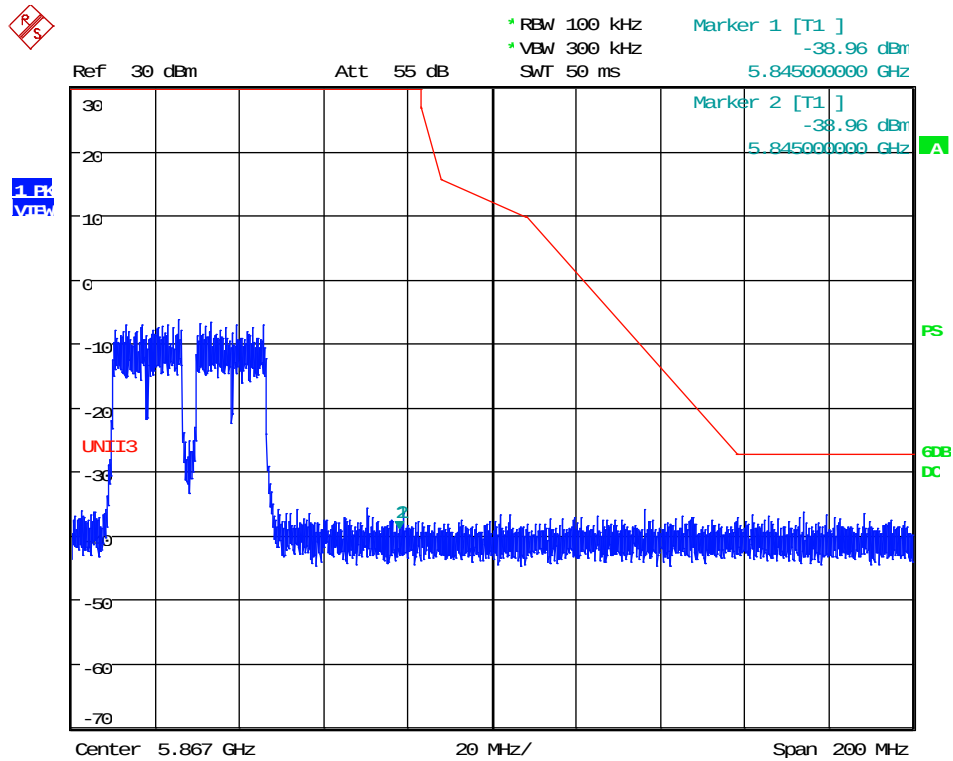
### Lower Band Edge, UNII 3, OFDM54 40M



Date: 8.FEB.2021 11:44:17



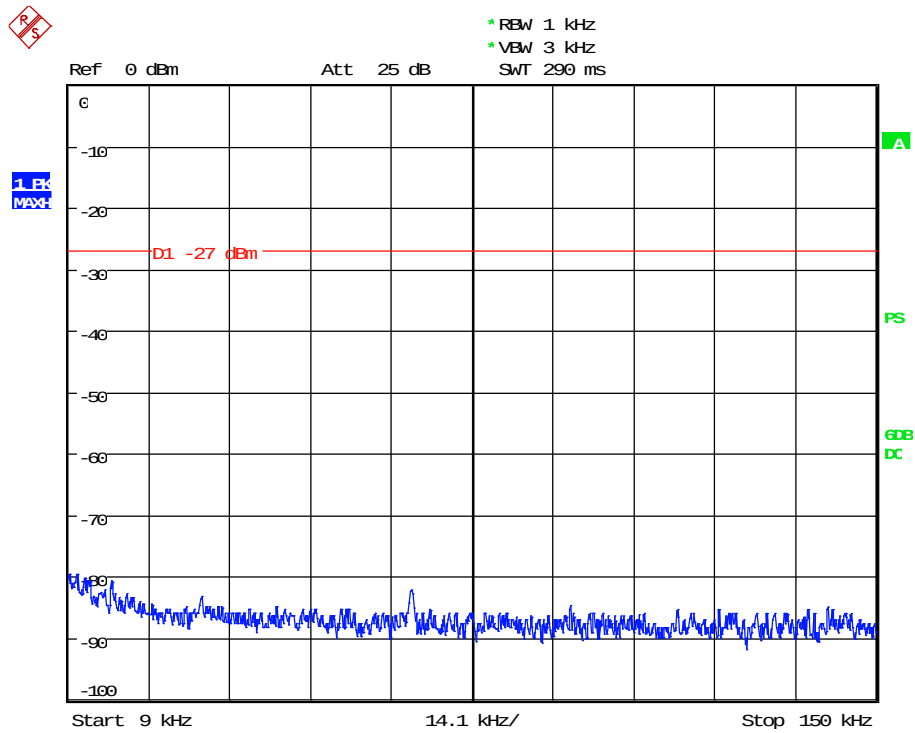
### Upper Band Edge, UNII 3, OFDM54 40M



Date: 8.FEB.2021 12:30:52



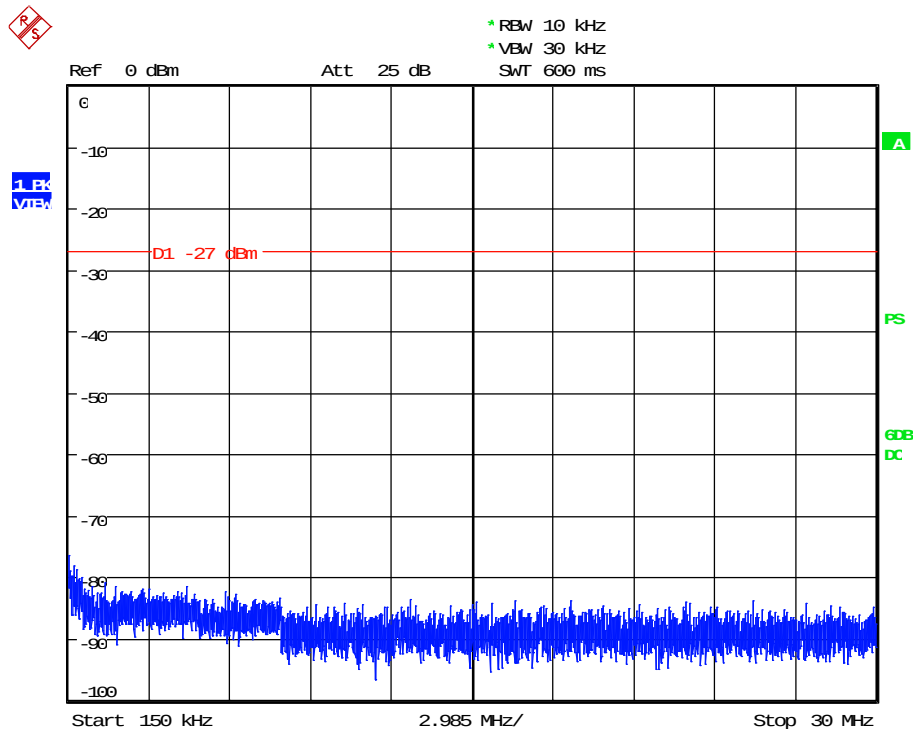
UNII 1, OFDM54 20M: Low Channel, 0.009 MHz to 0.15 MHz



Date: 8.FEB.2021 10:07:13



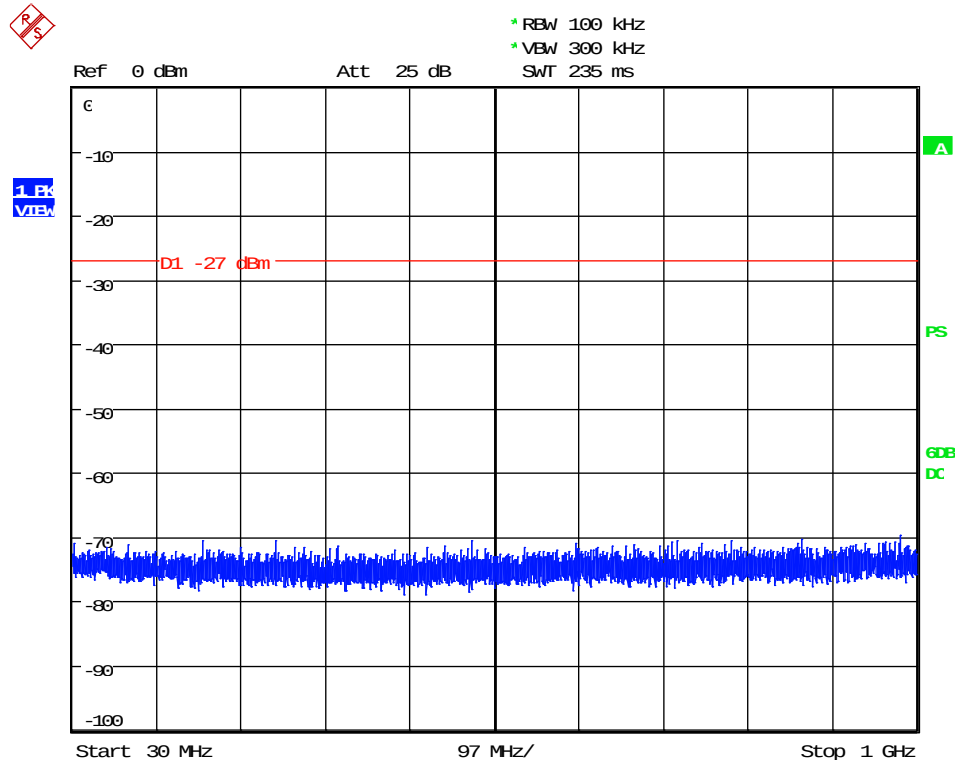
UNII 1, OFDM54 20M: Low Channel, 0.15 MHz to 30 MHz



Date: 8.FEB.2021 10:08:15



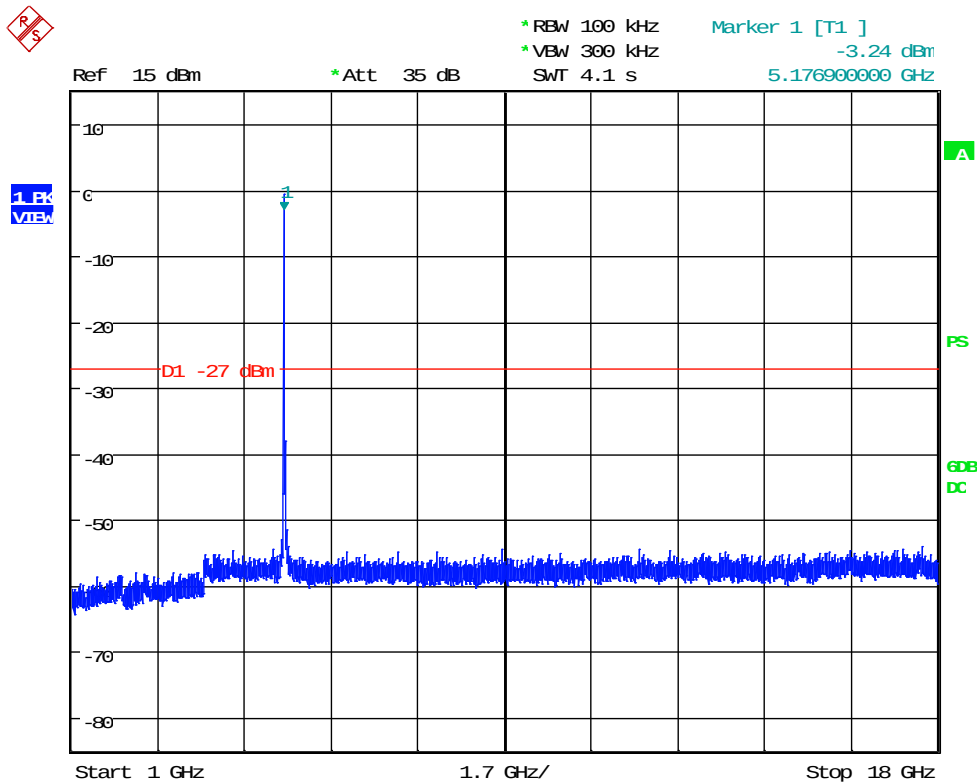
UNII 1, OFDM54 20M: Low Channel, 30 MHz to 1000 MHz



Date: 8.FEB.2021 10:09:10



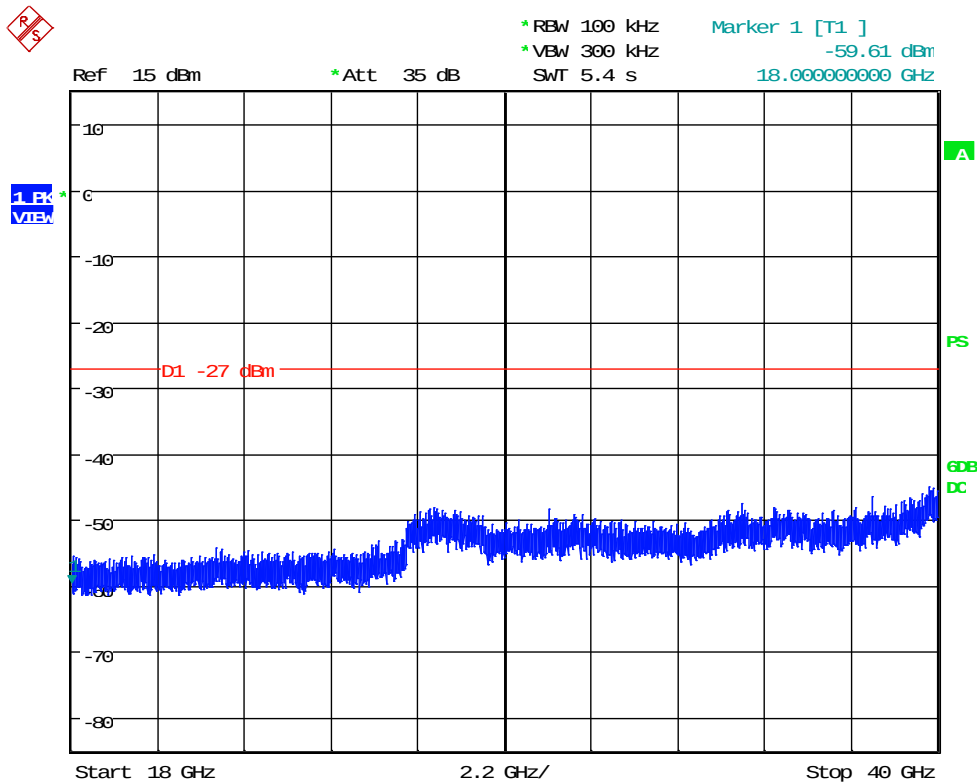
### UNII 1, OFDM54 20M: Low Channel, 1 GHz to 18 GHz



Date: 8.FEB.2021 10:12:47



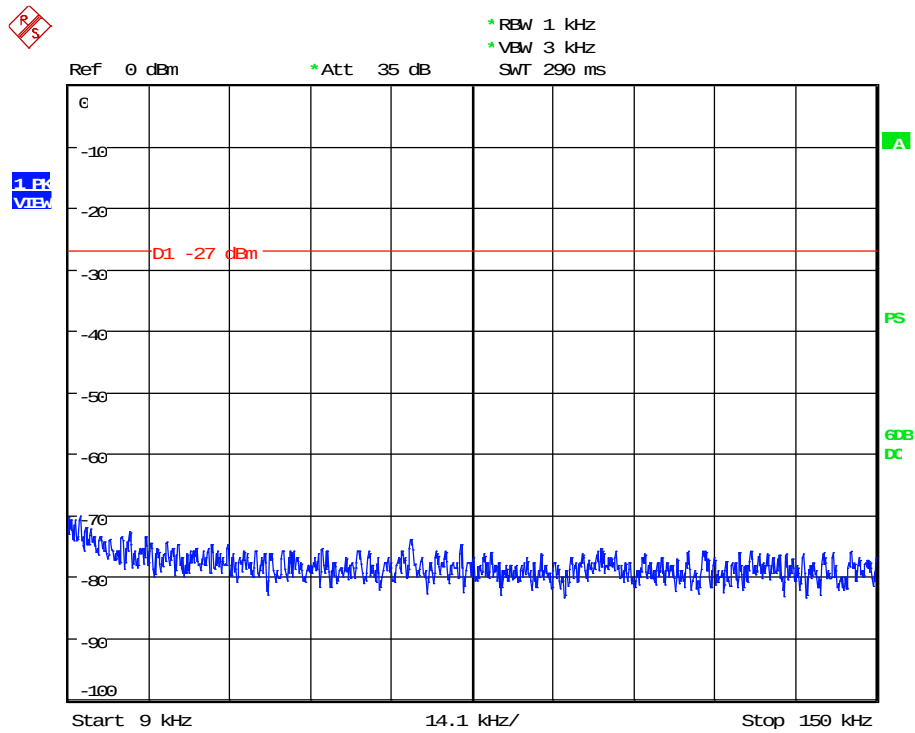
UNII 1, OFDM54 20M: Low Channel, 18 GHz to 40 GHz



Date: 8.FEB.2021 10:13:40



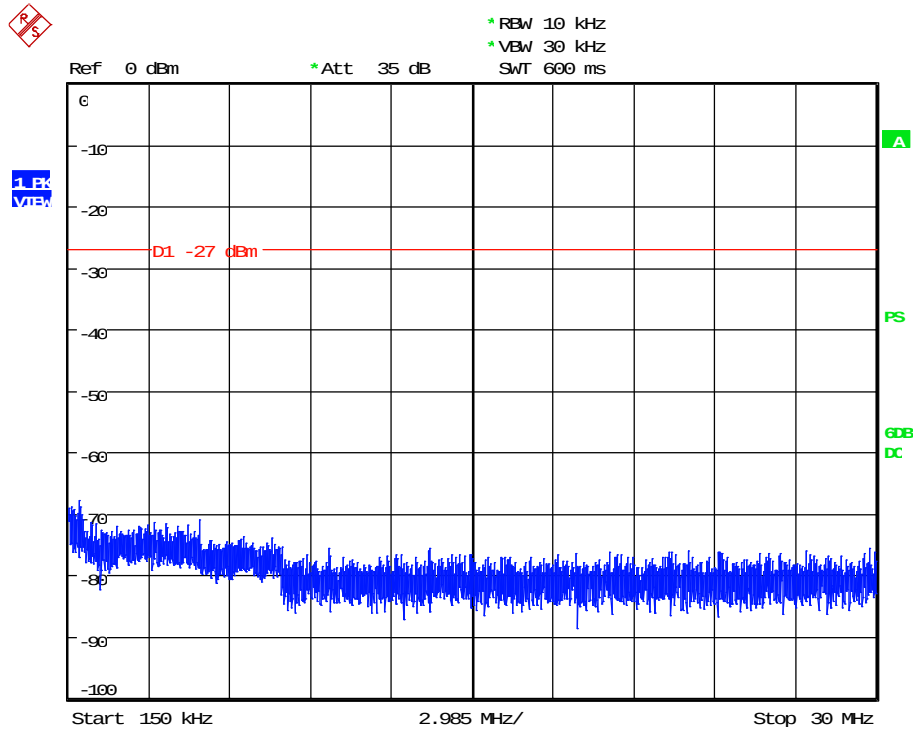
UNII 1, OFDM54 20M: Mid Channel, 0.009 MHz to 0.15 MHz



Date: 8.FEB.2021 10:24:41



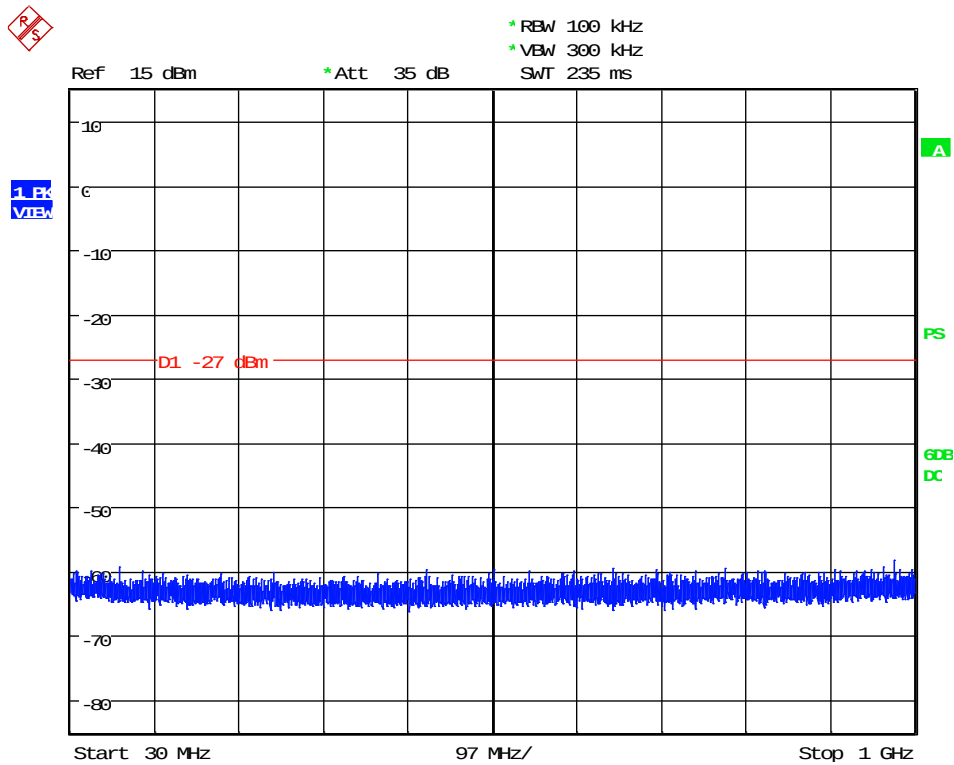
UNII 1, OFDM54 20M: Mid Channel, 0.15 MHz to 30 MHz



Date: 8.FEB.2021 10:23:41



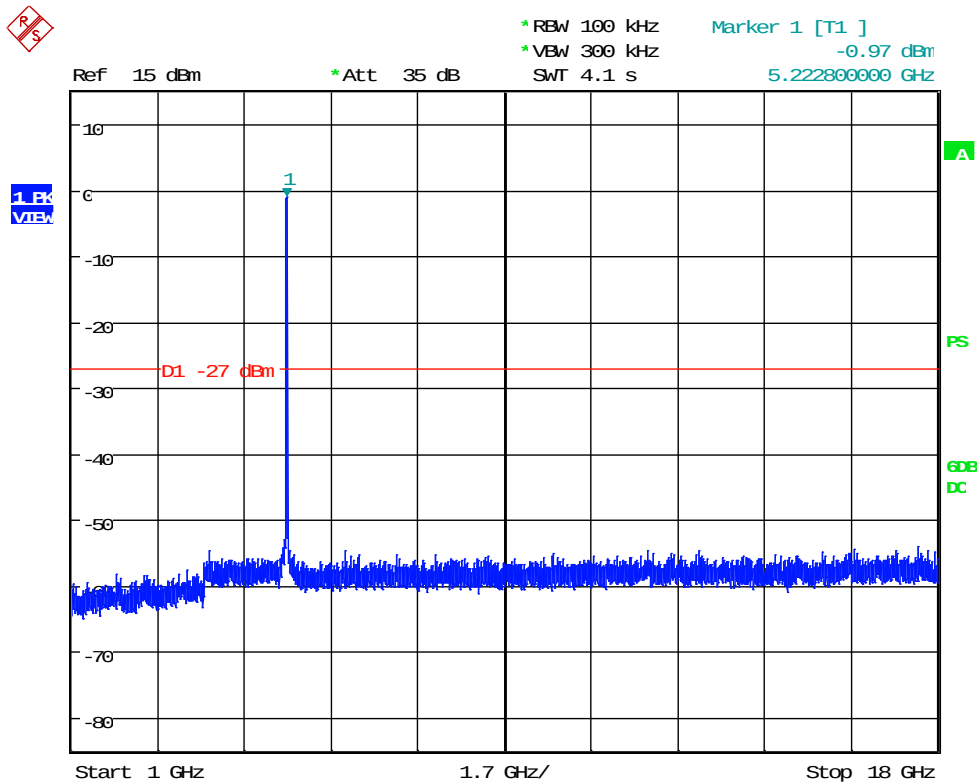
UNII 1, OFDM54 20M: Mid Channel, 30 MHz to 1000 MHz



Date: 8.FEB.2021 10:22:16



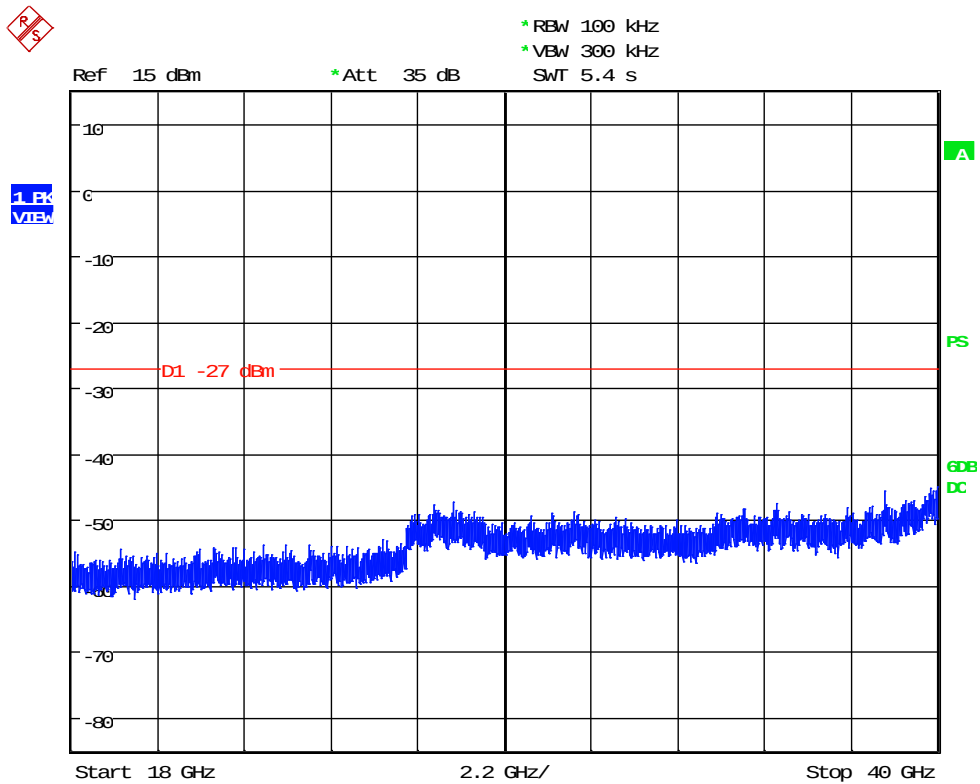
UNII 1, OFDM54 20M: Mid Channel, 1 GHz to 18 GHz



Date: 8.FEB.2021 10:21:22



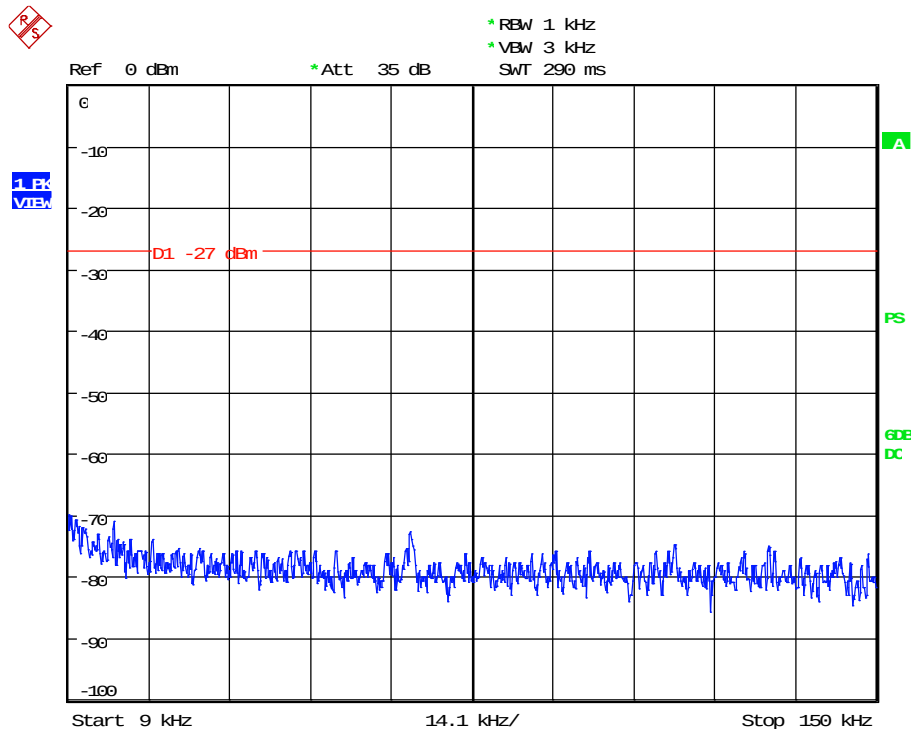
### UNII 1, OFDM54 20M: Mid Channel, 18 GHz to 40 GHz



Date: 8.FEB.2021 10:19:52



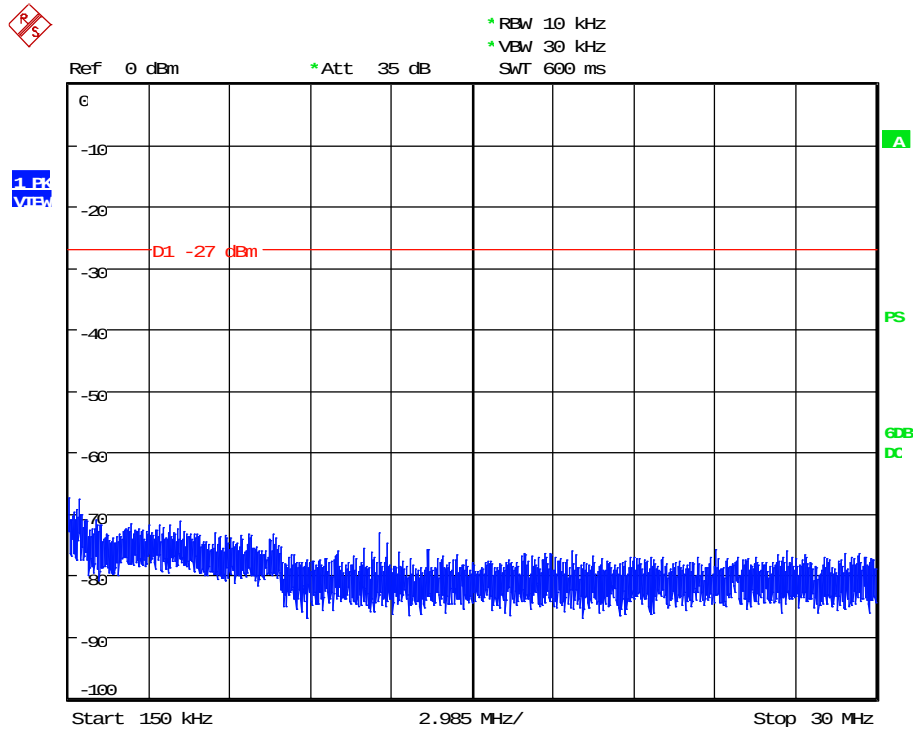
UNII 1, OFDM54 20M: High Channel, 0.009 MHz to 0.15 MHz



Date: 8.FEB.2021 10:25:36



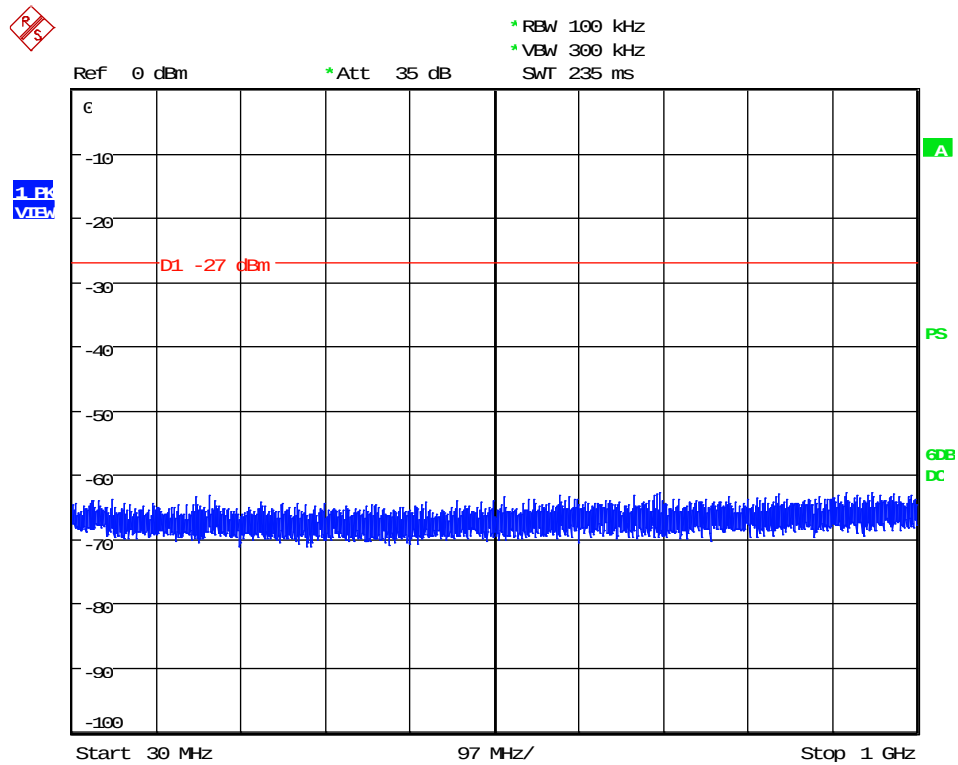
UNII 1, OFDM54 20M: High Channel, 0.15 MHz to 30 MHz



Date: 8.FEB.2021 10:26:47



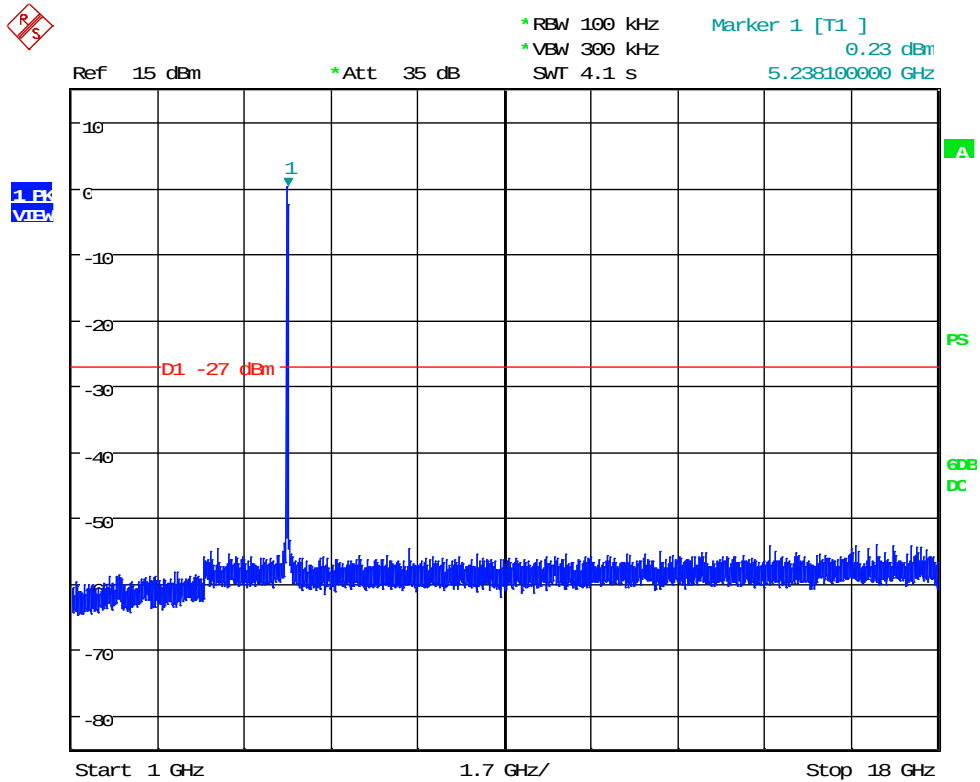
UNII 1, OFDM54 20M: High Channel, 30 MHz to 1000 MHz



Date: 8.FEB.2021 10:27:51



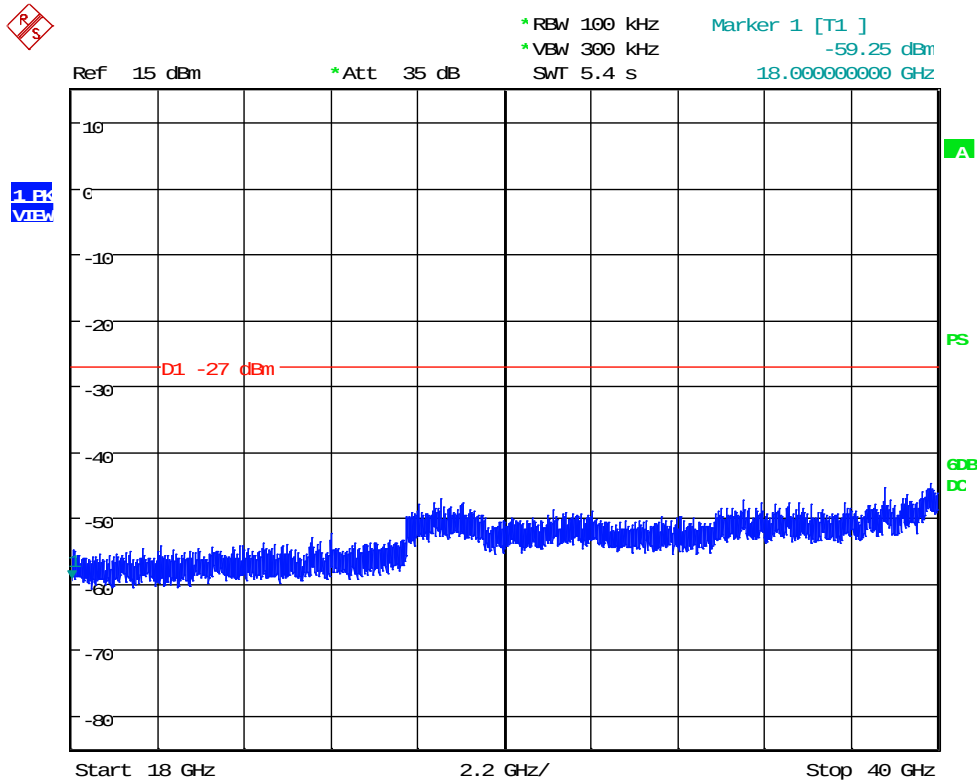
### UNII 1, OFDM54 20M: High Channel, 1 GHz to 18 GHz



Date: 8.FEB.2021 10:28:55



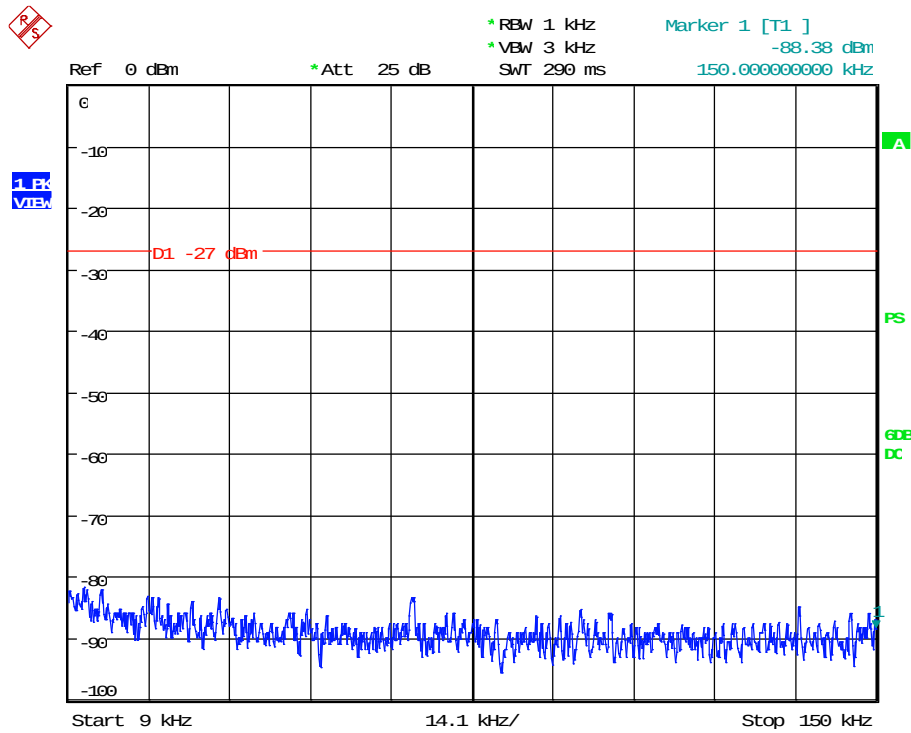
UNII 1, OFDM54 20M: High Channel, 18 GHz to 40 GHz



Date: 8.FEB.2021 10:30:05



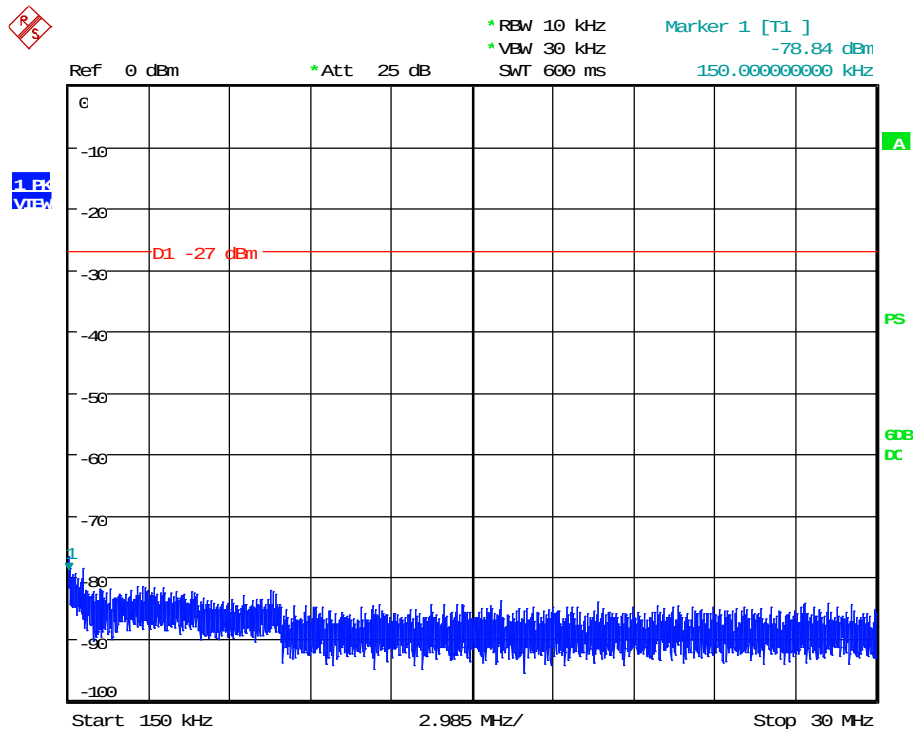
UNII 1, OFDM54 40M: Low Channel, 0.009 MHz to 0.15 MHz



Date: 8.FEB.2021 10:50:02



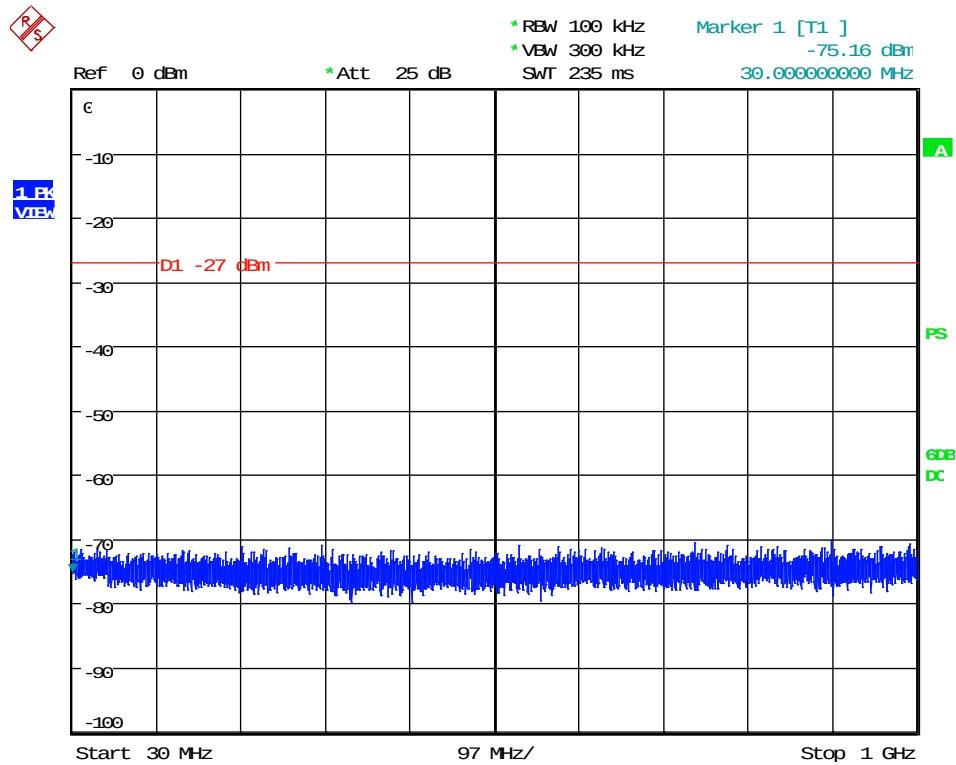
UNII 1, OFDM54 40M: Low Channel, 0.15 MHz to 30 MHz



Date: 8.FEB.2021 10:51:07



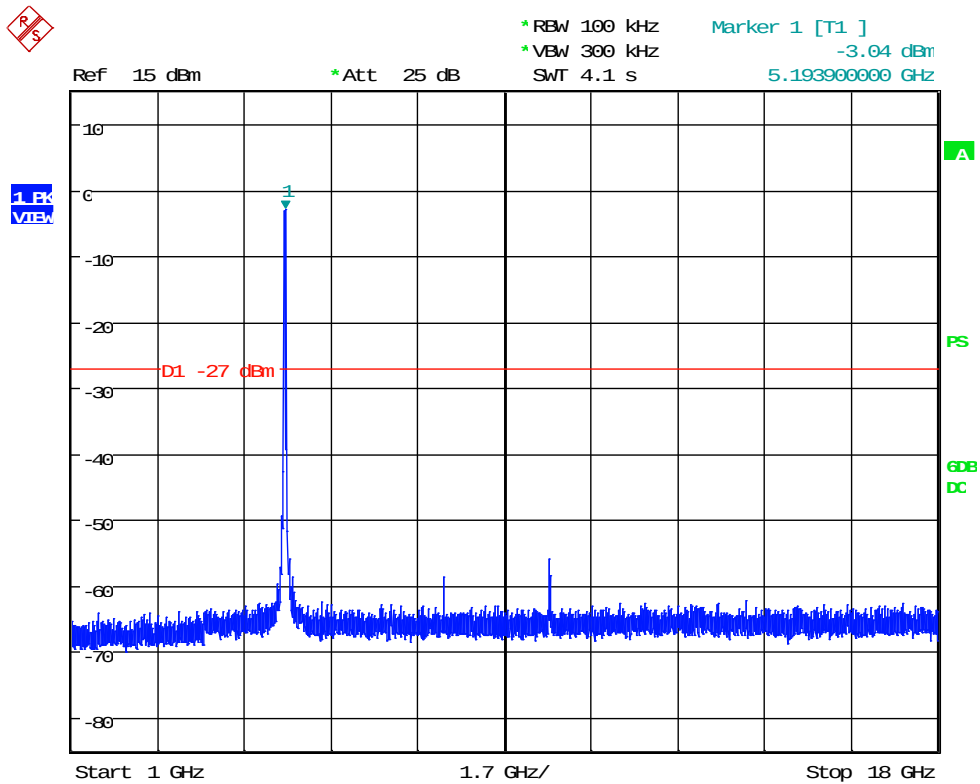
UNII 1, OFDM54 40M: Low Channel, 30 MHz to 1000 MHz



Date: 8.FEB.2021 10:52:04



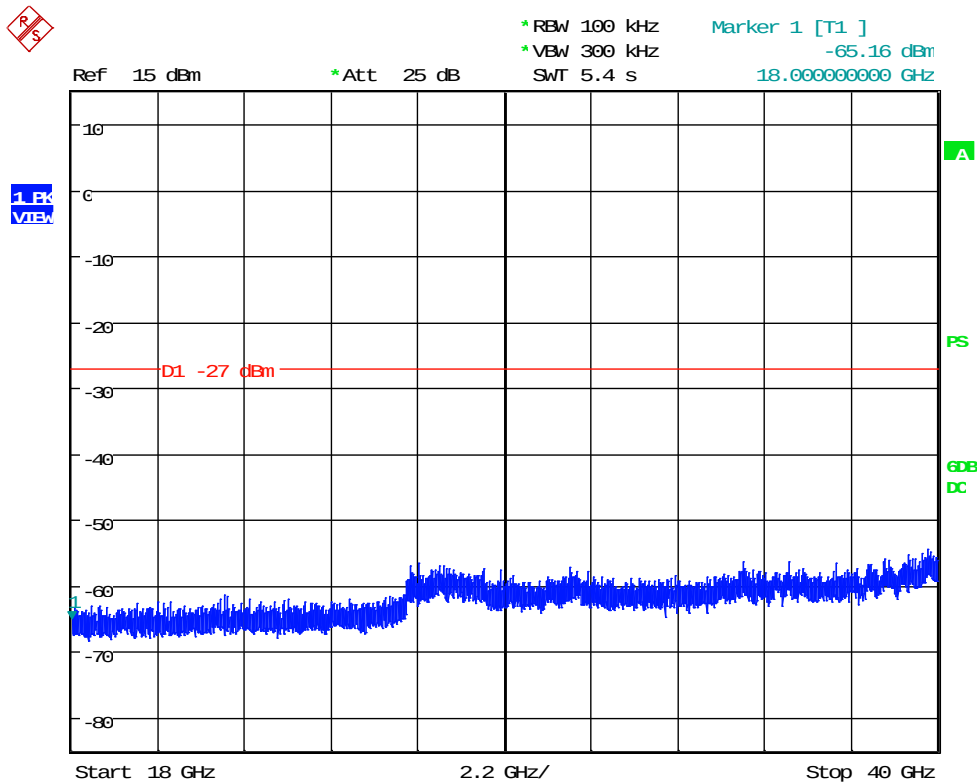
UNII 1, OFDM54 40M: Low Channel, 1 GHz to 18 GHz



Date: 8.FEB.2021 10:53:15



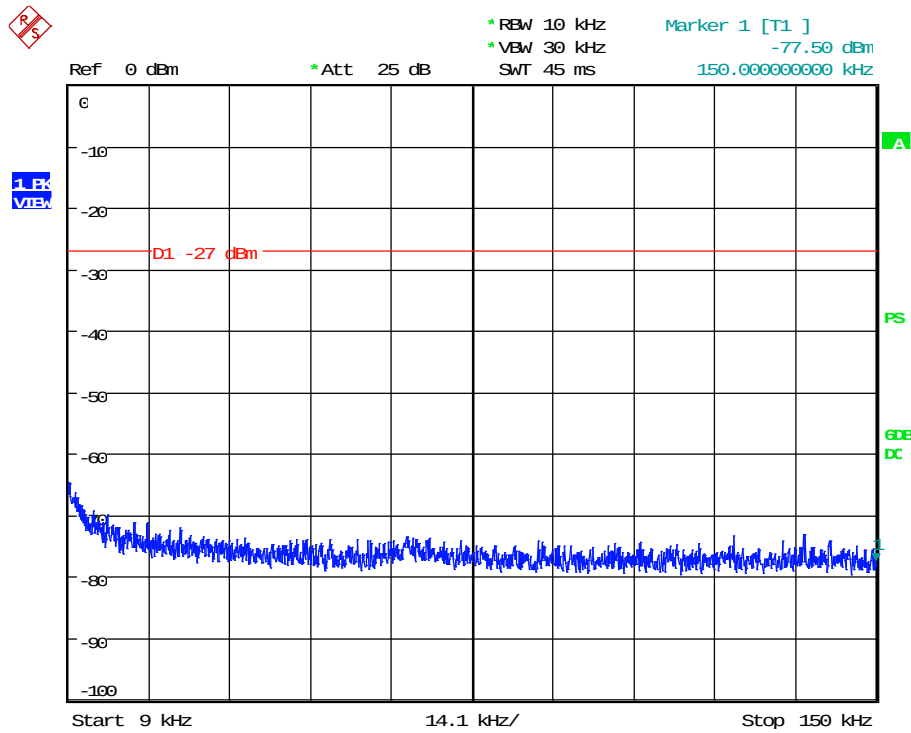
### UNII 1, OFDM54 40M: Low Channel, 18 GHz to 40 GHz



Date: 8.FEB.2021 10:54:09



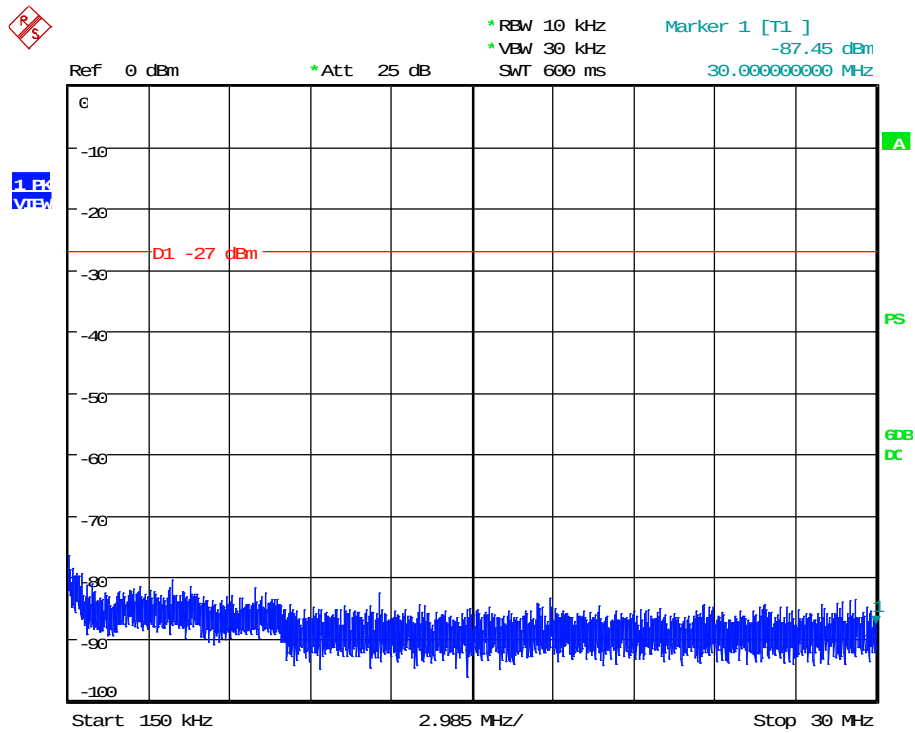
UNII 1, OFDM54 40M: High Channel, 0.009 MHz to 0.15 MHz



Date: 8.FEB.2021 10:48:15



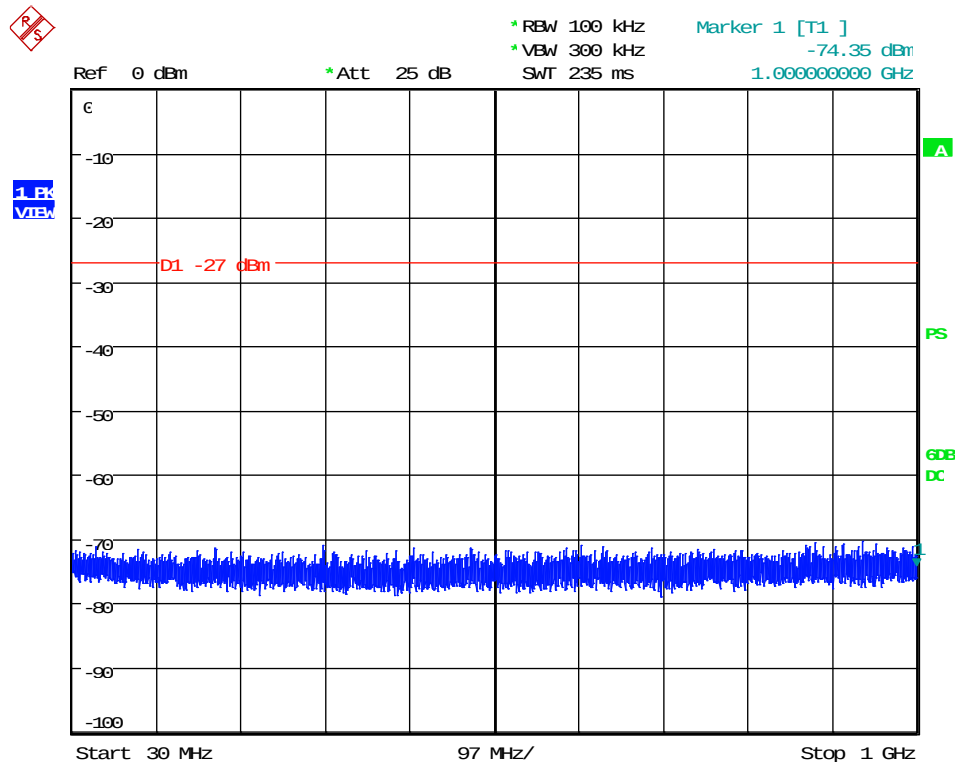
UNII 1, OFDM54 40M: High Channel, 0.15 MHz to 30 MHz



Date: 8.FEB.2021 10:47:20



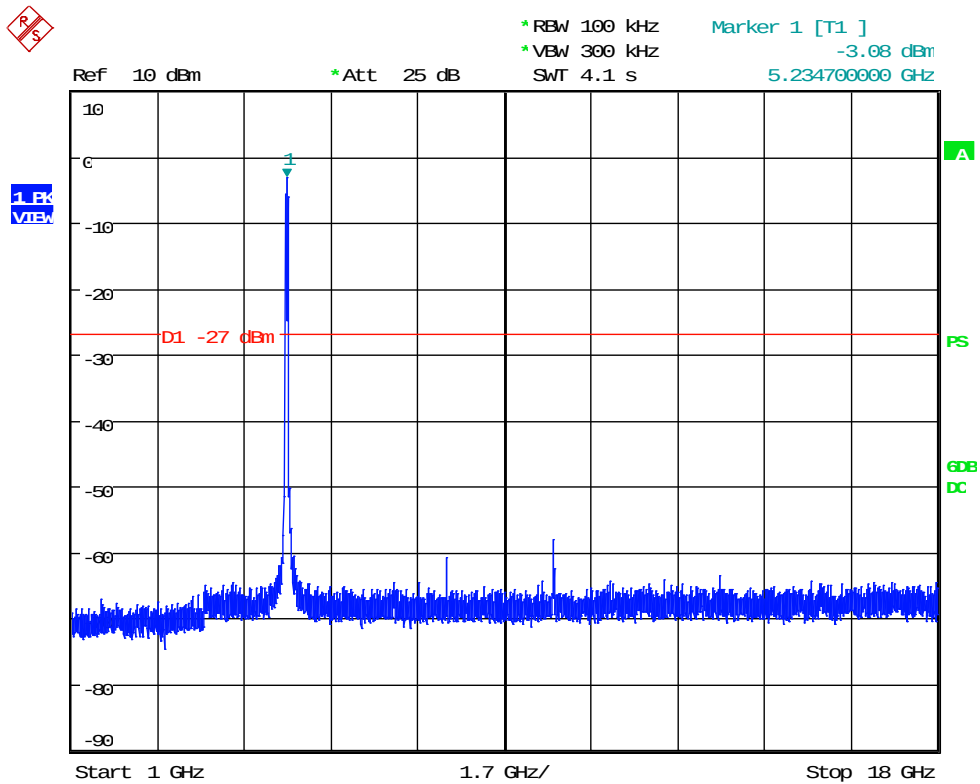
UNII 1, OFDM54 40M: High Channel, 30 MHz to 1000 MHz



Date: 8.FEB.2021 10:46:11



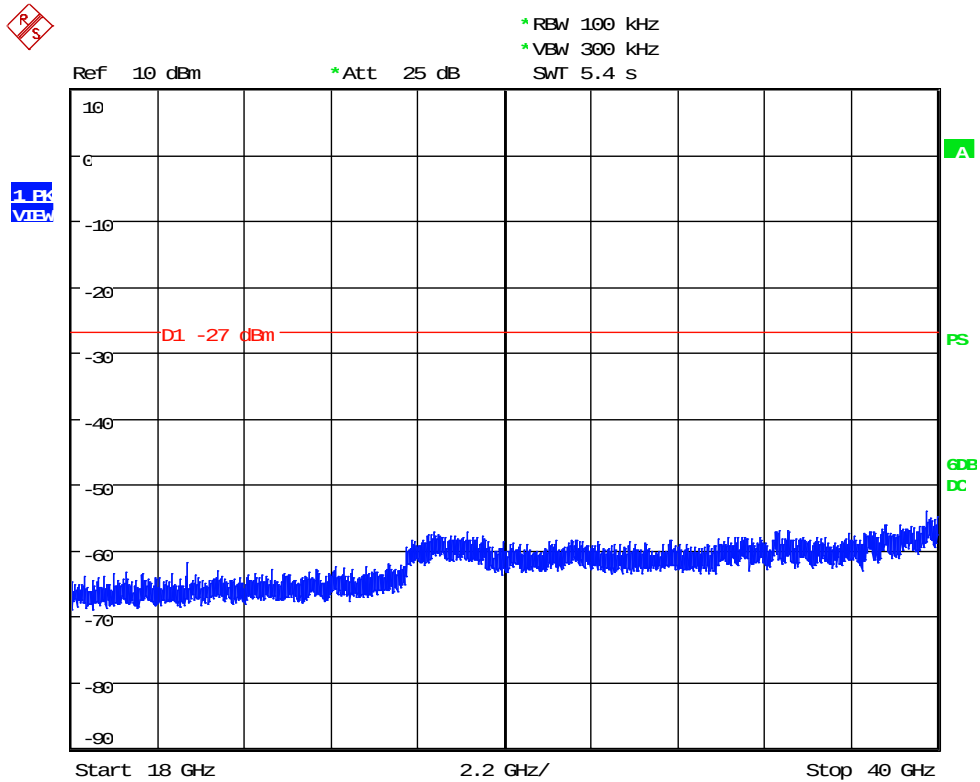
### UNII 1, OFDM54 40M: High Channel, 1 GHz to 18 GHz



Date: 8.FEB.2021 10:45:11



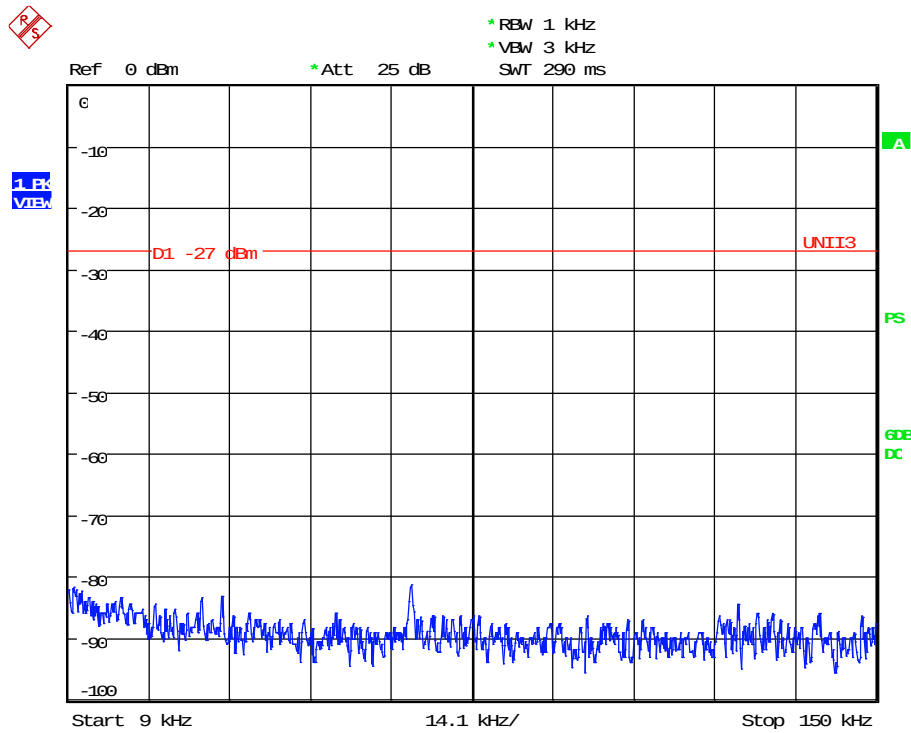
## UNII 1, OFDM54 40M: High Channel, 18 GHz to 40 GHz



Date: 8.FEB.2021 10:41:30



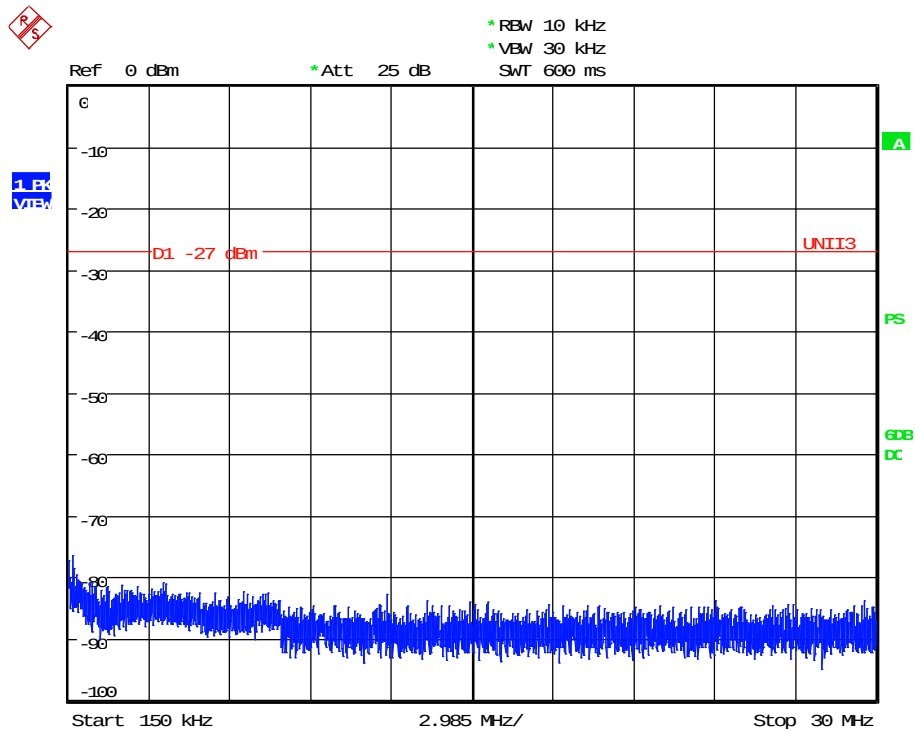
UNII 3, OFDM54 20M: Low Channel, 0.009 MHz to 0.15 MHz



Date: 8.FEB.2021 11:29:03



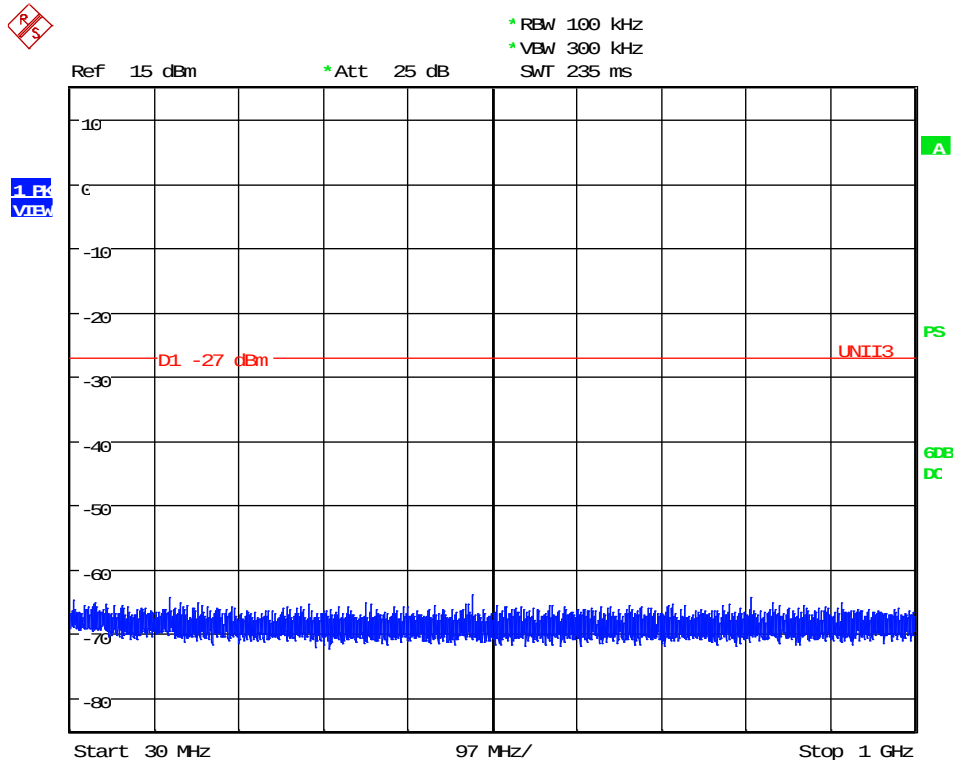
UNII 3, OFDM54 20M: Low Channel, 0.15 MHz to 30 MHz



Date: 8.FEB.2021 11:28:08



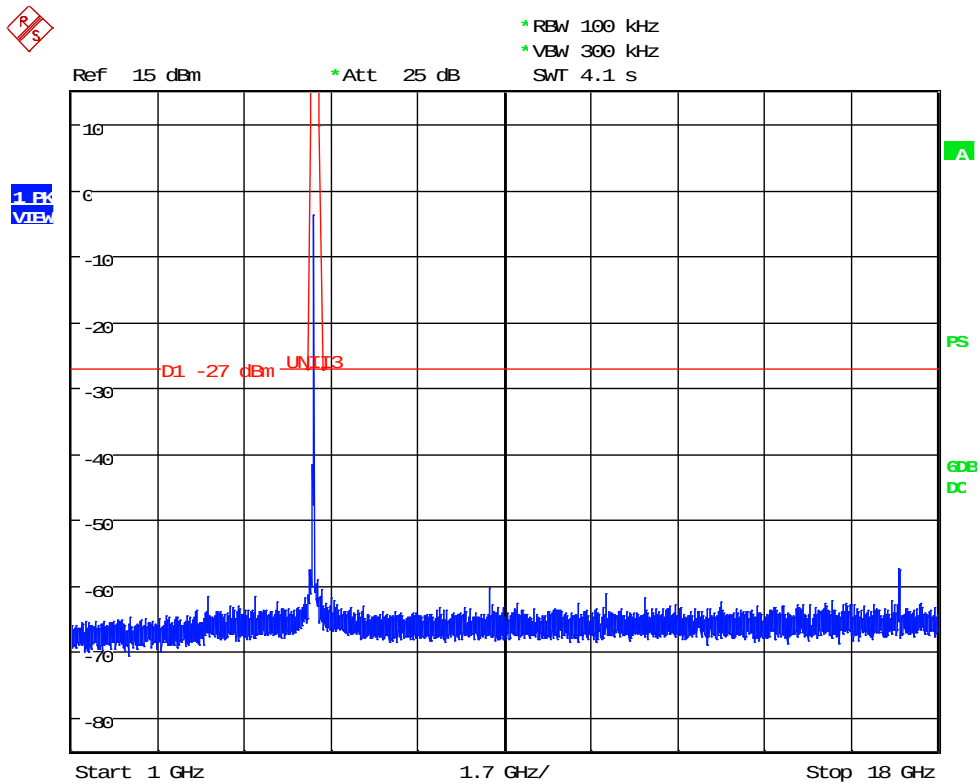
UNII 3, OFDM54 20M: Low Channel, 30 MHz to 1000 MHz



Date: 8.FEB.2021 11:26:51



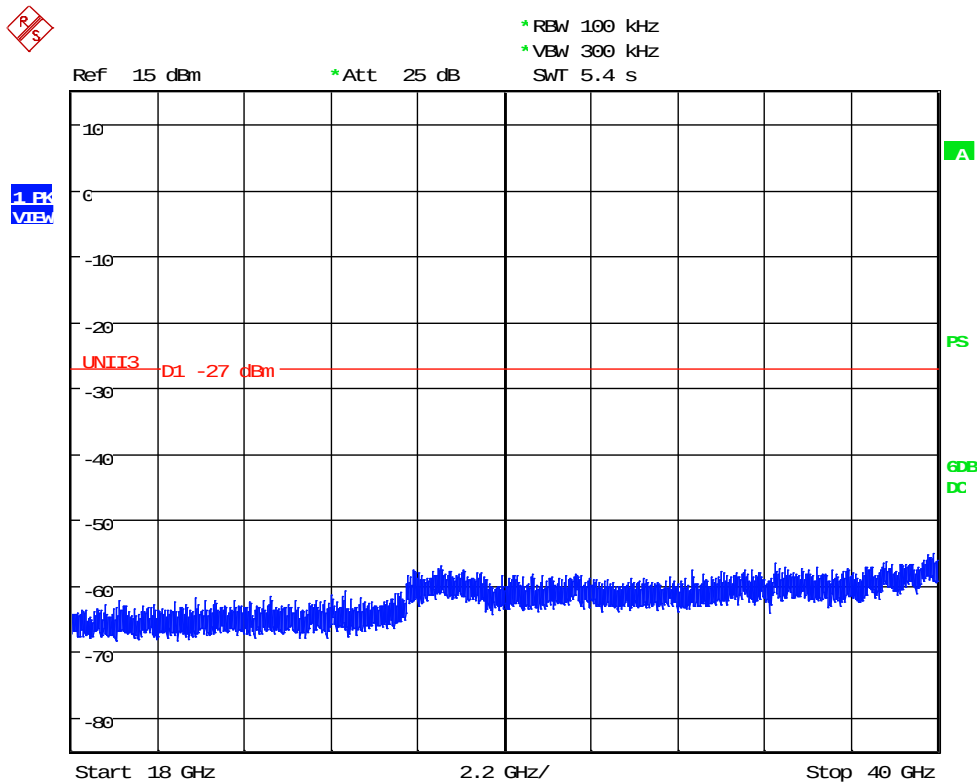
### UNII 3, OFDM54 20M: Low Channel, 1 GHz to 18 GHz



Date: 8.FEB.2021 11:24:56



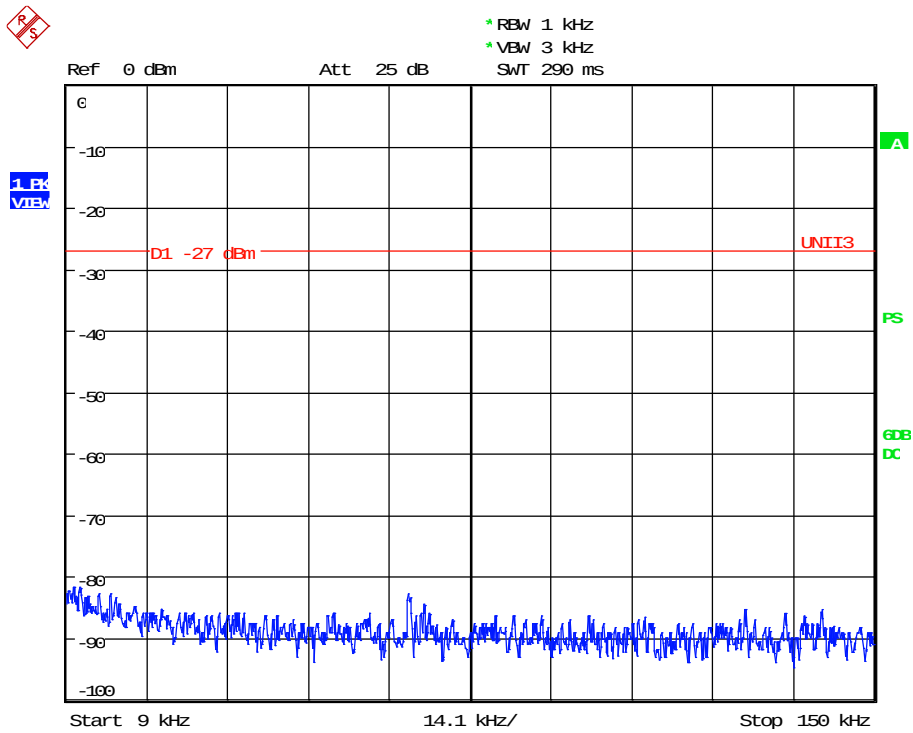
### UNII 3, OFDM54 20M: Low Channel, 18 GHz to 40 GHz



Date: 8.FEB.2021 11:25:53



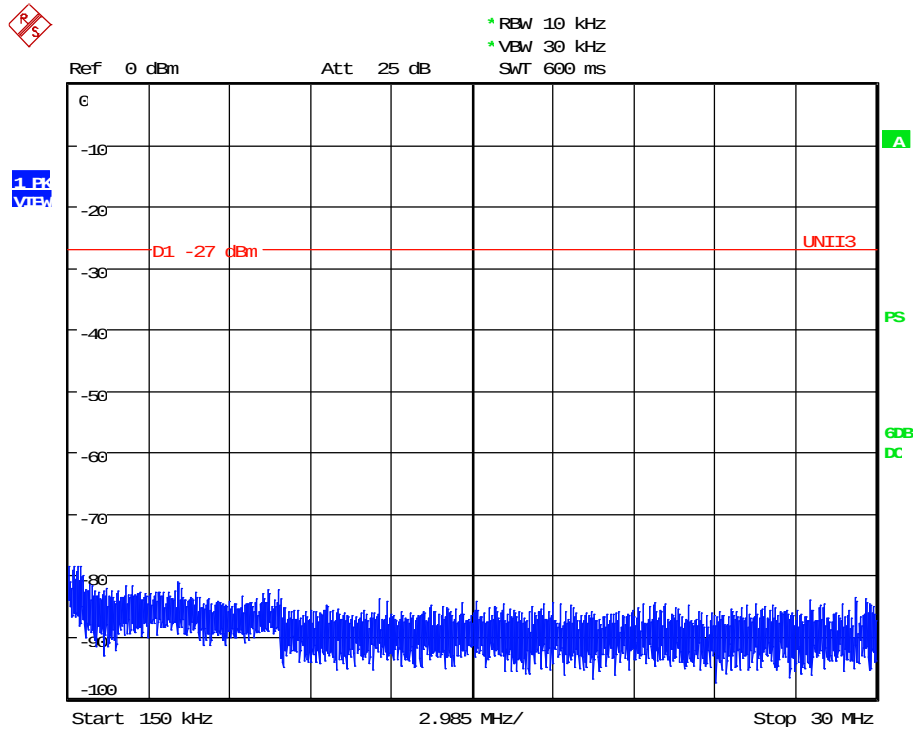
UNII 3, OFDM54 20M: Mid Channel, 0.009 MHz to 0.15 MHz



Date: 8.FEB.2021 11:50:16



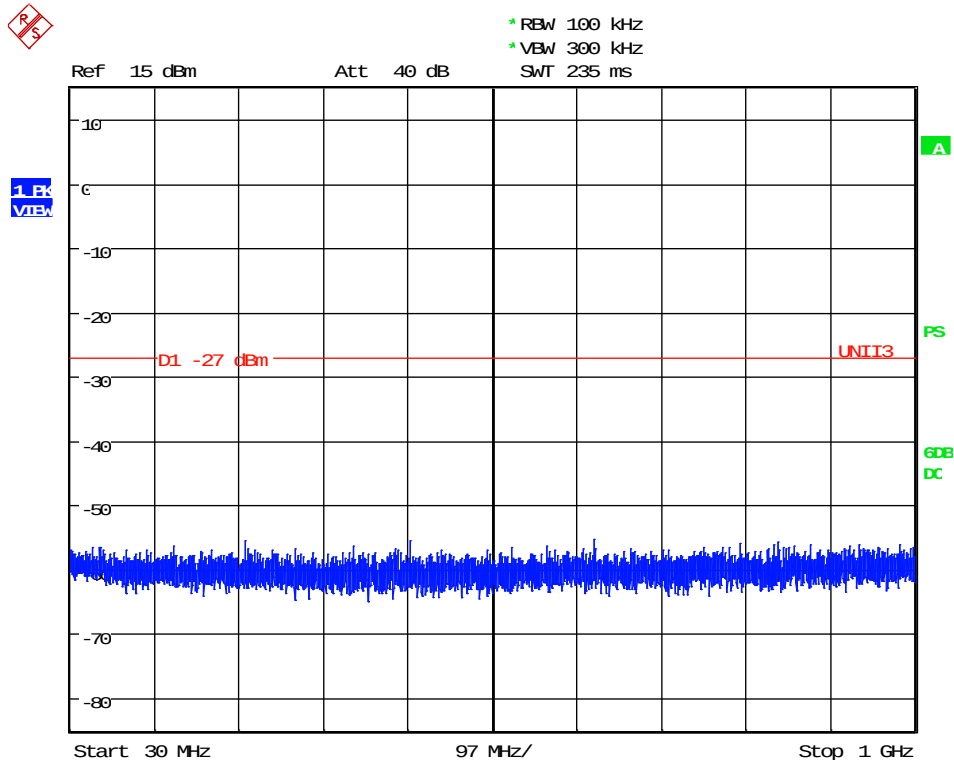
UNII 3, OFDM54 20M: Mid Channel, 0.15 MHz to 30 MHz



Date: 8.FEB.2021 11:49:29



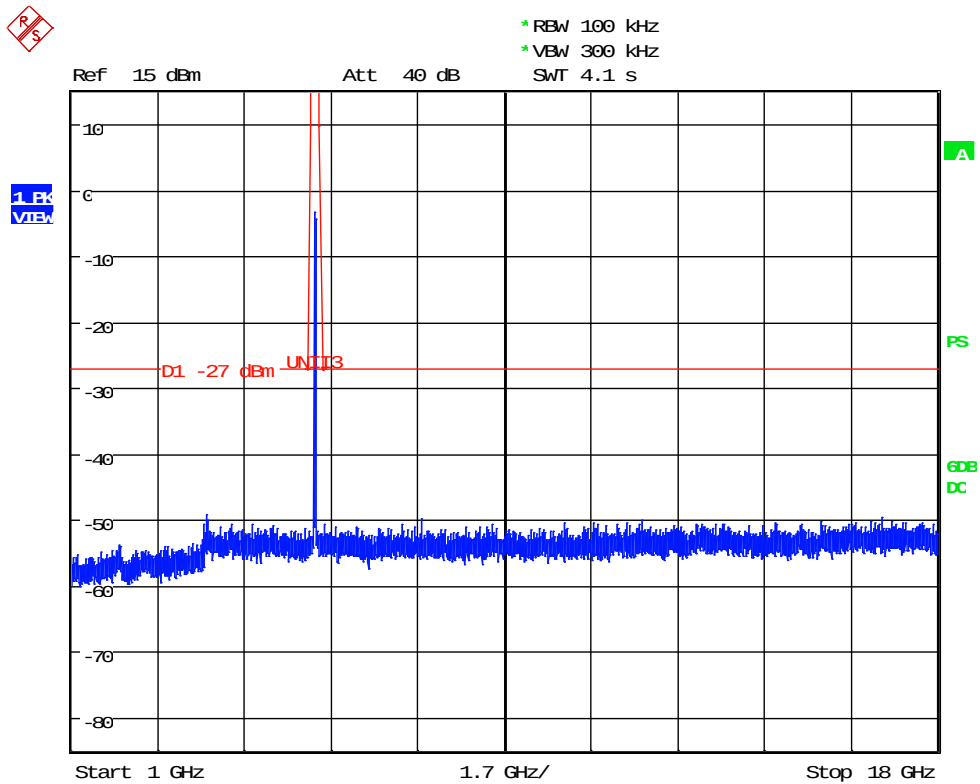
UNII 3, OFDM54 20M: Mid Channel, 30 MHz to 1000 MHz



Date: 8.FEB.2021 11:48:24



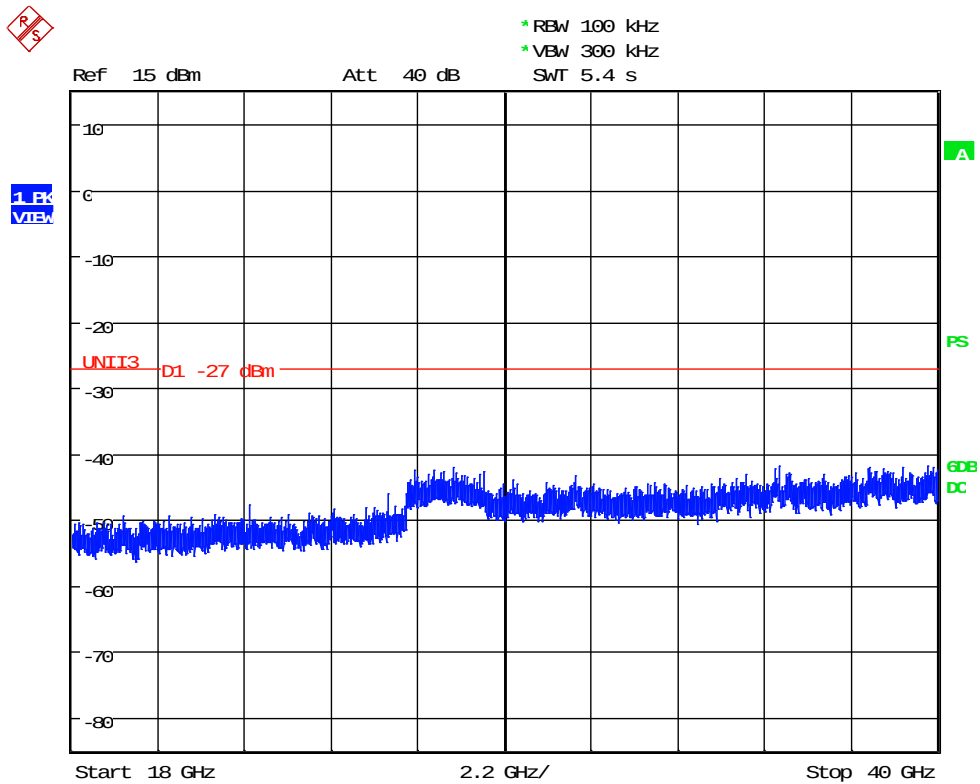
UNII 3, OFDM54 20M: Mid Channel, 1 GHz to 18 GHz



Date: 8.FEB.2021 11:47:41



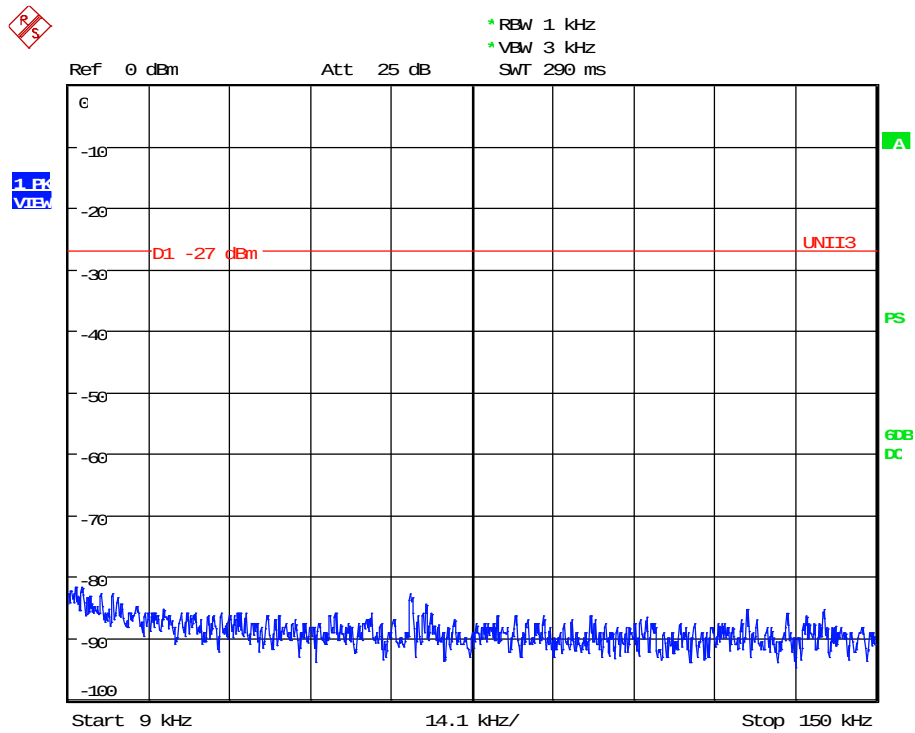
### UNII 3, OFDM54 20M: Mid Channel, 18 GHz to 40 GHz



Date: 8.FEB.2021 11:46:43



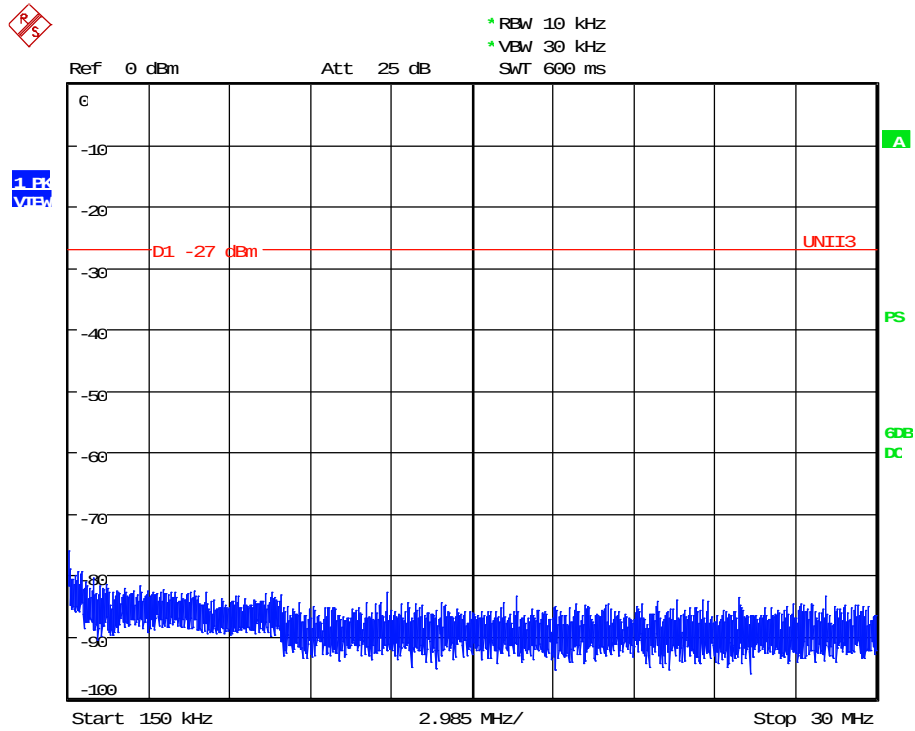
UNII 3, OFDM54 20M: High Channel, 0.009 MHz to 0.15 MHz



Date: 8.FEB.2021 11:51:03



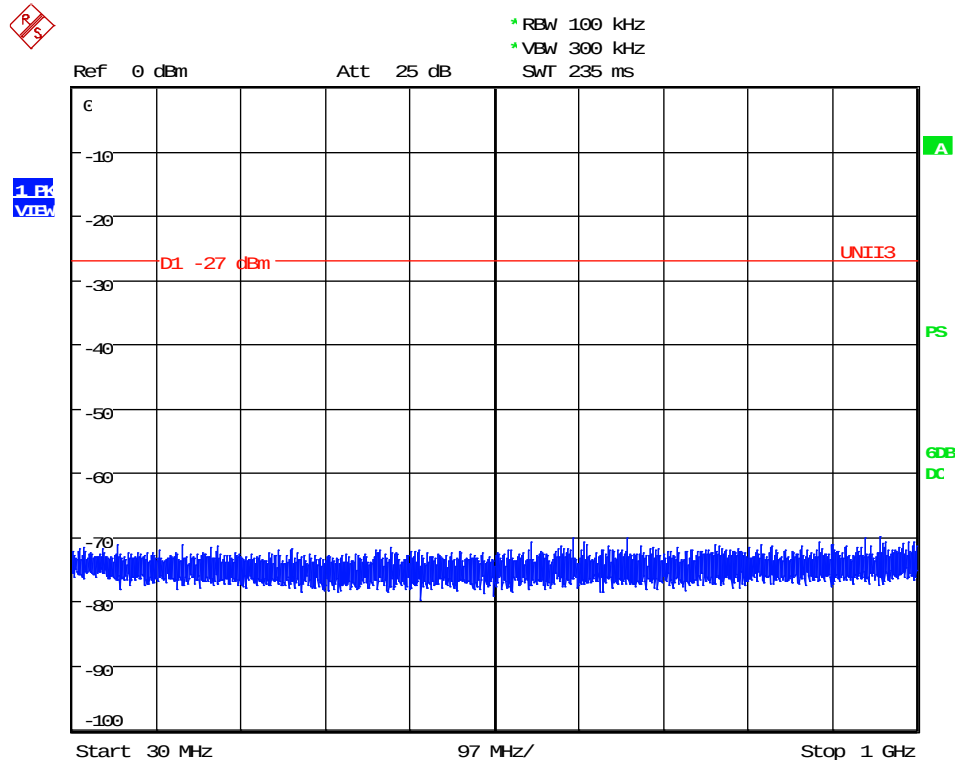
UNII 3, OFDM54 20M: High Channel, 0.15 MHz to 30 MHz



Date: 8.FEB.2021 11:52:04



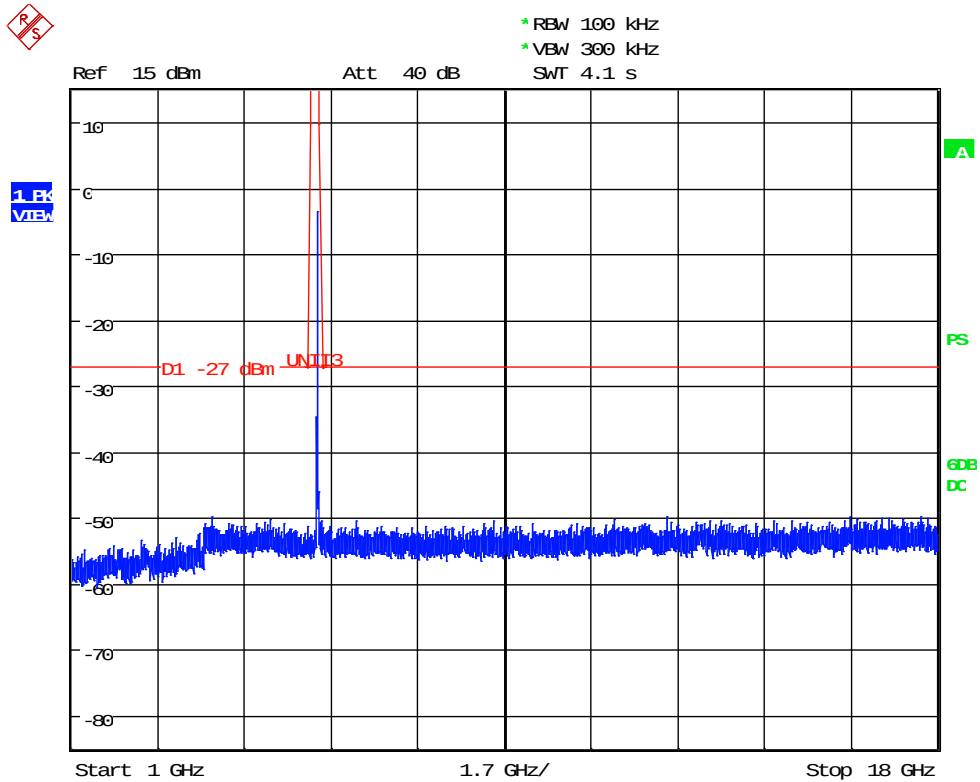
### UNII 3, OFDM54 20M: High Channel, 30 MHz to 1000 MHz



Date: 8.FEB.2021 11:52:52



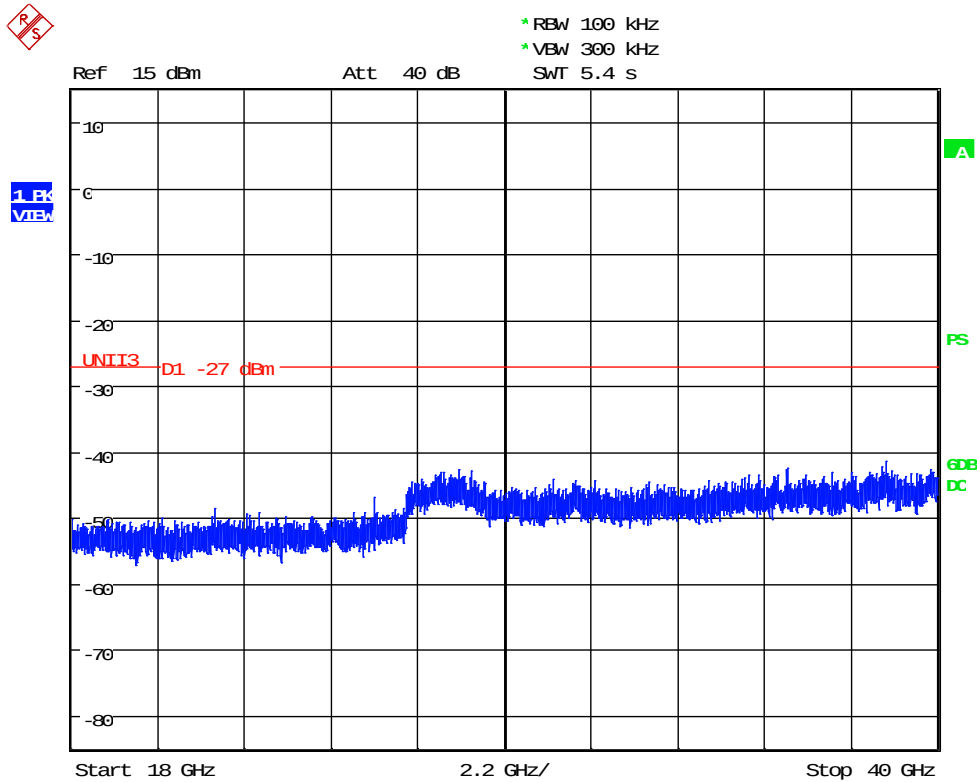
### UNII 3, OFDM54 20M: High Channel, 1 GHz to 18 GHz



Date: 8.FEB.2021 11:54:12



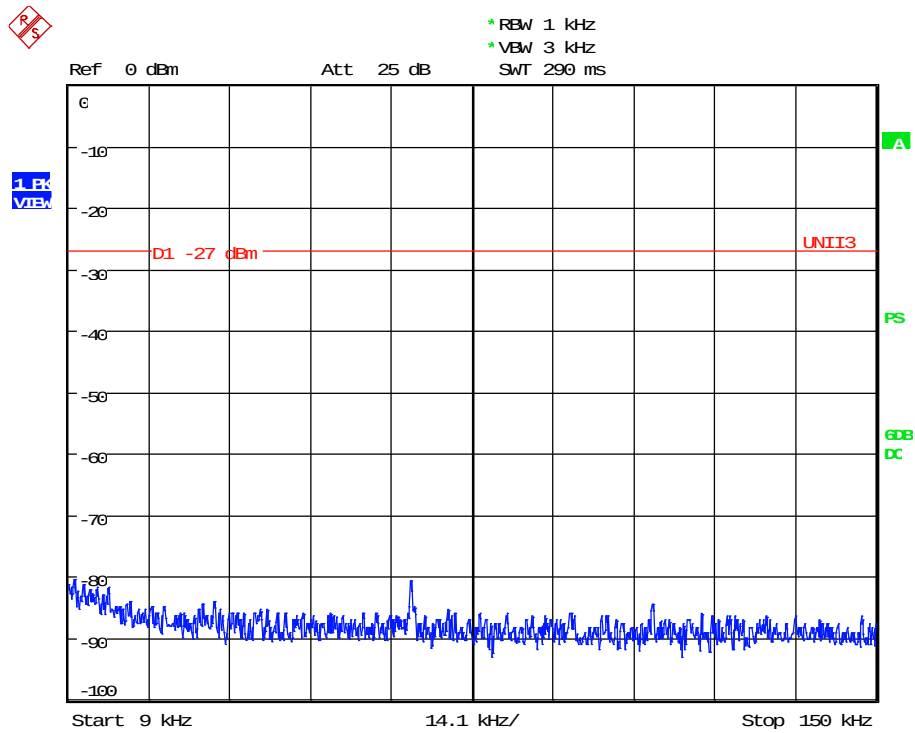
### UNII 3, OFDM54 20M: High Channel, 18 GHz to 40 GHz



Date: 8.FEB.2021 11:54:55



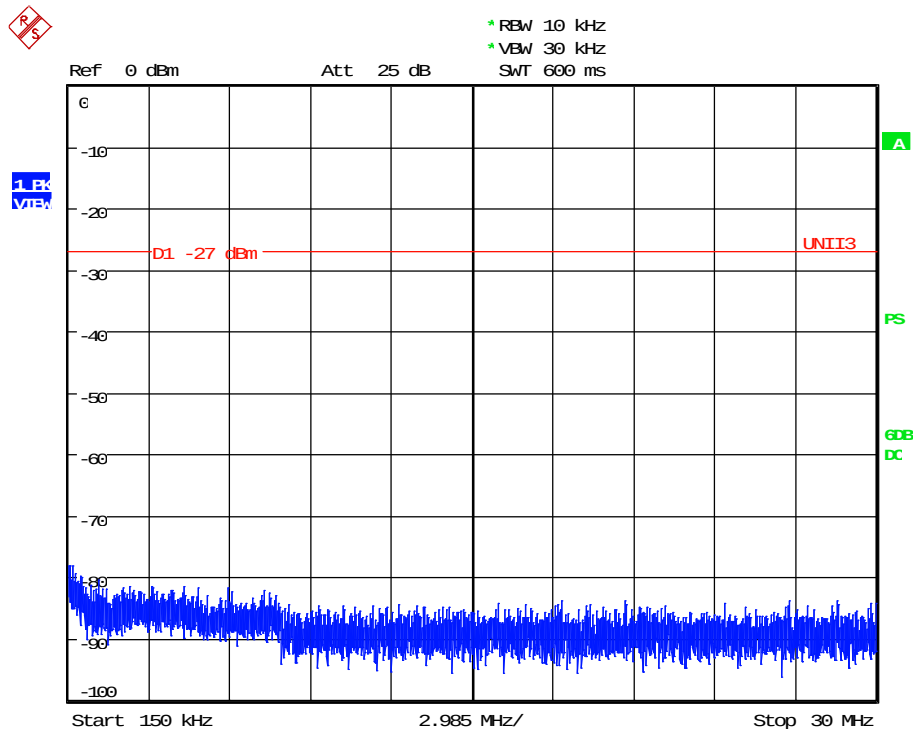
UNII 3, OFDM54 40M: Low Channel, 0.009 MHz to 0.15 MHz



Date: 8.FEB.2021 12:18:18



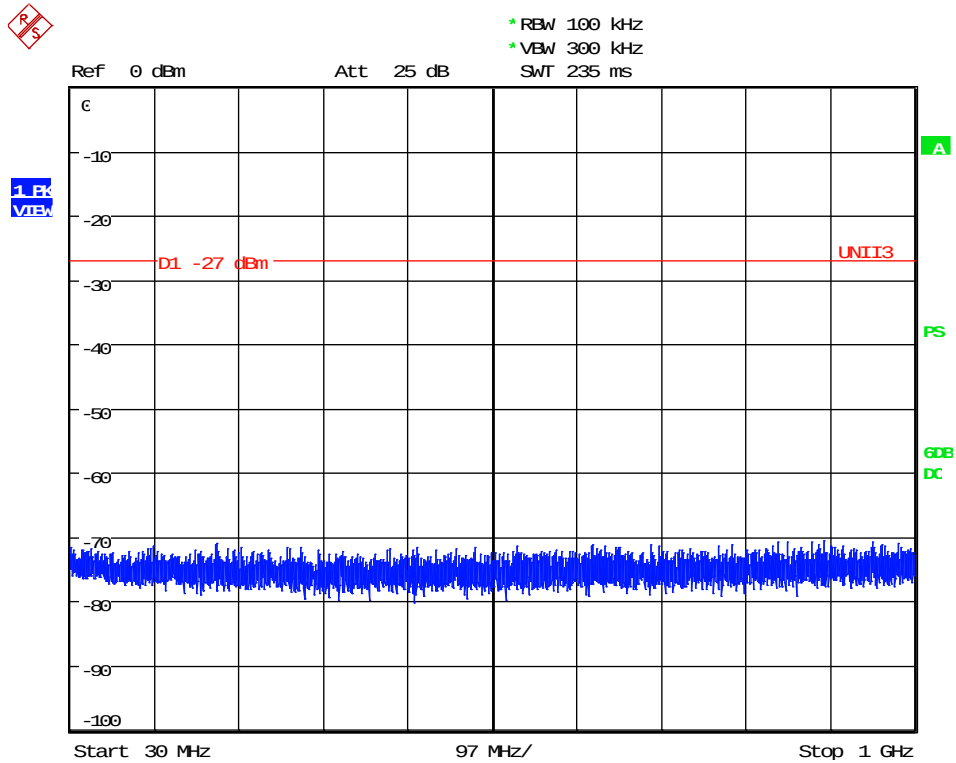
UNII 3, OFDM54 40M: Low Channel, 0.15 MHz to 30 MHz



Date: 8.FEB.2021 12:17:21



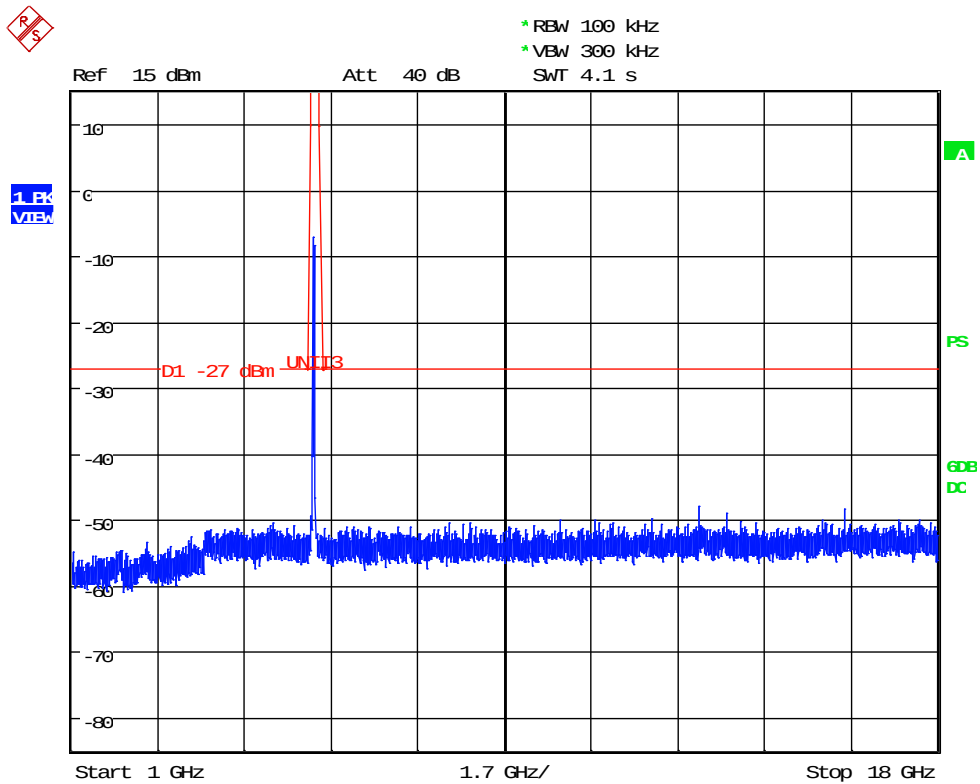
UNII 3, OFDM54 40M: Low Channel, 30 MHz to 1000 MHz



Date: 8.FEB.2021 12:16:18



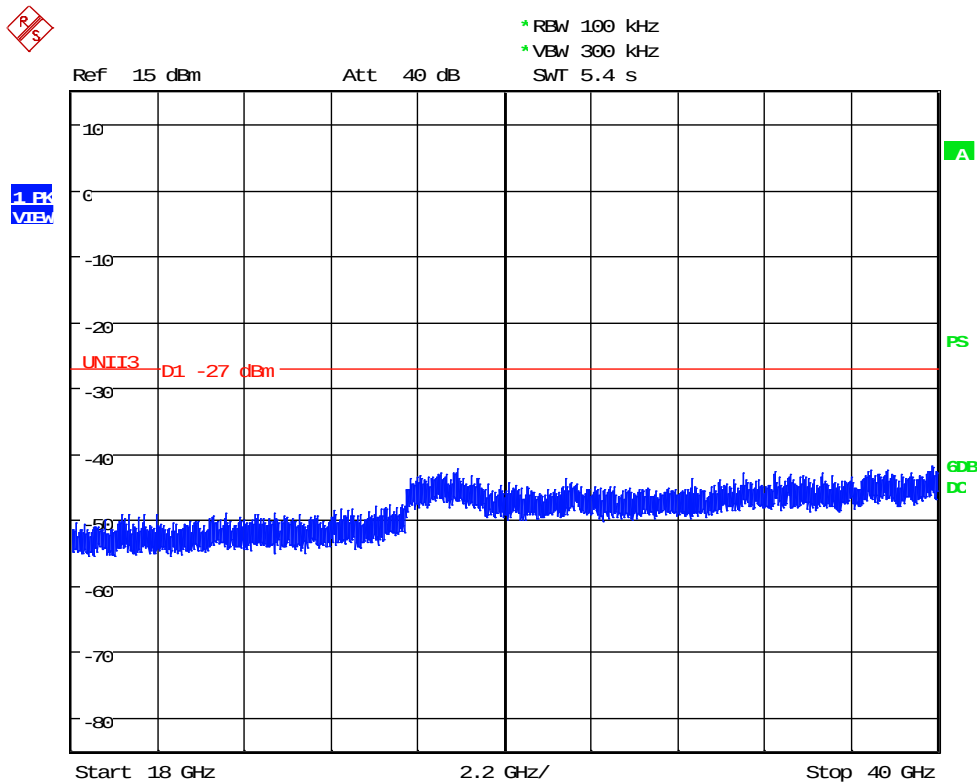
### UNII 3, OFDM54 40M: Low Channel, 1 GHz to 18 GHz



Date: 8.FEB.2021 12:15:22



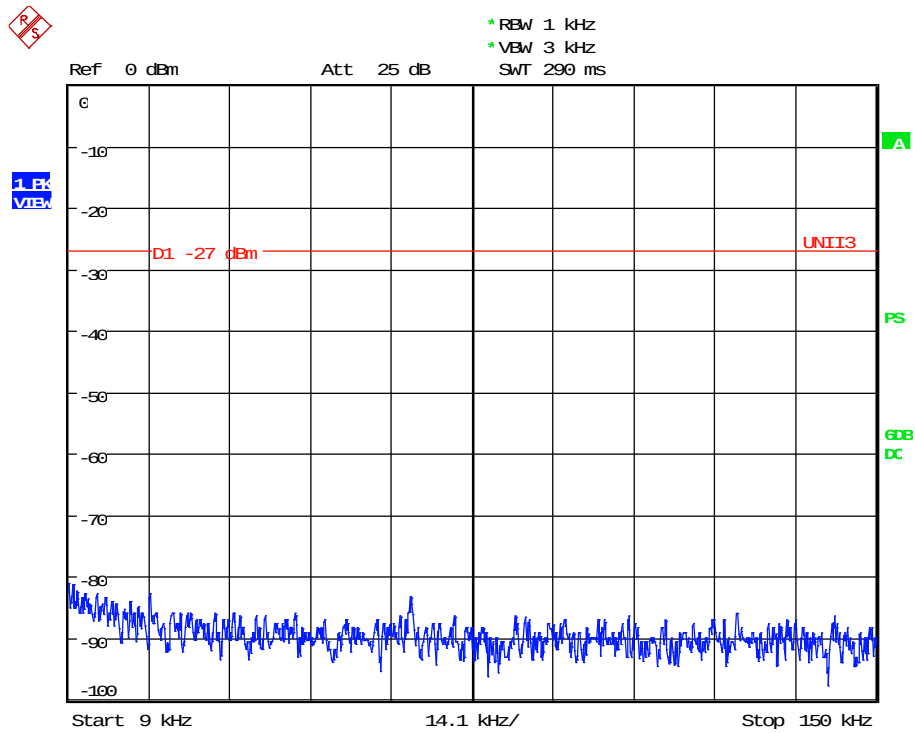
### UNII 3, OFDM54 40M: Low Channel, 18 GHz to 40 GHz



Date: 8.FEB.2021 12:14:15



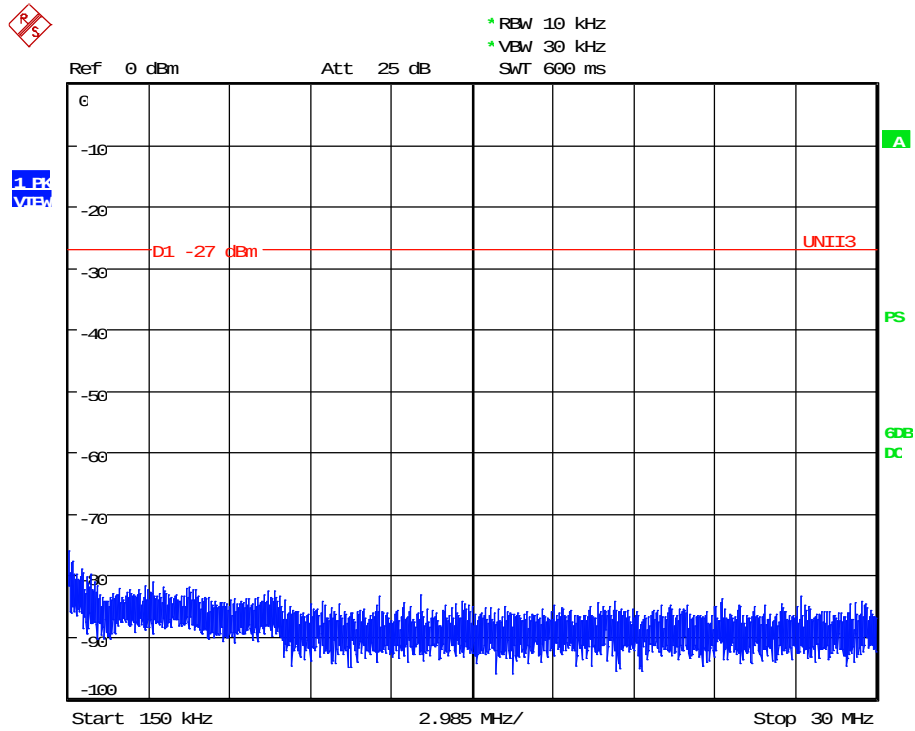
UNII 3, OFDM54 40M: High Channel, 0.009 MHz to 0.15 MHz



Date: 8.FEB.2021 12:24:22



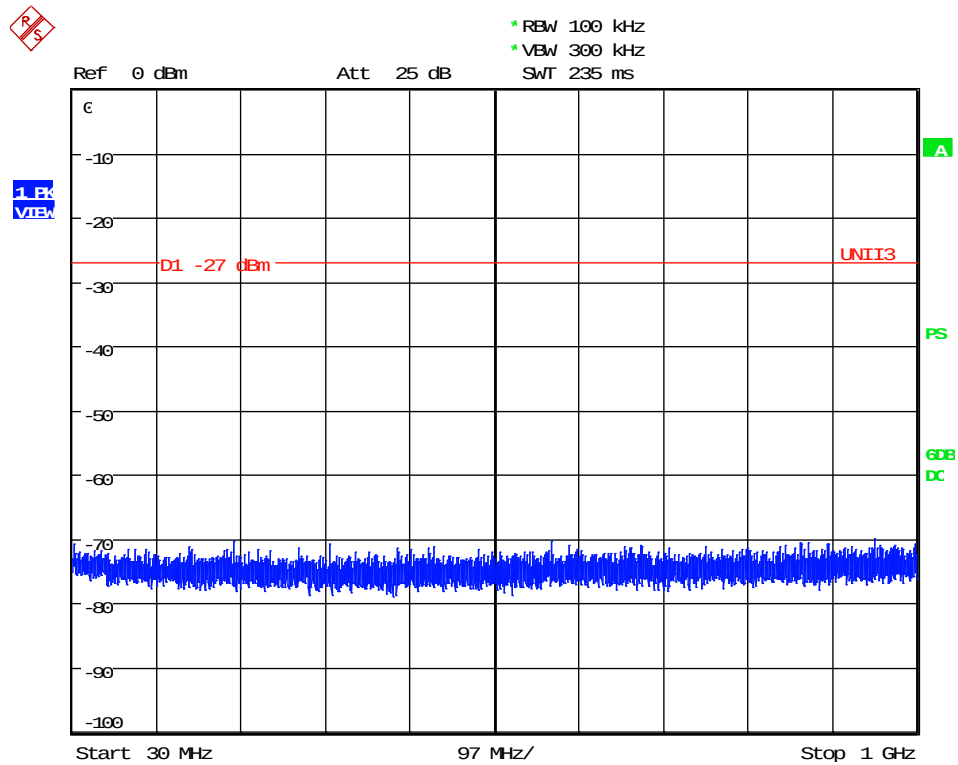
UNII 3, OFDM54 40M: High Channel, 0.15 MHz to 30 MHz



Date: 8.FEB.2021 12:25:26



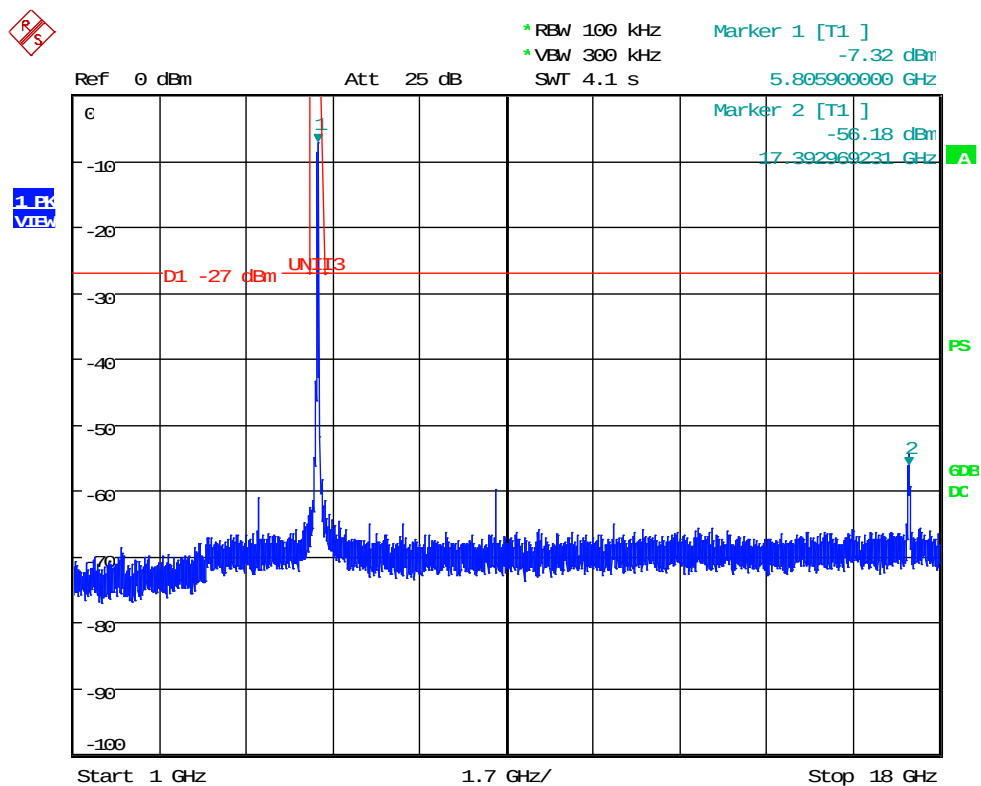
### UNII 3, OFDM54 40M: High Channel, 30 MHz to 1000 MHz



Date: 8.FEB.2021 12:26:15



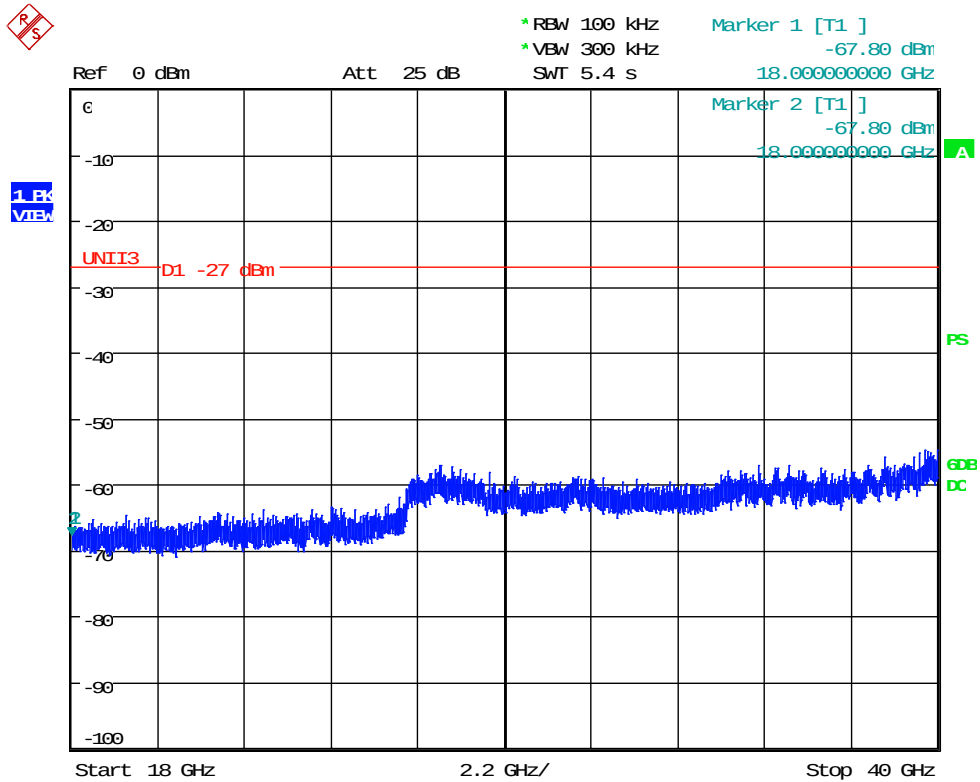
## UNII 3, OFDM54 40M: High Channel, 1 GHz to 18 GHz



Date: 8.FEB.2021 12:27:54



### UNII 3, OFDM54 40M: High Channel, 18 GHz to 40 GHz



Date: 8.FEB.2021 12:28:38



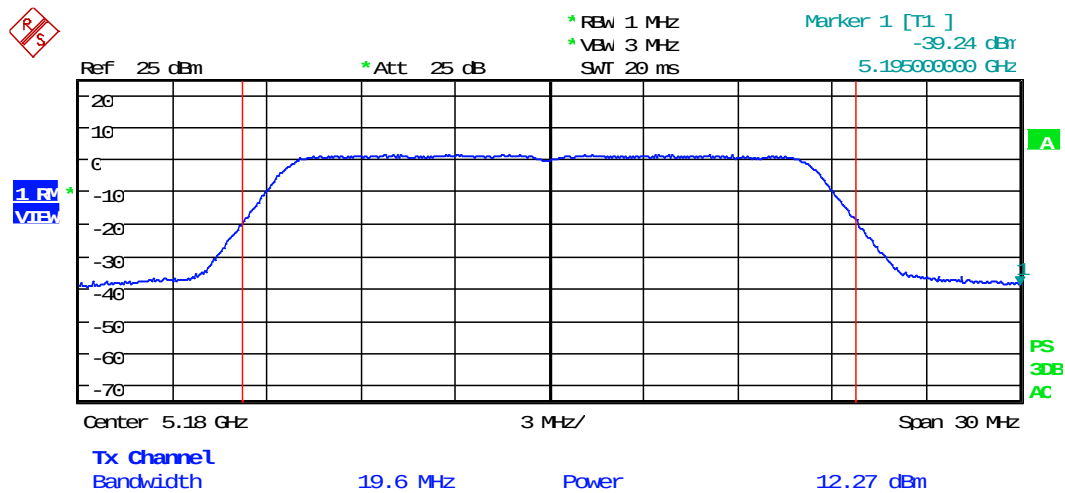
## 12 VOLTAGE VARIATIONS

For intentional radiators, measurements of the variation of the input power or the radiated signal level of the fundamental frequency component of the emission, as appropriate, shall be performed with the supply voltage varied between 85% and 115% of the nominal rated supply voltage. For battery operated equipment, the equipment tests shall be performed using a new battery

**RESULTS:** The results showed that the fundamental frequency did not move outside the frequency band and the output power did not increase above the limit during the variations.



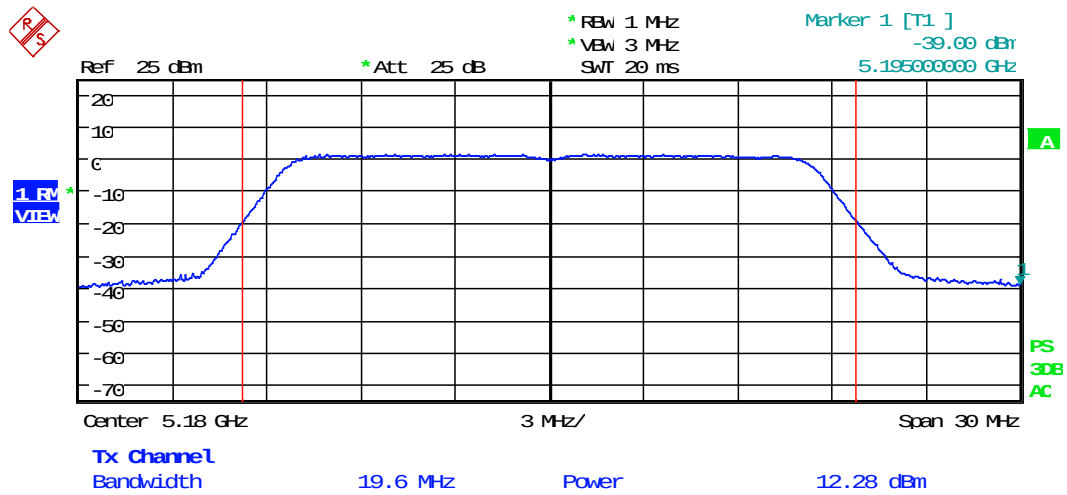
|               |                      |                  |            |
|---------------|----------------------|------------------|------------|
| Test Date:    | 2021-02-03           | Test Engineer:   | J. Chiller |
| Standards:    | CFR 47 Part 15.31(e) | Air Temperature: | 20.4°C     |
| Test Results: | Complies             | Humidity:        | 27%        |

**UNII 1, OFDM 20M, Low Channel @ 85%**

Date: 3.FEB.2021 14:19:21



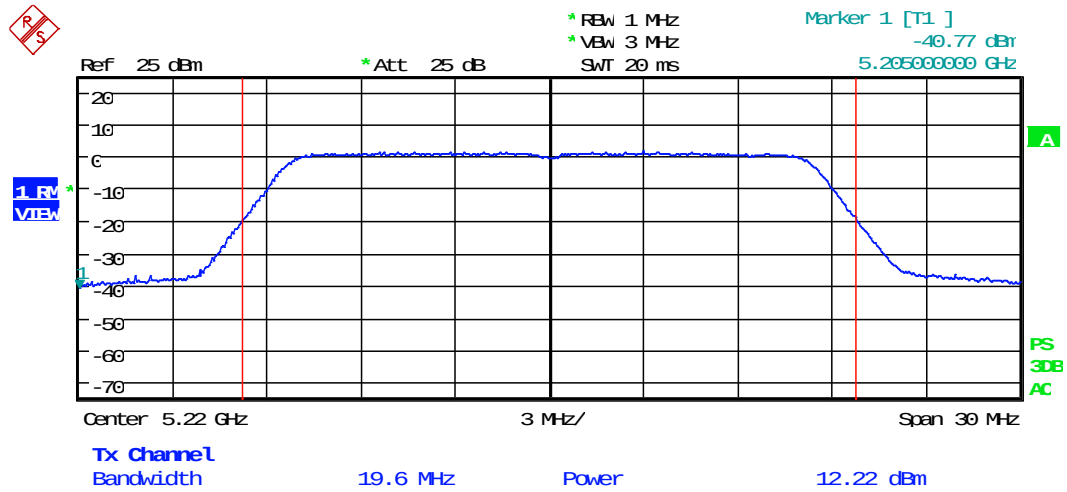
UNII 1, OFDM 20M, Low Channel @ 115%



Date: 3.FEB.2021 14:20:18



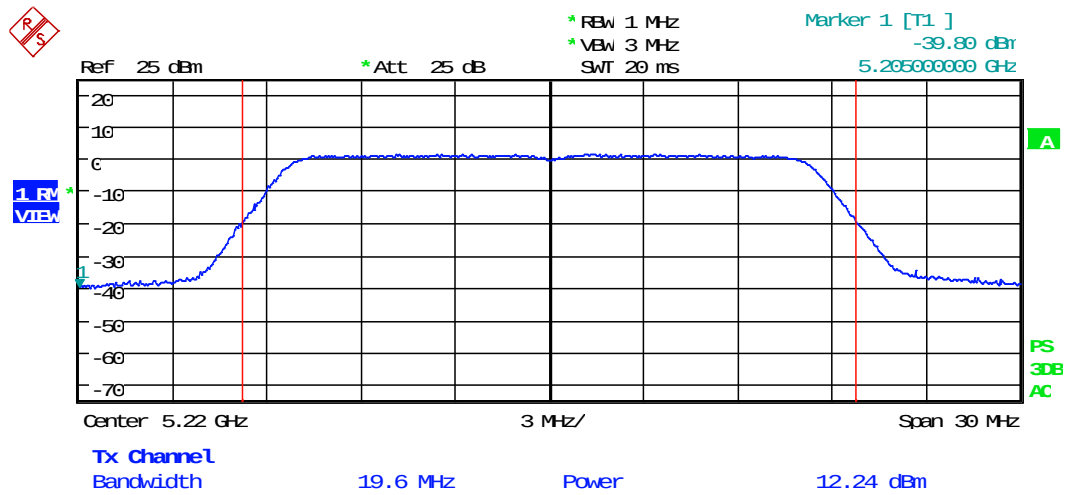
### UNII 1, OFDM 20M, Mid Channel @ 85%



Date: 3.FEB.2021 14:22:04



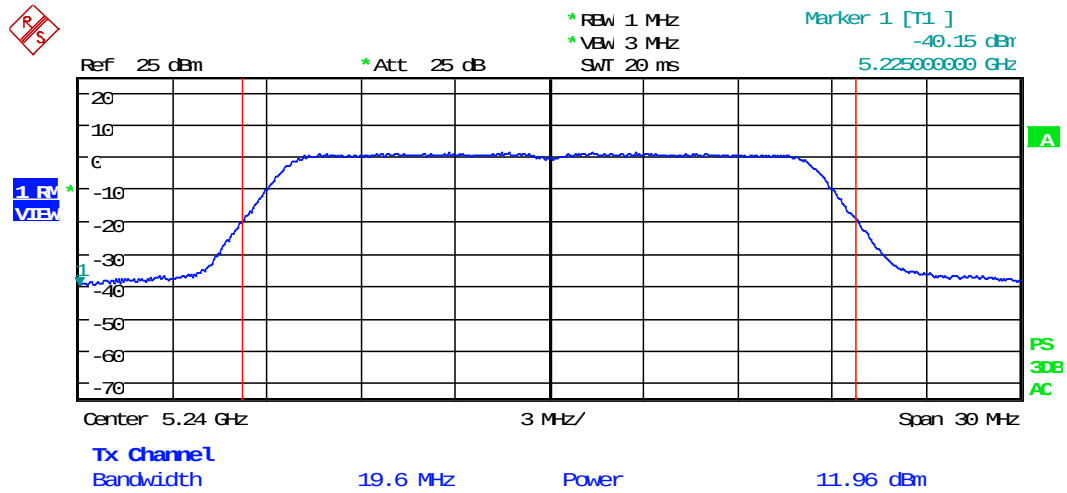
UNII 1, OFDM 20M, Mid Channel @ 115%



Date: 3.FEB.2021 14:21:24



UNII 1, OFDM 20M, High Channel @ 85%



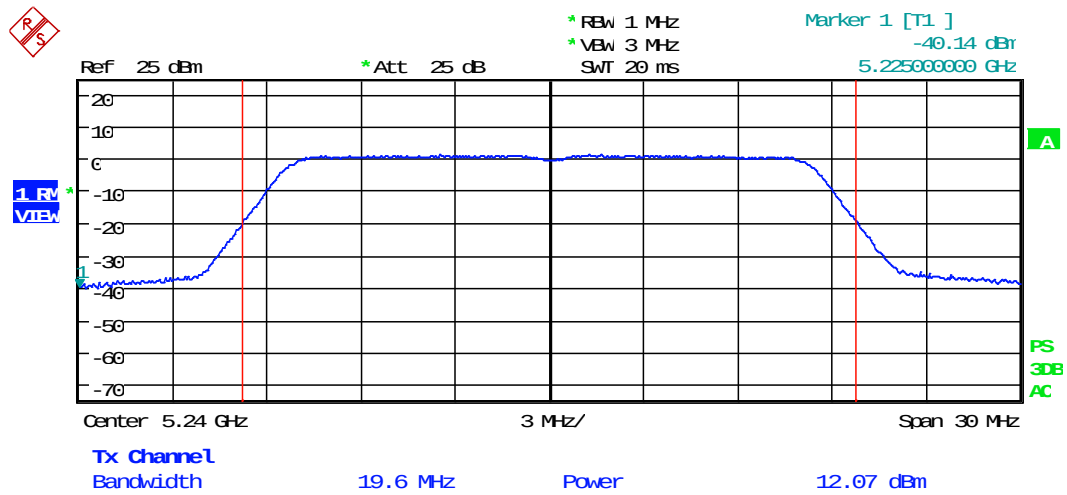
Date: 3.FEB.2021 14:23:13



Order Number: F2P24999

Applicant: Securus Technologies  
Model: JP6S

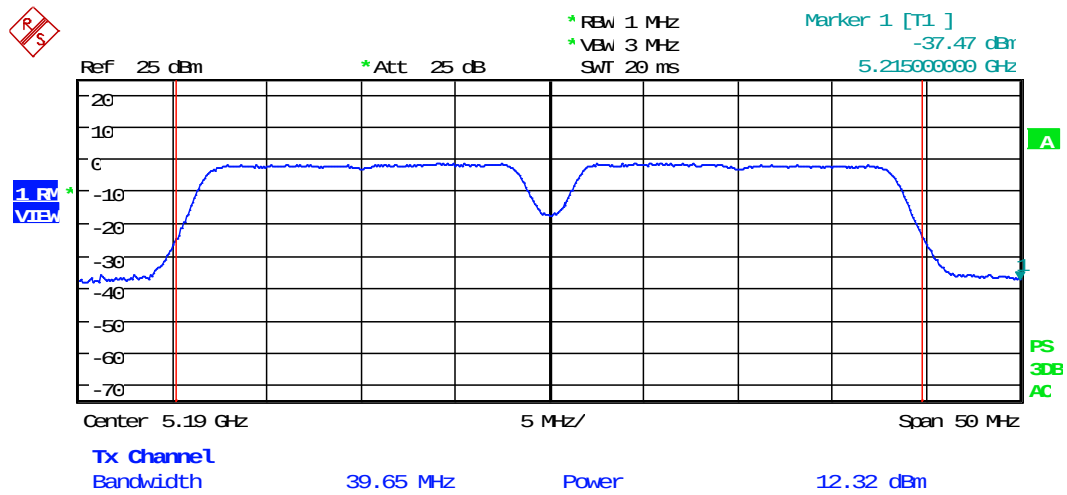
### UNII 1, OFDM 20M, High Channel @ 115%



Date: 3.FEB.2021 14:23:57



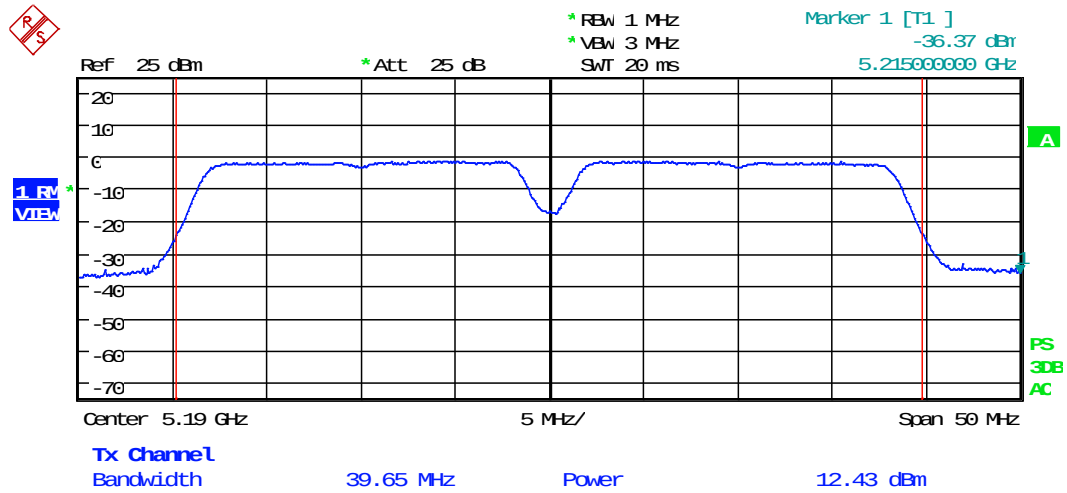
UNII 1, OFDM 40M, Low Channel @ 85%



Date: 3.FEB.2021 14:29:08



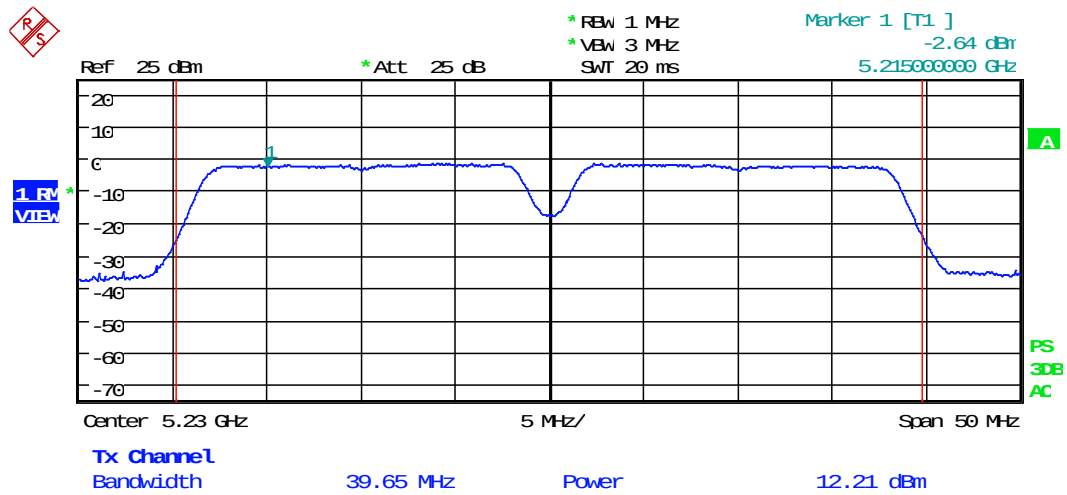
UNII 1, OFDM 40M, Low Channel @115%



Date: 3.FEB.2021 14:28:20



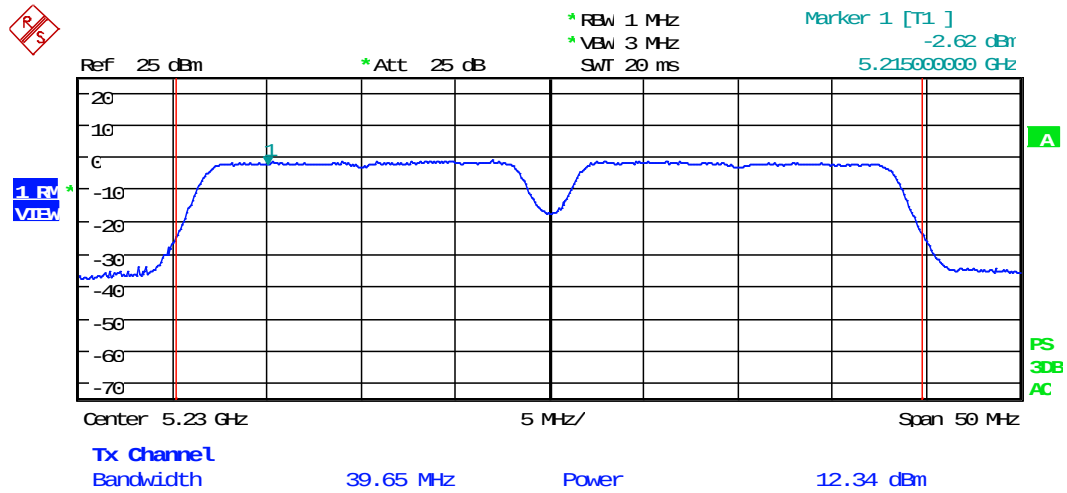
UNII 1, OFDM 40M, High Channel @ 85%



Date: 3.FEB.2021 14:30:37



UNII 1, OFDM 40M, High Channel @115%

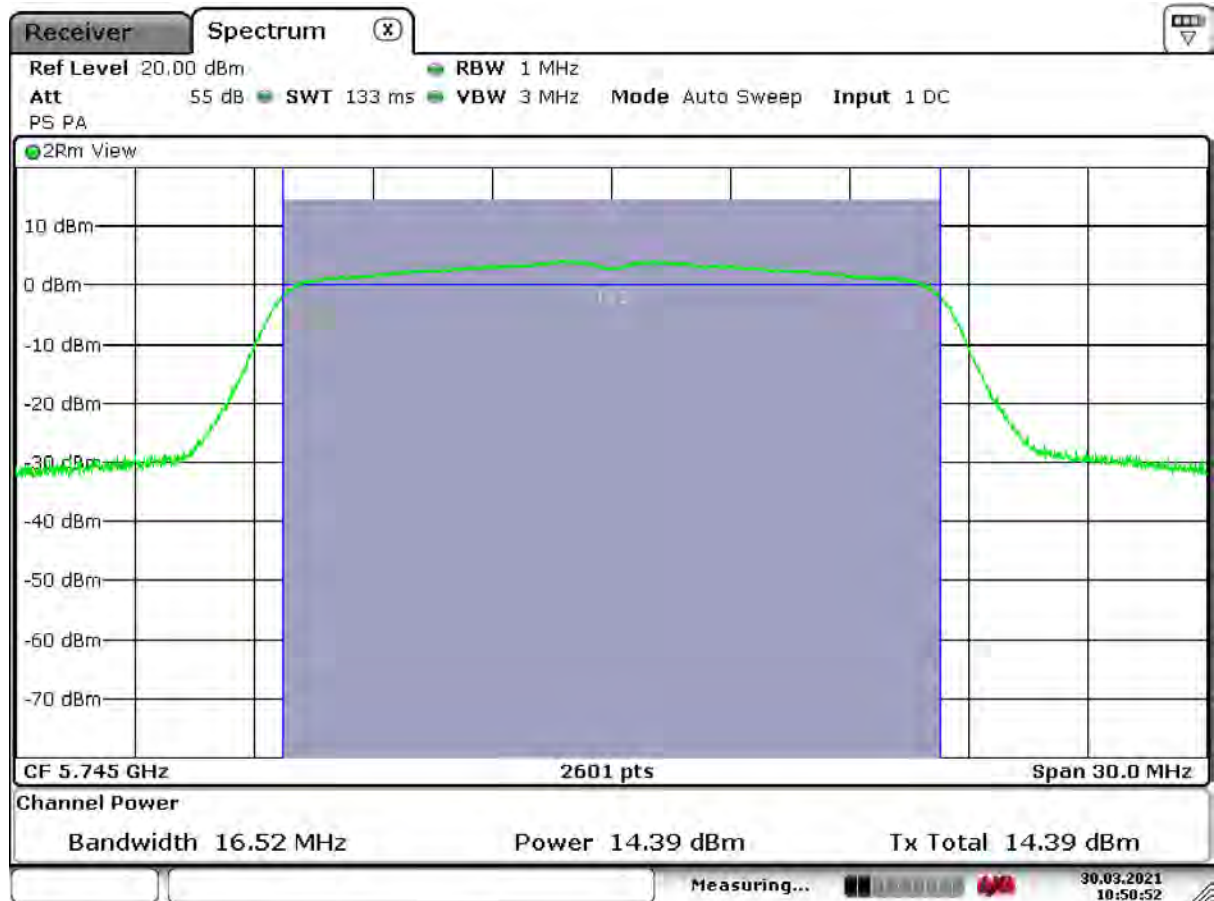


Date: 3.FEB.2021 14:31:48



|               |                      |                  |            |
|---------------|----------------------|------------------|------------|
| Test Date:    | 2021-03-30           | Test Engineer:   | J. Chiller |
| Standards:    | CFR 47 Part 15.31(e) | Air Temperature: | 20.4°C     |
| Test Results: | Complies             | Humidity:        | 27%        |

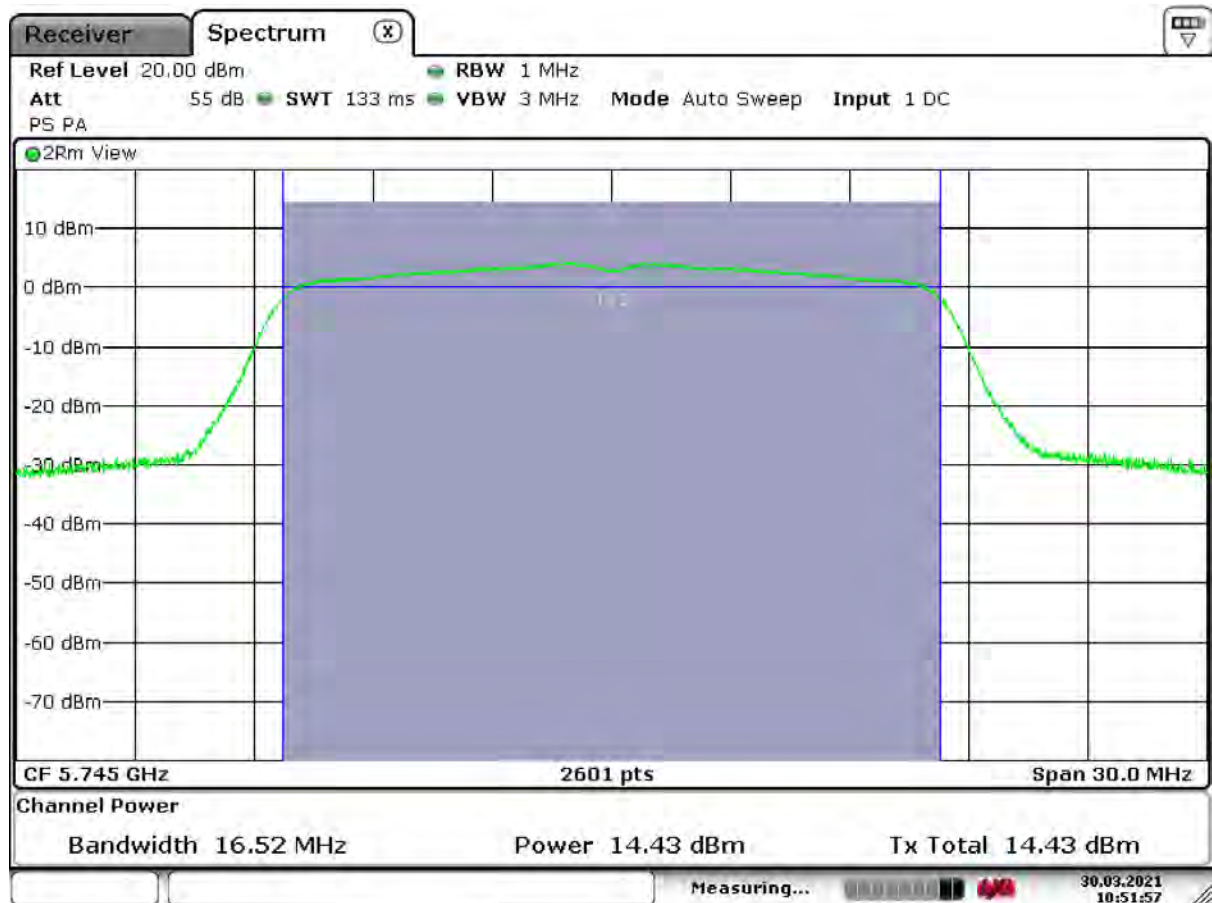
## UNII 3, OFDM 20M, Low Channel @ 85%



Date: 30.MAR.2021 10:50:52



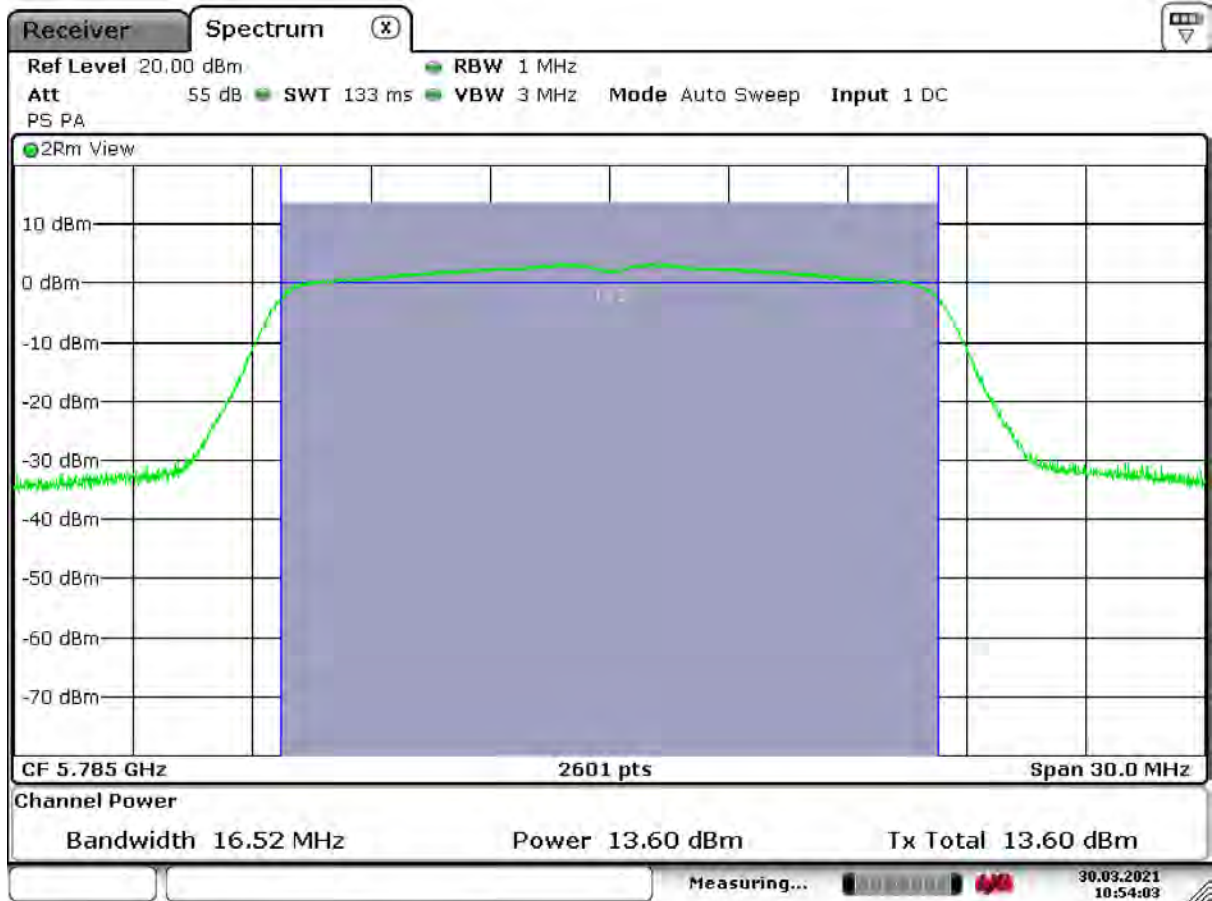
UNII 3, OFDM 20M, Low Channel @ 115%



Date: 30.MAR.2021 10:51:56



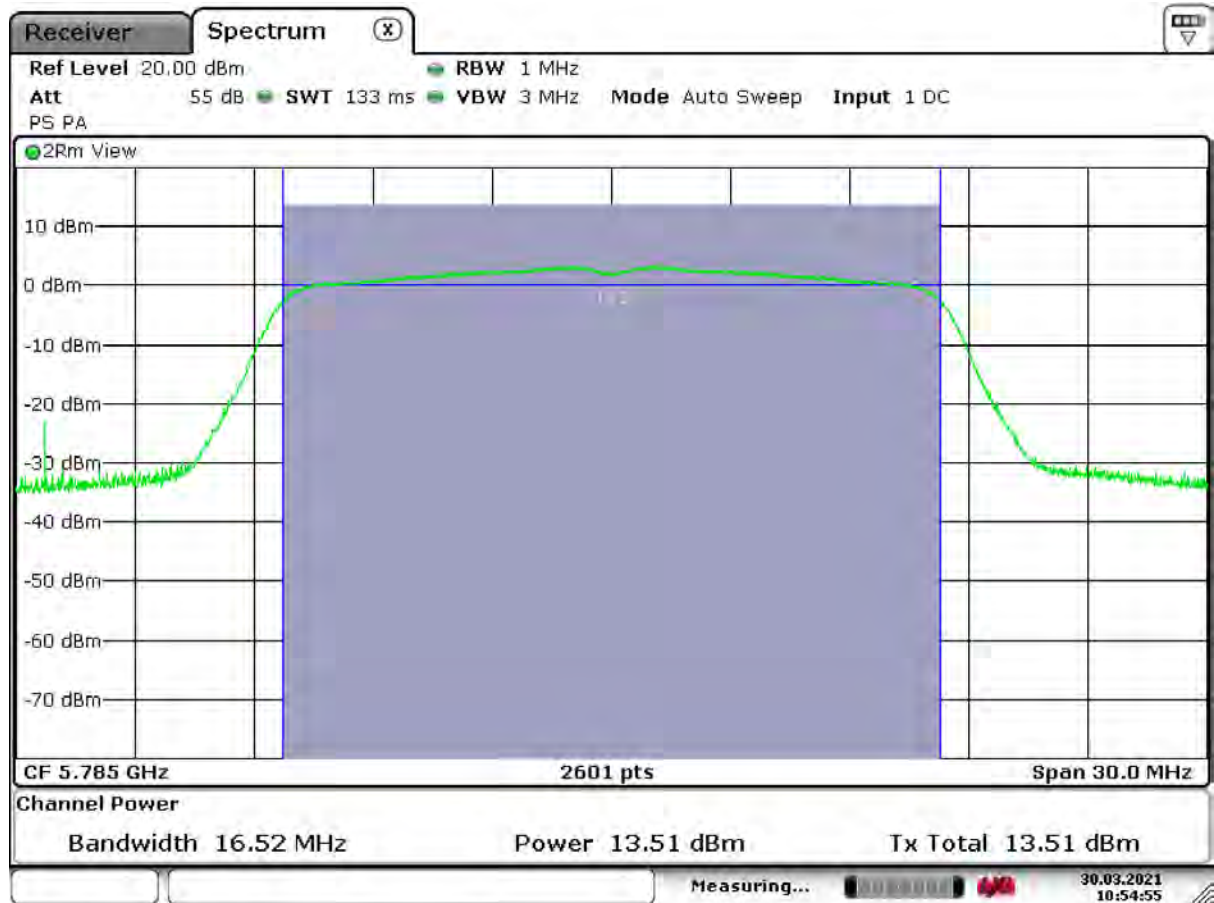
UNII 3, OFDM 20M, Mid Channel @ 85%



Date: 30.MAR.2021 10:54:04



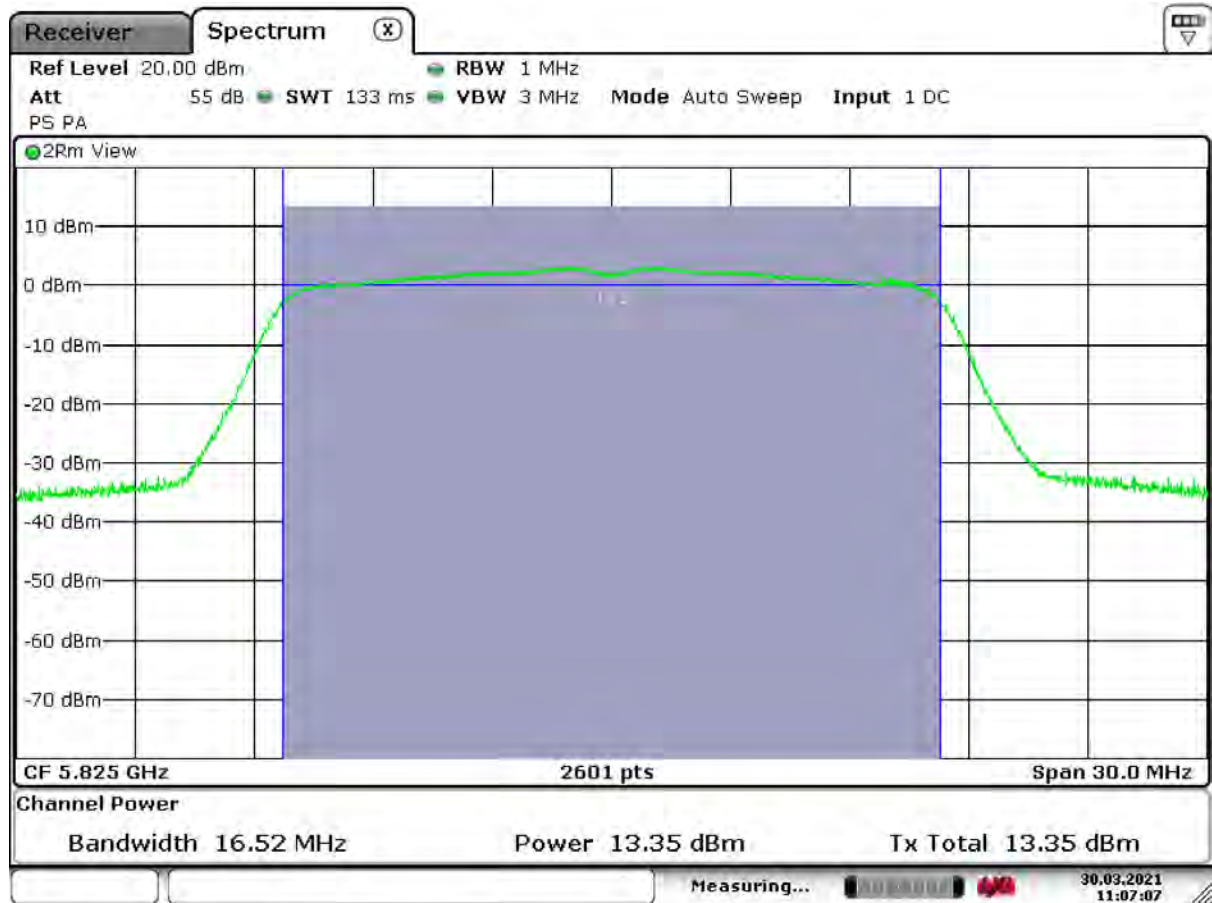
UNII 3, OFDM 20M, Mid Channel @ 115%



Date: 30.MAR.2021 10:54:55



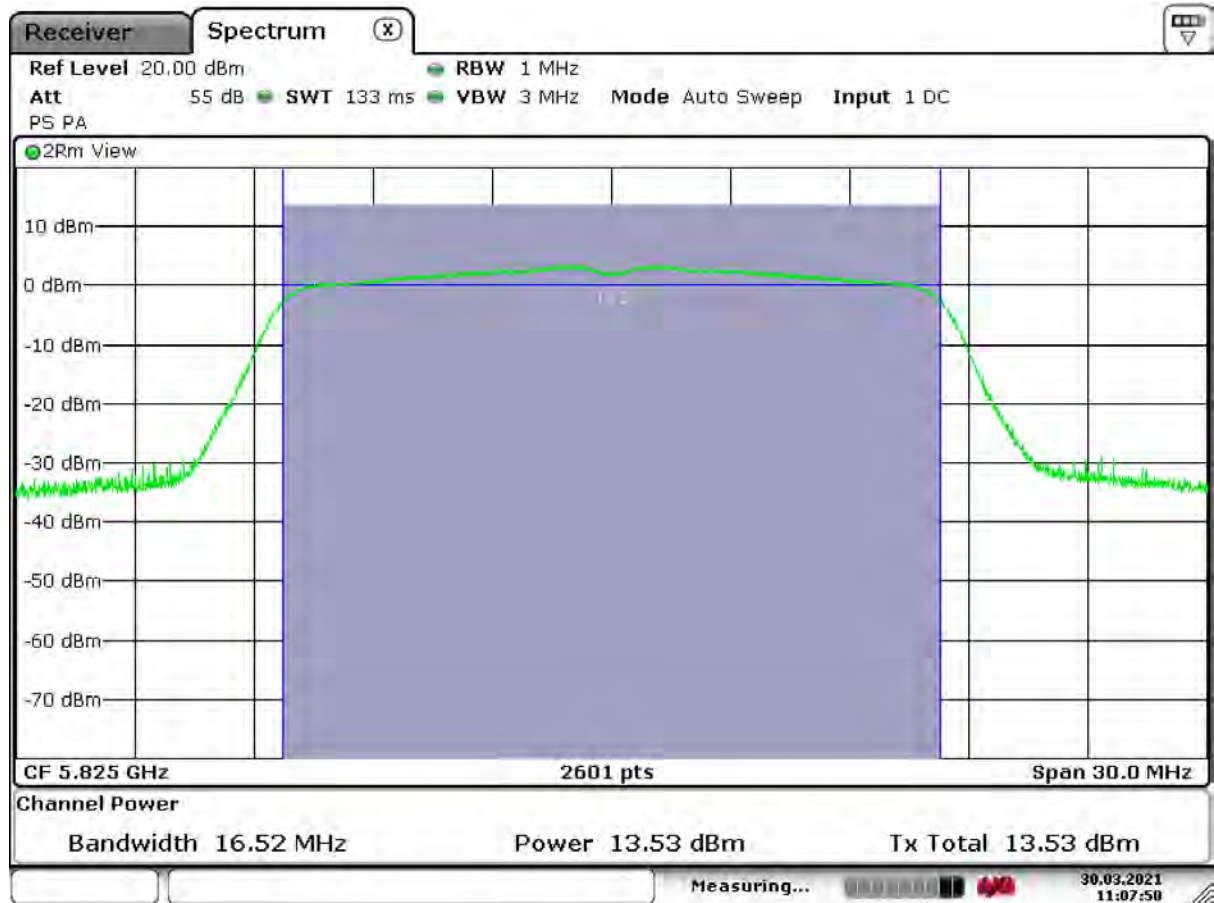
UNII 3, OFDM 20M, High Channel @ 85%



Date: 30.MAR.2021 11:07:07



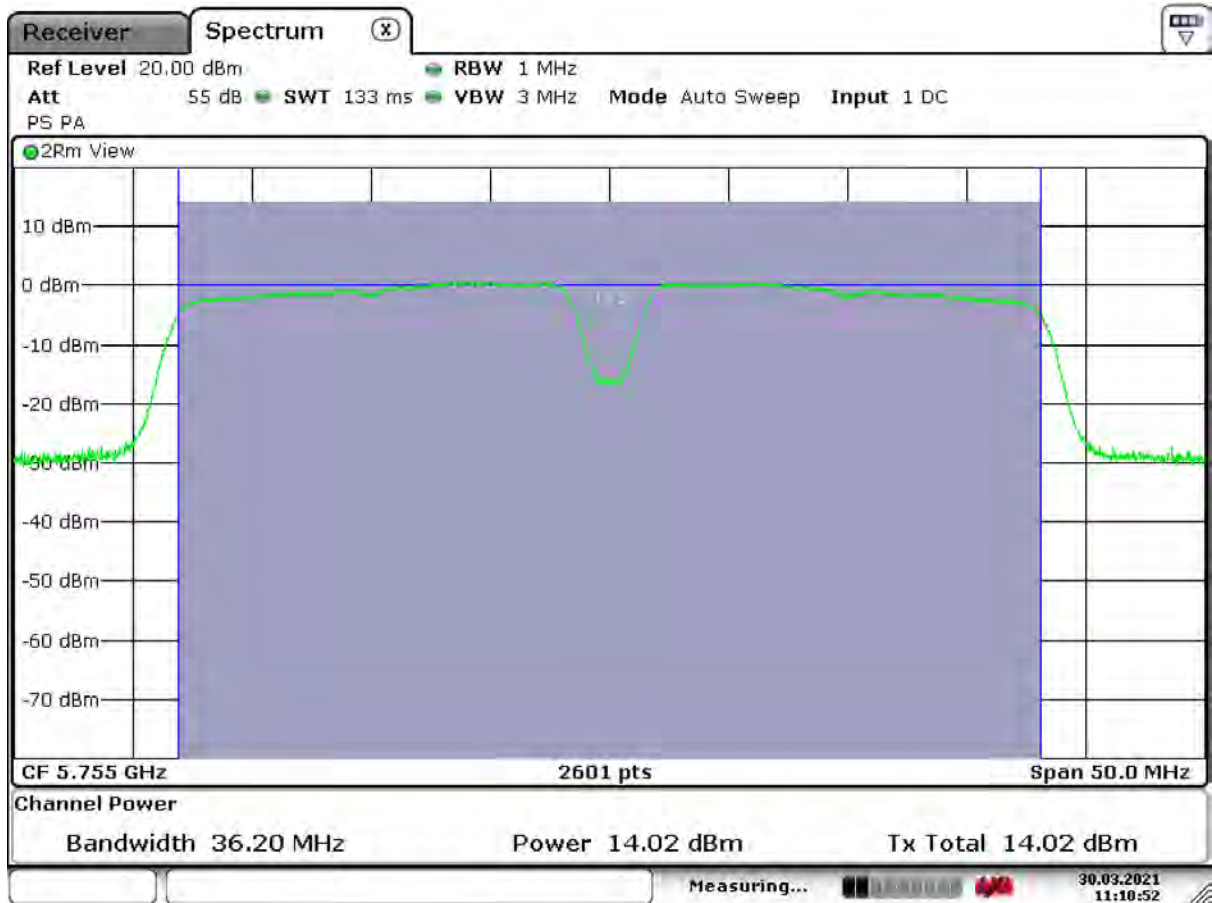
UNII 3, OFDM 20M, High Channel @ 115%



Date: 30.MAR.2021 11:07:50



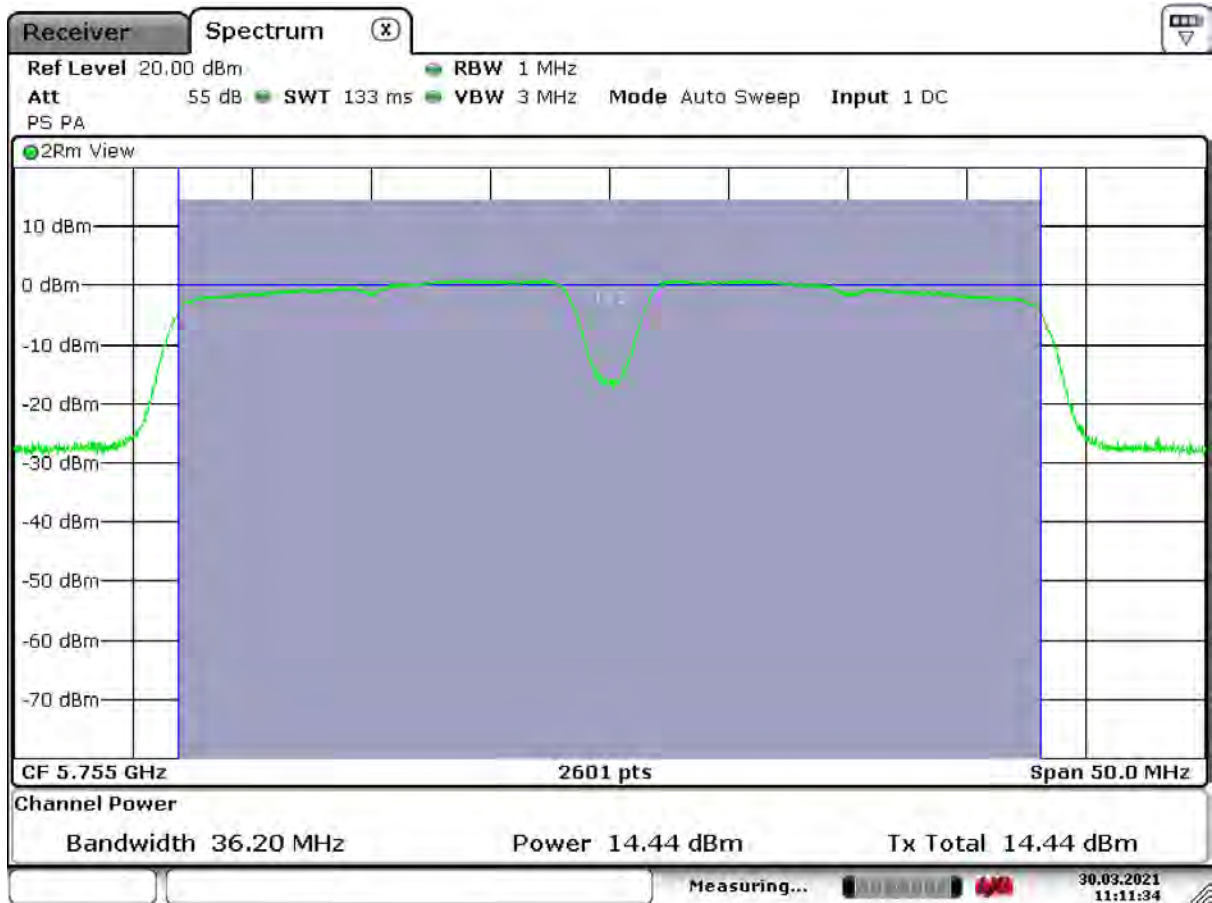
UNII 3, OFDM 40M, Low Channel @ 85%



Date: 30.MAR.2021 11:10:52



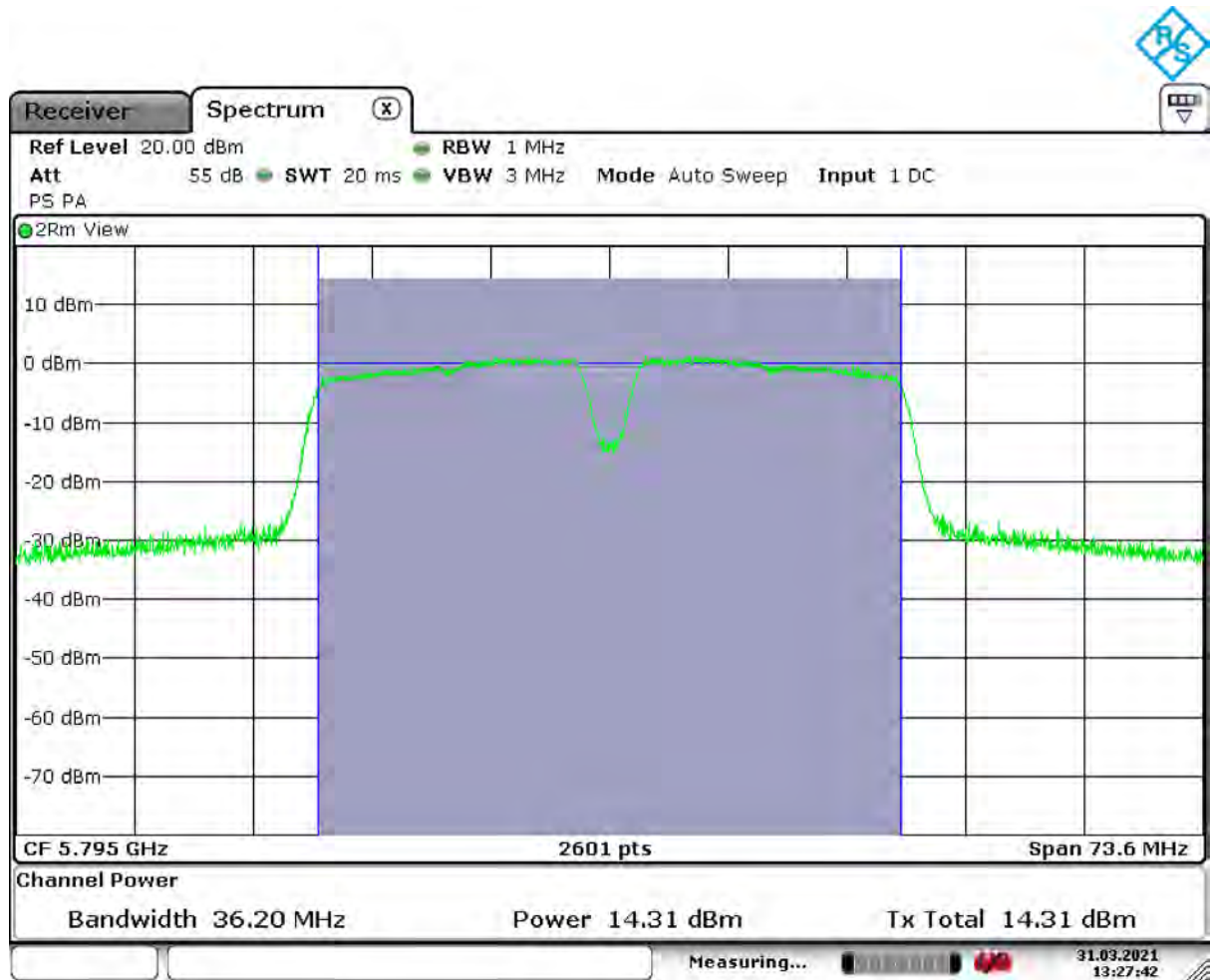
UNII 3, OFDM 40M, Low Channel @115%



Date: 30.MAR.2021 11:11:34



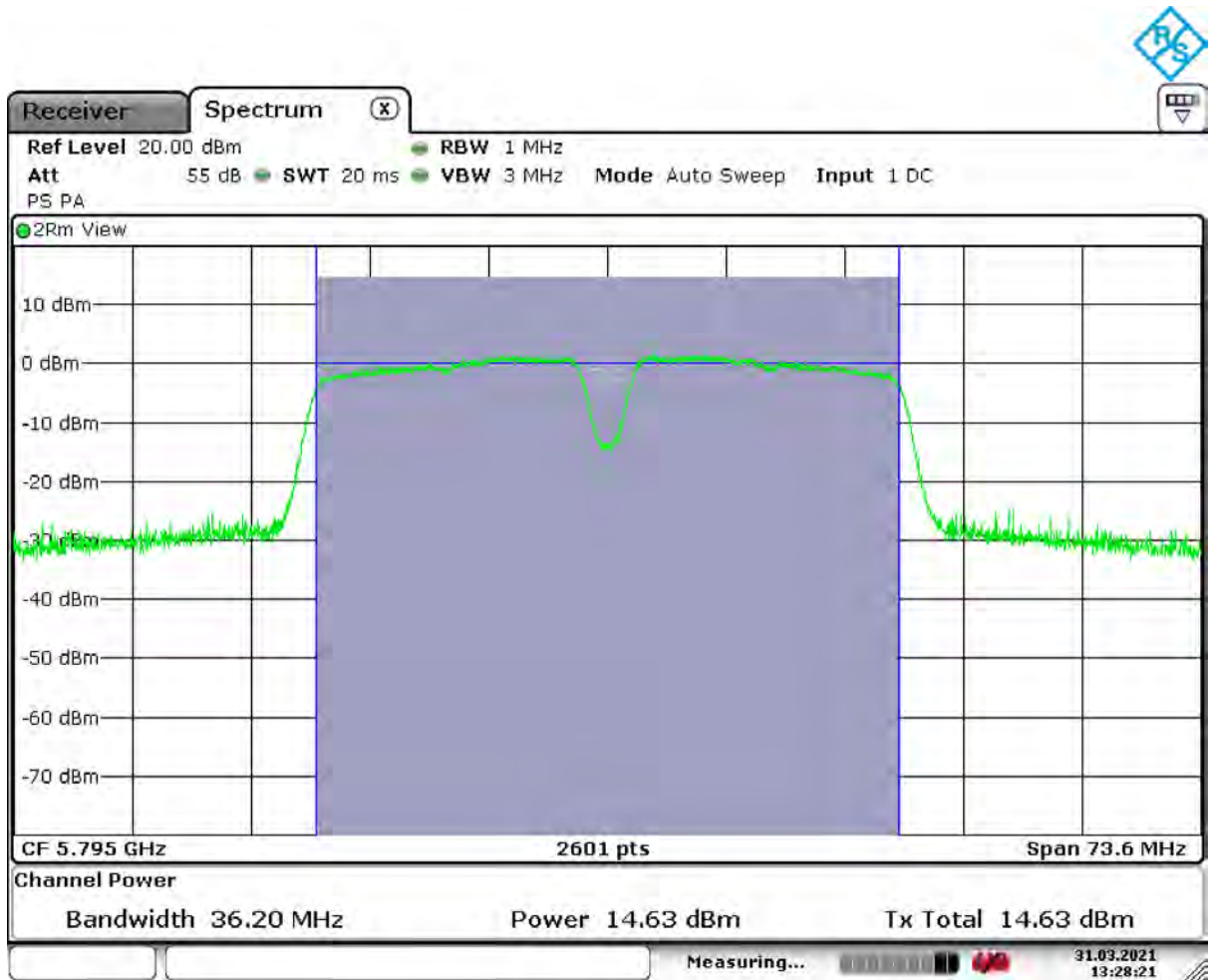
UNII 3, OFDM 40M, High Channel @ 85%



Date: 31.MAR.2021 13:27:42



UNII 3, OFDM 40M, High Channel @115%



Date: 31.MAR.2021 13:28:21



## 13 CONDUCTED EMISSIONS

### 13.1 Requirements

In accordance with FCC CFR 47 Part 15.207(a), "Except as shown in paragraphs (b) and (c) of this section, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30 MHz, shall not exceed the limits in the following table, as measured using a 50  $\mu$ H/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the boundary between the frequency ranges.

| Frequency of Emission (MHz) | Conducted Limit (dB $\mu$ V) |           |
|-----------------------------|------------------------------|-----------|
|                             | 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.

### 13.2 Procedure

The EUT was placed on a 1.0 x 1.5 meter non-conductive table, 0.8 meter above a horizontal ground plane and 0.4 meter from a vertical ground plane. Power was provided to the EUT through a LISN bonded to a 3 x 2 meter ground plane. The LISN and peripherals were supplied power through a filtered AC power source. The output of the LISN was connected to the input of the receiver via a transient limiter, and emissions in the range 150 kHz to 30 MHz were measured. The measurements were recorded using the quasi-peak and average detectors as directed by the standard, and the resolution bandwidth during testing was 9 kHz. The raw measurements were corrected to allow for attenuation from the LISN, transient limiter and cables.

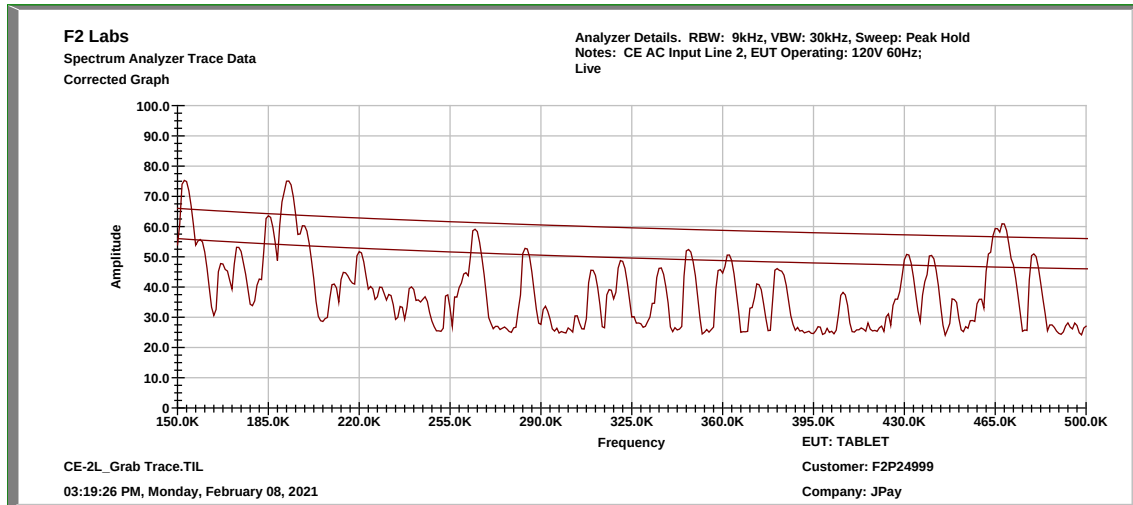
The following results are from the worse-case channel of the worse-case protocol, which was the high channel of OFDM 40M



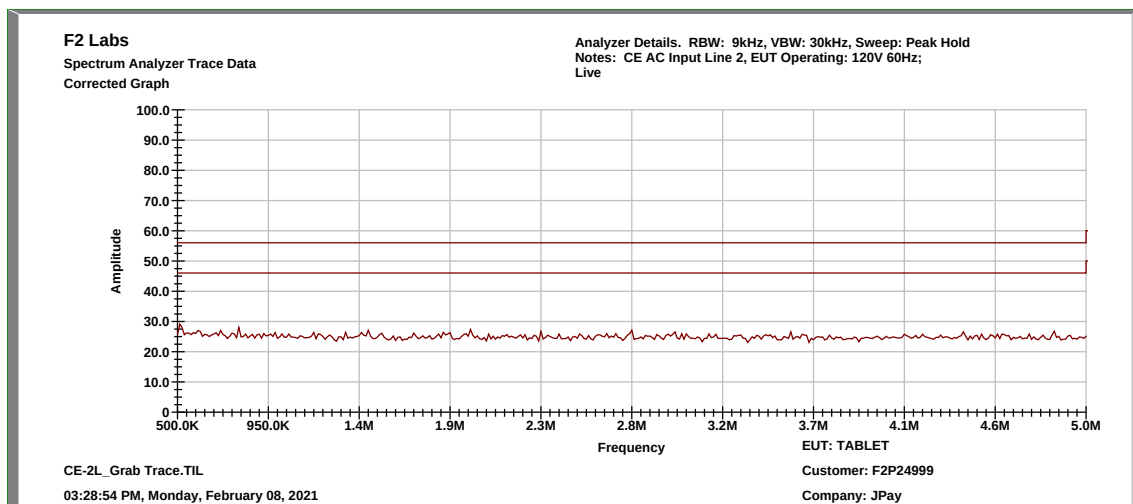
## 13.3 Conducted Emissions Test Data

|               |            |                    |            |
|---------------|------------|--------------------|------------|
| Test Date:    | 2021-02-08 | Test Engineer:     | J. Chiller |
| Rule:         | 15.207     | Air Temperature:   | 20.4° C    |
| Test Results: | Pass       | Relative Humidity: | 33%        |

## Conducted Test – Live: 0.15 MHz to 0.5 MHz

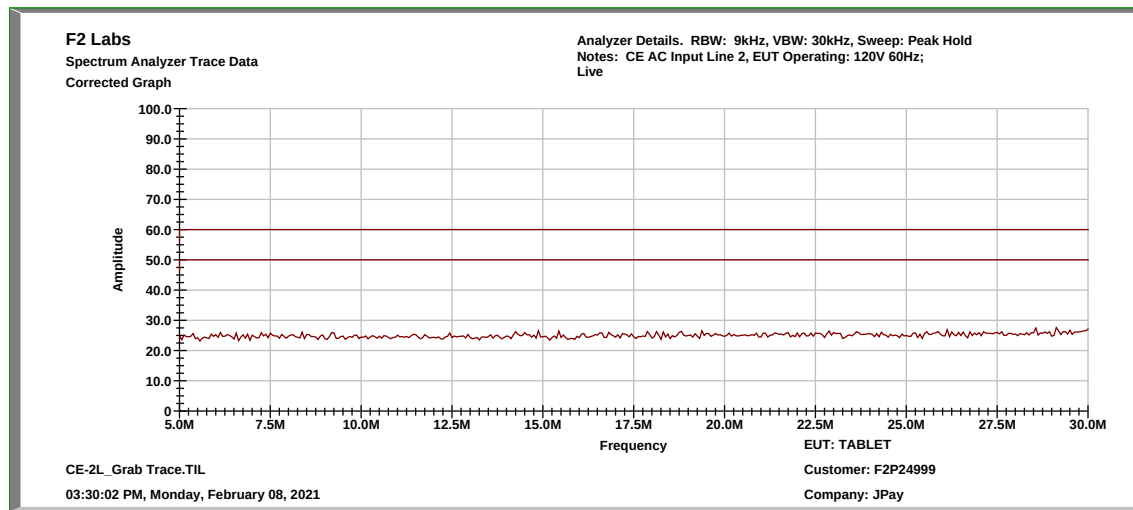


## Conducted Test – Live: 0.5 MHz to 5.0 MHz





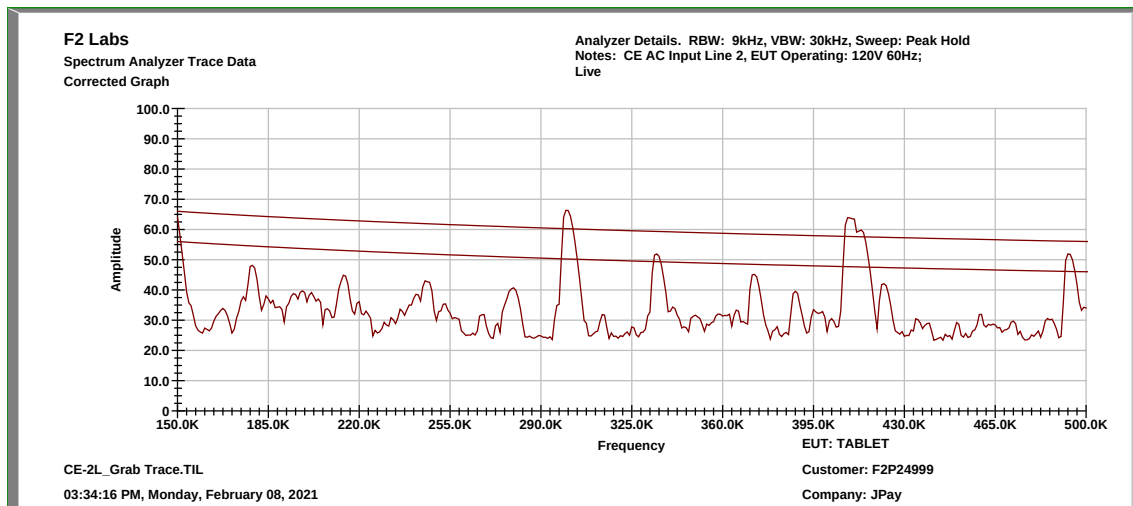
## Conducted Test – Live: 5.0 MHz to 30.0 MHz



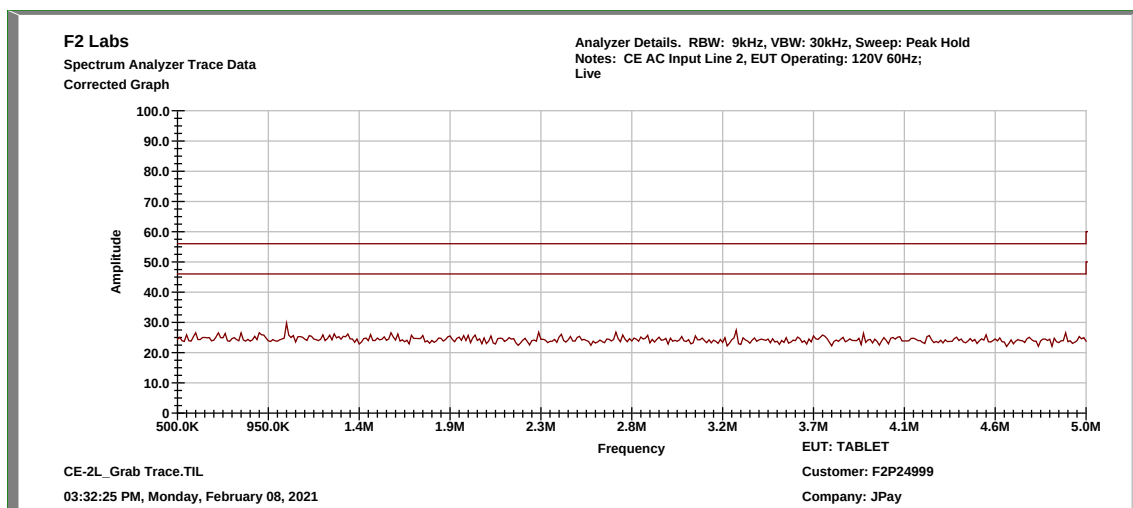
| Top Discrete Measurements |           |                 |            |              |                 |                |              |             |
|---------------------------|-----------|-----------------|------------|--------------|-----------------|----------------|--------------|-------------|
| No.                       | Conductor | Frequency (MHz) | Detector   | Level (dBμV) | Adjustment (dB) | Results (dBμV) | Limit (dBμV) | Margin (dB) |
| 1                         | Live      | 0.1535          | Quasi-Peak | 40.11        | 11.024          | 51.13          | 65.81        | -14.7       |
|                           |           |                 | Average    | 6.03         | 11.024          | 17.05          | 55.81        | -38.8       |
| 2                         | Live      | 0.192875        | Quasi-Peak | 39.33        | 10.614          | 49.94          | 63.913       | -14.0       |
|                           |           |                 | Average    | 5.2          | 10.614          | 15.81          | 53.913       | -38.1       |
| 3                         | Live      | 0.2655          | Quasi-Peak | 34.25        | 10.618          | 44.87          | 61.257       | -16.4       |
|                           |           |                 | Average    | 13.87        | 10.618          | 24.49          | 51.257       | -26.8       |
| 4                         | Live      | 0.346875        | Quasi-Peak | 37.75        | 10.087          | 47.84          | 59.037       | -11.2       |
|                           |           |                 | Average    | 12.6         | 10.087          | 22.69          | 49.037       | -26.4       |
| 5                         | Live      | 0.4685          | Quasi-Peak | 14.72        | 10.029          | 24.75          | 56.541       | -31.8       |
|                           |           |                 | Average    | 2.4          | 10.029          | 12.43          | 46.541       | -34.1       |



Conducted Test – Neutral: 0.15 MHz to 0.5 MHz

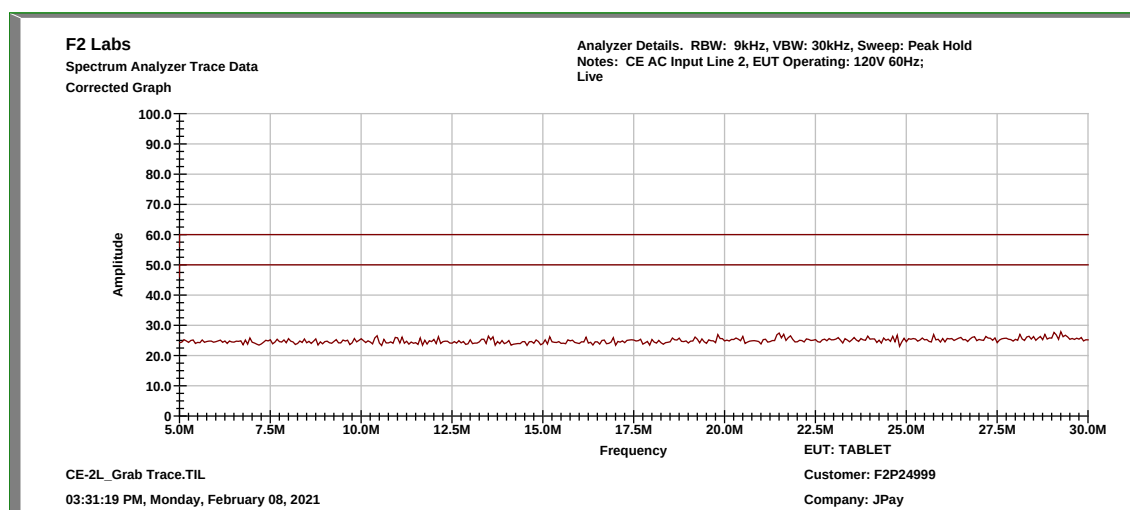


Conducted Test – Neutral: 0.5 MHz to 5.0 MHz





## Conducted Test – Neutral: 5.0 MHz to 30.0 MHz



| Top Discrete Measurements |           |                 |            |              |                 |                |              |             |
|---------------------------|-----------|-----------------|------------|--------------|-----------------|----------------|--------------|-------------|
| No.                       | Conductor | Frequency (MHz) | Detector   | Level (dBμV) | Adjustment (dB) | Results (dBμV) | Limit (dBμV) | Margin (dB) |
| 1                         | Neutral   | 0.150           | Quasi-Peak | 39.56        | 11.001          | 50.56          | 66.0         | -15.4       |
|                           |           |                 | Average    | 3.62         | 11.001          | 14.62          | 56.0         | -41.4       |
| 2                         | Neutral   | 0.3005          | Quasi-Peak | 26.21        | 10.09           | 36.30          | 60.229       | -23.9       |
|                           |           |                 | Average    | 3.38         | 10.09           | 13.47          | 50.229       | -36.8       |
| 3                         | Neutral   | 0.3355          | Quasi-Peak | 21.83        | 10.069          | 31.90          | 59.314       | -27.4       |
|                           |           |                 | Average    | 3.41         | 10.069          | 13.48          | 49.314       | -35.8       |
| 4                         | Neutral   | 0.409           | Quasi-Peak | 21.73        | 10.072          | 31.80          | 57.668       | -25.9       |
|                           |           |                 | Average    | 3.02         | 10.072          | 13.09          | 47.668       | -34.6       |
| 5                         | Neutral   | 0.493           | Quasi-Peak | 21.76        | 10.002          | 31.76          | 56.118       | -24.4       |
|                           |           |                 | Average    | 3.1          | 10.002          | 13.10          | 46.118       | -33.0       |



## 14 PHOTOGRAPHS

**Occupied Bandwidth, RF Output Power, Power Spectral Density,  
Conducted Spurious Emissions, Voltage Variations**



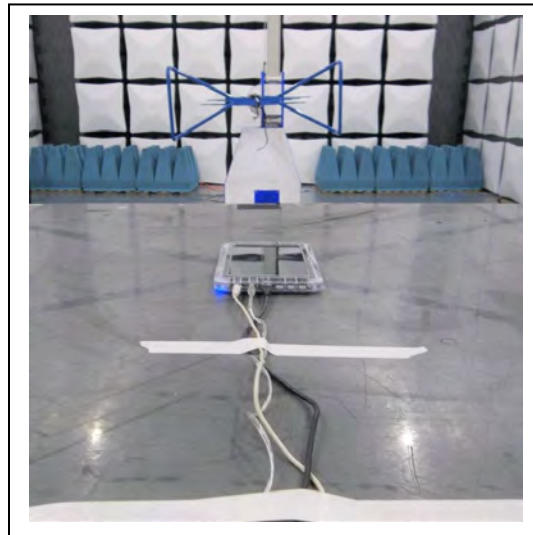


## Radiated Spurious Emissions, Less Than 30 MHz





### Radiated Spurious Emissions, 30 MHz to 1000 MHz



### Radiated Spurious Emissions, above 1 GHz





## Conducted Emissions

