

At  $P_o$  transmitting power, the specified minimum attenuation becomes  $55 + 10 \log(P_o)$ , and the level in dBm relative  $P_o$  becomes:

$$P_o \text{ (dBm)} - [55 + 10 \log(P_o \text{ in mwatts}) - 30] = -25 \text{ dBm}$$

## 2. LTE Band 66. FCC §2.1053 & §27.53 (h) / RSS-139 Issue 3 Clause 6.6.

FCC §27.53 (h):

(h) Except as otherwise specified below, for operations in the 1695-1710 MHz, 1710-1755 MHz, 1755-1780 MHz, 1915-1920 MHz, 1995-2000 MHz, 2000-2020 MHz, 2110-2155 MHz, 2155-2180 MHz, and 2180-2200 MHz, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power ( $P$ ) in watts by at least  $43 + 10 \log_{10}(P)$  dB.

RSS-139 Issue 3 Clause 6.6:

i. In the first 1.0 MHz bands immediately outside and adjacent to the equipment's smallest operating frequency block, which can contain the equipment's occupied bandwidth, the emission power per any 1% of the emission bandwidth shall be attenuated below the transmitter output power  $P$  (in dBW) by at least  $43 + 10 \log_{10}(P)$  (watts) dB.

ii. After the first 1.0 MHz outside the equipment's smallest operating frequency block, which can contain the equipment's occupied bandwidth, the emission power in any 1 MHz bandwidth shall be attenuated below the transmitter output power  $P$  (in dBW) by at least  $43 + 10 \log_{10}(P)$  (watts) dB.

### LTE Band 66 MEASUREMENT LIMIT:

At  $P_o$  transmitting power, the specified minimum attenuation becomes  $43 + 10 \log(P_o)$ , and the level in dBm relative  $P_o$  becomes:

$$P_o \text{ (dBm)} - [43 + 10 \log(P_o \text{ in mwatts}) - 30] = -13 \text{ dBm}$$

### METHOD:

The measurement was performed with the EUT inside an anechoic chamber.

The spectrum was scanned from 30 MHz to at least the 10th harmonic of the High frequency generated within the equipment.

The EUT was placed on a non-conductive stand at a 3 meter distance from the measuring antenna for measurements below 1 GHz up to 18 GHz.

Detected emissions were maximized at each frequency by rotating the EUT and adjusting the measuring antenna height and polarization. The maximum meter reading was recorded.

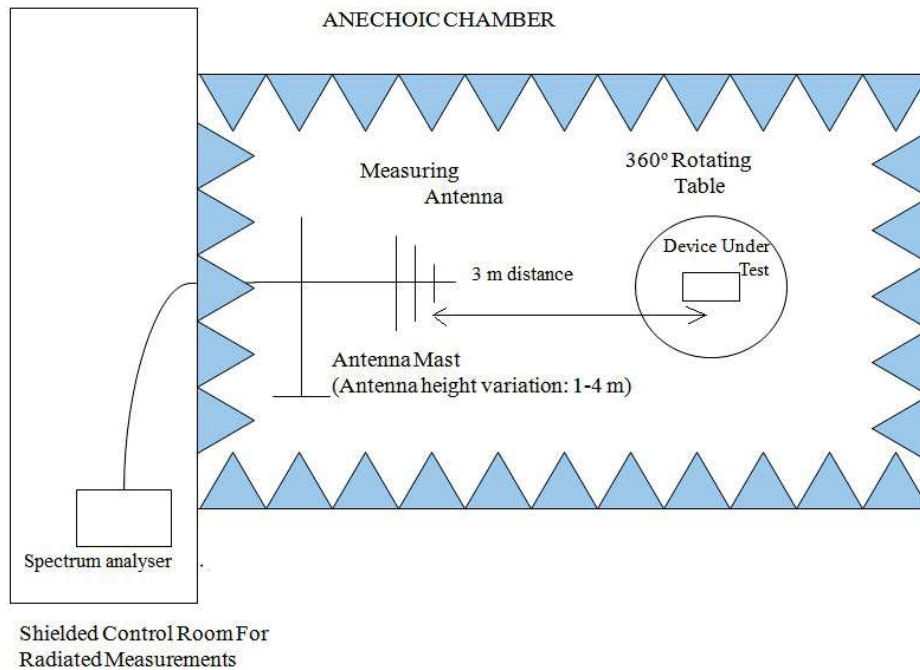
The maximum field strength (dBμV/m) of each detected emission at less than 20 dB respect to the limit is converted to an equivalent EIRP level (dBm) according to ANSI C63.26 with the formula:

$$\text{EIRP (dBm)} = E \text{ (dBμV/m)} + 20 \log(D) - 104.8; \text{ where } D \text{ is the measurement distance (in the far field region) in m.}$$
$$D = 3 \text{ m}$$

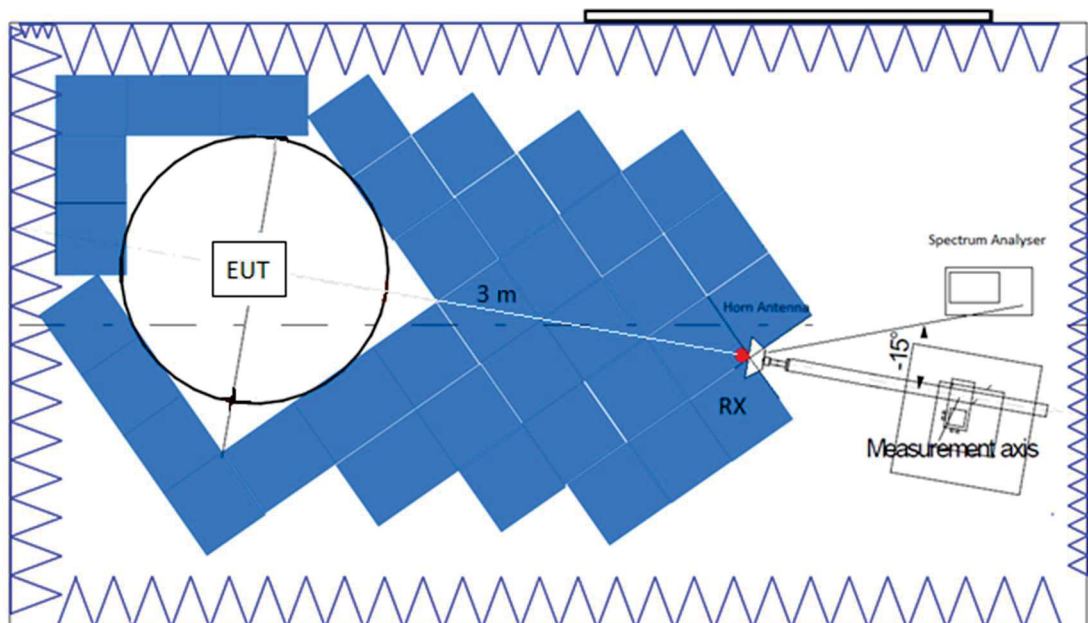
A resolution bandwidth / video bandwidth of 100 kHz / 300 kHz was used for frequencies below 1 GHz and 1 MHz / 3 MHz for frequencies above 1 GHz.

## TEST SETUP:

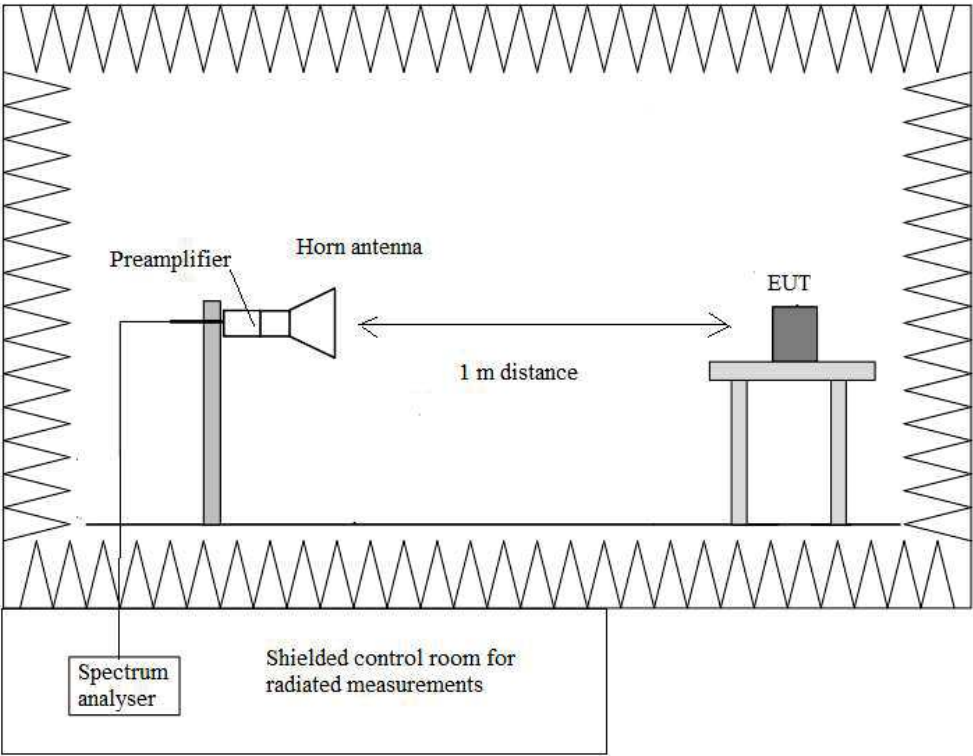
Radiated measurements setup from 30 MHz to 1 GHz:



Radiated measurements setup from 1 GHz to 18 GHz:



Radiated measurements setup  $f > 18\text{ GHz}$ :



## RESULTS:

### LTE Band CA 7C + LTE Band 7:

QPSK and QAM modulations: A preliminary scan determined the worst case:

- 1) LTE CA\_7C: For the PCC: QPSK modulation, BW=20 MHz, RB=1, Offset=0.  
For the SCC1: QPSK modulation, BW=20 MHz, RB=1, Offset=0.
- 2) LTE Band 7: QPSK modulation, BW=10 MHz, RB=1, Offset=0.

The following results are the ones of the worst case.

#### - LOW CHANEL:

##### Frequency range 30 MHz - 1 GHz:

No spurious frequencies at less than 20 dB below the limit.

##### Frequency range 1 - 27 GHz:

Spurious frequencies at less than 20 dB below the limit:

| Spurious frequency (GHz) | E.I.R.P (dBm) | Polarization | Detector | Measurement Uncertainty (dB) |
|--------------------------|---------------|--------------|----------|------------------------------|
| 7.62175                  | -36.6         | V            | RMS      | <±4.98                       |
| 10.16225                 | -44.56        | V            | RMS      | <±4.98                       |
| 15.00625                 | -44.32        | V            | RMS      | <±4.98                       |
| 20.32448                 | -38.44        | V            | RMS      | <±5.08                       |
| 22.86563                 | -41.78        | V            | RMS      | <±5.08                       |

##### Frequency range 2490.5 - 2496 MHz:

No spurious frequencies at less than 20 dB below the limit.

#### - MIDDLE CHANNEL:

##### Frequency range 30 MHz - 1 GHz:

No spurious frequencies at less than 20 dB below the limit.

##### Frequency range 1 - 27 GHz:

Spurious frequencies at less than 20 dB below the limit:

| Spurious frequency (GHz) | E.I.R.P (dBm) | Polarization | Detector | Measurement Uncertainty (dB) |
|--------------------------|---------------|--------------|----------|------------------------------|
| 7.66675                  | -38.62        | V            | RMS      | <±4.98                       |
| 17.61325                 | -43.88        | V            | RMS      | <±5.08                       |
| 20.4463                  | -44.05        | V            | RMS      | <±5.08                       |

##### Frequency range 2490.5 - 2496 MHz:

No spurious frequencies at less than 20 dB below the limit.

## - HIGH CHANNEL:

### Frequency range 30 MHz - 1 GHz:

No spurious frequencies at less than 20 dB below the limit.

### Frequency range 1 - 27 GHz:

Spurious frequencies at less than 20 dB below the limit:

| Spurious frequency (GHz) | E.I.R.P (dBm) | Polarization | Detector | Measurement Uncertainty (dB) |
|--------------------------|---------------|--------------|----------|------------------------------|
| 7.53225                  | -38.16        | V            | RMS      | <±4.98                       |
| 10.04225                 | -44.37        | V            | RMS      | <±4.98                       |
| 20.08463                 | -39.82        | V            | RMS      | <±5.08                       |
| 22.59563                 | -44.03        | V            | RMS      | <±5.08                       |

### Frequency range 2490.5 - 2496 MHz:

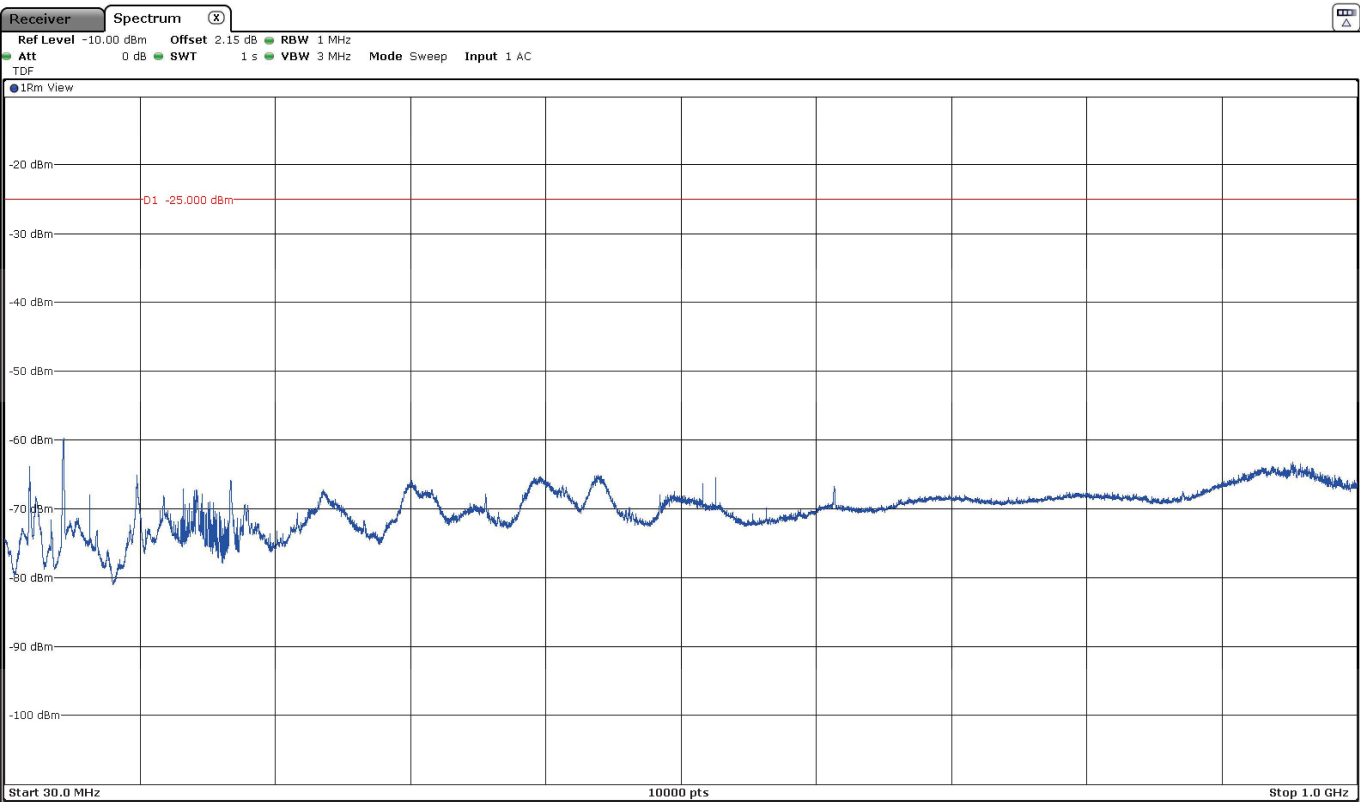
No spurious frequencies at less than 20 dB below the limit.

|                              |                                                                                                             |
|------------------------------|-------------------------------------------------------------------------------------------------------------|
| Measurement Uncertainty (dB) | <±4.99 for $f < 1$ GHz<br><±4.98 for $f \geq 1$ GHz up to 17 GHz<br><±5.08 for $f \geq 17$ GHz up to 26 GHz |
|------------------------------|-------------------------------------------------------------------------------------------------------------|

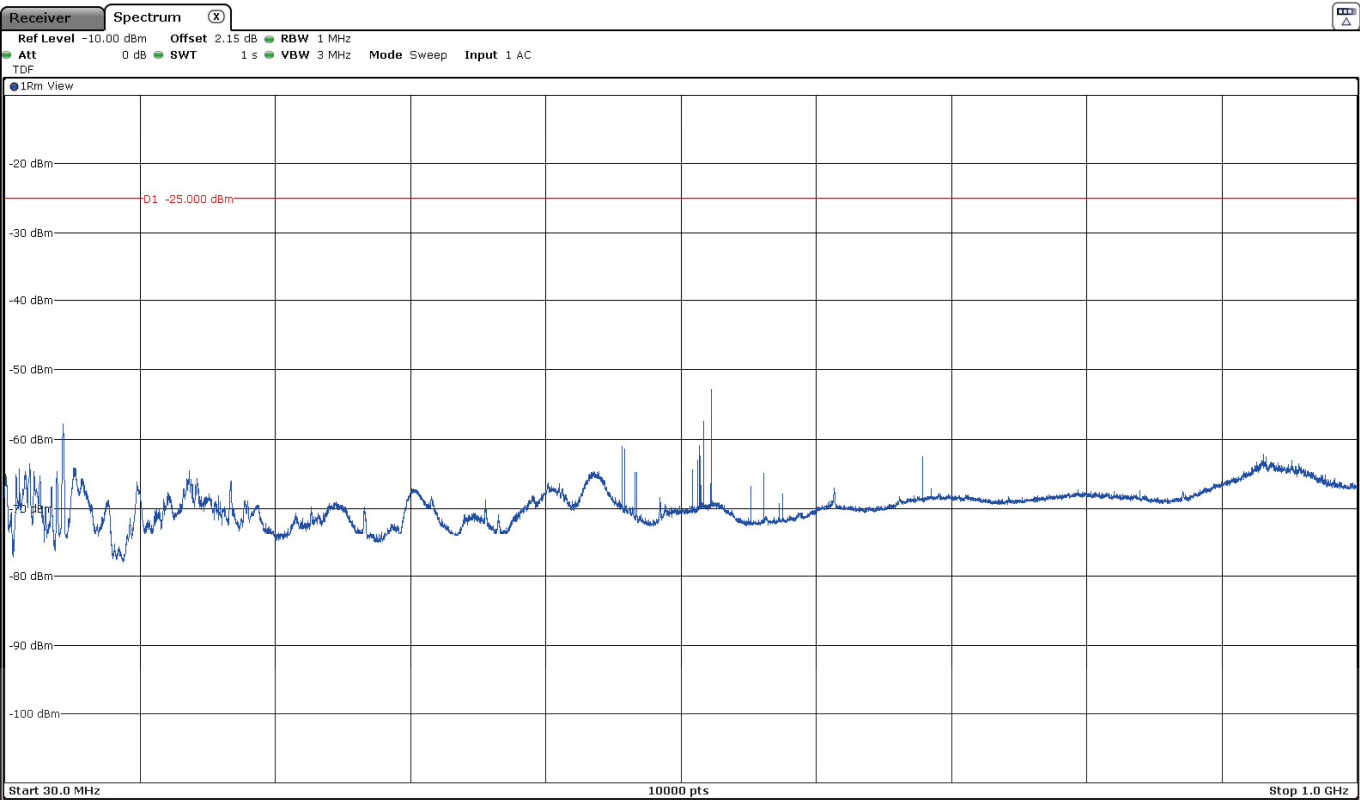
Verdict: PASS

FREQUENCY RANGE 30 MHz - 1 GHz (worst case):

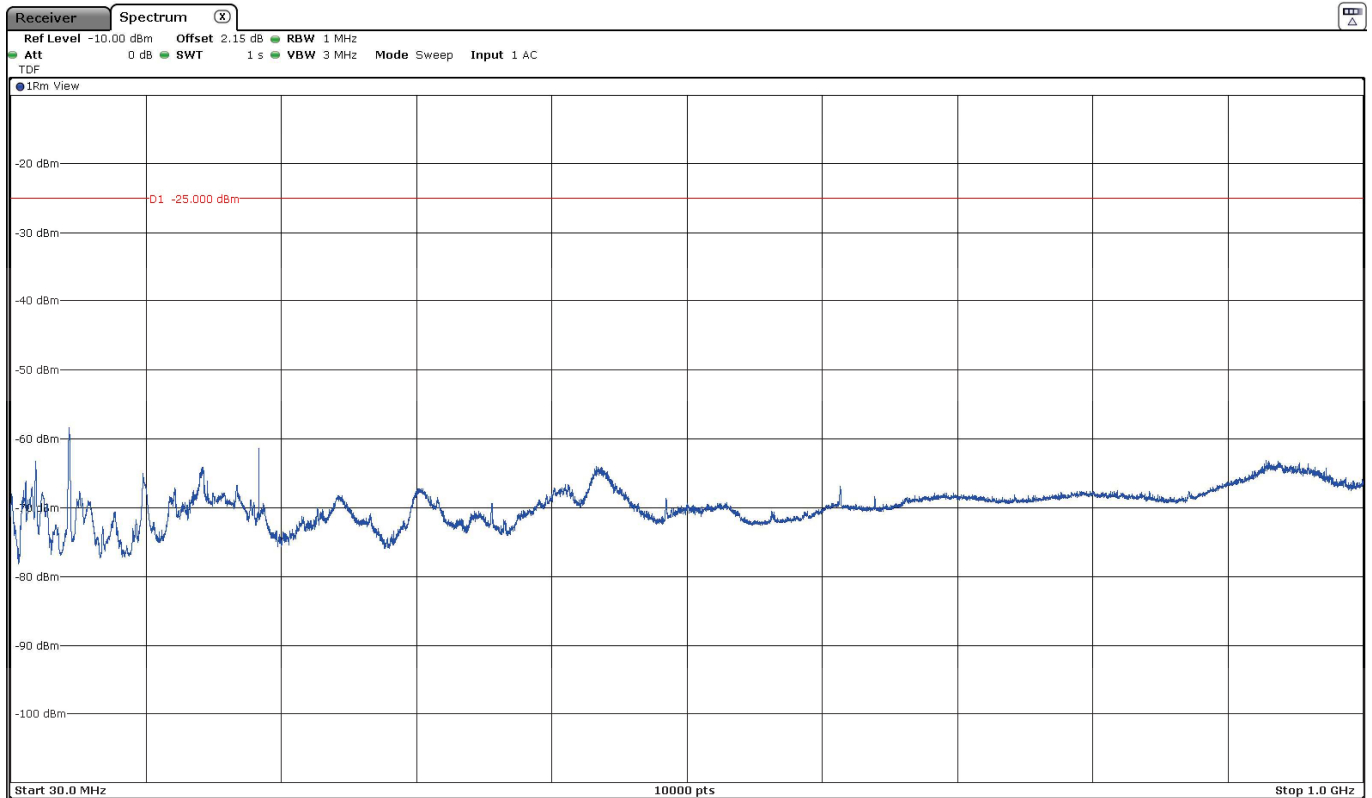
- Low Channel:



- Middle Channel:

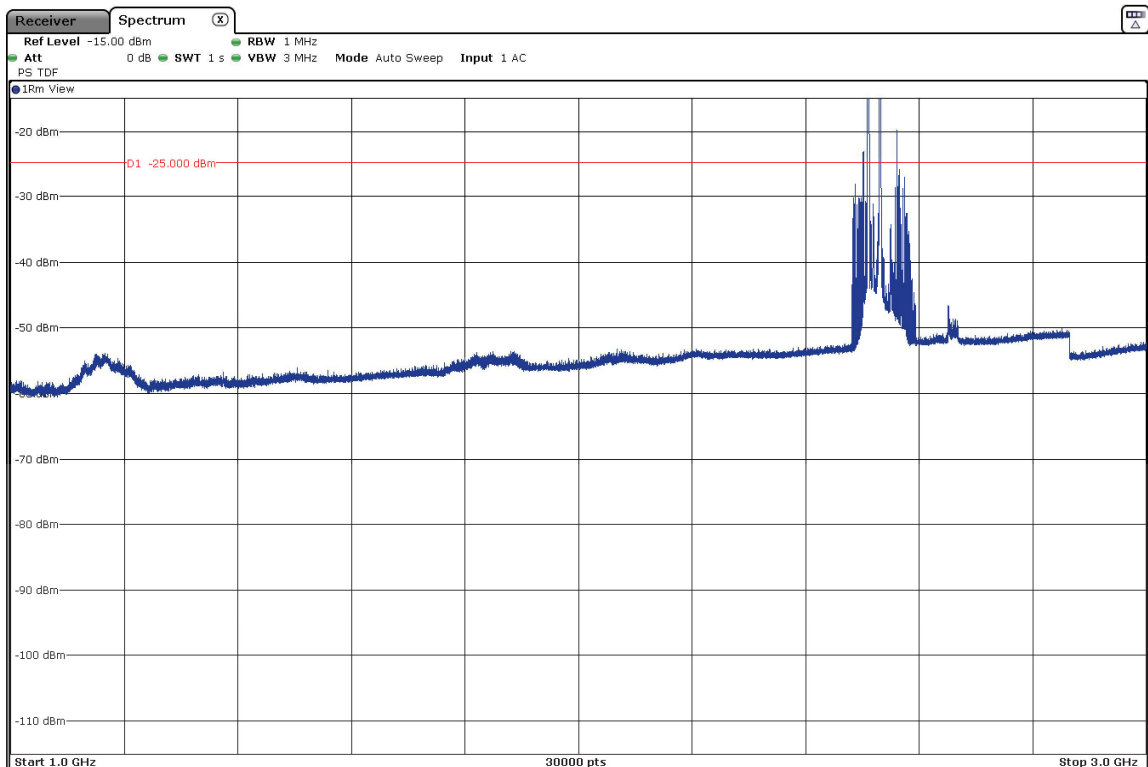


- High Channel:



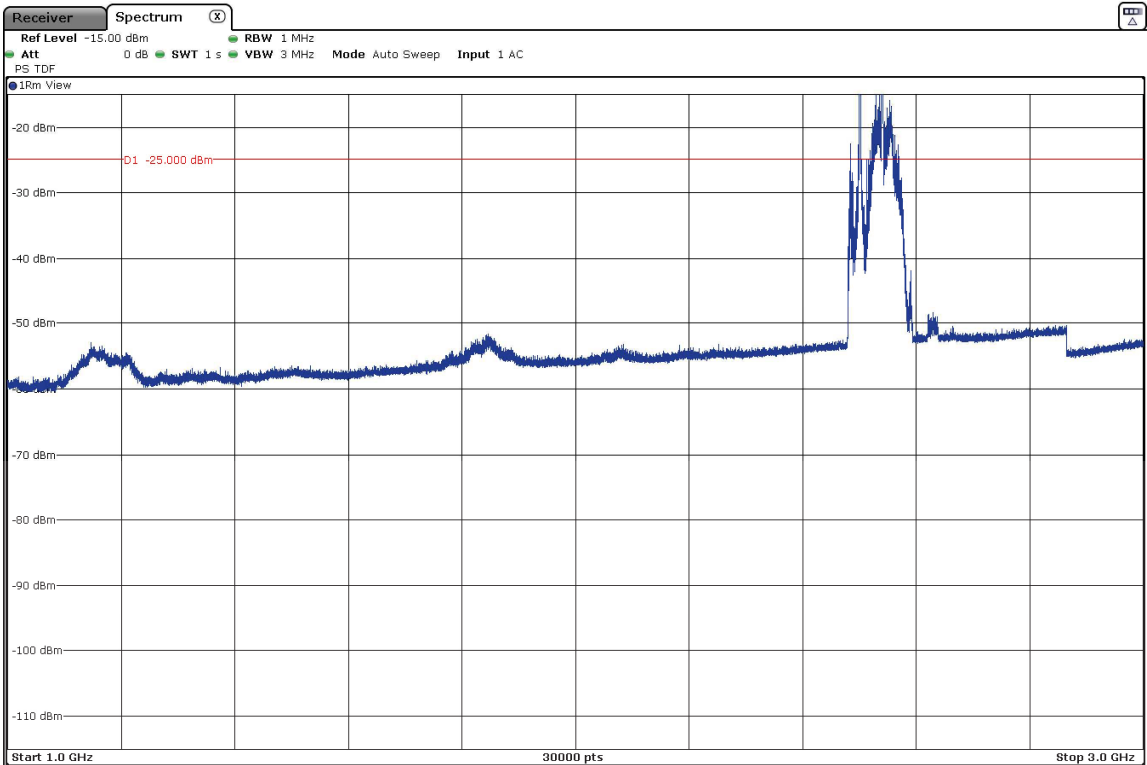
**FREQUENCY RANGE 1 - 3 GHz (worst case):**

- Low Channel:



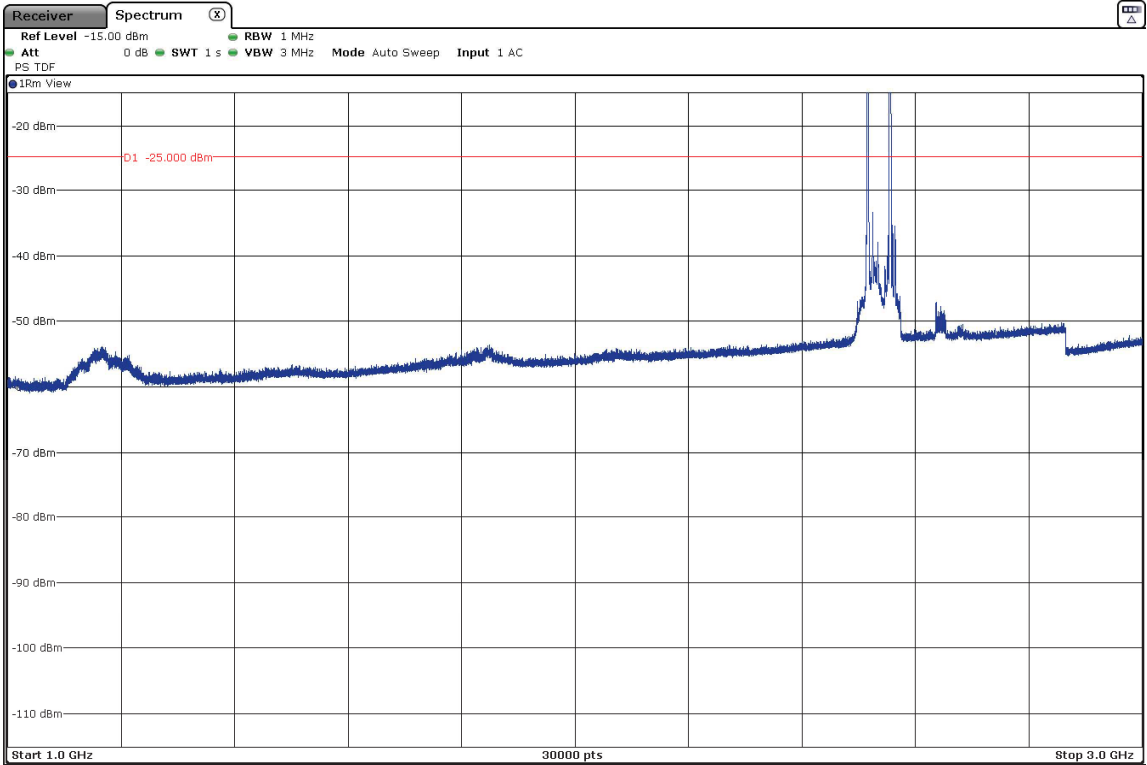
The peaks above the limit are the carrier frequencies.

- Middle Channel:



The peaks above the limit are the carrier frequencies.

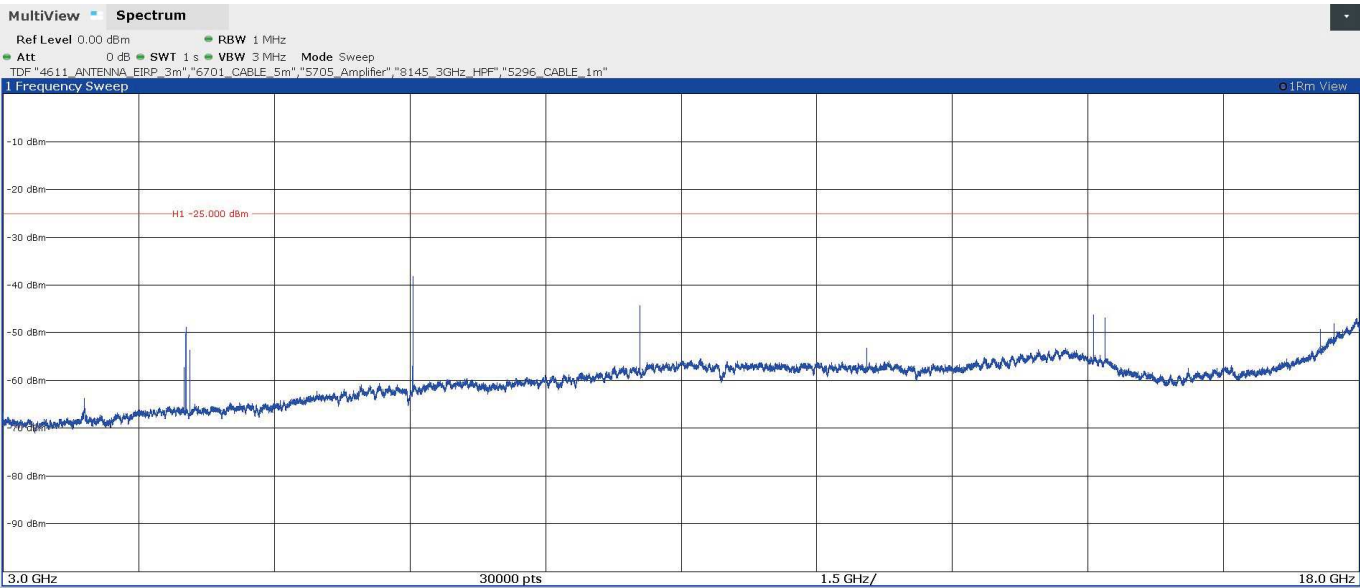
- High Channel:



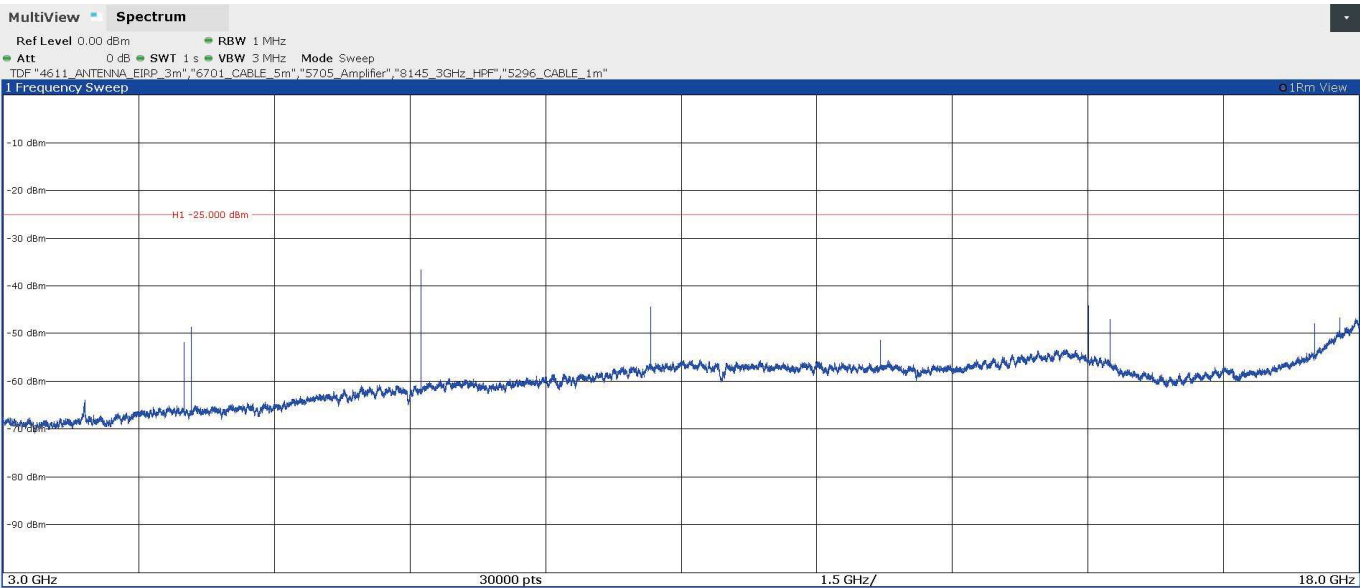
The peaks above the limit are the carriers frequencies.

FREQUENCY RANGE 3 - 18 GHz (worst case):

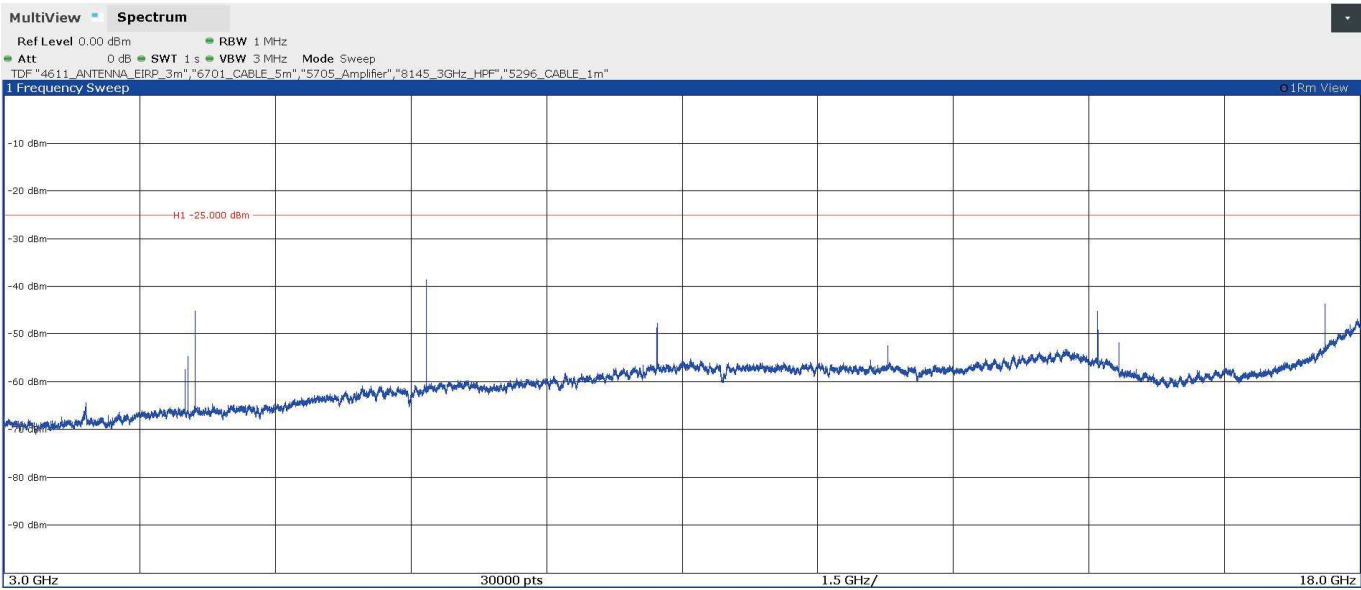
- Low Channel:



- Middle Channel:

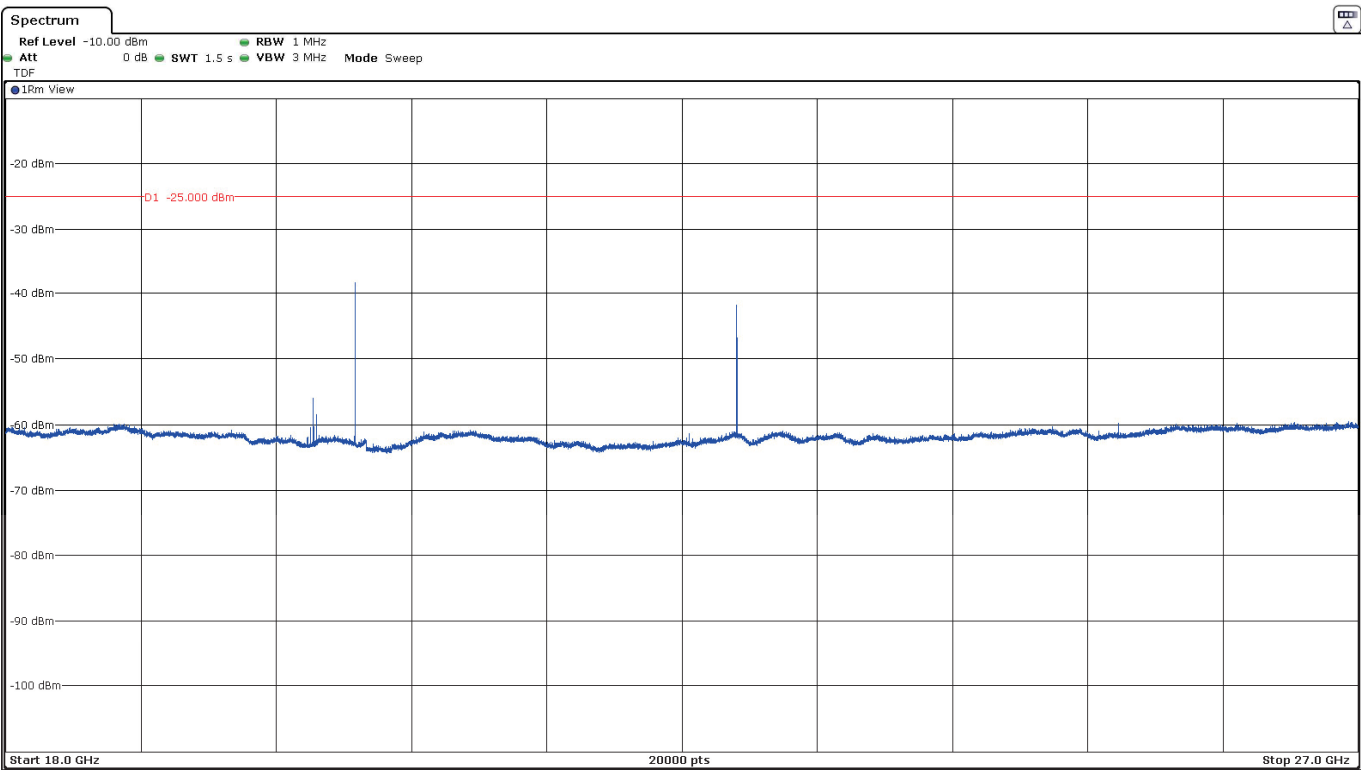


- High Channel:

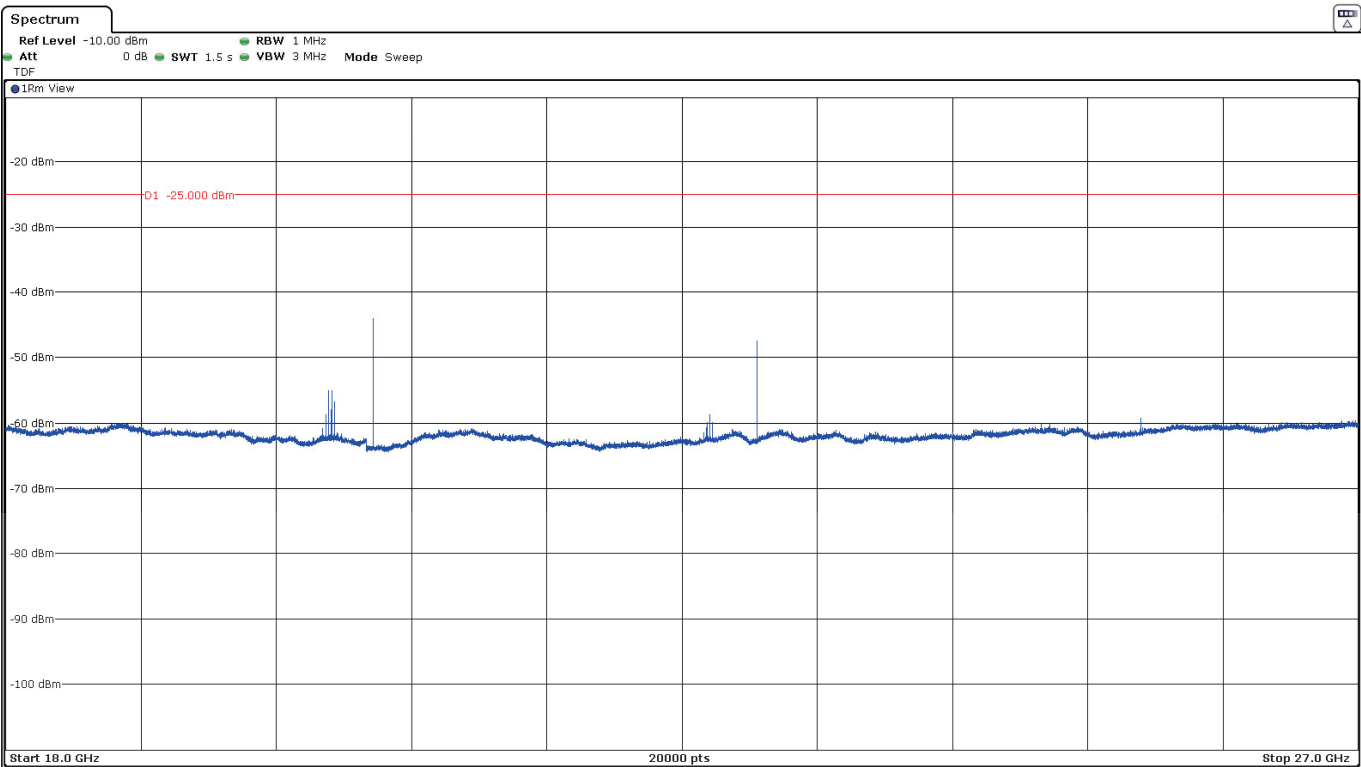


FREQUENCY RANGE 18 - 27 GHz (worst case):

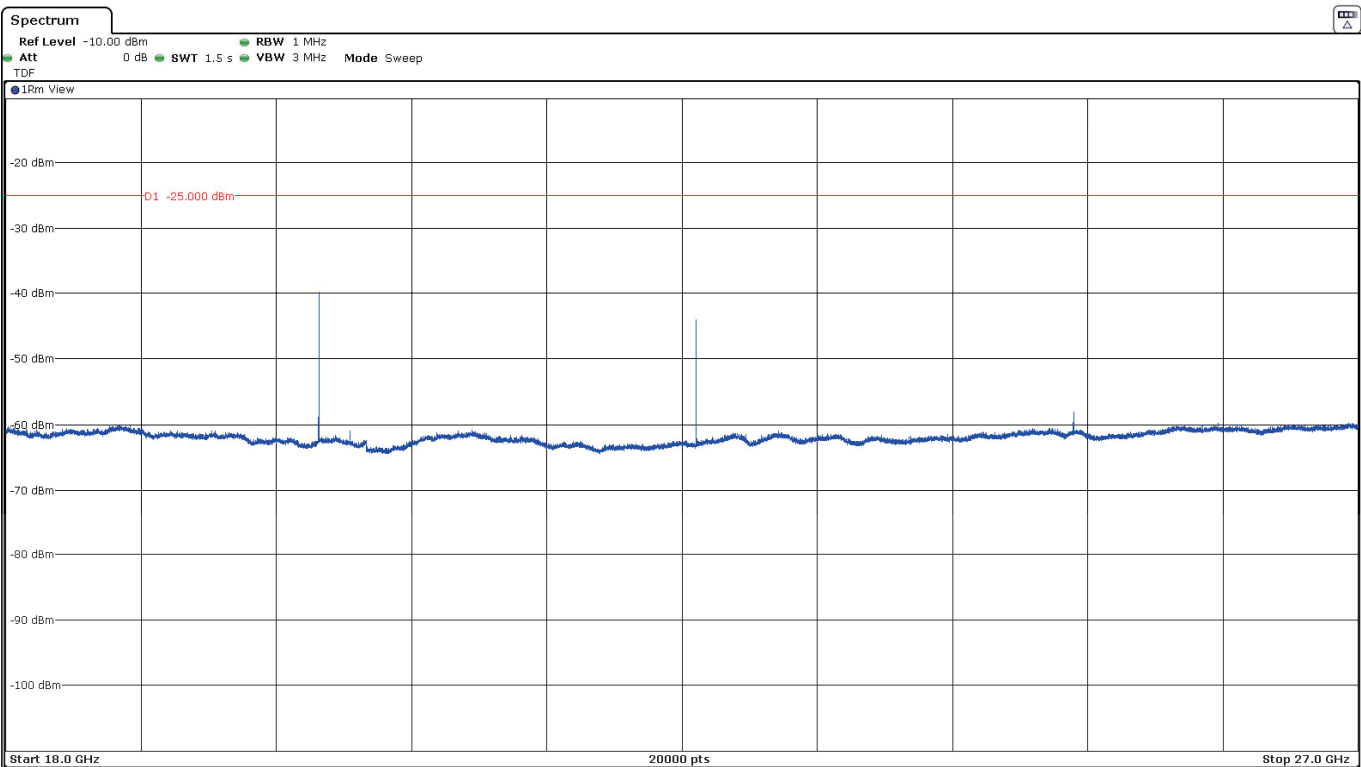
- Low Channel:



- Middle Channel:

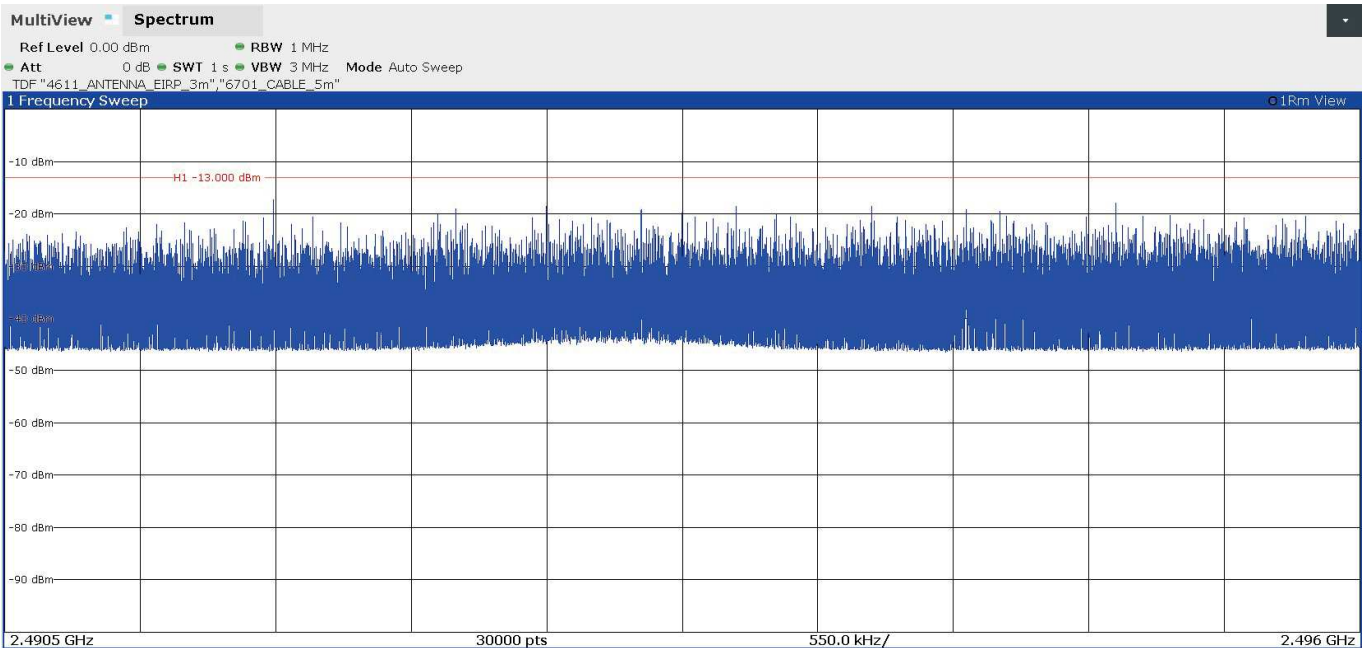


- High Channel:

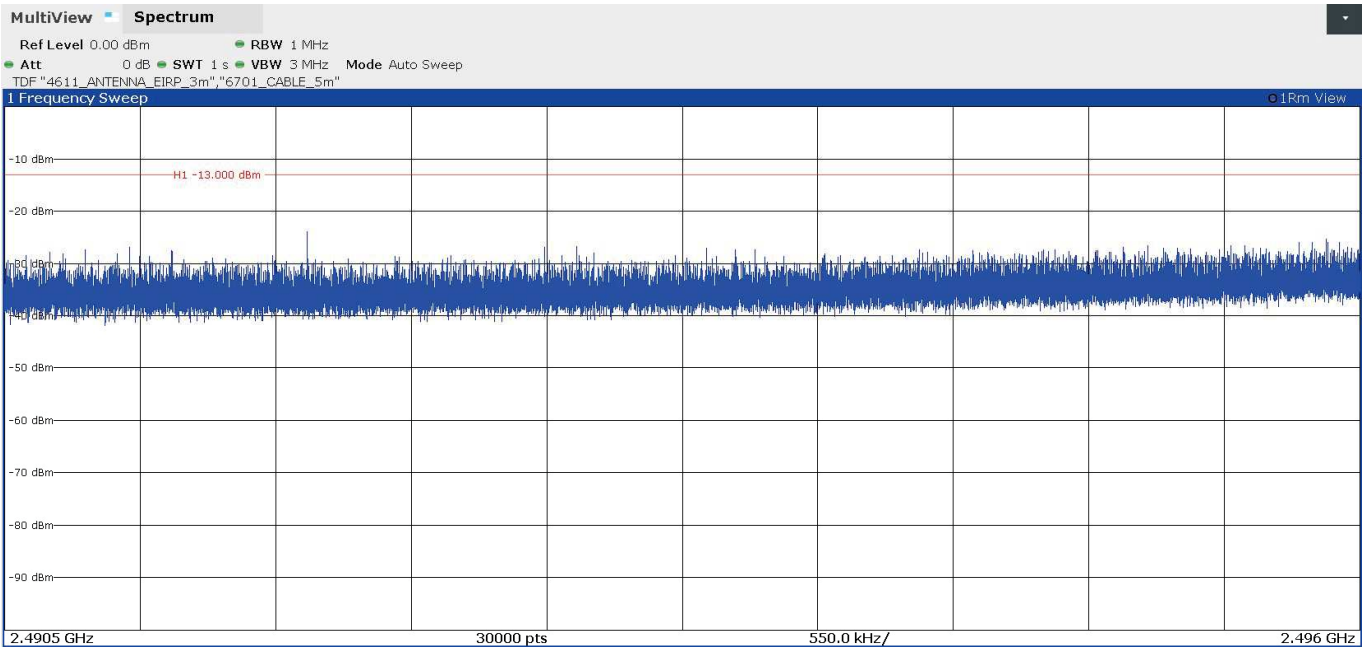


FREQUENCY RANGE 2490.5 - 2496 MHz (worst case):

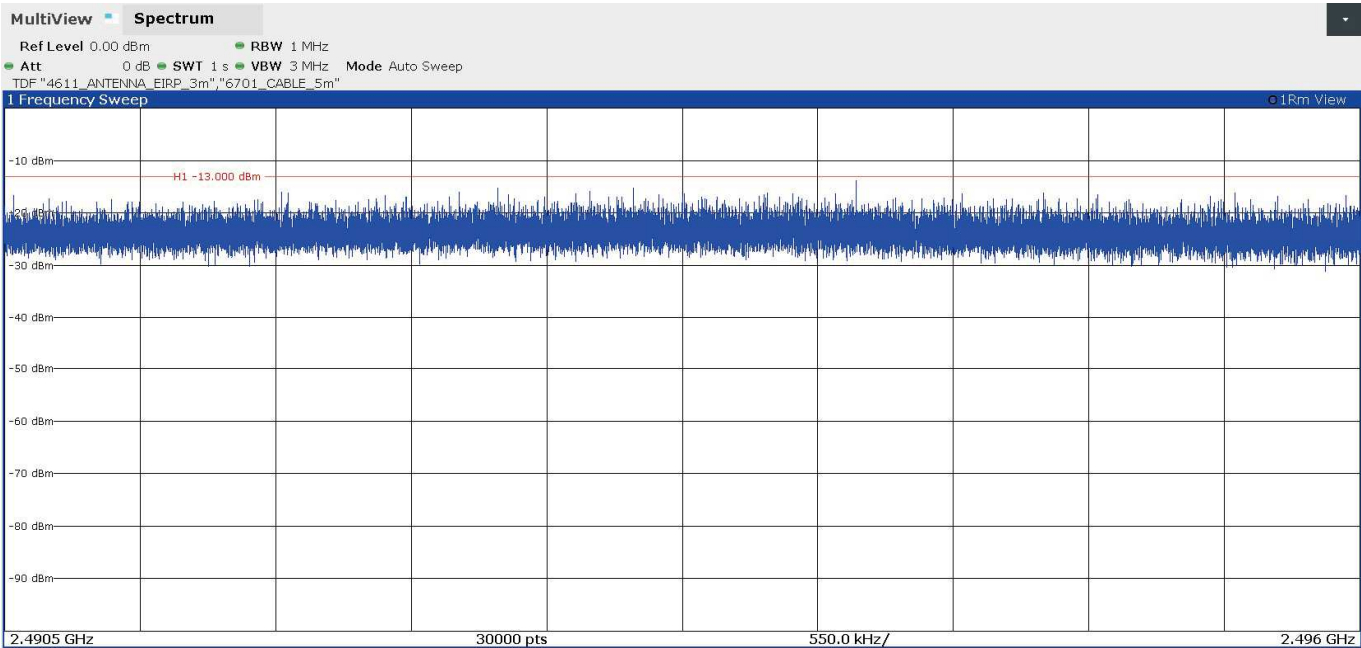
- Low Channel:



- Middle Channel:



- High Channel:



### **LTE Band CA 41C + LTE Band 41:**

QPSK and QAM modulations: A preliminary scan determined the worst case:

- 1) LTE CA\_41C: For the PCC: 16QAM modulation, BW=20 MHz, RB=1, Offset=0.  
For the SCC1: 16QAM modulation, BW=5 MHz, RB=1, Offset=0.
- 2) LTE Band 41: QPSK modulation, BW=20 MHz, RB=1, Offset=0.

The following results are the ones of the worst case.

#### **- LOW CHANNEL:**

##### **Frequency range 30 MHz - 1 GHz:**

Spurious frequencies at less than 20 dB below the limit:

| Spurious frequency (MHz) | E.I.R.P (dBm) | Polarization | Detector | Measurement Uncertainty (dB) |
|--------------------------|---------------|--------------|----------|------------------------------|
| 767.443                  | -44.87        | V            | Peak     | <±4.99                       |

##### **Frequency range 1 - 27 GHz:**

Spurious frequencies at less than 20 dB below the limit:

| Spurious frequency (GHz) | E.I.R.P (dBm) | Polarization | Detector | Measurement Uncertainty (dB) |
|--------------------------|---------------|--------------|----------|------------------------------|
| 7.55175                  | -44.38        | V            | RMS      | <±4.98                       |

##### **Frequency range 2490.5 - 2496 MHz:**

No spurious frequencies at less than 20 dB below the limit.

#### **- MIDDLE CHANNEL:**

##### **Frequency range 30 MHz - 1 GHz:**

No spurious frequencies at less than 20 dB below the limit.

##### **Frequency range 1 - 27 GHz:**

Spurious frequencies at less than 20 dB below the limit:

| Spurious frequency (GHz) | E.I.R.P (dBm) | Polarization | Detector | Measurement Uncertainty (dB) |
|--------------------------|---------------|--------------|----------|------------------------------|
| 2.4783                   | -38.68        | V            | RMS      | <±4.98                       |

##### **Frequency range 2490.5 - 2496 MHz:**

No spurious frequencies at less than 20 dB below the limit.

**- HIGH CHANNEL:**

**Frequency range 30 MHz - 1 GHz:**

No spurious frequencies at less than 20 dB below the limit.

**Frequency range 1 - 27 GHz:**

Spurious frequencies at less than 20 dB below the limit:

| Spurious frequency (GHz) | E.I.R.P (dBm) | Polarization | Detector | Measurement Uncertainty (dB) |
|--------------------------|---------------|--------------|----------|------------------------------|
| 2.7031                   | -42.48        | V            | RMS      | <±4.98                       |
| 5.27825                  | -44.04        | V            | RMS      | <±4.98                       |
| 7.91775                  | -40.49        | V            | RMS      | <±4.98                       |

**Frequency range 2490.5 - 2496 MHz:**

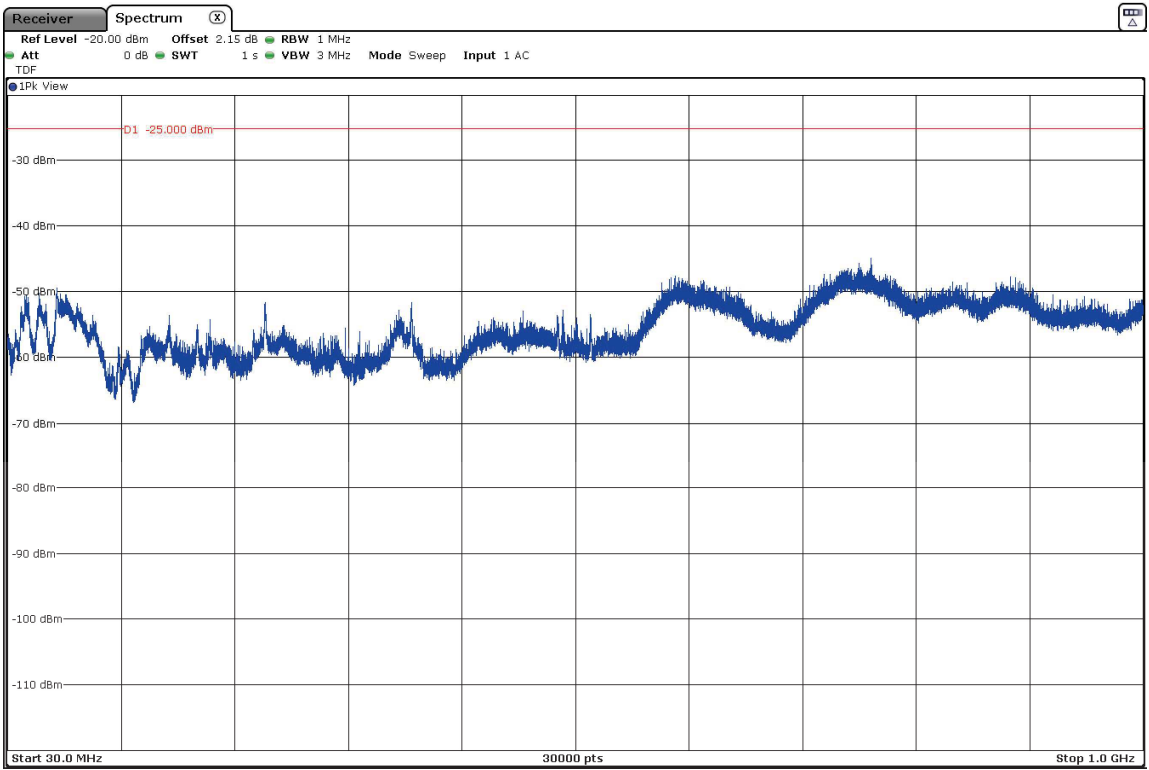
No spurious frequencies at less than 20 dB below the limit.

|                              |                                                                                                             |
|------------------------------|-------------------------------------------------------------------------------------------------------------|
| Measurement Uncertainty (dB) | <±4.99 for $f < 1$ GHz<br><±4.98 for $f \geq 1$ GHz up to 17 GHz<br><±5.08 for $f \geq 17$ GHz up to 26 GHz |
|------------------------------|-------------------------------------------------------------------------------------------------------------|

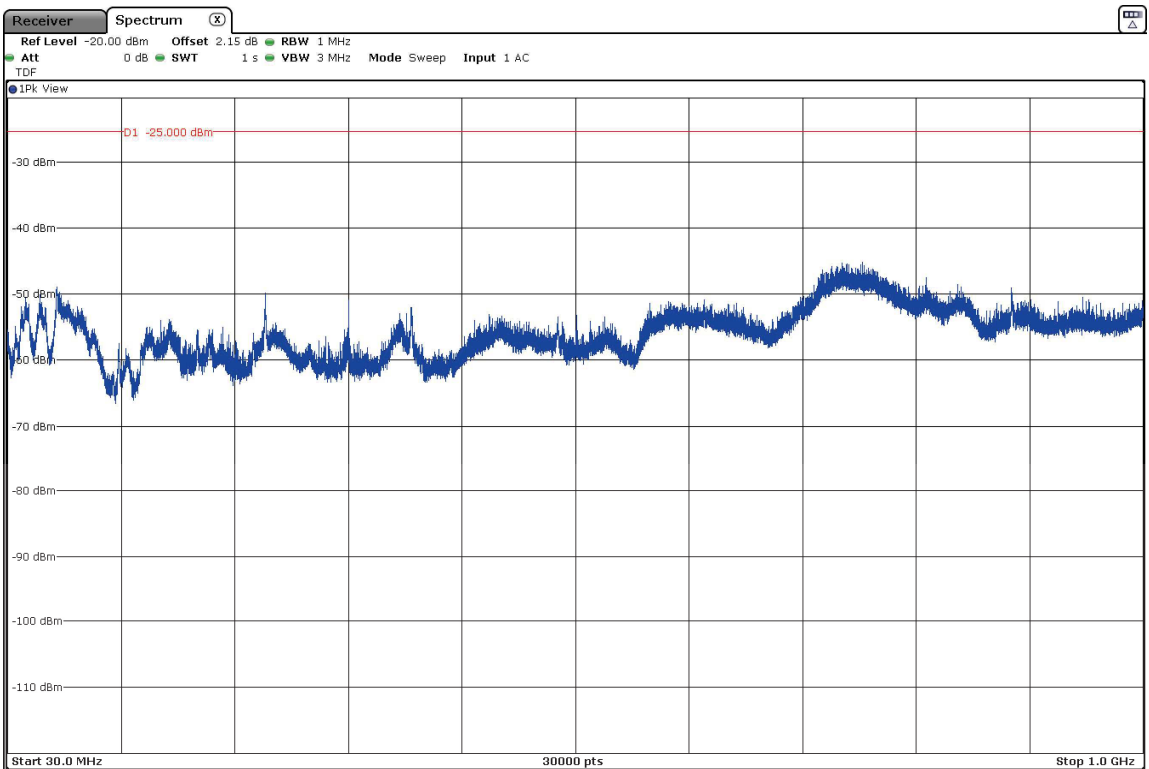
Verdict: PASS

FREQUENCY RANGE 30 MHz - 1 GHz (worst case):

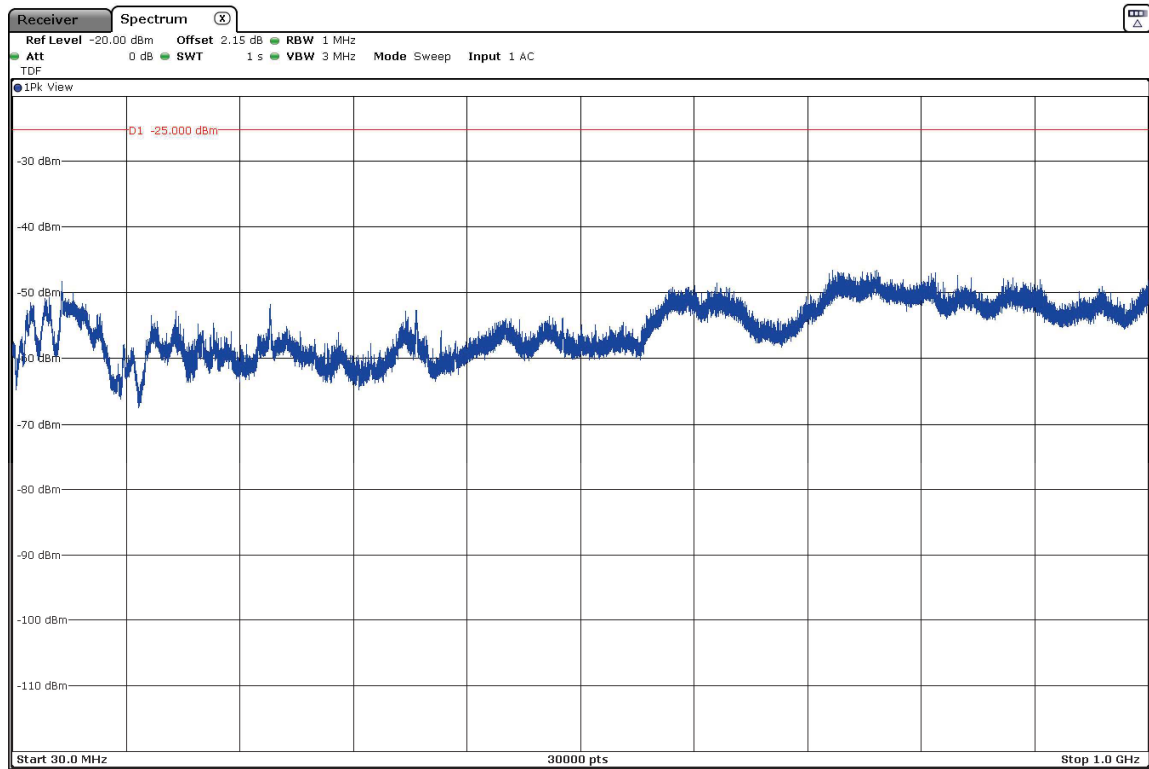
- Low Channel:



- Middle Channel:

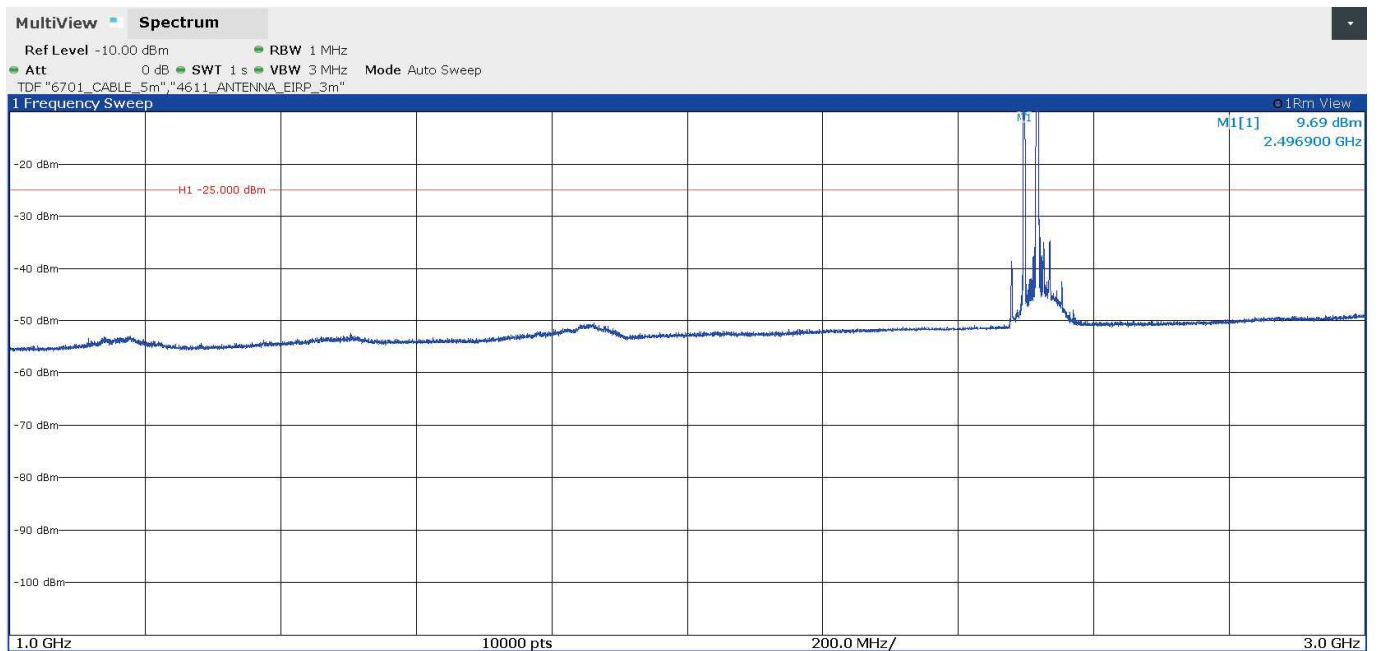


- High Channel:

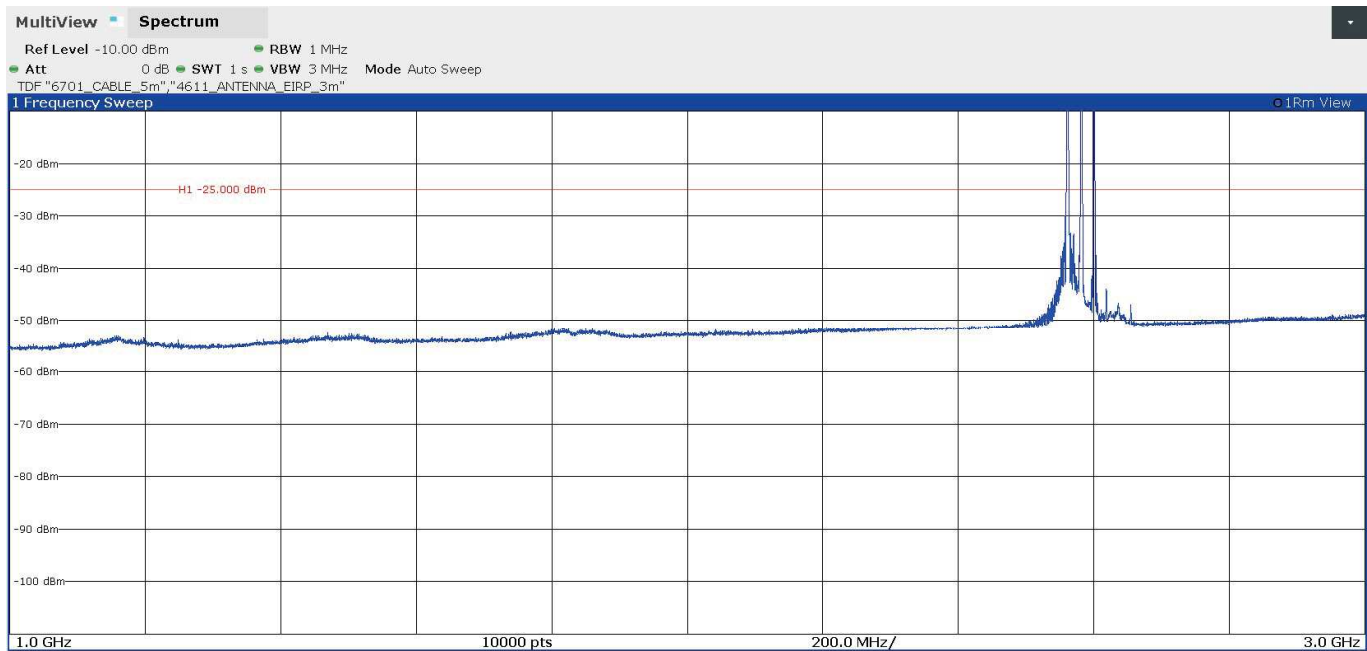


**FREQUENCY RANGE 1 - 3 GHz (worst case):**

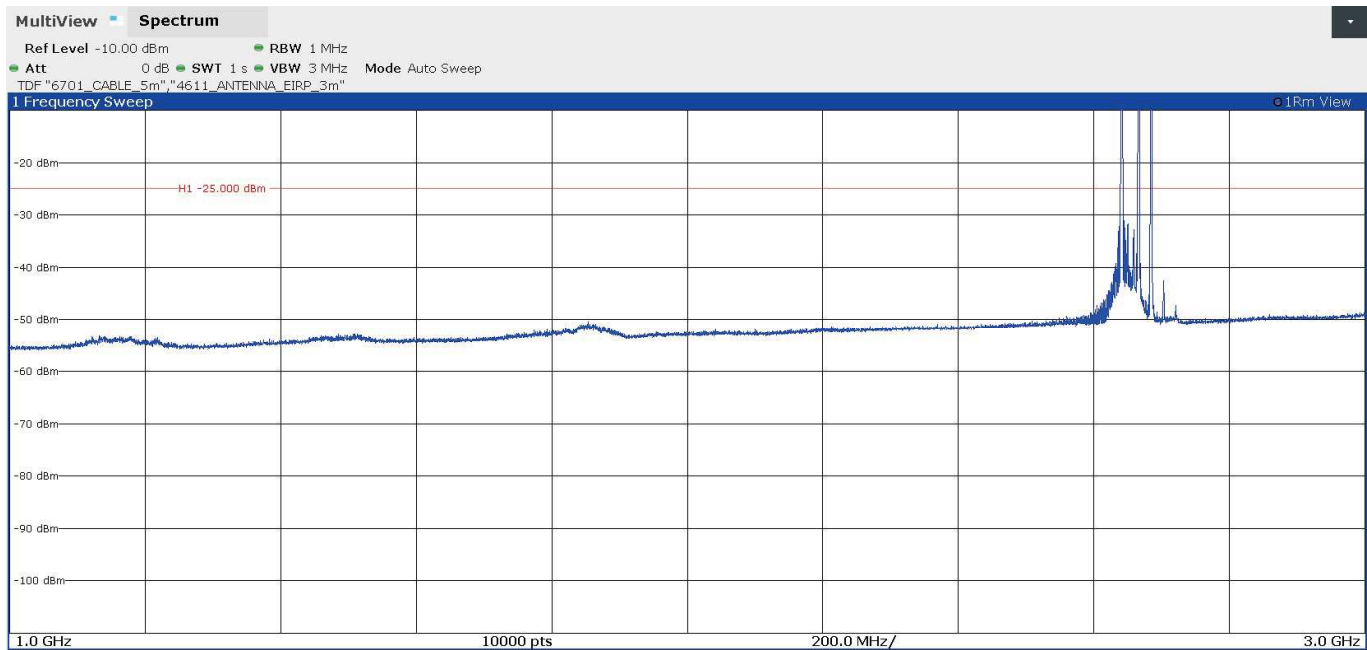
- Low Channel:



- Middle Channel:

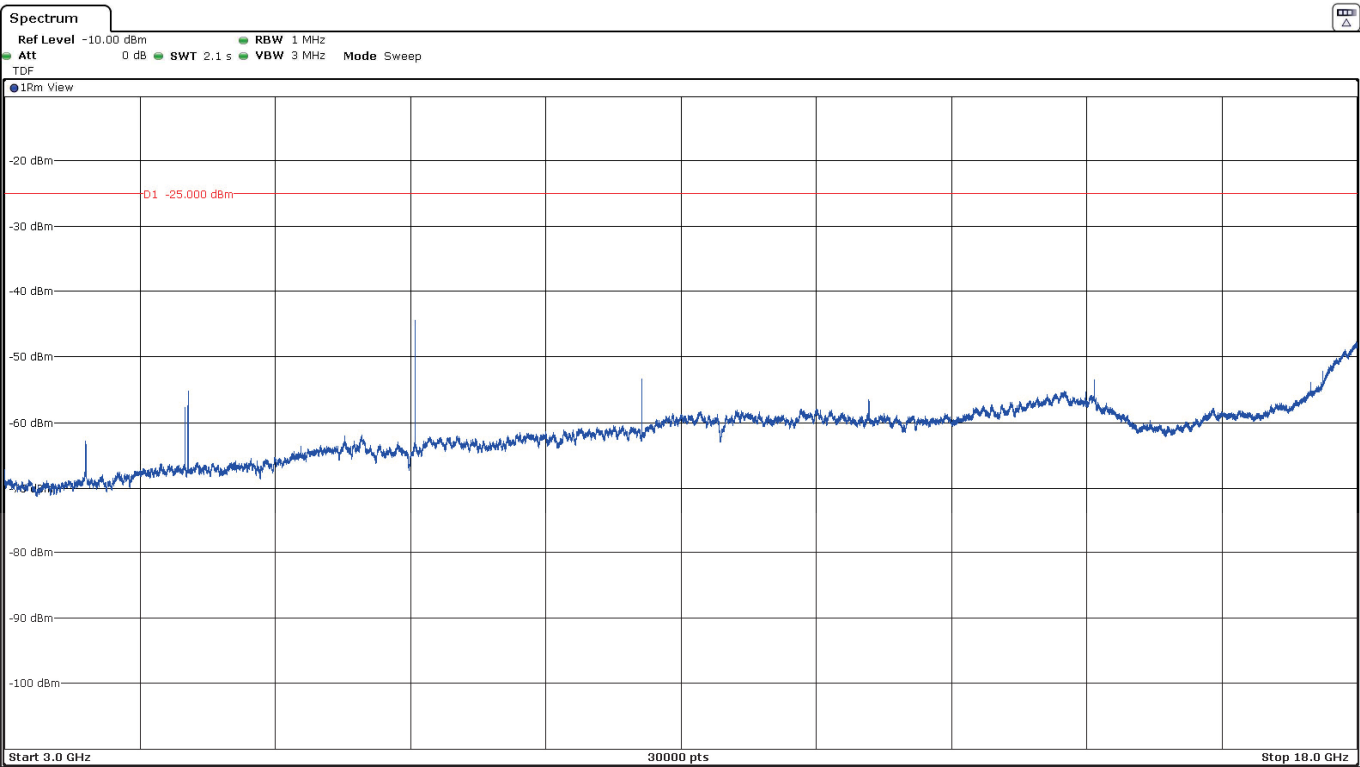


- High Channel:

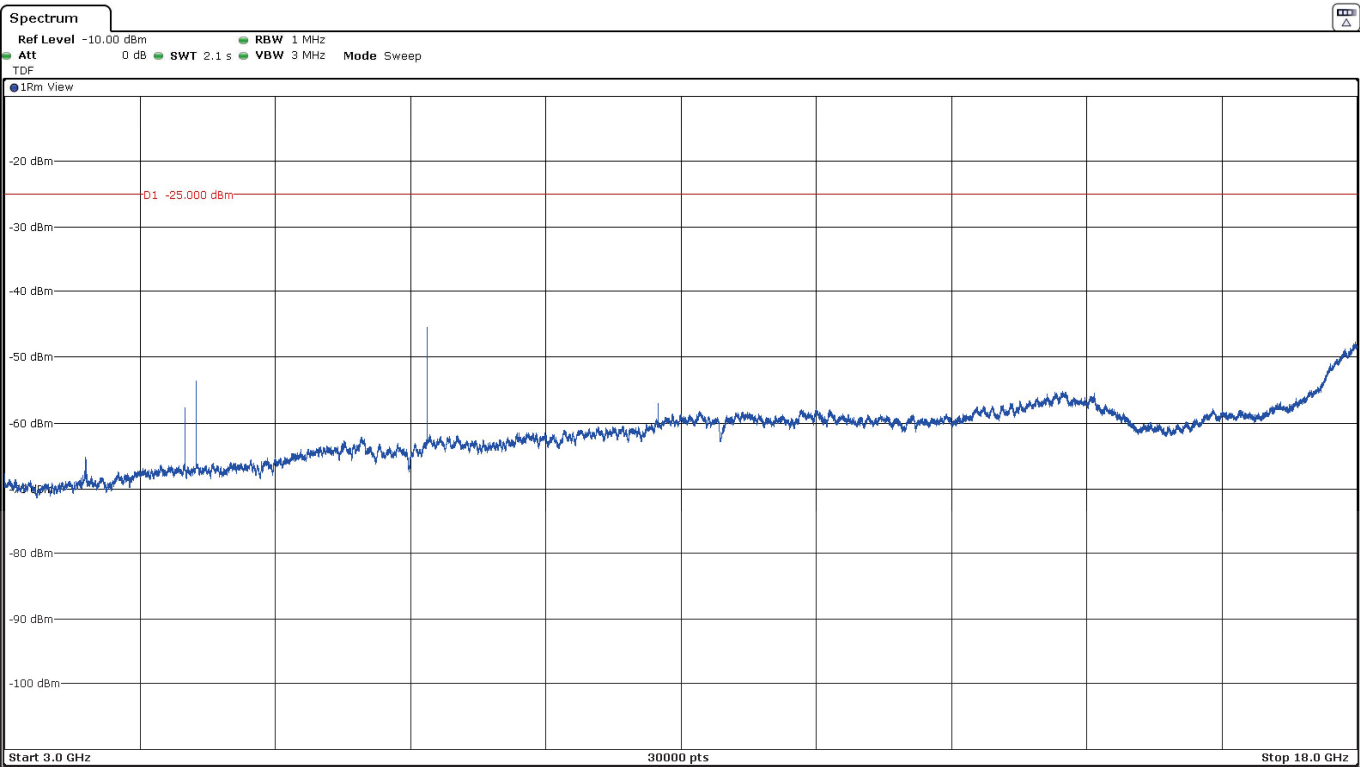


FREQUENCY RANGE 3 - 18 GHz (worst case):

- Low Channel:



- Middle Channel:



- High Channel:

