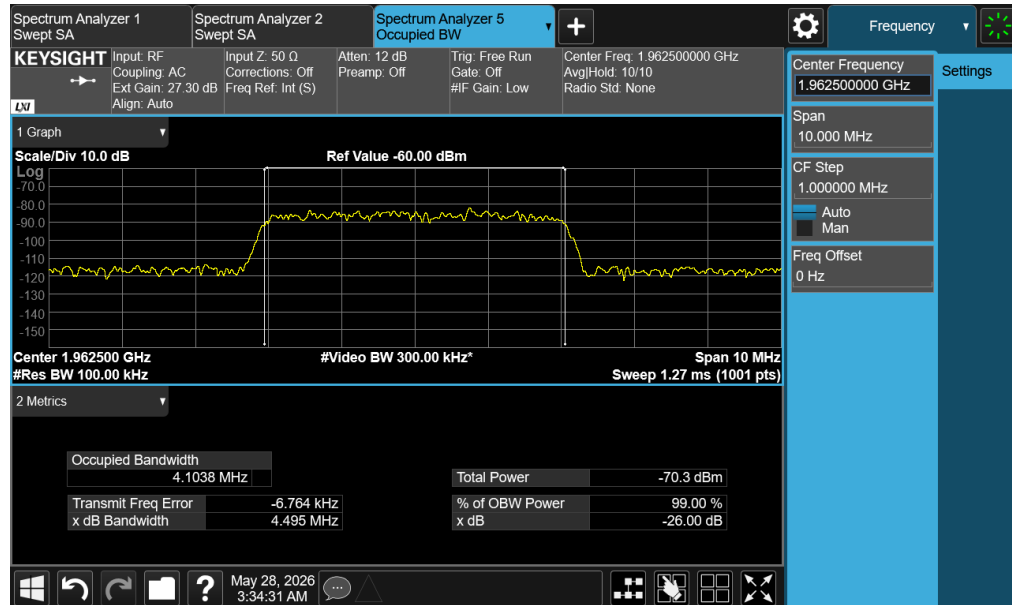


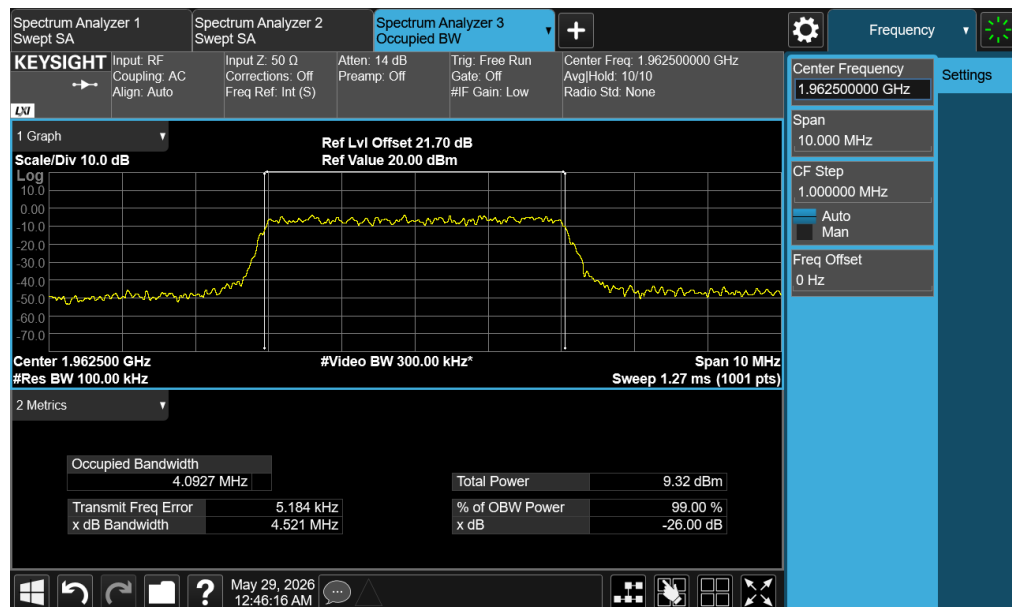
### Occupied bandwidth

#### DL\_Middle channel\_4.1MHz AWGN signal type

#### Input



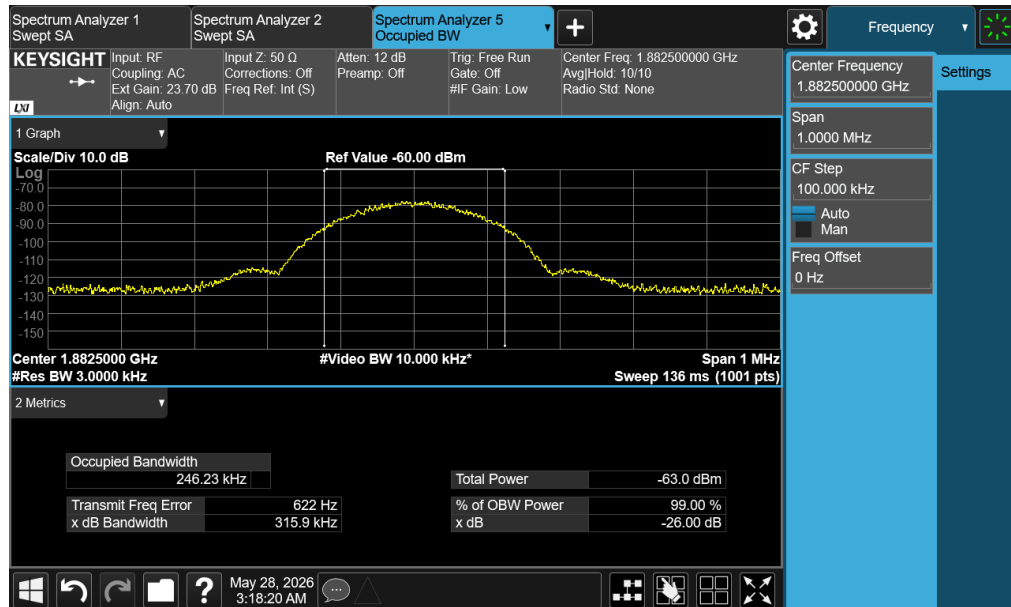
#### Output



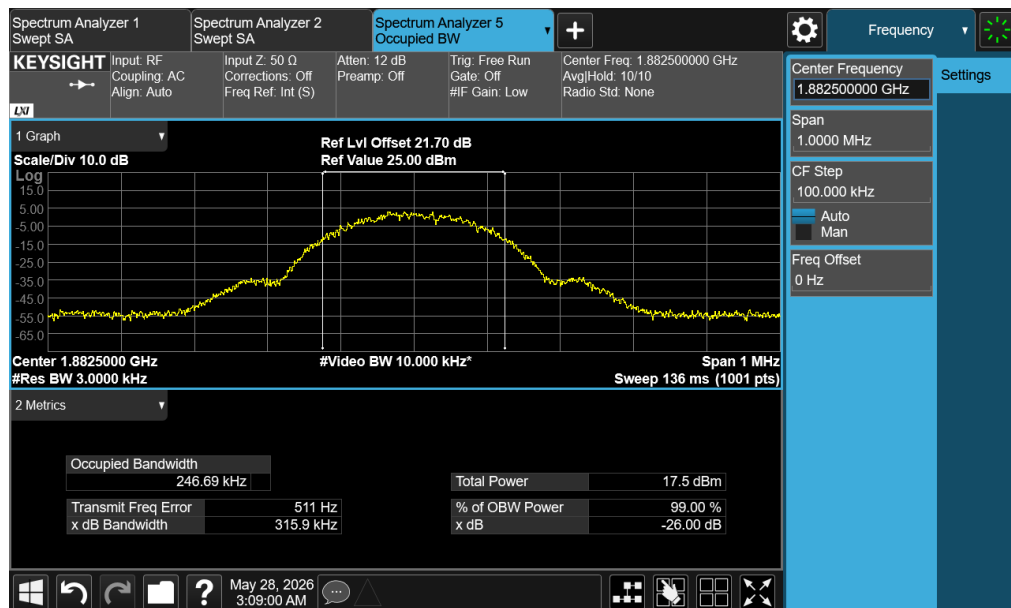
### Occupied bandwidth

#### UL\_Middle channel\_GSM signal type

#### Input



#### Output



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SGS-CSTC Standards Technical Services Co., Ltd.  
Guangzhou Branch Competency Laboratory

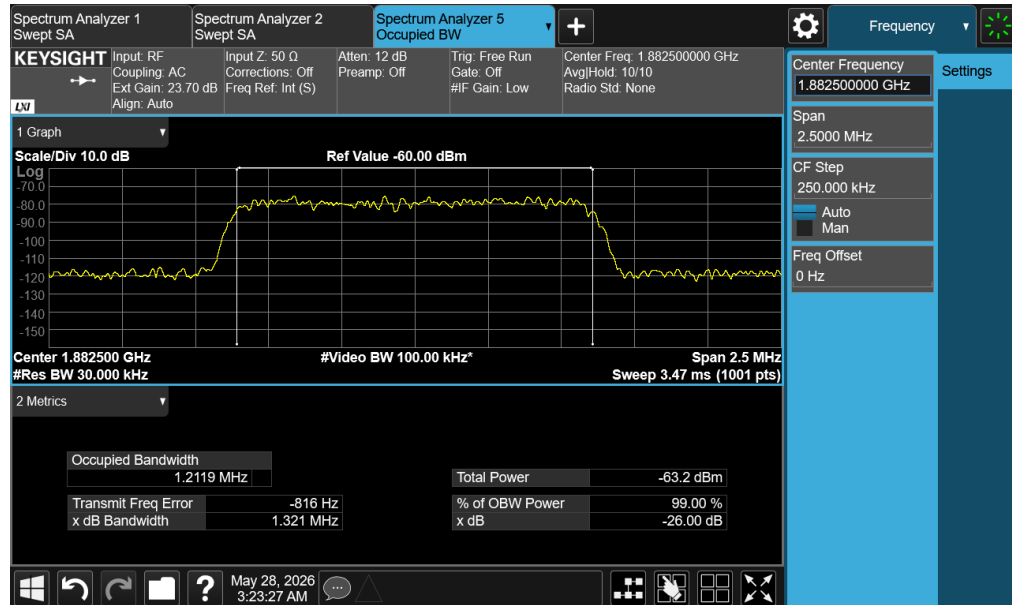
No.198, Kazhu Road, Science City, Economic & Technological Development Area, Guangzhou, Guangdong, China 510663  
中国·广东·广州高新技术产业开发区科学城科珠路198号 邮编: 510663

t (86-20) 82155555 www.sgsgroup.com.cn  
t (86-20) 82155555 sgs.china@sgs.com

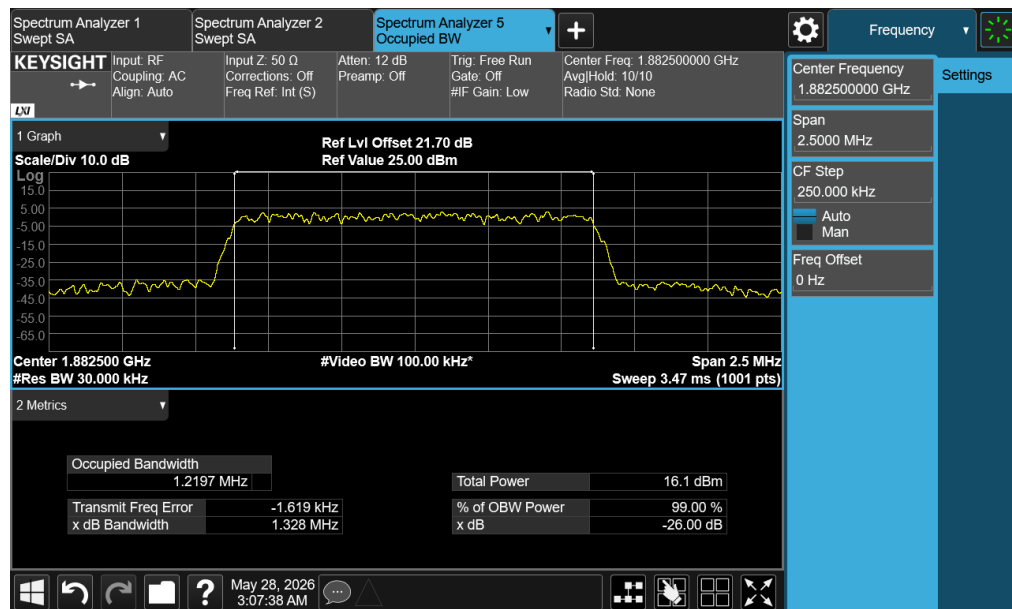
### Occupied bandwidth

#### UL\_Middle channel\_1.25MHz AWGN signal type

#### Input



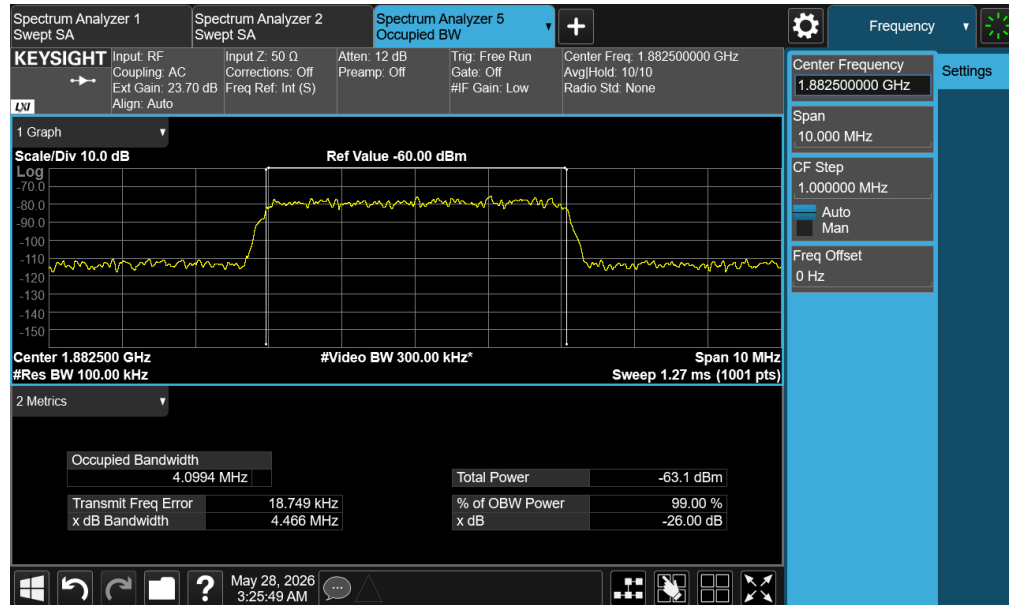
#### Output



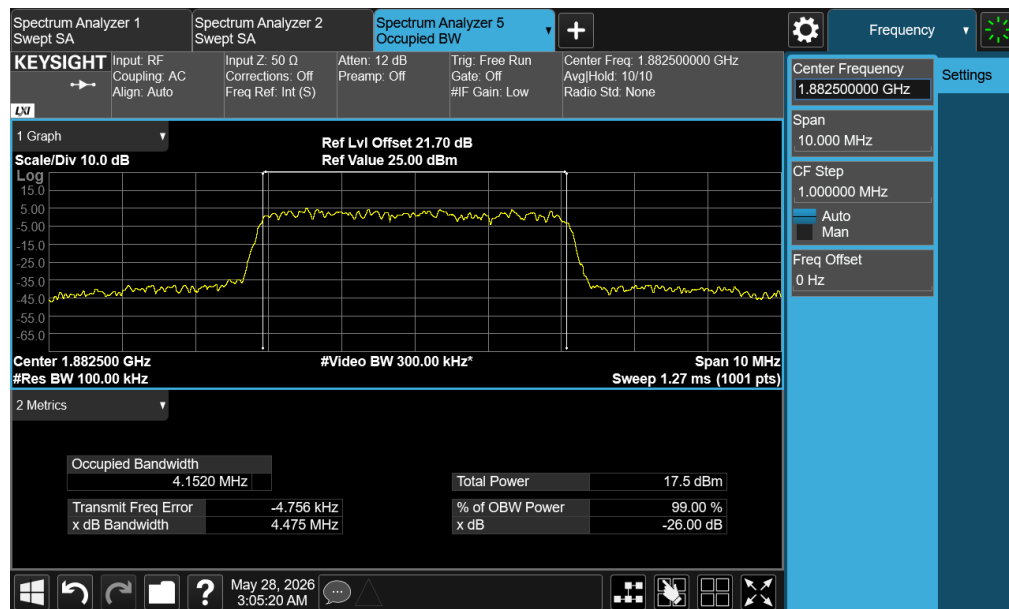
### Occupied bandwidth

#### UL\_Middle channel\_4.1MHz AWGN signal type

#### Input



#### Output



## 12 Oscillation detection

### 12.1 Oscillation detection

| Oscillation Detection |           |                     |           |                         |                   |       |                  |           |         |
|-----------------------|-----------|---------------------|-----------|-------------------------|-------------------|-------|------------------|-----------|---------|
| Test Path             | Test Port | Mitigation Time (s) | Limit (s) | Oscillation Level (dBm) | Number of Restart | Limit | Restart time (s) | Limit (s) | Verdict |
| DL                    | ANT       | 0.05                | ≤1        | -0.82                   | 0                 | ≤5    | /                | ≥60       | PASS    |
| UL                    | ANT1      | 0.03                | ≤0.3      | -5.64                   | 0                 | ≤5    | /                | ≥60       | PASS    |
|                       | ANT2      | 0.025               |           | -5.97                   | 0                 |       | /                |           | PASS    |
|                       | ANT3      | 0.03                |           | -4.09                   | 0                 |       | /                |           | PASS    |
|                       | ANT4      | 0.05                |           | -4.00                   | 0                 |       | /                |           | PASS    |
|                       | ANT5      | 0.035               |           | -5.05                   | 0                 |       | /                |           | PASS    |
|                       | ANT6      | 0.02                |           | -5.72                   | 0                 |       | /                |           | PASS    |

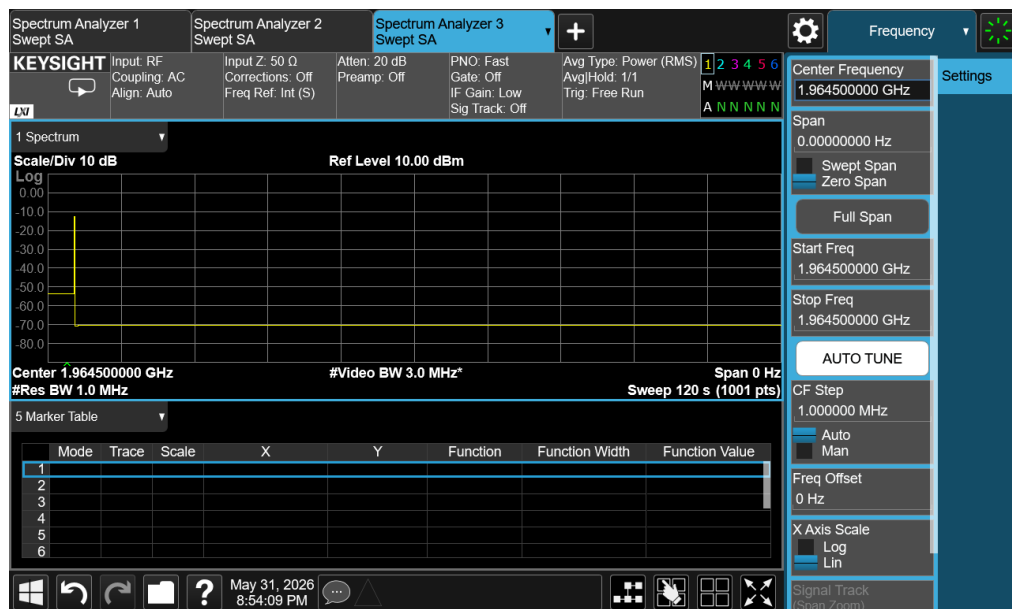
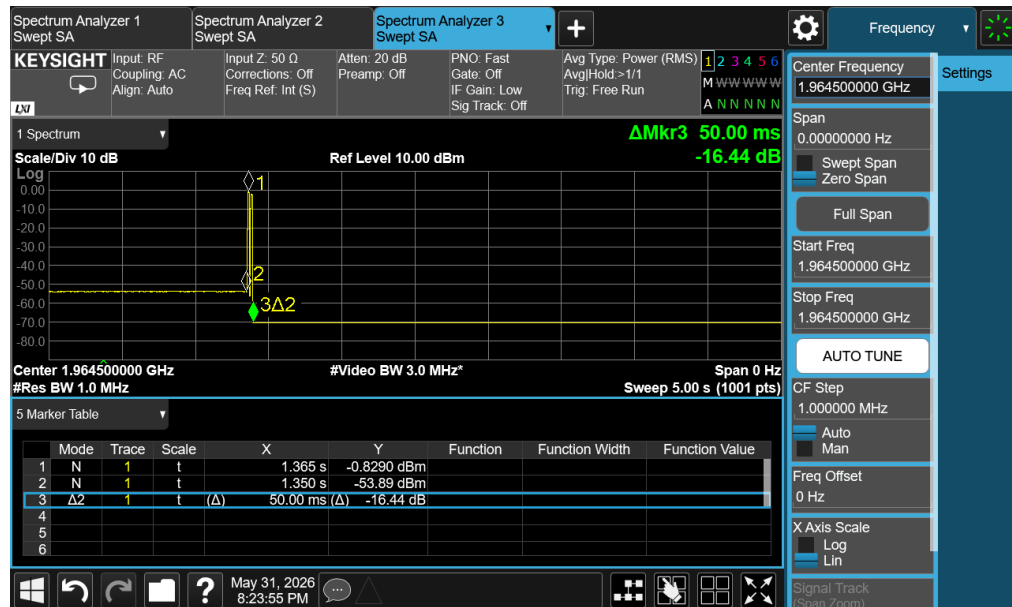
**Remark:**

The EUT will not restart after oscillation detection and mitigation. It can demonstrate compliance to the restart limit without restart time testing.



### Oscillation detection

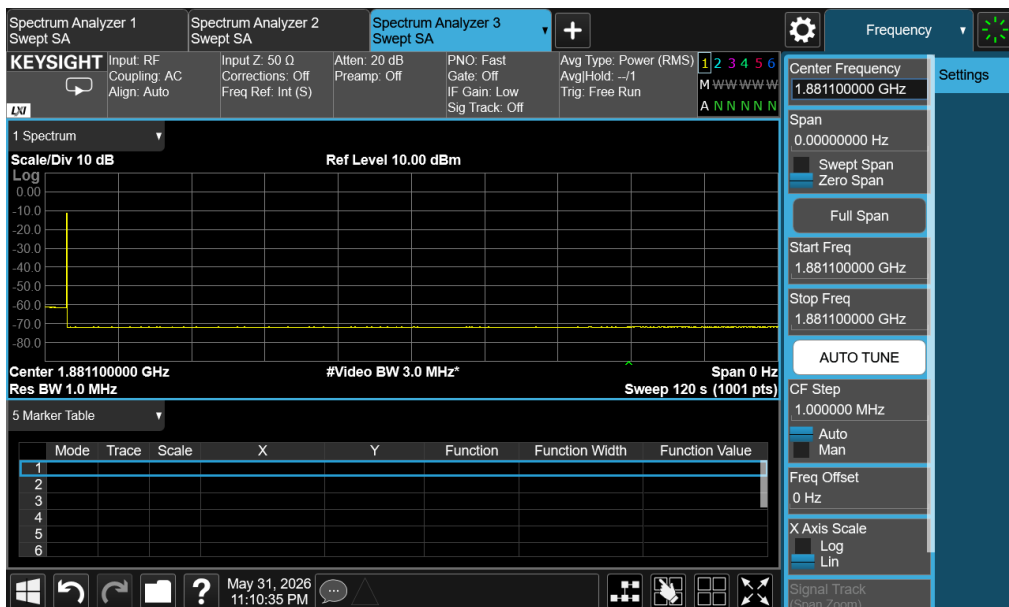
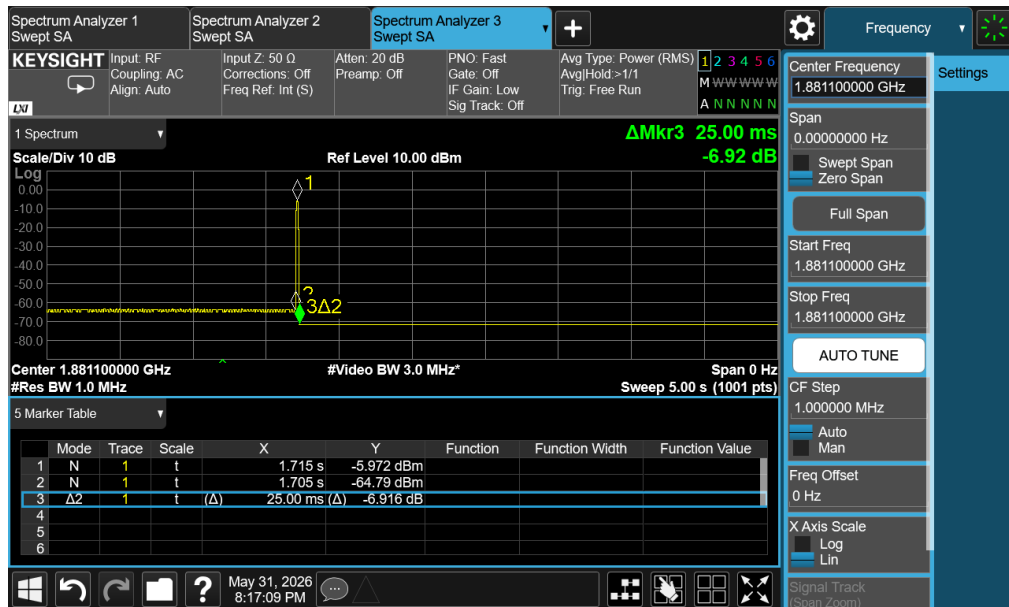
DL\_ANT





### Oscillation detection

UL\_ANT2

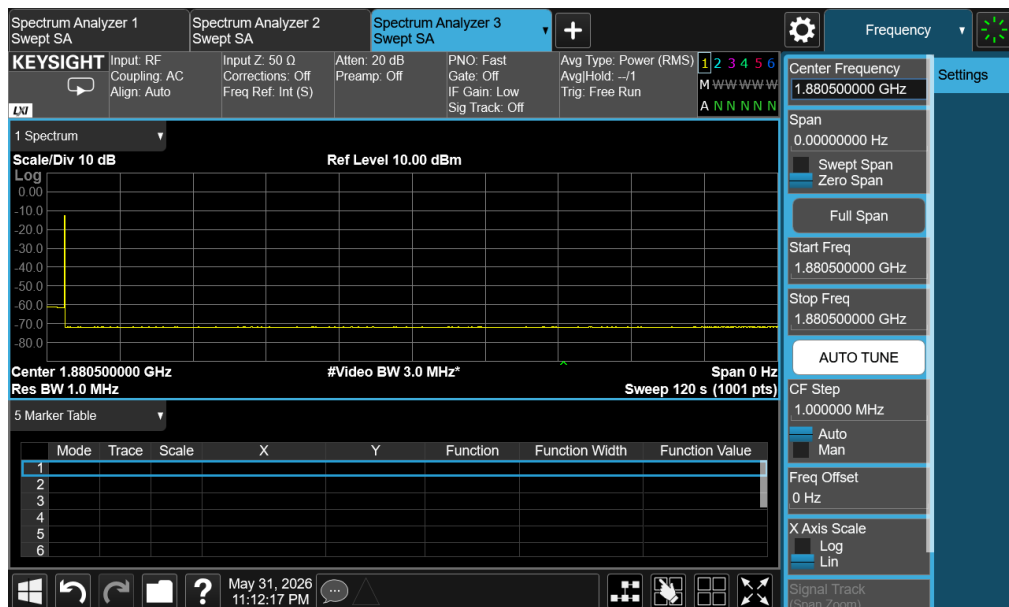
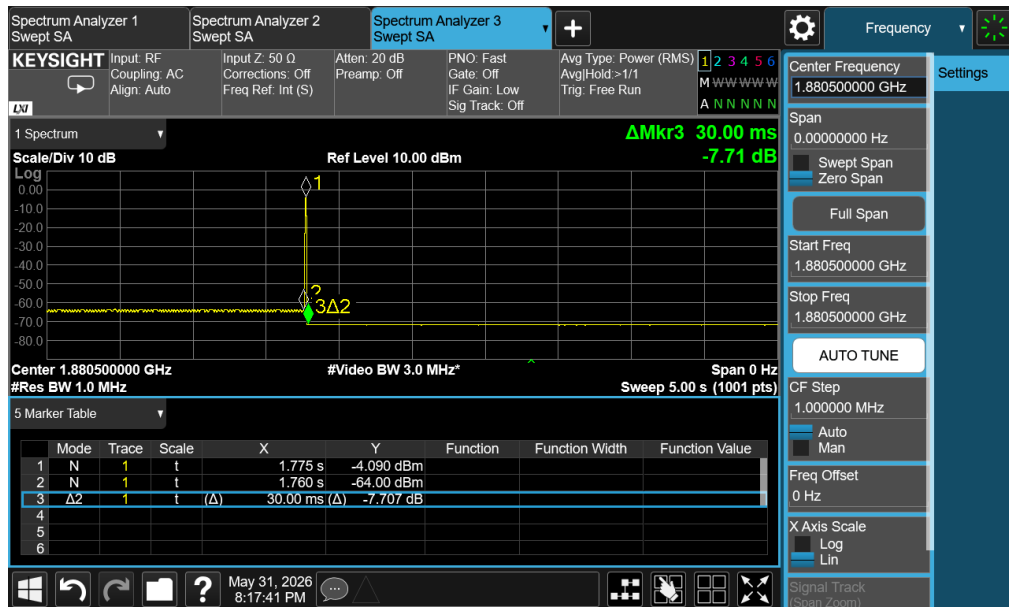


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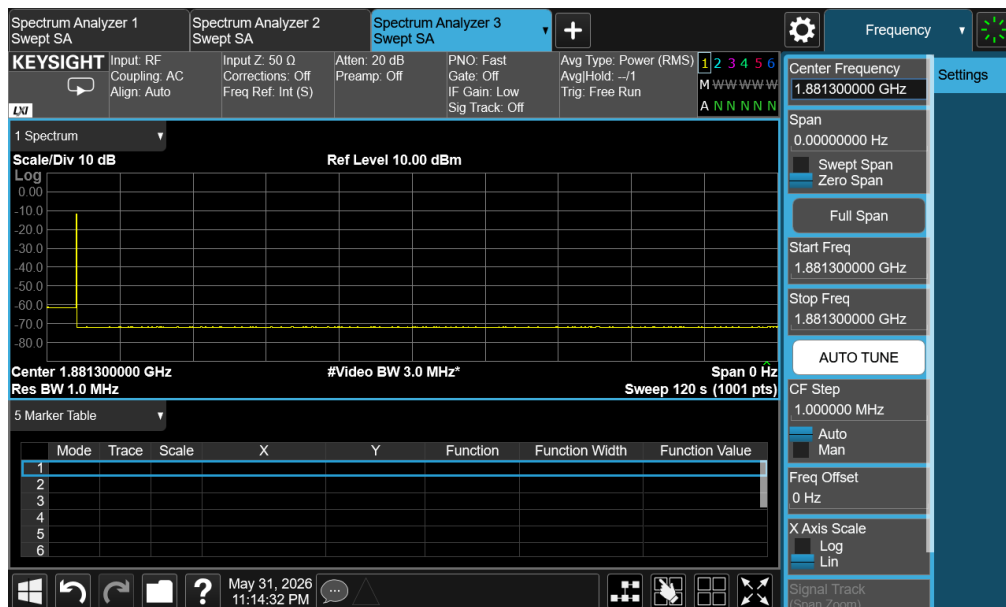
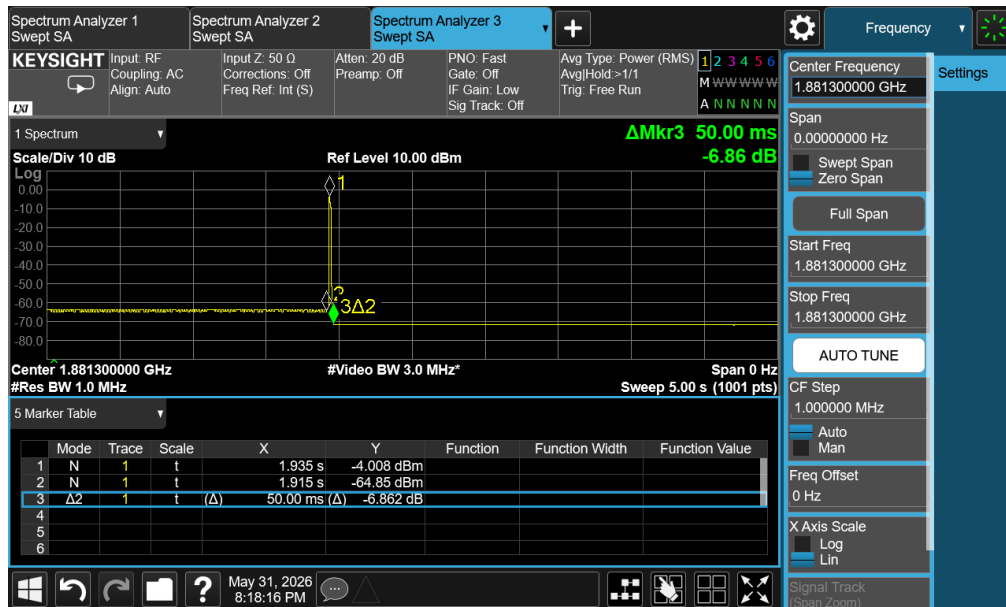
### Oscillation detection

UL\_ANT3



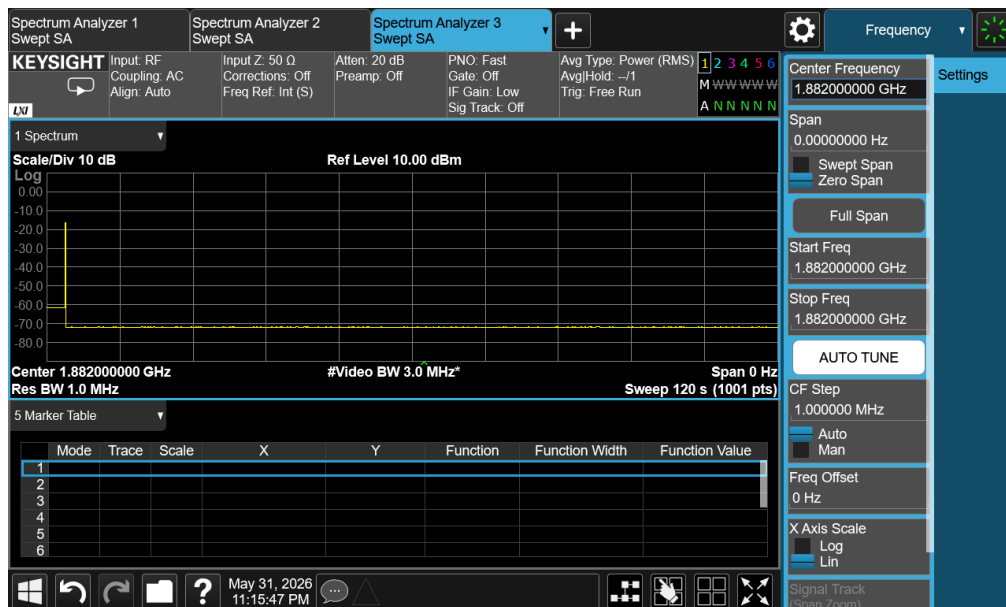
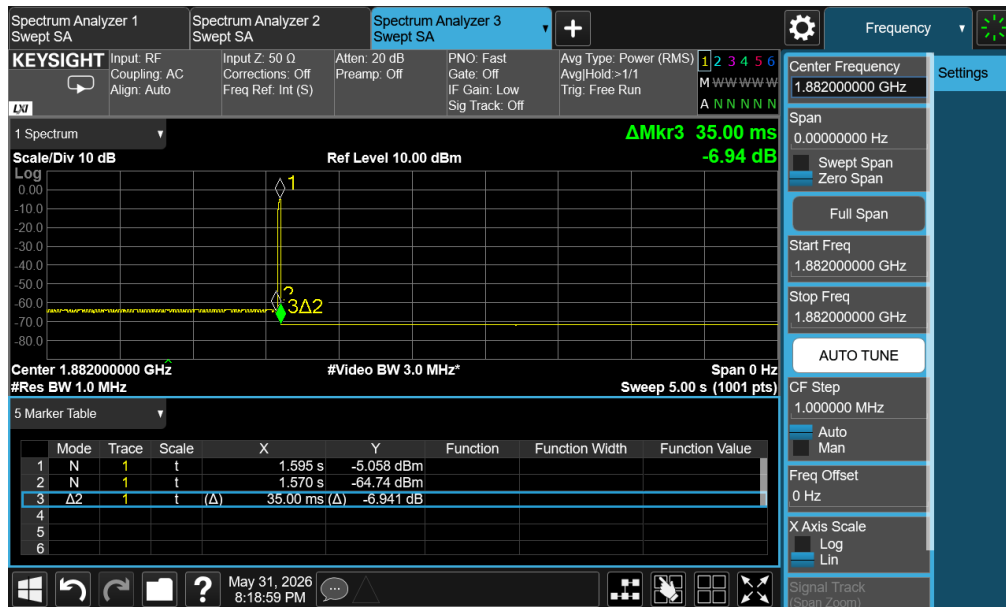
### Oscillation detection

UL\_ANT4



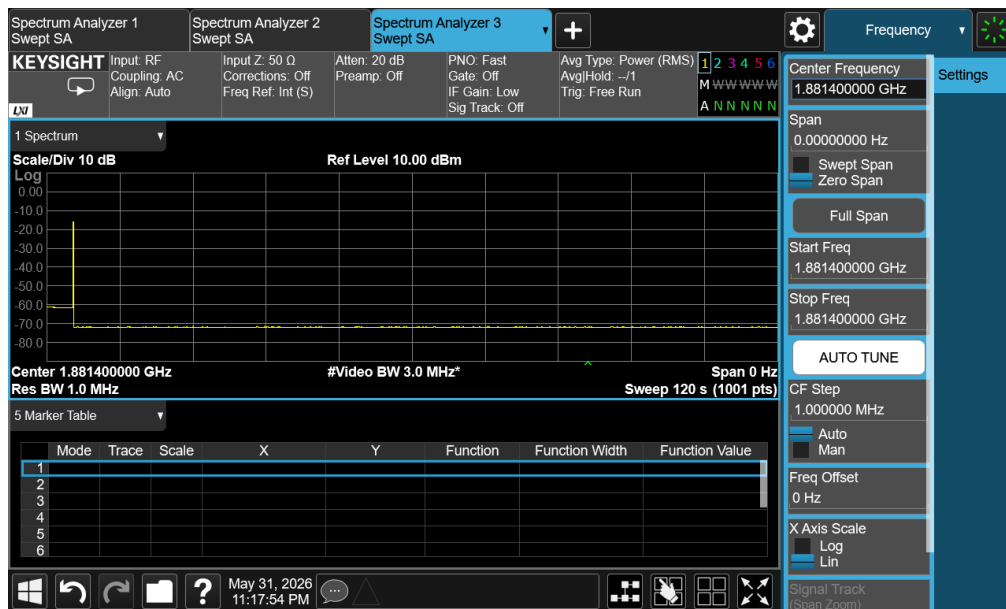
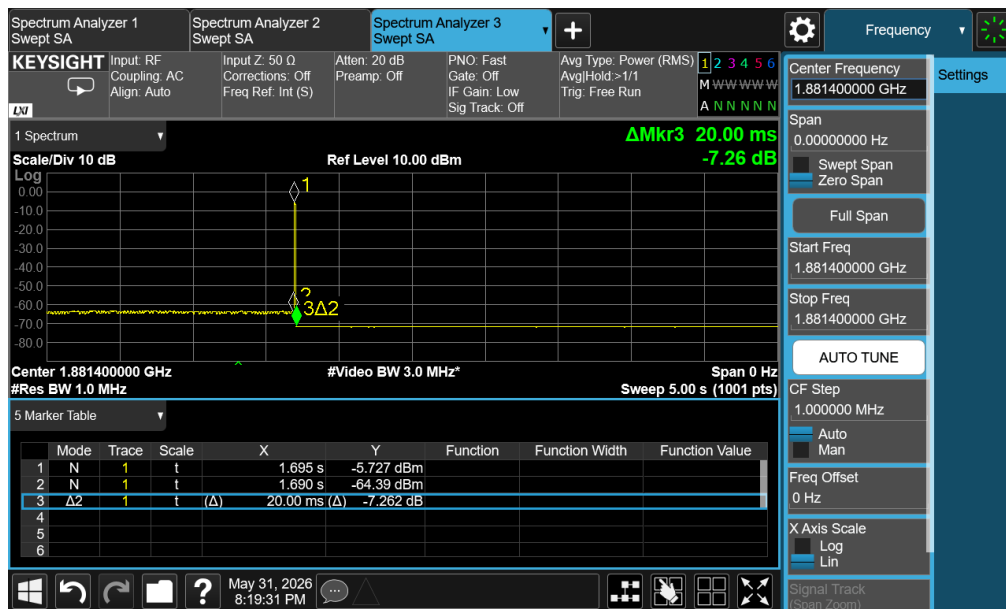
### Oscillation detection

UL\_ANT5



### Oscillation detection

UL\_ANT6



## 12.2 Oscillation mitigation or shutdown

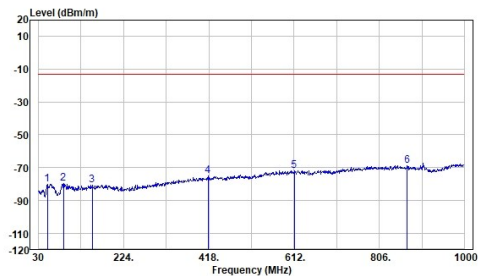
| Oscillation Mitigation or Shutdown         |           |                |                     |                    |                 |            |         |
|--------------------------------------------|-----------|----------------|---------------------|--------------------|-----------------|------------|---------|
| Test Path                                  | Test Port | Isolation (dB) | Oscillation Level   |                    |                 |            | Verdict |
|                                            |           |                | Highest level (dBm) | Lowest level (dBm) | Difference (dB) | Limit (dB) |         |
| DL                                         | ANT       | 84.94          | -0.69               | -3.23              | 2.54            | ≤12        | PASS    |
|                                            |           | 83.94          | 1.34                | -1.11              | 2.45            |            | PASS    |
|                                            |           | 82.94          | 3.64                | 0.74               | 2.90            |            | PASS    |
|                                            |           | 81.94          | 5.52                | 3.25               | 2.27            |            | PASS    |
|                                            |           | 80.94          | 8.75                | 7.02               | 1.73            |            | PASS    |
|                                            |           | 79.94          | 10.08               | 7.94               | 2.14            |            | PASS    |
|                                            |           | 78.94          | /                   | /                  | /               |            | PASS    |
|                                            |           | 77.94          | /                   | /                  | /               |            | PASS    |
|                                            |           | 76.94          | /                   | /                  | /               |            | PASS    |
|                                            |           | 75.94          | /                   | /                  | /               |            | PASS    |
|                                            |           | 74.94          | /                   | /                  | /               |            | PASS    |
| Remark:<br>“/” presents the EUT shut down. |           |                |                     |                    |                 |            |         |



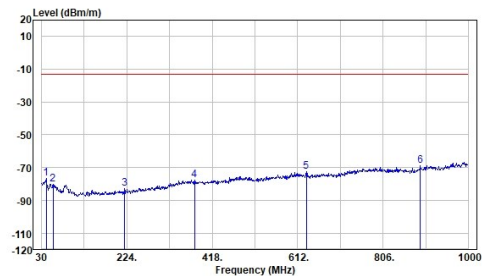
## 13 Radiated spurious emissions

## Radiated spurious emissions

## UL\_30MHz~1GHz

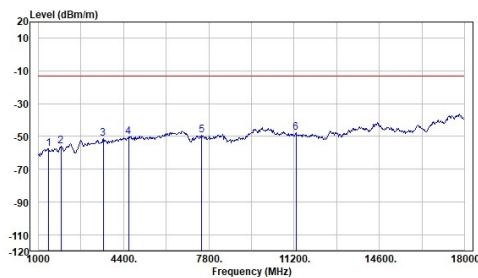


|   | Freq   | Read Level | Correction Factor | Level  | Limit Line | Over Limit | Pol/Phase |
|---|--------|------------|-------------------|--------|------------|------------|-----------|
|   | MHz    | dBm        | dB                | dBm    | dBm        | dB         |           |
| 1 | 50.37  | -77.34     | -3.09             | -80.43 | -13.00     | -67.43     | VERTICAL  |
| 2 | 87.23  | -71.78     | -8.06             | -79.84 | -13.00     | -66.84     | VERTICAL  |
| 3 | 152.22 | -76.81     | -3.67             | -80.48 | -13.00     | -67.48     | VERTICAL  |
| 4 | 416.06 | -76.43     | 1.63              | -74.80 | -13.00     | -61.80     | VERTICAL  |
| 5 | 612.97 | -76.22     | 4.45              | -71.77 | -13.00     | -58.77     | VERTICAL  |
| 6 | 870.02 | -77.19     | 8.55              | -68.64 | -13.00     | -55.64     | VERTICAL  |

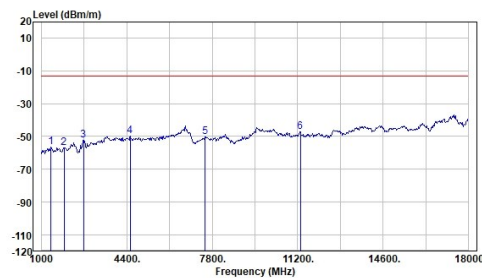


|   | Freq   | Read Level | Correction Factor | Level  | Limit Line | Over Limit | Pol/Phase  |
|---|--------|------------|-------------------|--------|------------|------------|------------|
|   | MHz    | dBm        | dB                | dBm    | dBm        | dB         |            |
| 1 | 40.67  | -75.98     | -0.81             | -76.79 | -13.00     | -63.79     | HORIZONTAL |
| 2 | 56.19  | -77.22     | -2.93             | -80.15 | -13.00     | -67.15     | HORIZONTAL |
| 3 | 219.15 | -76.84     | -6.14             | -82.98 | -13.00     | -69.98     | HORIZONTAL |
| 4 | 378.23 | -76.85     | -0.56             | -77.41 | -13.00     | -64.41     | HORIZONTAL |
| 5 | 632.37 | -75.27     | 2.68              | -72.59 | -13.00     | -59.59     | HORIZONTAL |
| 6 | 891.36 | -76.45     | 7.58              | -68.87 | -13.00     | -55.87     | HORIZONTAL |

## UL\_above 1GHz



|   | Freq     | Read Level | Correction Factor | Level  | Limit Line | Over Limit | Pol/Phase |
|---|----------|------------|-------------------|--------|------------|------------|-----------|
|   | MHz      | dBm        | dB                | dBm    | dBm        | dB         |           |
| 1 | 1408.00  | -59.62     | 2.13              | -57.49 | -13.00     | -44.49     | VERTICAL  |
| 2 | 1901.00  | -61.07     | 5.03              | -56.04 | -13.00     | -43.04     | VERTICAL  |
| 3 | 3584.00  | -61.02     | 9.59              | -51.43 | -13.00     | -38.43     | VERTICAL  |
| 4 | 4604.00  | -61.91     | 11.77             | -50.14 | -13.00     | -37.14     | VERTICAL  |
| 5 | 7511.00  | -62.62     | 13.63             | -48.99 | -13.00     | -35.99     | VERTICAL  |
| 6 | 11285.00 | -63.71     | 16.18             | -47.53 | -13.00     | -34.53     | VERTICAL  |



|   | Freq     | Read Level | Correction Factor | Level  | Limit Line | Over Limit | Pol/Phase  |
|---|----------|------------|-------------------|--------|------------|------------|------------|
|   | MHz      | dBm        | dB                | dBm    | dBm        | dB         |            |
| 1 | 1374.00  | -59.42     | 2.09              | -56.53 | -13.00     | -43.53     | HORIZONTAL |
| 2 | 1901.00  | -61.52     | 4.72              | -56.80 | -13.00     | -43.80     | HORIZONTAL |
| 3 | 2683.00  | -59.35     | 7.15              | -52.20 | -13.00     | -39.20     | HORIZONTAL |
| 4 | 4536.00  | -60.83     | 11.00             | -49.75 | -13.00     | -36.75     | HORIZONTAL |
| 5 | 7511.00  | -62.46     | 12.40             | -50.06 | -13.00     | -37.06     | HORIZONTAL |
| 6 | 11319.00 | -63.59     | 16.60             | -46.99 | -13.00     | -33.99     | HORIZONTAL |

## Remark:

Pre-test was performed at uplink and downlink path, the test result always keeps more than 20dB margin, The spurious emissions 9kHz to 30MHz were very low and not displayed in this report. Therefore, only show the worst-case data in this report.



## 14 Out of band gain

| Out of band gain                                                                                                                                          |           |                |           |           |          |           |                |         |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|----------------|-----------|-----------|----------|-----------|----------------|---------|
| Test Path                                                                                                                                                 | Test Port | Offset (MHz)   | Gain (dB) |           | ATT (dB) |           | ATT Limit (dB) | Verdict |
|                                                                                                                                                           |           |                | Low edge  | High edge | Low edge | High edge |                |         |
| DL                                                                                                                                                        | ANT       | f <sub>c</sub> | 79.0      |           | /        |           | /              | /       |
|                                                                                                                                                           |           | 0              | 55.6      | 53.6      | -23.4    | -25.4     | ≤-20           | PASS    |
|                                                                                                                                                           |           | 1              | 43.7      | 45.8      | -35.3    | -33.2     | ≤-30           | PASS    |
|                                                                                                                                                           |           | 5              | 36.7      | 32.7      | -42.3    | -46.3     | ≤-40           | PASS    |
| UL                                                                                                                                                        | ANT5      | f <sub>c</sub> | 79.7      |           | /        |           | /              | /       |
|                                                                                                                                                           |           | 0              | 58.4      | 57.4      | -21.3    | -22.3     | ≤-20           | PASS    |
|                                                                                                                                                           |           | 1              | 45.6      | 42.2      | -34.1    | -37.5     | ≤-30           | PASS    |
|                                                                                                                                                           |           | 5              | 32.9      | 36.5      | -46.8    | -43.2     | ≤-40           | PASS    |
| Remark:<br>1. f <sub>c</sub> is the centre frequency of the pass band of the EUT.<br>2. ATT is the attenuation referenced to the gain in f <sub>c</sub> . |           |                |           |           |          |           |                |         |

| Out of band gain |           |              |           |           |                 |         |
|------------------|-----------|--------------|-----------|-----------|-----------------|---------|
| Test Path        | Test Port | Offset (MHz) | Gain (dB) |           | Gain Limit (dB) | Verdict |
|                  |           |              | Low edge  | High edge |                 |         |
| DL               | ANT       | 0.2          | 55.8      | 58.4      | $\leq 60$       | PASS    |
|                  |           | 1            | 43.2      | 41.4      | $\leq 45$       | PASS    |
| UL               | ANT4      | 0.2          | 57.9      | 56.7      | $\leq 60$       | PASS    |
|                  |           | 1            | 40.2      | 42.2      | $\leq 45$       | PASS    |



### 15 Frequency Stability

| Frequency stability vs temperature |           |              |              |                 |                  |                 |         |
|------------------------------------|-----------|--------------|--------------|-----------------|------------------|-----------------|---------|
| Test Path                          | Test Port | Test Channel | Test Voltage | Test Temp. (°C) | Freq. error (Hz) | Tolerance (ppm) | Verdict |
| DL                                 | ANT       | Middle       | VN           | +50             | 2.1              | 0.00107         | PASS    |
|                                    |           |              |              | +40             | 1.1              | 0.00056         | PASS    |
|                                    |           |              |              | +30             | 1.8              | 0.00092         | PASS    |
|                                    |           |              |              | +20             | 1.6              | 0.00082         | PASS    |
|                                    |           |              |              | +10             | 1.9              | 0.00097         | PASS    |
|                                    |           |              |              | 0               | 2.1              | 0.00107         | PASS    |
|                                    |           |              |              | -10             | 1.5              | 0.00076         | PASS    |
|                                    |           |              |              | -20             | 1.3              | 0.00066         | PASS    |
|                                    |           |              |              | -30             | 1.5              | 0.00076         | PASS    |
| UL                                 | ANT1      | Middle       | VN           | +50             | 1.6              | 0.00085         | PASS    |
|                                    |           |              |              | +40             | 1.1              | 0.00058         | PASS    |
|                                    |           |              |              | +30             | 1.9              | 0.00101         | PASS    |
|                                    |           |              |              | +20             | 1.2              | 0.00064         | PASS    |
|                                    |           |              |              | +10             | 2.0              | 0.00106         | PASS    |
|                                    |           |              |              | 0               | 1.2              | 0.00064         | PASS    |
|                                    |           |              |              | -10             | 1.2              | 0.00064         | PASS    |
|                                    |           |              |              | -20             | 2.0              | 0.00106         | PASS    |
|                                    |           |              |              | -30             | 1.9              | 0.00101         | PASS    |



| Frequency stability vs voltage |           |              |            |              |                  |                 |         |
|--------------------------------|-----------|--------------|------------|--------------|------------------|-----------------|---------|
| Test Path                      | Test Port | Test Channel | Test Temp. | Test Voltage | Freq. error (Hz) | Tolerance (ppm) | Verdict |
| DL                             | ANT       | Middle       | TN         | VL           | 1.6              | 0.00082         | PASS    |
|                                |           |              |            | VN           | 1.6              | 0.00082         | PASS    |
|                                |           |              |            | VH           | 1.6              | 0.00082         | PASS    |
| UL                             | ANT1      | Middle       | TN         | VL           | 1.2              | 0.00064         | PASS    |
|                                |           |              |            | VN           | 1.2              | 0.00064         | PASS    |
|                                |           |              |            | VH           | 1.2              | 0.00064         | PASS    |

--End of Appendix--

