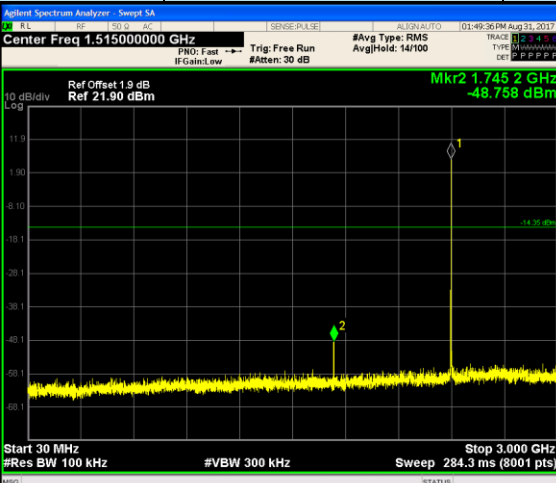
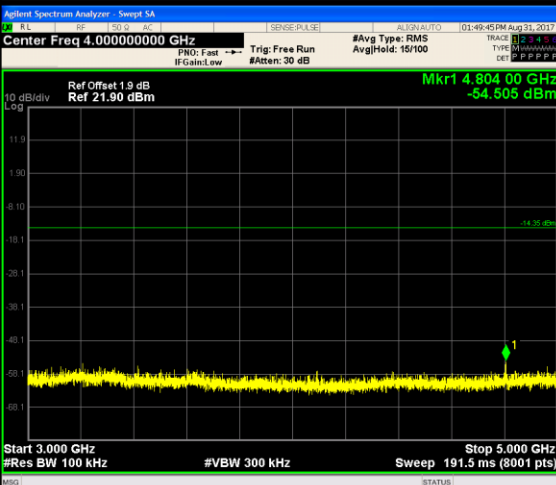
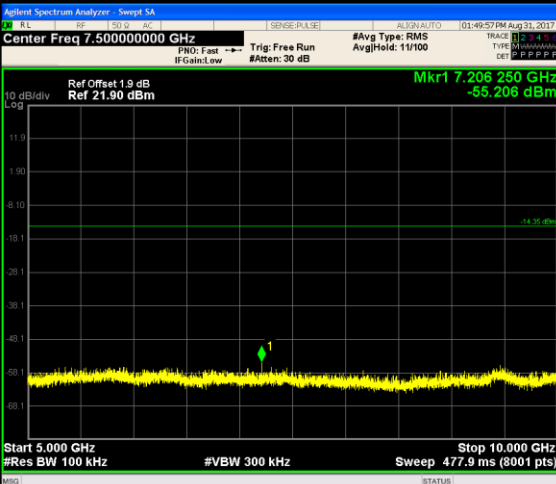
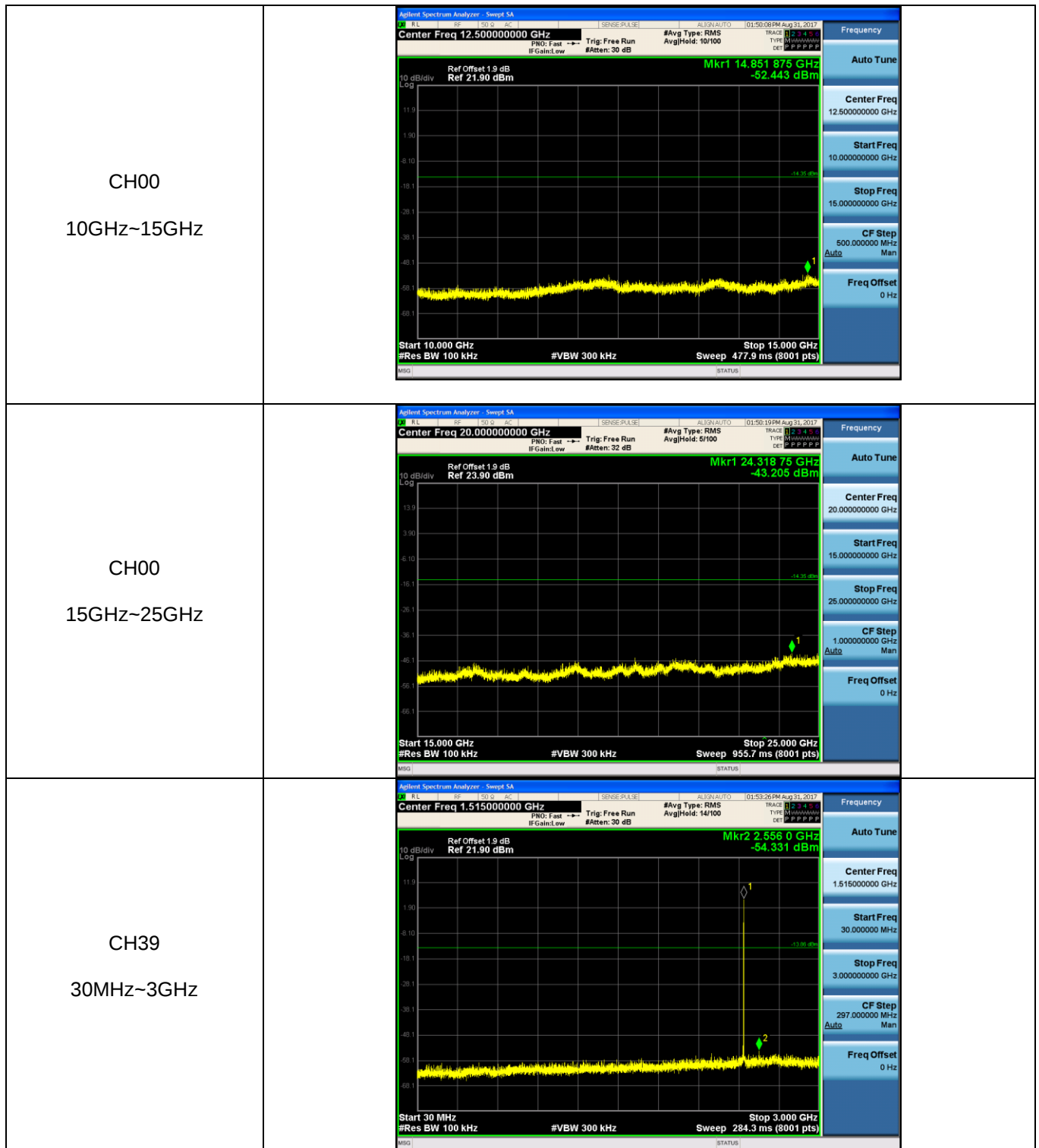
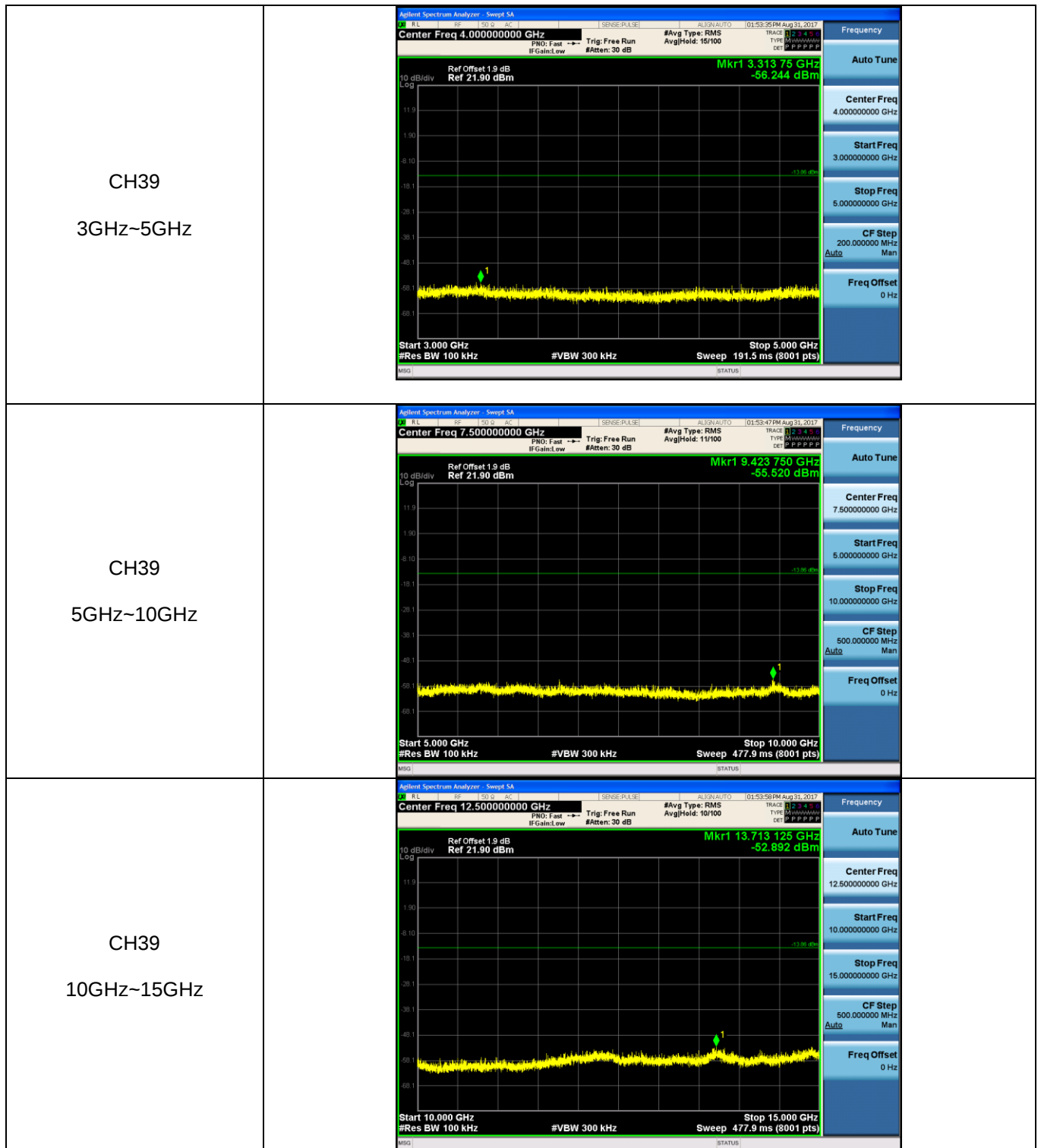


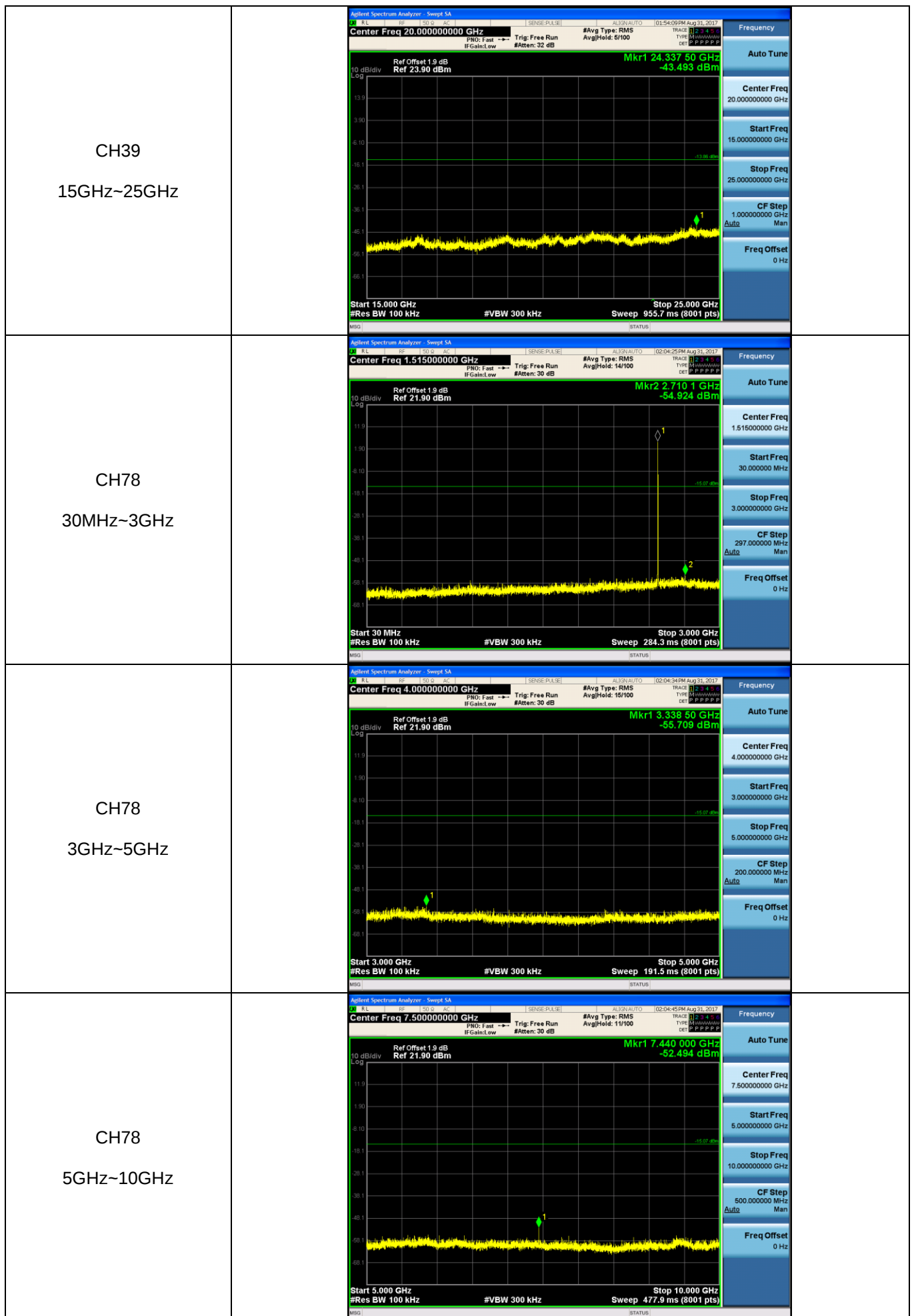
CH78  
Hoppig mode

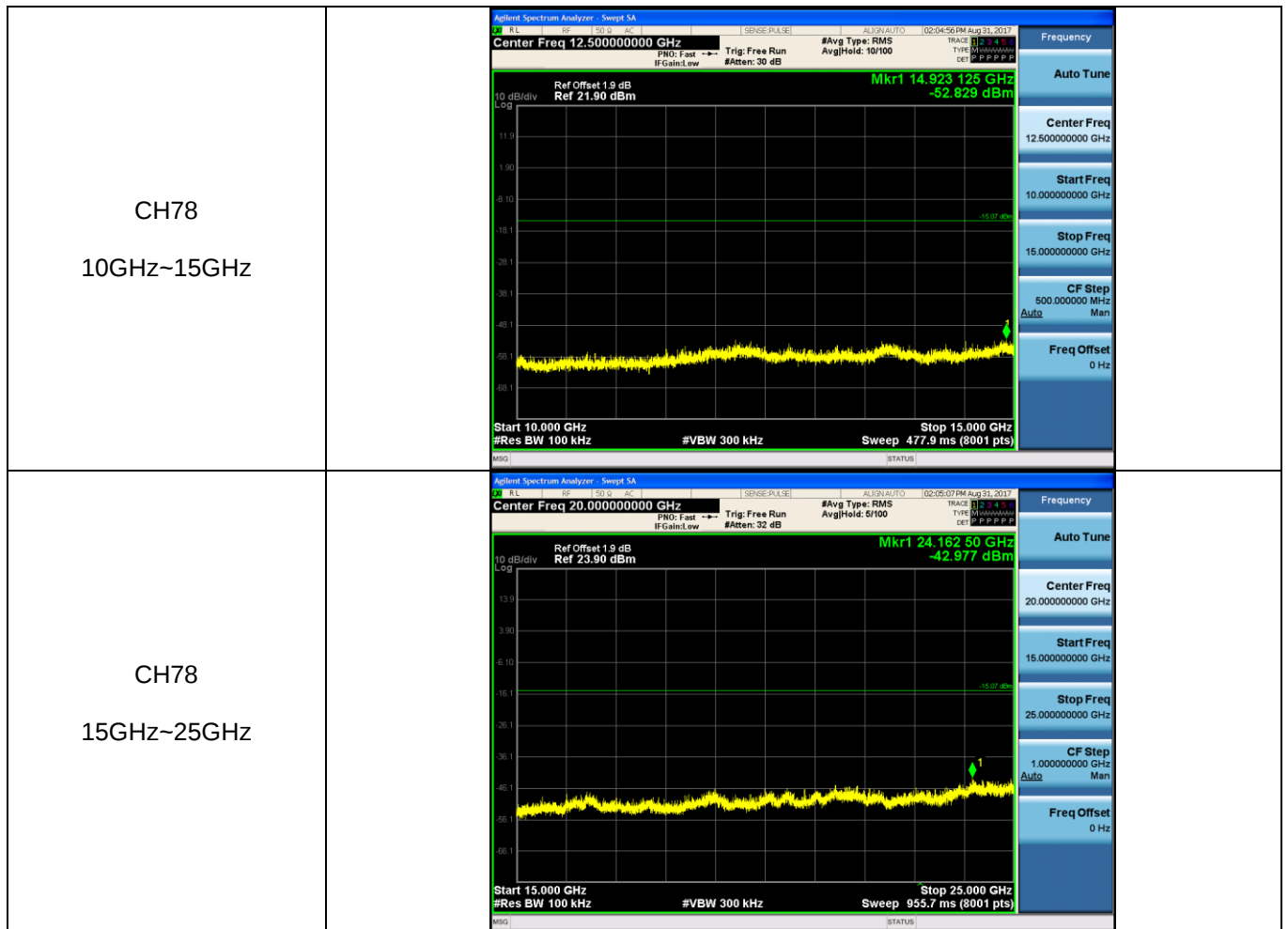


| Test Item:         | SE | Modulation type:                                                                     | GFSK                                                                                  |
|--------------------|----|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| CH00<br>30MHz~3GHz |    |    |    |
| CH00<br>3GHz~5GHz  |    |   |   |
| CH00<br>5GHz~10GHz |    |  |  |

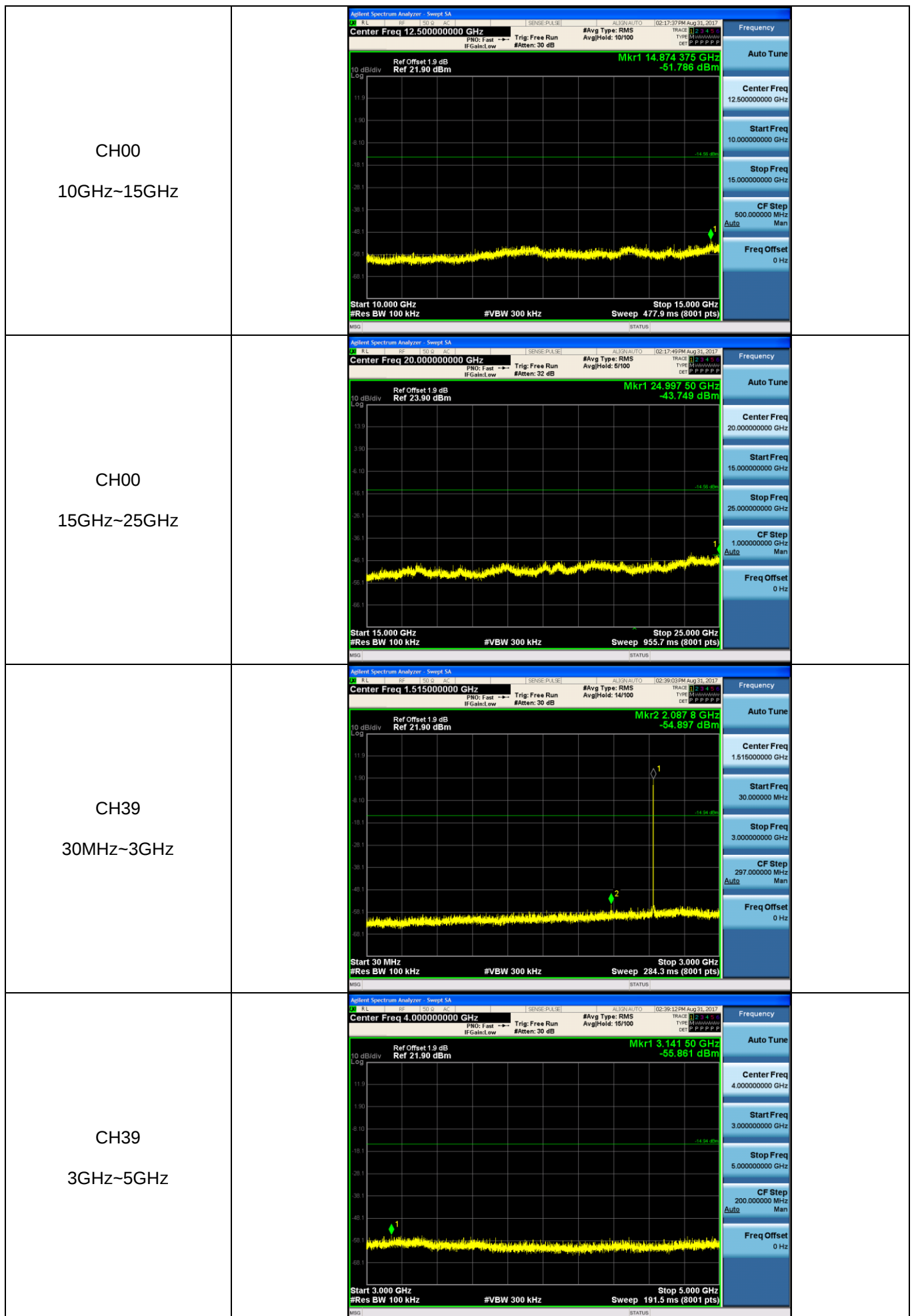


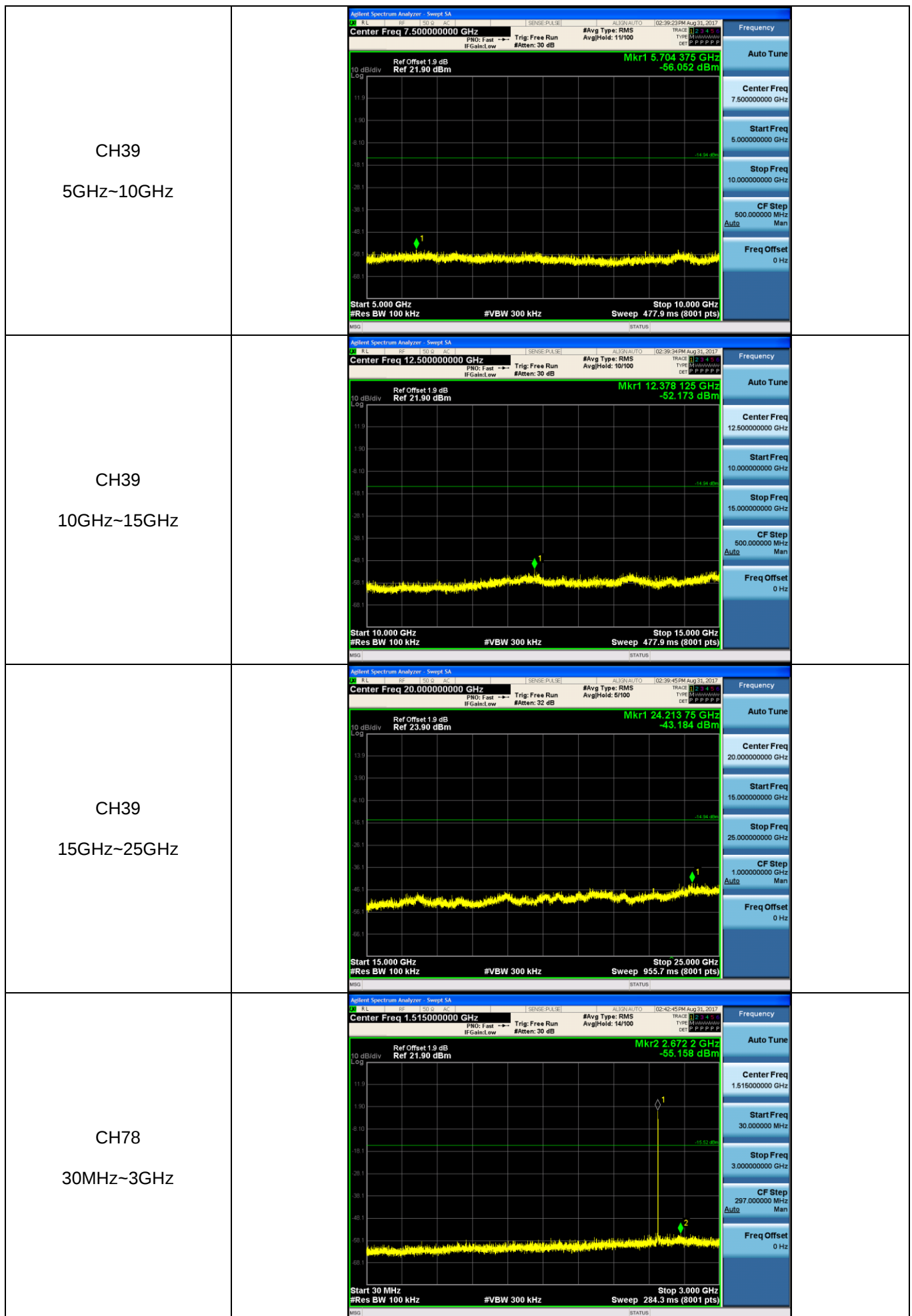


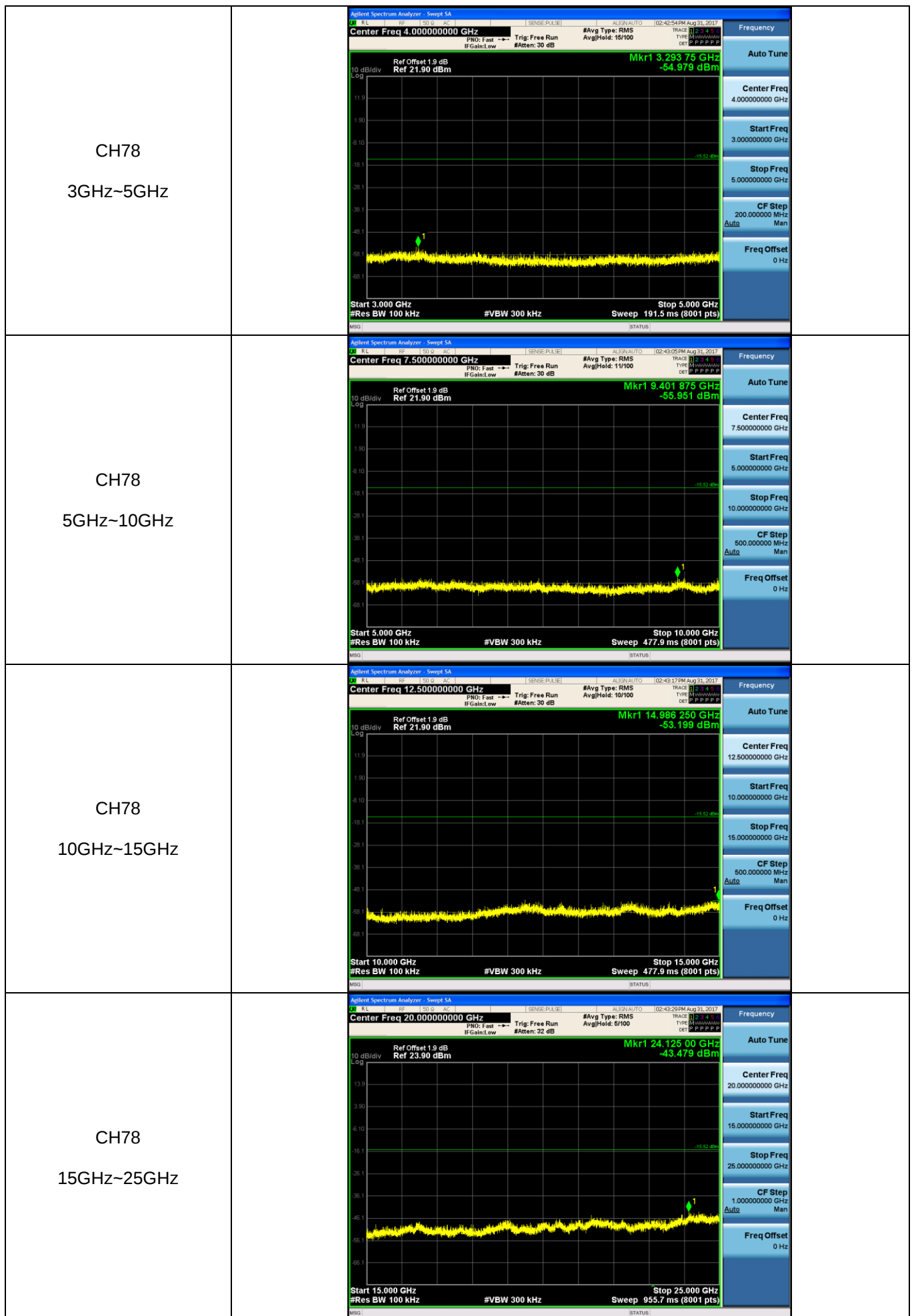


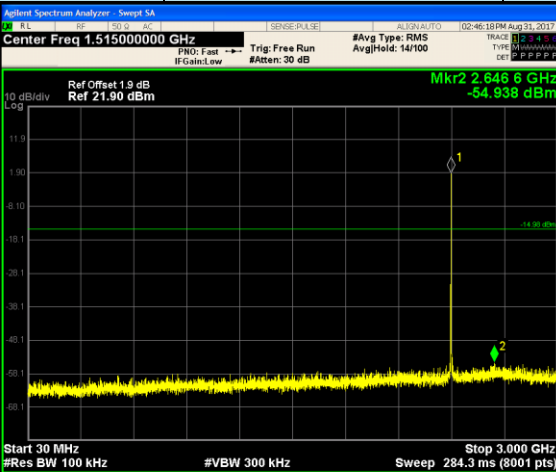
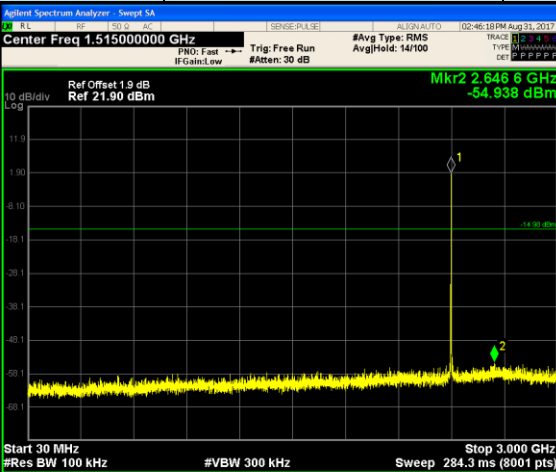
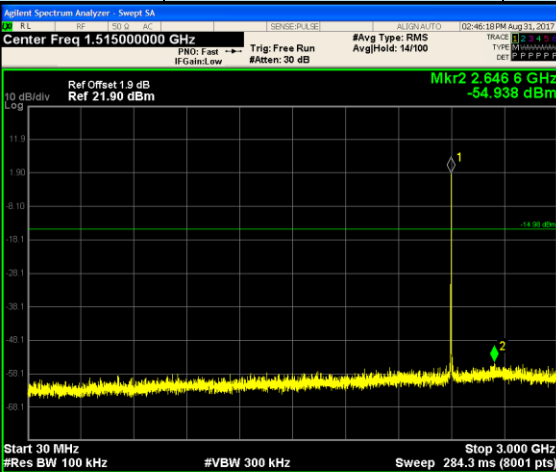
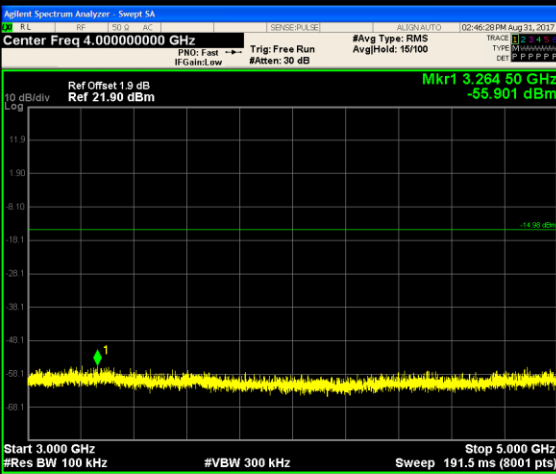
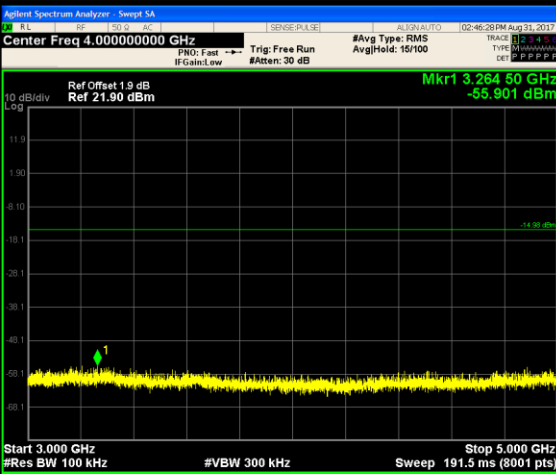
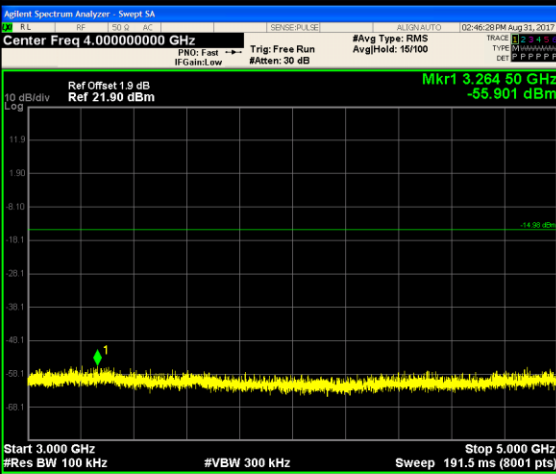
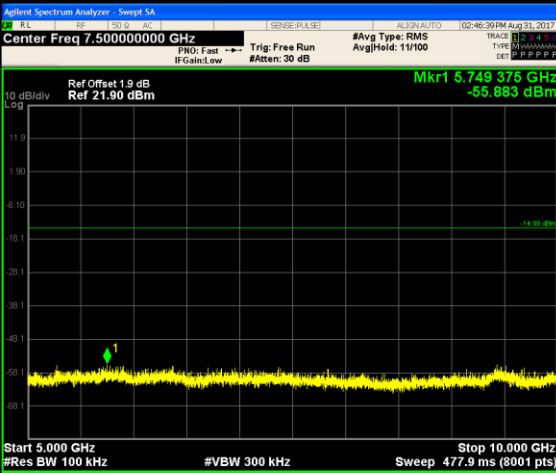
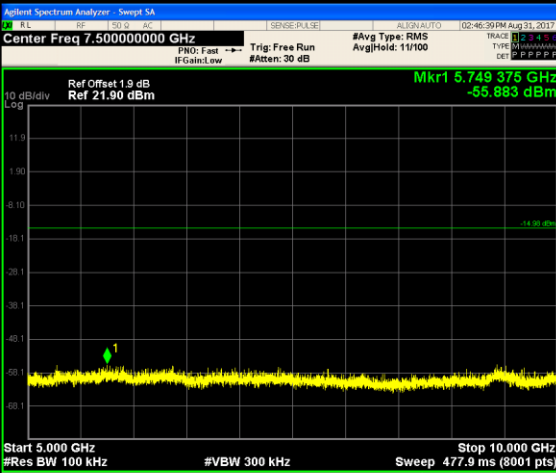
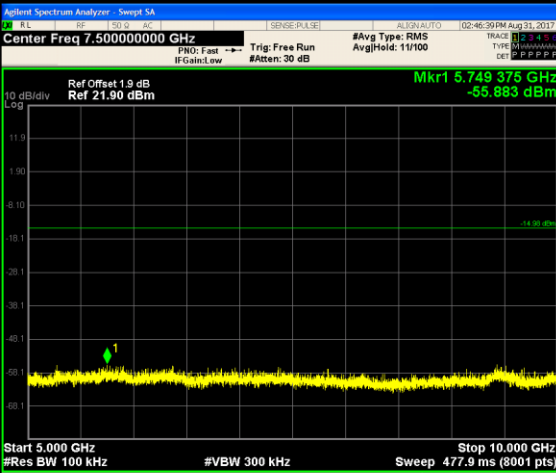


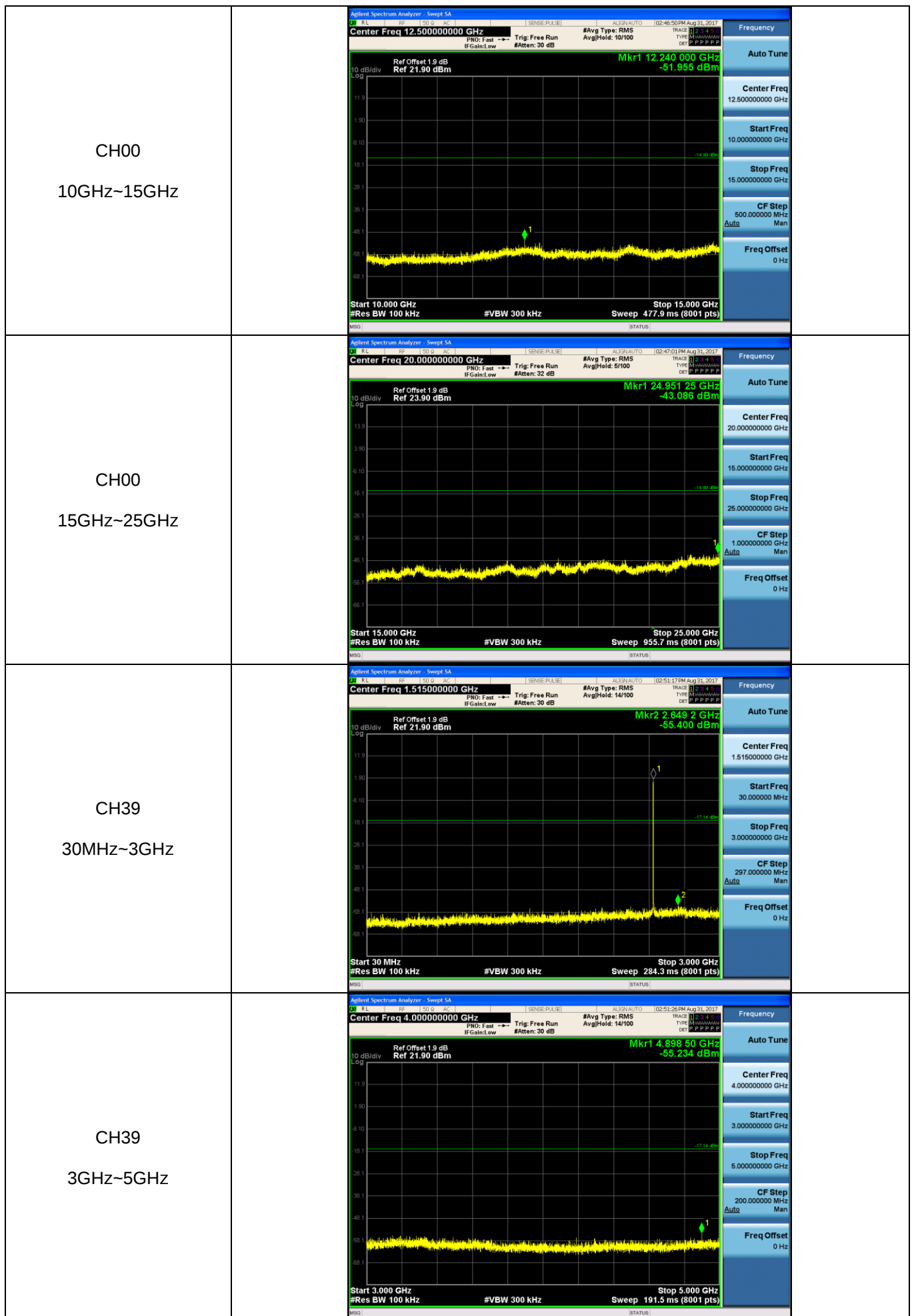
| Test Item:         | SE | Modulation type: | $\pi/4$ DQPSK |
|--------------------|----|------------------|---------------|
| CH00<br>30MHz~3GHz |    |                  |               |
| CH00<br>3GHz~5GHz  |    |                  |               |
| CH00<br>5GHz~10GHz |    |                  |               |

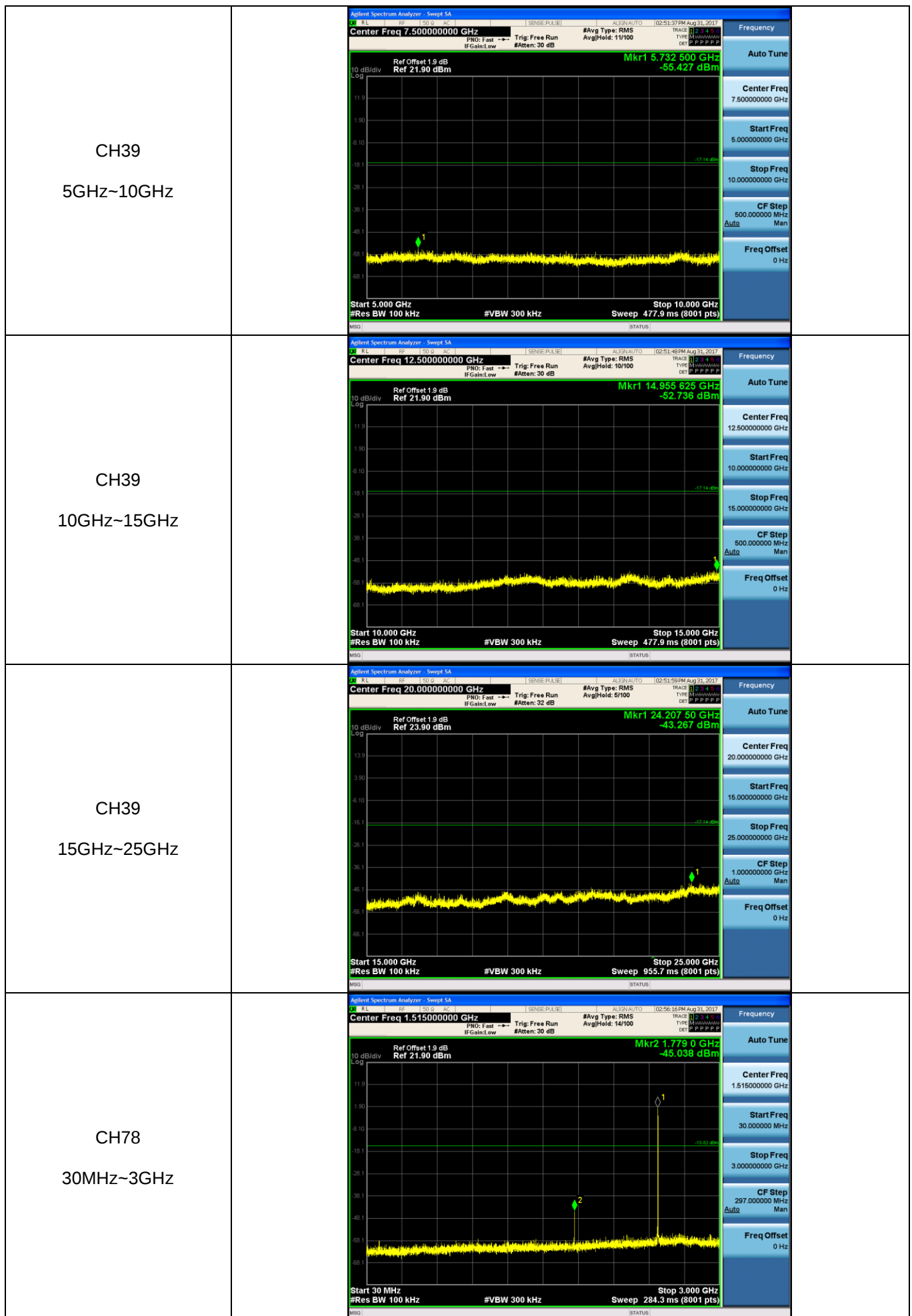


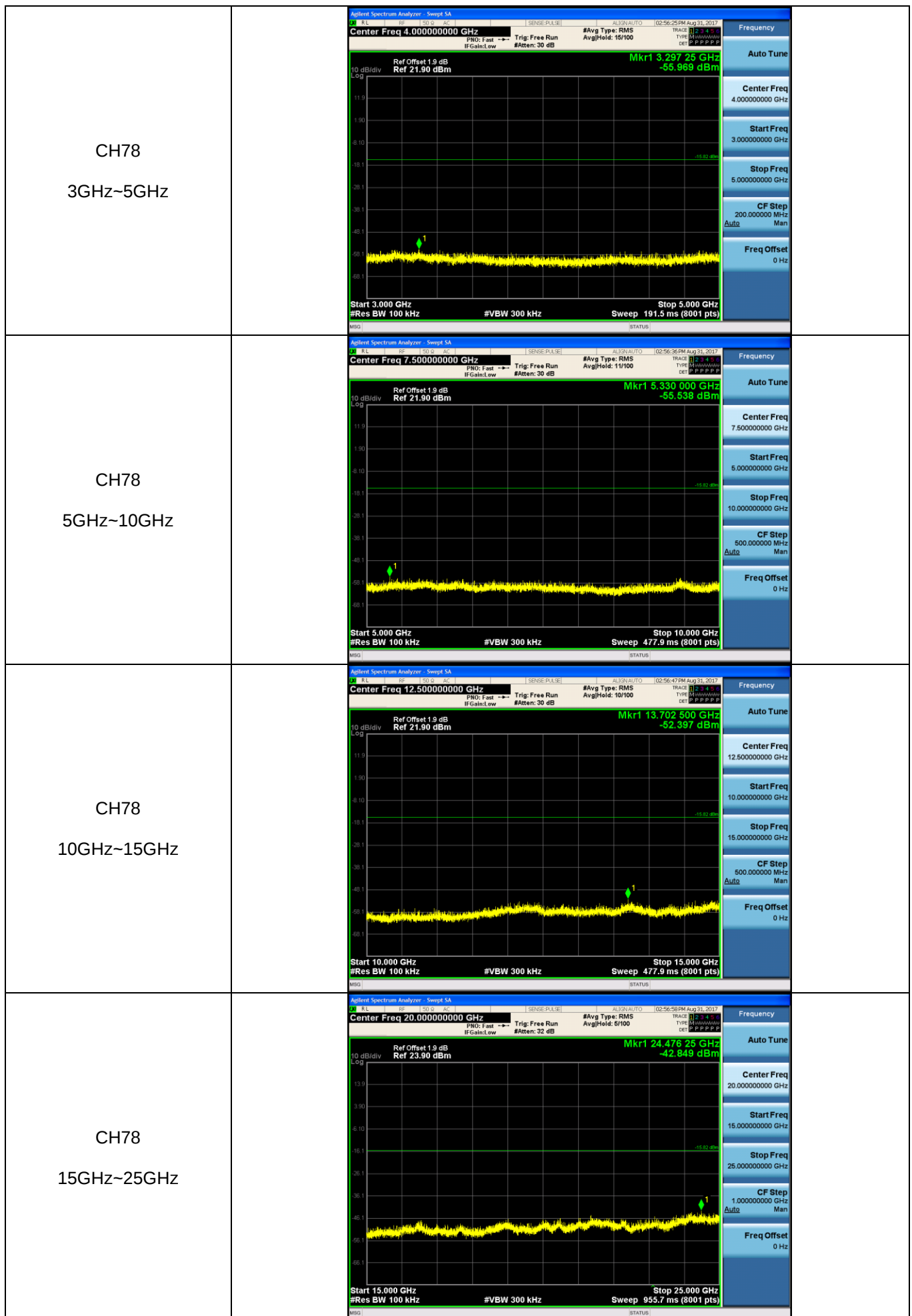




| Test Item:         | SE                                                                                   | Modulation type:                                                                     | 8DPSK                                                                                |
|--------------------|--------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| CH00<br>30MHz~3GHz |    |    |    |
| CH00<br>3GHz~5GHz  |   |   |   |
| CH00<br>5GHz~10GHz |  |  |  |







## 5.11. Spurious Emissions (radiated)

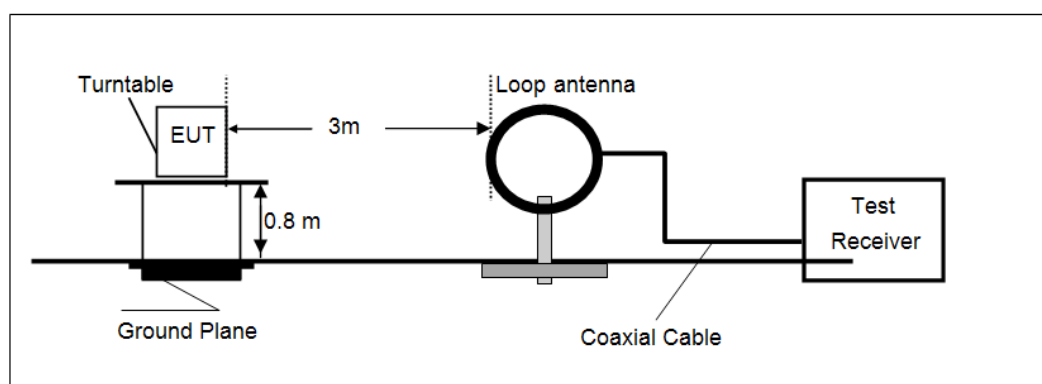
### LIMIT

#### FCC CFR Title 47 Part 15 Subpart C Section 15.209

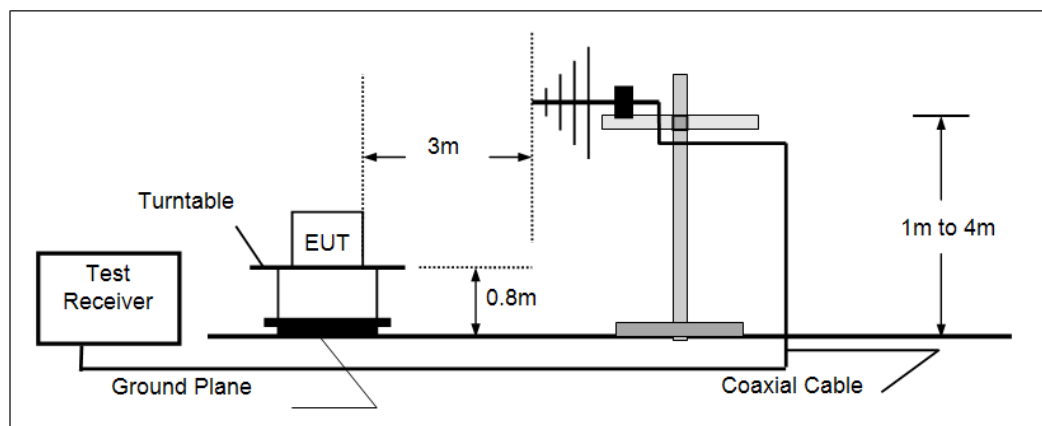
| Frequency         | Limit (dBuV/m @3m) | Value      |
|-------------------|--------------------|------------|
| 30 MHz ~ 88 MHz   | 40.00              | Quasi-peak |
| 88 MHz ~ 216 MHz  | 43.50              | Quasi-peak |
| 216 MHz ~ 960 MHz | 46.00              | Quasi-peak |
| 960 MHz ~ 1 GHz   | 54.00              | Quasi-peak |
| Above 1 GHz       | 54.00              | Average    |
|                   | 74.00              | Peak       |

### TEST CONFIGURATION

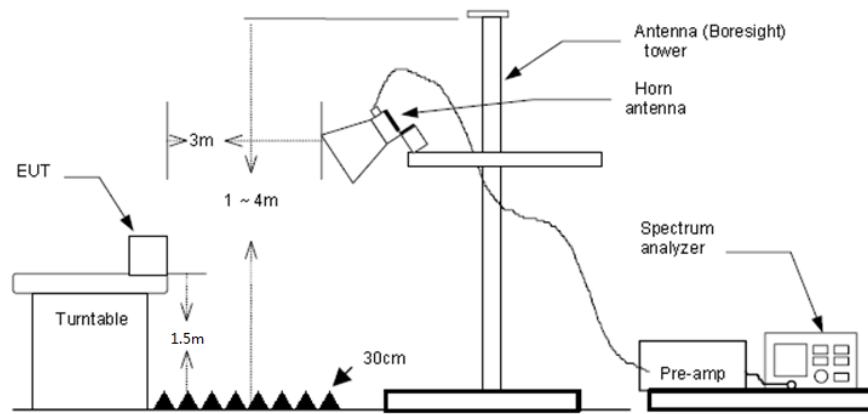
- Below 30 MHz



- 30 MHz ~1000 MHz



- Above 1 GHz



### **TEST PROCEDURE**

1. The EUT was tested according to ANSI C63.10:2013.
2. The EUT is placed on a turntable which is 0.8 meter above ground. The turn table is rotated 360 degrees to determine the position of the maximum emission level.
3. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.
4. The antenna is scanned from 1 meter to 4 meters to find out the maximum emission level. This is repeated for both horizontal and vertical polarization of the antenna.
5. Use the following spectrum analyzer settings
  - (1) Span shall wide enough to fully capture the emission being measured;
  - (2) Below 1 GHz, RBW=120 kHz, VBW=300 kHz, Sweep=auto, Detector function=peak, Trace=max hold; If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.
  - (3) Above 1 GHz, RBW=1 MHz, VBW=3 MHz Peak detector for Peak value  
RBW=1 MHz, VBW=10 Hz Peak detector for Average value.

### **TEST MODE:**

Please refer to the clause 3.3

### **TEST RESULTS**

☒ **Passed**      ☐ **Not Applicable**

Note:

- 1) Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor
- 2) The emission levels of other frequencies are very lower than the limit and not show in test report.
- 3) Below 1 GHz, Have pre-scan all modulation mode, found the GFSK modulation High channel which it was worst case, so only the worst case's data on the test report.
- 4) Above 1 GHz, Have pre-scan all modulation mode, found the GFSK modulation which it was worst case, so only the worst case's data on the test report
- 5) The peak level is lower than average limit(54 dBuV/m), this data is the too weak instrument of signal is unable to test.

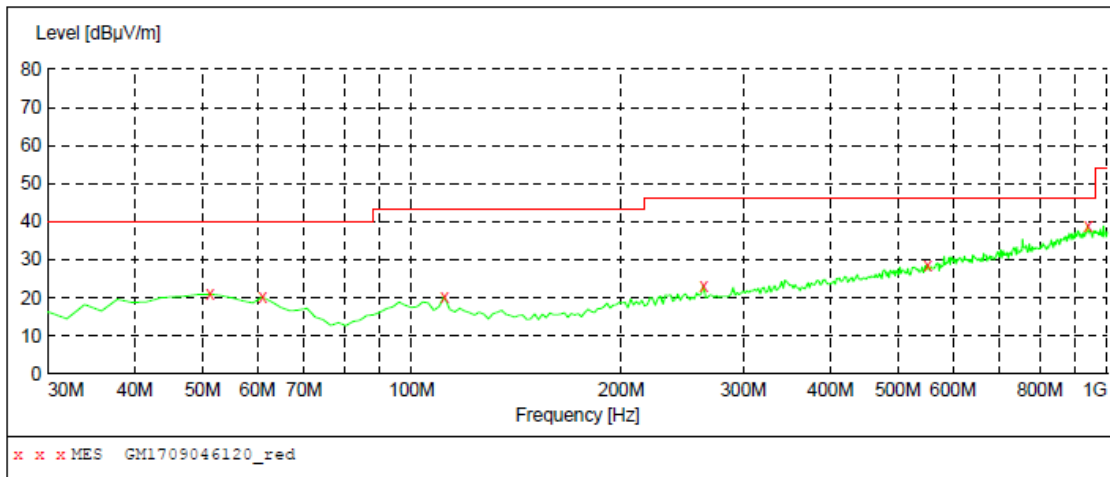
#### **➤ 9 kHz ~ 30 MHz**

The low frequency, which started from 9 kHz to 30 MHz, was pre-scanned and the result which was 20 dB lower than the limit line per 15.31(o) was not reported.

## ➤ 30 MHz ~ 1 GHz

Polarization:

Vertical

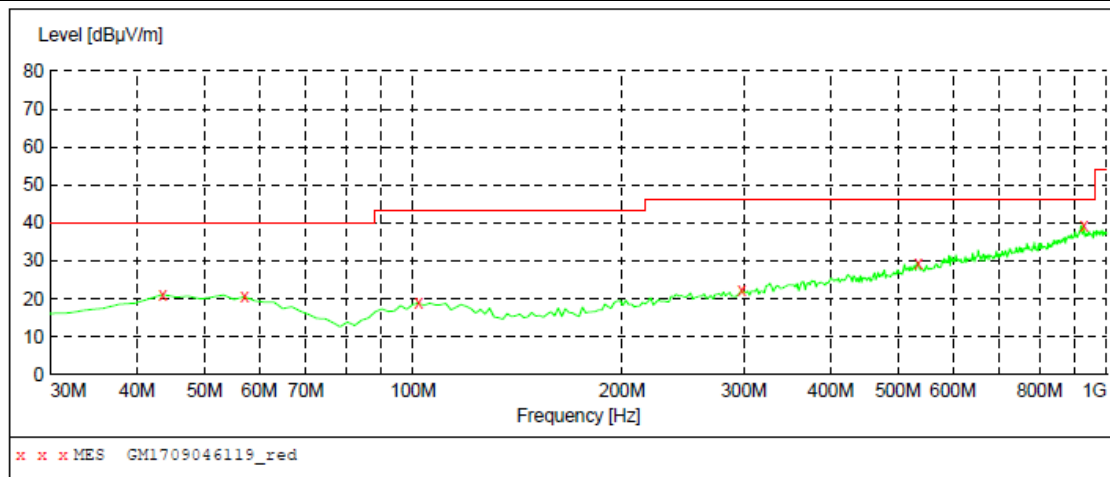
**MEASUREMENT RESULT: "GM1709046120\_red"**

9/4/2017 11:10PM

| Frequency<br>MHz | Level<br>dBμV/m | Transd<br>dB | Limit<br>dBμV/m | Margin<br>dB | Det. | Height<br>cm | Azimuth<br>deg | Polarization |
|------------------|-----------------|--------------|-----------------|--------------|------|--------------|----------------|--------------|
| 51.340000        | 21.00           | -8.8         | 40.0            | 19.0         | QP   | 100.0        | 360.00         | VERTICAL     |
| 61.040000        | 20.20           | -10.3        | 40.0            | 19.8         | QP   | 100.0        | 39.00          | VERTICAL     |
| 111.480000       | 20.40           | -11.0        | 43.5            | 23.1         | QP   | 100.0        | 238.00         | VERTICAL     |
| 262.800000       | 23.20           | -8.1         | 46.0            | 22.8         | QP   | 100.0        | 0.00           | VERTICAL     |
| 551.860000       | 28.70           | -0.7         | 46.0            | 17.3         | QP   | 100.0        | 331.00         | VERTICAL     |
| 937.920000       | 38.90           | 7.1          | 46.0            | 7.1          | QP   | 100.0        | 267.00         | VERTICAL     |

Polarization:

Horizontal

**MEASUREMENT RESULT: "GM1709046119\_red"**

9/4/2017 11:08PM

| Frequency<br>MHz | Level<br>dBμV/m | Transd<br>dB | Limit<br>dBμV/m | Margin<br>dB | Det. | Height<br>cm | Azimuth<br>deg | Polarization |
|------------------|-----------------|--------------|-----------------|--------------|------|--------------|----------------|--------------|
| 43.580000        | 21.20           | -9.1         | 40.0            | 18.8         | QP   | 300.0        | 0.00           | HORIZONTAL   |
| 57.160000        | 20.60           | -9.4         | 40.0            | 19.4         | QP   | 100.0        | 193.00         | HORIZONTAL   |
| 101.780000       | 18.90           | -10.5        | 43.5            | 24.6         | QP   | 300.0        | 222.00         | HORIZONTAL   |
| 297.720000       | 22.30           | -7.3         | 46.0            | 23.7         | QP   | 100.0        | 193.00         | HORIZONTAL   |
| 534.400000       | 29.60           | -1.1         | 46.0            | 16.4         | QP   | 300.0        | 0.00           | HORIZONTAL   |
| 926.280000       | 39.40           | 7.1          | 46.0            | 6.6          | QP   | 300.0        | 360.00         | HORIZONTAL   |

## ➤ Above 1 GHz

| CH00            |                   |                       |                 |                    |                |                     |                 |              |            |
|-----------------|-------------------|-----------------------|-----------------|--------------------|----------------|---------------------|-----------------|--------------|------------|
| Frequency (MHz) | Read Level (dBuV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | Polarization | Test value |
| 1899.28         | 48.36             | 25.30                 | 6.11            | 37.22              | 42.55          | 74.00               | -31.45          | Vertical     | Peak       |
| 2651.00         | 43.18             | 27.95                 | 7.03            | 37.97              | 40.19          | 74.00               | -33.81          | Vertical     | Peak       |
| 4809.50         | 44.20             | 31.58                 | 9.55            | 36.93              | 48.40          | 74.00               | -25.60          | Vertical     | Peak       |
| 8484.55         | 35.37             | 36.85                 | 12.87           | 34.37              | 50.72          | 74.00               | -23.28          | Vertical     | Peak       |
| 1786.72         | 44.99             | 25.37                 | 5.93            | 37.11              | 39.18          | 74.00               | -34.82          | Horizontal   | Peak       |
| 3112.13         | 36.82             | 28.80                 | 7.61            | 38.21              | 35.02          | 74.00               | -38.98          | Horizontal   | Peak       |
| 4809.50         | 45.54             | 31.58                 | 9.55            | 36.93              | 49.74          | 74.00               | -24.26          | Horizontal   | Peak       |
| 6299.18         | 34.72             | 33.10                 | 11.00           | 35.30              | 43.52          | 74.00               | -30.48          | Horizontal   | Peak       |

| CH39            |                   |                       |                 |                    |                |                     |                 |              |            |
|-----------------|-------------------|-----------------------|-----------------|--------------------|----------------|---------------------|-----------------|--------------|------------|
| Frequency (MHz) | Read Level (dBuV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | Polarization | Test value |
| 1219.64         | 38.18             | 26.28                 | 4.69            | 36.56              | 32.59          | 74.00               | -41.41          | Vertical     | Peak       |
| 3844.28         | 36.29             | 29.64                 | 8.56            | 38.20              | 36.29          | 74.00               | -37.71          | Vertical     | Peak       |
| 4700.57         | 34.86             | 31.20                 | 9.50            | 37.09              | 38.47          | 74.00               | -35.53          | Vertical     | Peak       |
| 7045.74         | 32.47             | 35.44                 | 11.85           | 34.86              | 44.90          | 74.00               | -29.10          | Vertical     | Peak       |
| 1764.12         | 43.12             | 25.33                 | 5.89            | 37.06              | 37.28          | 74.00               | -36.72          | Horizontal   | Peak       |
| 3507.65         | 37.30             | 29.02                 | 8.13            | 38.40              | 36.05          | 74.00               | -37.95          | Horizontal   | Peak       |
| 4883.52         | 41.08             | 31.43                 | 9.59            | 36.73              | 45.37          | 74.00               | -28.63          | Horizontal   | Peak       |
| 5821.21         | 33.16             | 32.14                 | 10.60           | 35.33              | 40.57          | 74.00               | -33.43          | Horizontal   | Peak       |

| CH78            |                   |                       |                 |                    |                |                     |                 |              |            |
|-----------------|-------------------|-----------------------|-----------------|--------------------|----------------|---------------------|-----------------|--------------|------------|
| Frequency (MHz) | Read Level (dBuV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | Polarization | Test value |
| 1764.12         | 41.12             | 25.33                 | 5.89            | 37.06              | 35.28          | 74.00               | -38.72          | Vertical     | Peak       |
| 3690.85         | 36.09             | 29.30                 | 8.37            | 38.25              | 35.51          | 74.00               | -38.49          | Vertical     | Peak       |
| 5086.52         | 33.35             | 31.85                 | 9.74            | 36.31              | 38.63          | 74.00               | -35.37          | Vertical     | Peak       |
| 7547.01         | 32.69             | 36.15                 | 12.55           | 34.94              | 46.45          | 74.00               | -27.55          | Vertical     | Peak       |
| 1755.16         | 40.08             | 25.31                 | 5.87            | 37.05              | 34.21          | 74.00               | -39.79          | Horizontal   | Peak       |
| 3598.09         | 35.35             | 29.29                 | 8.27            | 38.27              | 34.64          | 74.00               | -39.36          | Horizontal   | Peak       |
| 4958.68         | 39.10             | 31.46                 | 9.64            | 36.52              | 43.68          | 74.00               | -30.32          | Horizontal   | Peak       |
| 7432.62         | 32.33             | 36.23                 | 12.18           | 34.85              | 45.89          | 74.00               | -28.11          | Horizontal   | Peak       |

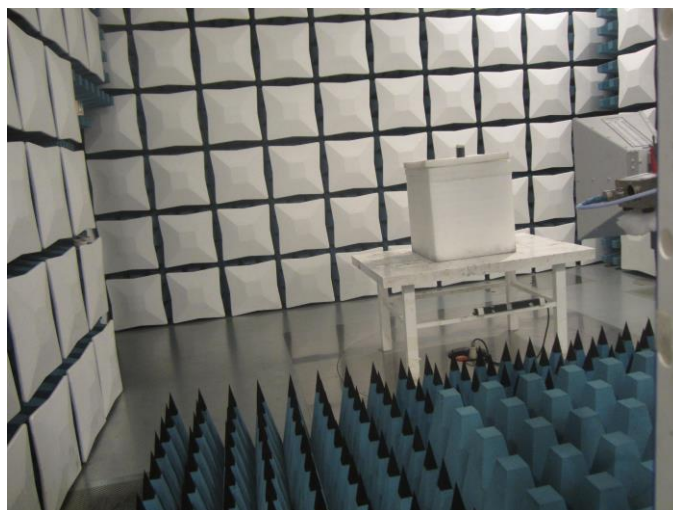
## 6. TEST SETUP PHOTOS

### Conducted Emissions



### Radiated Emissions





## **7. EXTERANAL AND INTERNAL PHOTOS**

Reference to Test Report No.: TRE1708016501.

.....End of Report.....