

## TRANSMITTER SPURIOUS EMISSIONS (CONDUCTED)

SPECIFICATIONS: FCC 47 CFR 2.1051

RSS-119 5.8

GUIDE: ANSI C63.26 5.7

### MEASUREMENT PROCEDURE:

1. Refer Annex A for equipment set up.
2. The frequency range examined was from the lowest frequency generated within the EUT, to a frequency higher than the 10<sup>th</sup> Harmonic:  
9 kHz to Fc-BW  
Fc + BW to 10Fc (4.8 GHz)
3. The EUT was set to transmit high or low power. A scan is performed with a resolution bandwidth of 100 kHz and a video bandwidth of 300 kHz for frequencies up to 1 GHz, and a resolution bandwidth of 1 MHz and a video bandwidth of 3 MHz for frequencies above 1 GHz.
4. For frequencies close to the carrier the spectrum was measured using a resolution bandwidth of 1kHz, the results were then integrated to give measurements for 100kHz bandwidth.
5. A low-pass filter was used for frequencies from 800 MHz to 4.0 GHz.
6. For each frequency range the spectrum analyser was loaded with the appropriate calibration figures to compensate for the cables, attenuator, and filter losses, allowing the emission levels to be read directly with no further calculation.
7. The results of the various sweeps were combined programmatically to give charts for frequencies near the carrier, up to 1GHz and above 1GHz.  
The calibrations are loaded as an overall reference level offset plus a set of correction factors for the required frequency band.

Spurious emissions which were attenuated by more than 20 dB below the limit were not recorded.

### Example of attenuation correction: (dB)

|                                 |       |                                  |
|---------------------------------|-------|----------------------------------|
| E5023 30dB 350W CK9178          | 32.21 |                                  |
| E5015 3m Blue                   | 1.06  |                                  |
| E5028 1m5 Blue                  | 0.41  |                                  |
| E3384 400_520MHz HPBRF          | 6.37  |                                  |
| Total Attenuation @ 812.250 MHz | 40.06 | Sum of component attenuation (a) |
| Amplitude offset                | 41.59 | (b)                              |
| Correction @ 812.250MHz         | -1.52 | (a-b)                            |

MEASUREMENT UNCERTAINTY:  $\leq 12.75$  GHz  $\pm 3.0$  dB

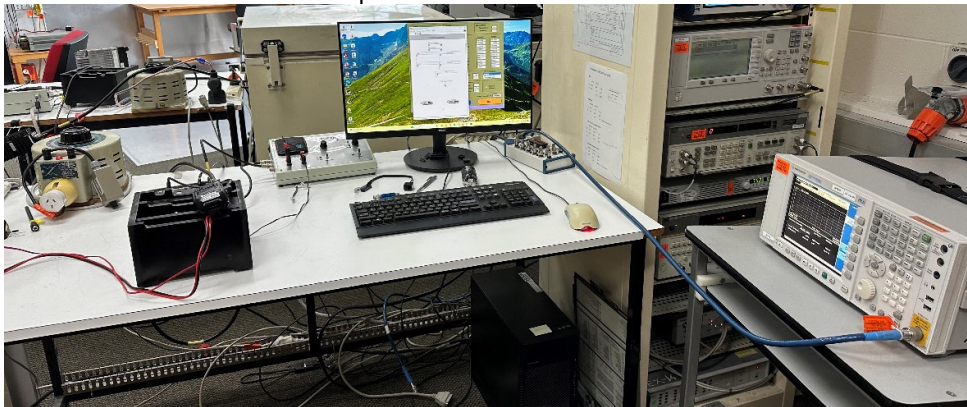
### MEASUREMENT RESULTS:

See the tables and plots on the following pages for 12.5 kHz channel spacing.

LIMIT CLAUSES: FCC 47 CFR 90.210

RSS-119 5.8

Photo: Conducted Emissions Test Setup



### Spurious Emissions (Tx Conducted)

SPECIFICATION: FCC 47 CFR 2.1051

RSS-119 5.8

12.5 kHz Channel Spacing

406.125 MHz @ 4 W

Emission Mask D

| Emission Frequency (MHz) | Level (dBm) | Level (dBc) |
|--------------------------|-------------|-------------|
| 3656.509                 | -39.6       | -75.6       |
| ~                        | ~           | ~           |

12.5 kHz Channel Spacing

406.125 MHz @ 1 W

Emission Mask D

| Emission Frequency (MHz)                                                        | Level (dBm) | Level (dBc) |
|---------------------------------------------------------------------------------|-------------|-------------|
| ~                                                                               | ~           | ~           |
| No other emissions were detected at a level greater than 20 dB below the limit. |             |             |

Spurious Emissions (Tx Conducted)

406.125 MHz

4 W

1 W

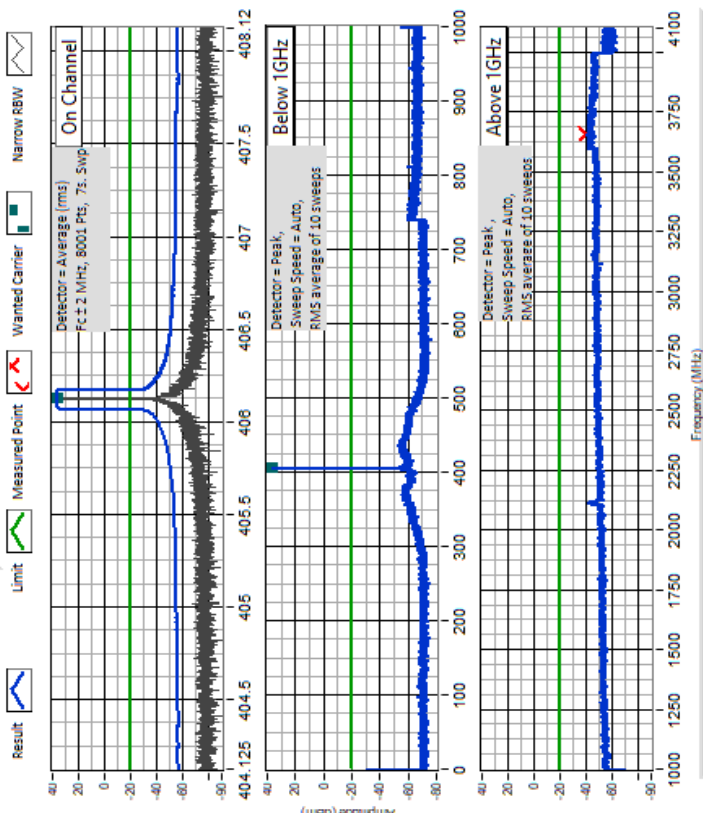
406.125MHz 4W 12.5kHz

Unmodulated

100kHz RBW- 100kHz to 1GHz

1MHz RBW- 1GHz to 4.1GHz

Low Pass Filter used from 740.0 MHz to 4.0 GHz



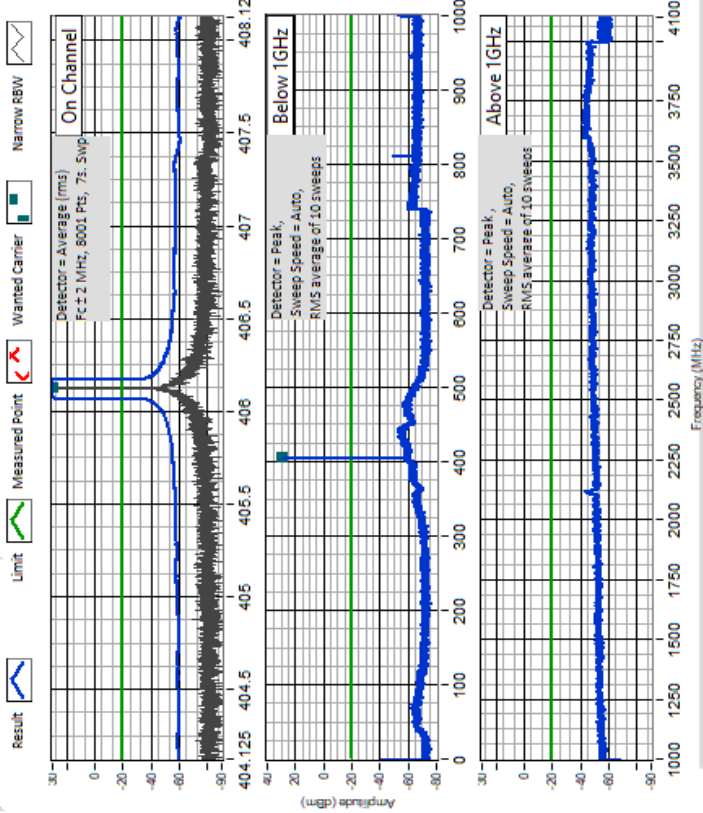
406.125MHz 1W 12.5kHz

Unmodulated

100kHz RBW- 100kHz to 1GHz

1MHz RBW- 1GHz to 4.1GHz

Low Pass Filter used from 740.0 MHz to 4.0 GHz



### Spurious Emissions (Tx Conducted)

SPECIFICATION: FCC 47 CFR 2.1051

RSS-119 5.8

12.5 kHz Channel Spacing

418.025 MHz @ 4 W

Emission Mask D

| Emission Frequency (MHz) | Level (dBm) | Level (dBc) |
|--------------------------|-------------|-------------|
| ~                        | ~           | ~           |

12.5 kHz Channel Spacing

418.025 MHz @ 1 W

Emission Mask D

| Emission Frequency (MHz)                                                        | Level (dBm) | Level (dBc) |
|---------------------------------------------------------------------------------|-------------|-------------|
| 3672.622                                                                        | -39.6       | -69.6       |
| ~                                                                               | ~           | ~           |
| No other emissions were detected at a level greater than 20 dB below the limit. |             |             |

Spurious Emissions (Tx Conducted)

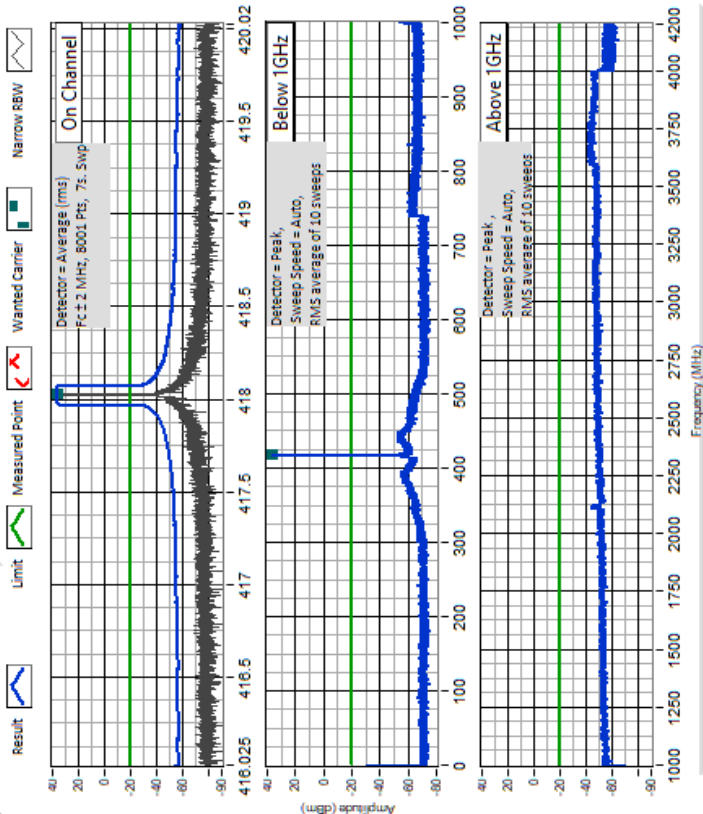
418.025 MHz

4 W

1 W

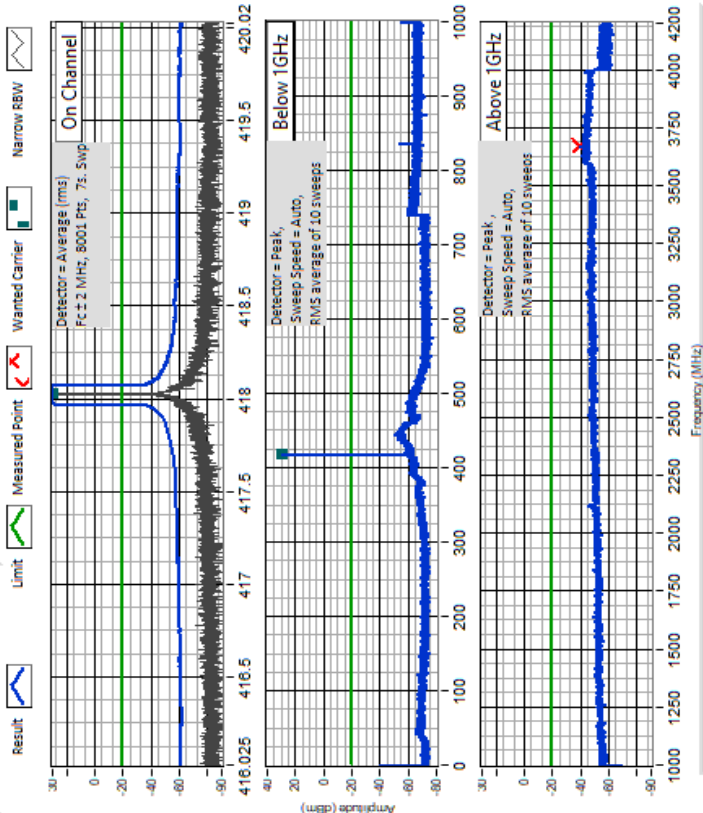
418.025MHz 4W 12.5kHz  
Unmodulated

100kHz RBW- 100kHz to 1GHz  
1MHz RBW- 1GHz to 4.2GHz  
Low Pass Filter used from 740.0 MHz to 4.0 GHz



418.025MHz 1W 12.5kHz  
Unmodulated

100kHz RBW- 100kHz to 1GHz  
1MHz RBW- 1GHz to 4.2GHz  
Low Pass Filter used from 740.0 MHz to 4.0 GHz



### Spurious Emissions (Tx Conducted)

SPECIFICATION: FCC 47 CFR 2.1051

RSS-119 5.8

12.5 kHz Channel Spacing

429.975 MHz @ 4 W

Emission Mask D

| Emission Frequency (MHz) | Level (dBm) | Level (dBc) |
|--------------------------|-------------|-------------|
| ~                        | ~           | ~           |

12.5 kHz Channel Spacing

429.975 MHz @ 1 W

Emission Mask D

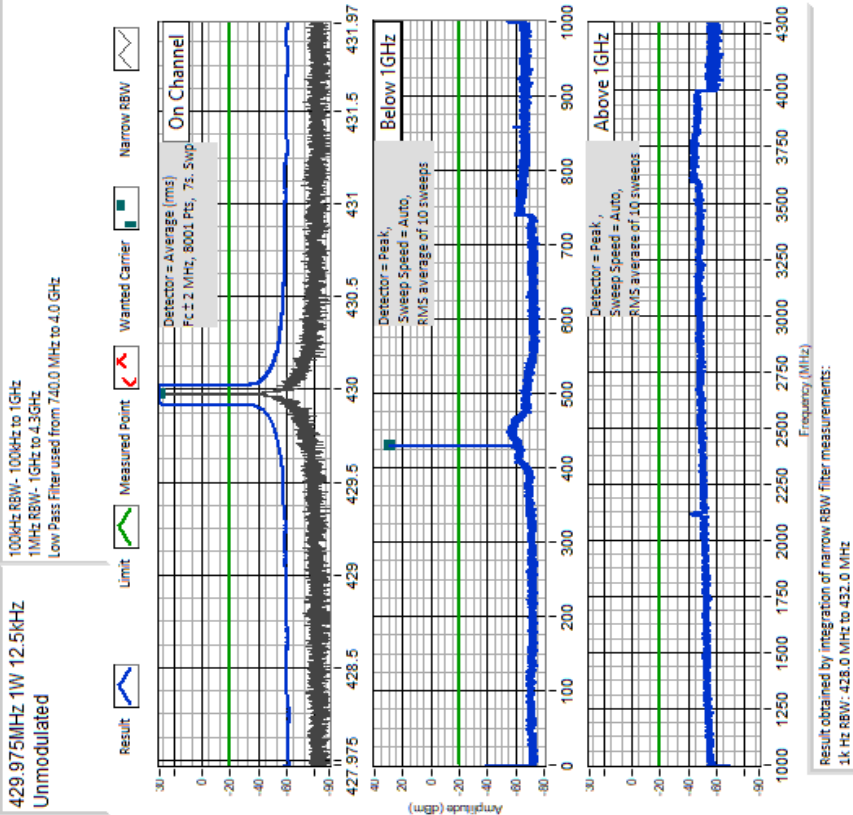
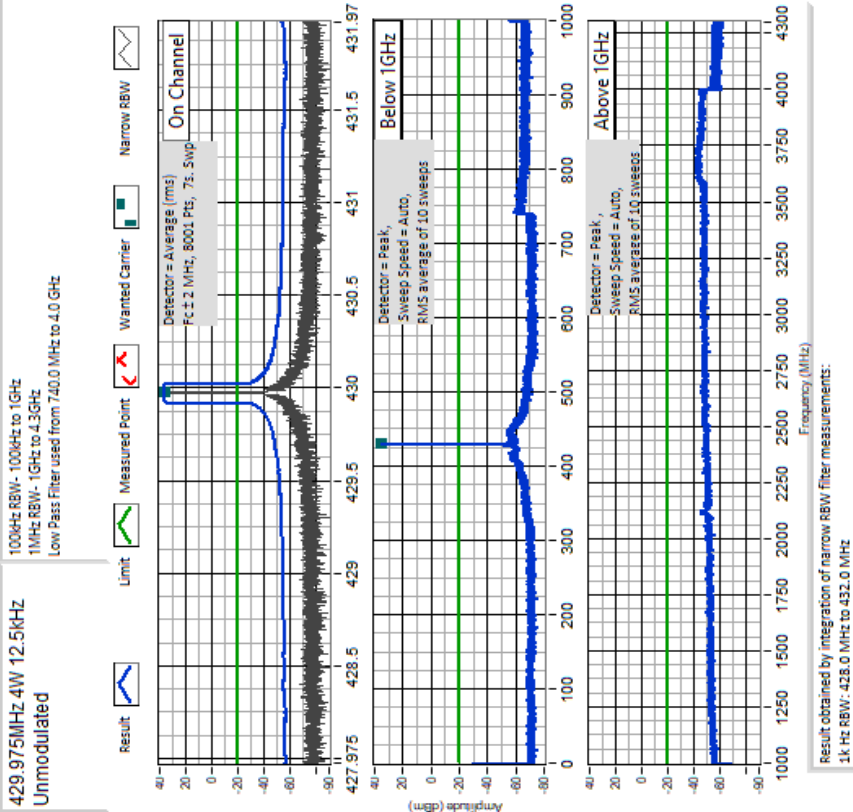
| Emission Frequency (MHz)                                                  | Level (dBm) | Level (dBc) |
|---------------------------------------------------------------------------|-------------|-------------|
| ~                                                                         | ~           | ~           |
| No emissions were detected at a level greater than 20 dB below the limit. |             |             |

Spurious Emissions (Tx Conducted)

429.975 MHz

4 W

1 W



### Spurious Emissions (Tx Conducted)

SPECIFICATION: FCC 47 CFR 2.1051

RSS-119 5.8

12.5 kHz Channel Spacing

450.025 MHz @ 4 W

Emission Mask D

| Emission Frequency (MHz) | Level (dBm) | Level (dBc) |
|--------------------------|-------------|-------------|
| ~                        | ~           | ~           |

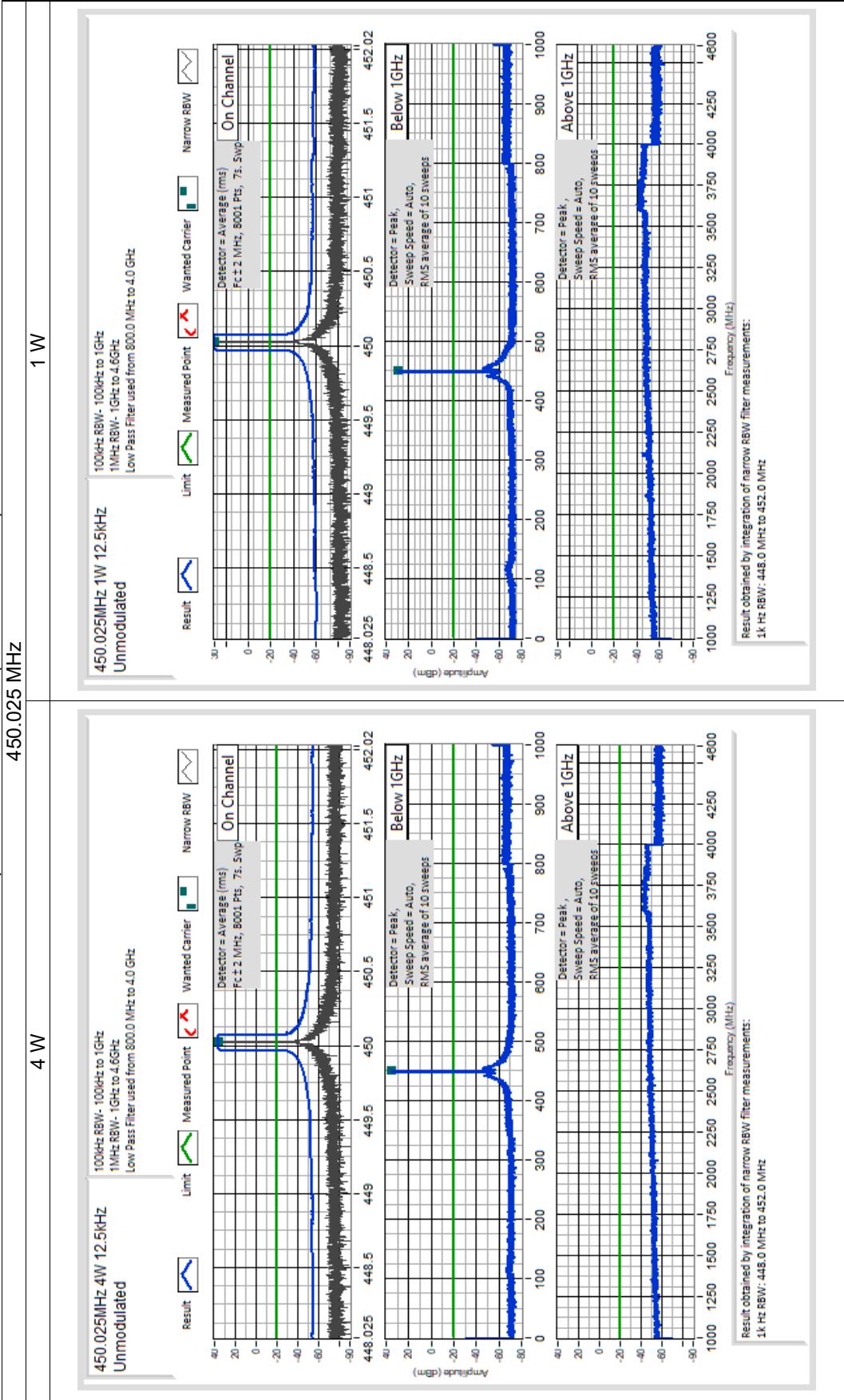
12.5 kHz Channel Spacing

450.025 MHz @ 1 W

Emission Mask D

| Emission Frequency (MHz)                                                  | Level (dBm) | Level (dBc) |
|---------------------------------------------------------------------------|-------------|-------------|
| ~                                                                         | ~           | ~           |
| No emissions were detected at a level greater than 20 dB below the limit. |             |             |

Spurious Emissions (Tx Conducted)



Spurious Emissions (Tx Conducted)ss

SPECIFICATION: FCC 47 CFR 2.1051

RSS-119 5.8

12.5 kHz Channel Spacing

460.025 MHz @ 4 W

Emission Mask D

| Emission Frequency (MHz) | Level (dBm) | Level (dBc) |
|--------------------------|-------------|-------------|
| ~                        | ~           | ~           |

12.5 kHz Channel Spacing

460.025 MHz @ 1 W

Emission Mask D

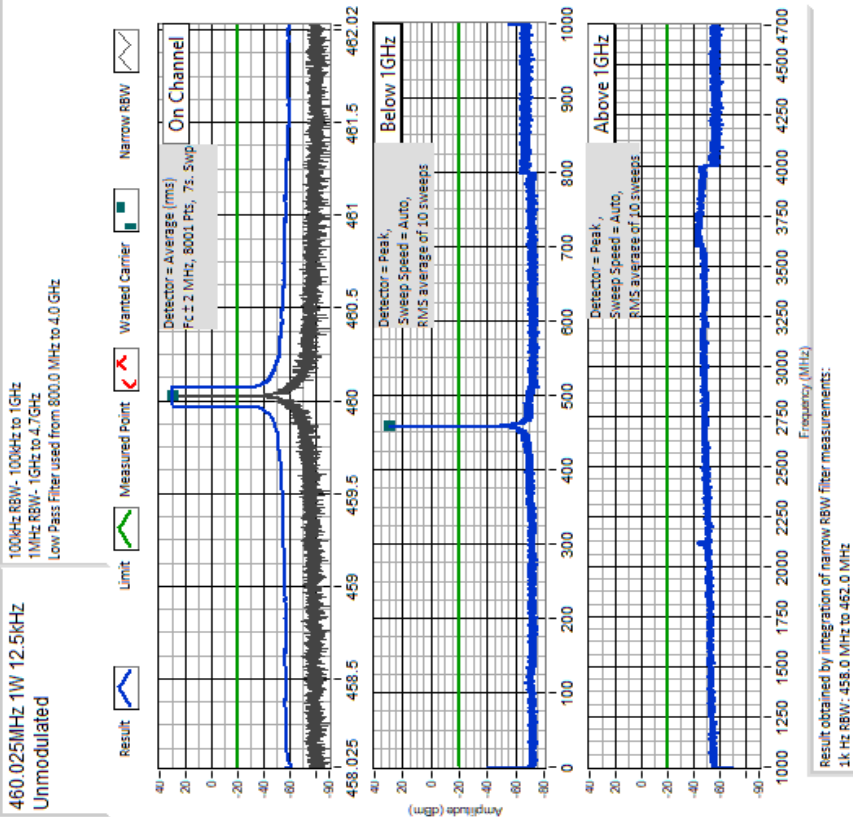
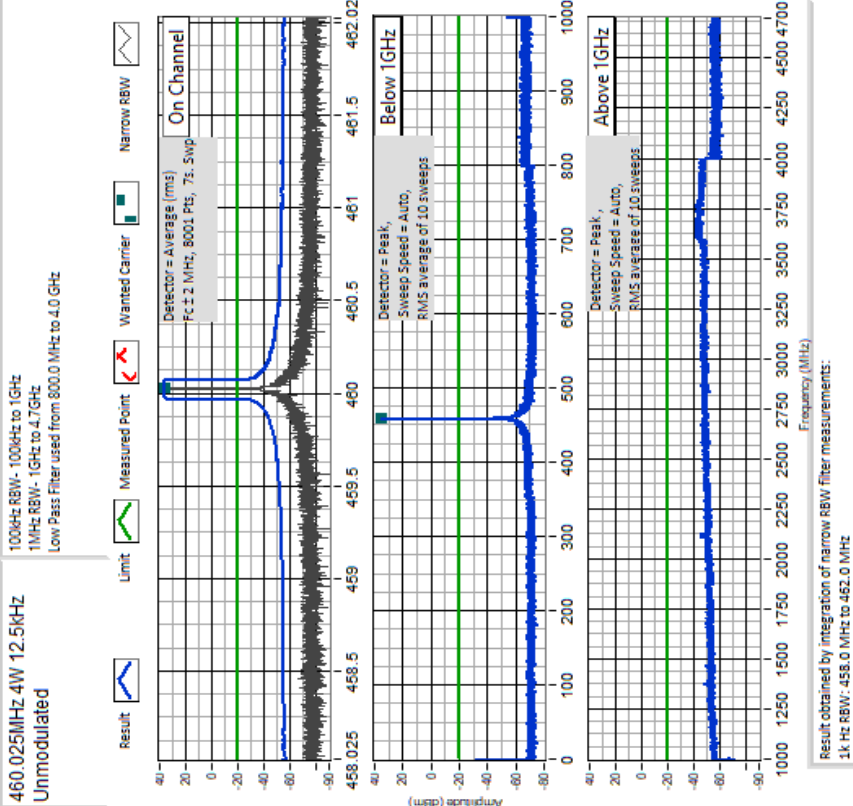
| Emission Frequency (MHz)                                                  | Level (dBm) | Level (dBc) |
|---------------------------------------------------------------------------|-------------|-------------|
| ~                                                                         | ~           | ~           |
| No emissions were detected at a level greater than 20 dB below the limit. |             |             |

Spurious Emissions (Tx Conducted)

460.025 MHz

4 W

1 W



### Spurious Emissions (Tx Conducted)

SPECIFICATION: FCC 47 CFR 2.1051

RSS-119 5.8

12.5 kHz Channel Spacing

469.975 MHz @ 4 W

Emission Mask D

| Emission Frequency (MHz) | Level (dBm) | Level (dBc) |
|--------------------------|-------------|-------------|
| 2116.295                 | -39.6       | -75.6       |
| ~                        | ~           | ~           |

12.5 kHz Channel Spacing

469.975 MHz @ 1 W

Emission Mask D

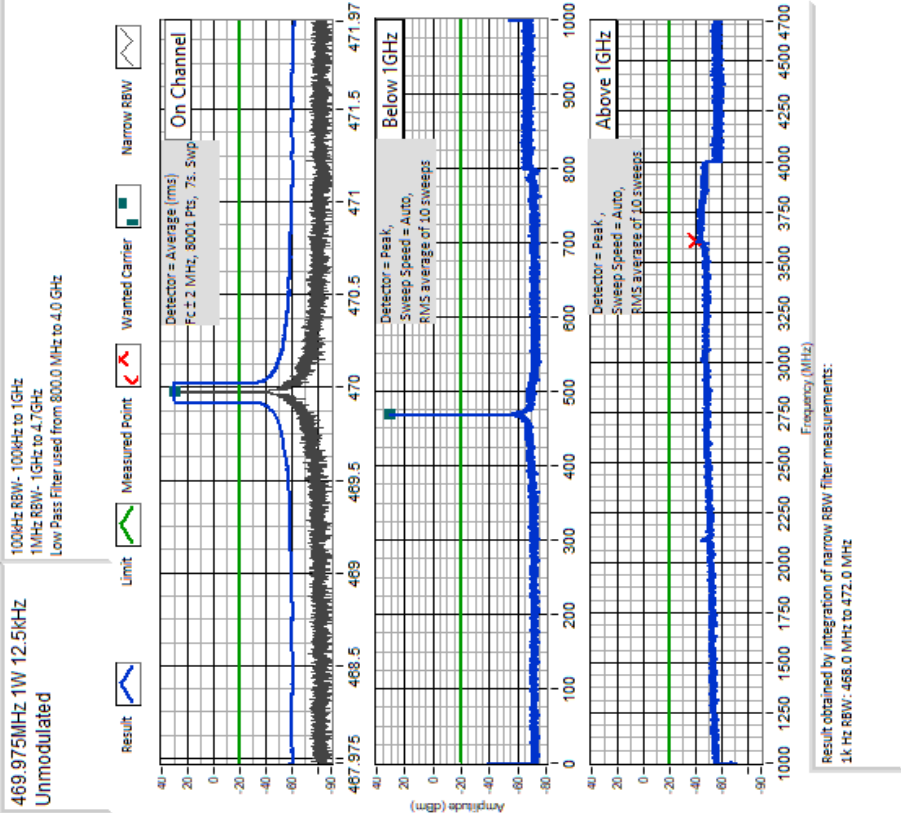
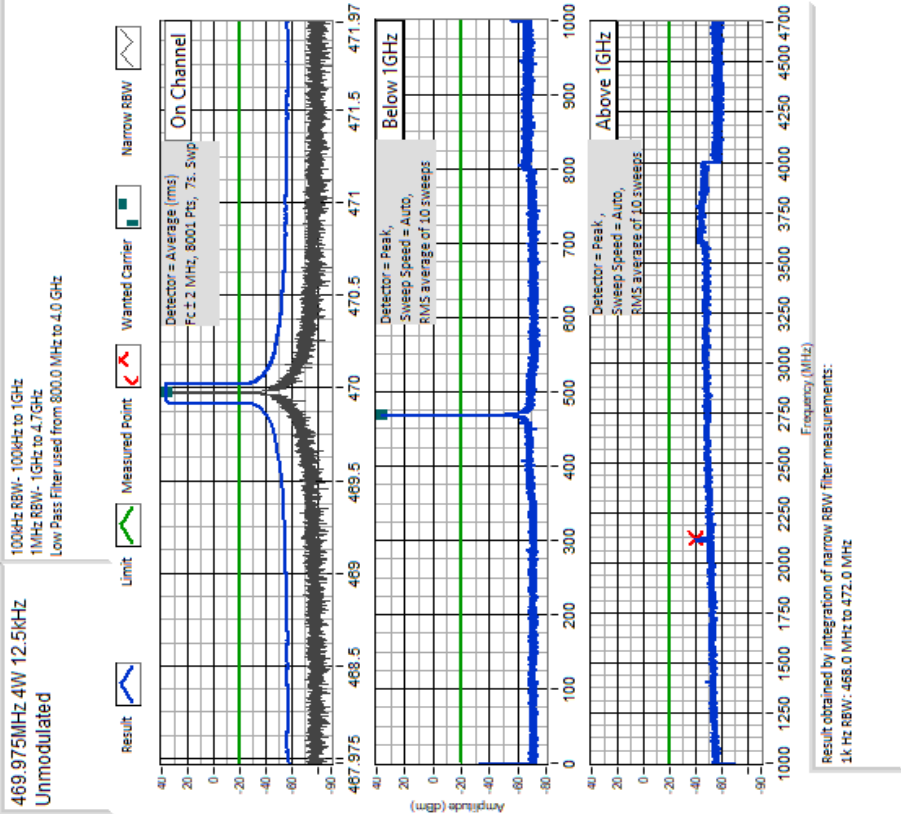
| Emission Frequency (MHz)                                                        | Level (dBm) | Level (dBc) |
|---------------------------------------------------------------------------------|-------------|-------------|
| 3600.115                                                                        | -40.0       | -70.0       |
| ~                                                                               | ~           | ~           |
| No other emissions were detected at a level greater than 20 dB below the limit. |             |             |

Spurious Emissions (Tx Conducted)

469.975 MHz

4 W

1 W



Spurious Emissions (Tx Conducted)

SPECIFICATION: FCC 47 CFR 2.1051

RSS-119 5.8

12.5 kHz Channel Spacing

479.975 MHz @ 4 W

Emission Mask D

| Emission Frequency (MHz) | Level (dBm) | Level (dBc) |
|--------------------------|-------------|-------------|
| 2115.929                 | -39.7       | -75.7       |
| ~                        | ~           | ~           |

12.5 kHz Channel Spacing

479.975 MHz @ 1 W

Emission Mask D

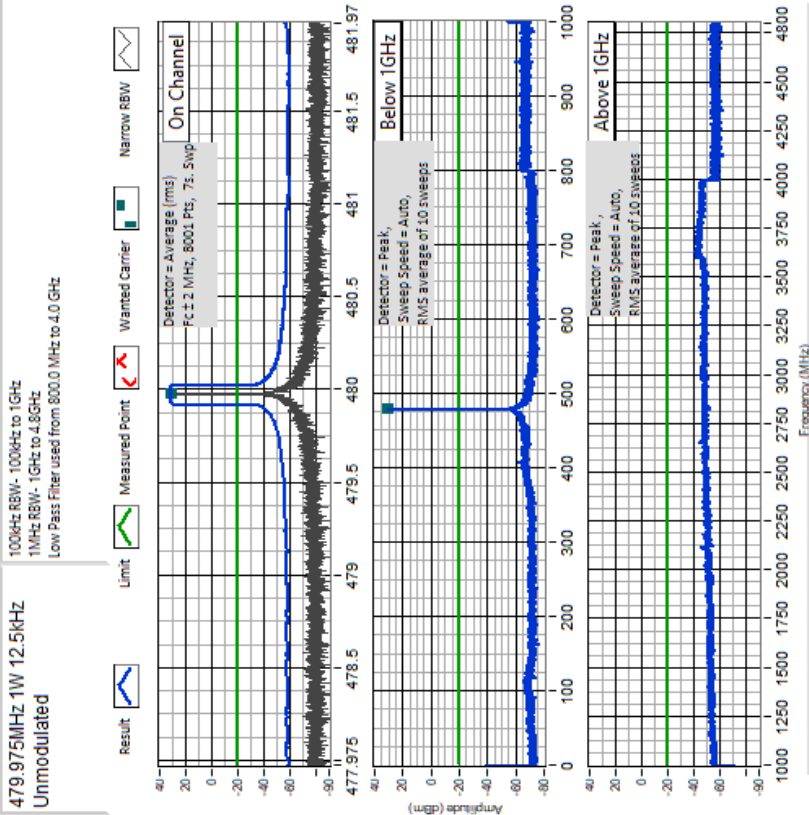
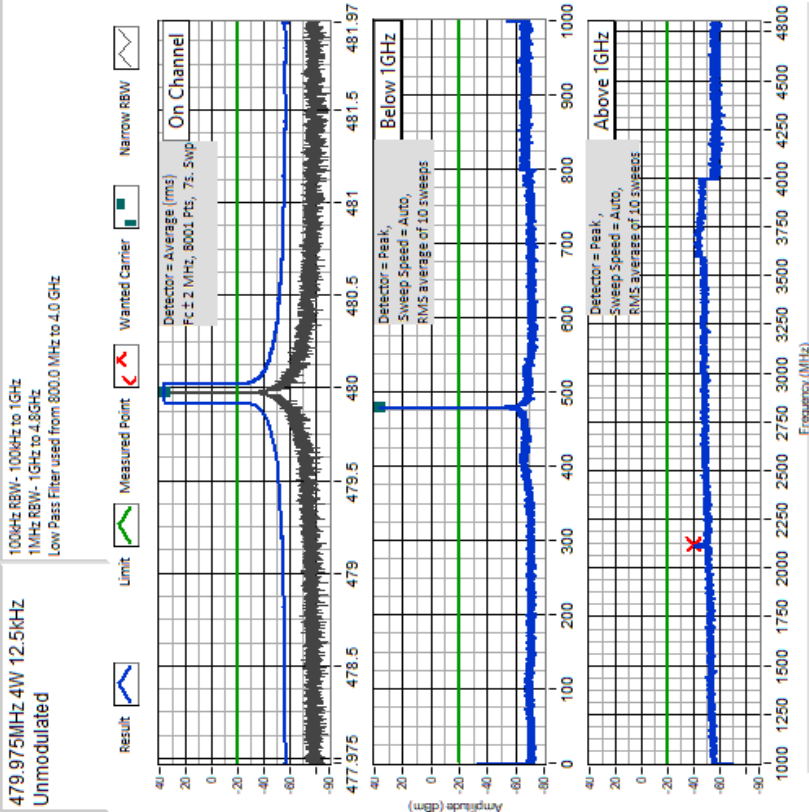
| Emission Frequency (MHz)                                                        | Level (dBm) | Level (dBc) |
|---------------------------------------------------------------------------------|-------------|-------------|
| ~                                                                               | ~           | ~           |
| No other emissions were detected at a level greater than 20 dB below the limit. |             |             |

Spurious Emissions (Tx Conducted)

479.975 MHz

4 W

1 W



Spurious Emissions (Tx Conducted)

SPECIFICATION: FCC 47 CFR 2.1051

RSS-119 5.8

LIMITS: FCC 47 CFR 90.210

RSS-119 5.8

| Carrier Output Power | Emission Mask D<br>12.5 kHz Channel Spacing<br>$50 + 10 \log_{10}(P_{\text{Watts}})$ |         |
|----------------------|--------------------------------------------------------------------------------------|---------|
|                      | -20 dBm                                                                              | -56 dBc |
| 4 W                  | -20 dBm                                                                              | -56 dBc |
| 1 W                  | -20 dBm                                                                              | -50 dBc |

## TRANSMITTER SPURIOUS EMISSIONS (RADIATED)

SPECIFICATION: FCC 47 CFR 2.1053

GUIDE: ANSI C63.26 5.5.3

### MEASUREMENT PROCEDURE:

#### Initial Scan:

1. The EUT is placed in the S-Line TEM cell and emissions are measured from 30 MHz to 700 MHz. Any emission within 20 dB of the limit is then re-tested on the OATS.
2. The EUT is placed in the reverberation chamber and emissions are measured from 700 MHz to the upper frequency required ( $10 \times F_c$ ). Any emission within 20 dB of the limit is then re-tested on the OATS.
3. The harmonics emissions up to the 6<sup>th</sup> harmonic of the fundamental frequency are measured on the OATS

#### OATS Measurement:

1. The EUT is placed on a wooden turntable at a distance of three metres from the test antenna. The output terminal is connected to an RF dummy load.
2. The test antenna is raised from 1 m to 4 m to obtain a maximum reading; the turntable is then rotated through 360° to obtain the maximum response of each spurious emission. Valid emissions are determined by switching the EUT on and off.
3. The EUT is then replaced by a signal generator and substitution antenna to make measurements by the substitution method.

MEASUREMENT UNCERTAINTY:  $\leq 12.75 \text{ GHz}$   $\pm 4.6 \text{ dB}$

### MEASUREMENT RESULTS:

See the tables on the following pages

Spurious Emissions (Tx Radiated) – Continued

SPECIFICATION: FCC 47 CFR 2.1053

12.5 kHz Channel Spacing      406.125 MHz @ 4 W      Emission Mask D

| Emission Frequency (MHz) | Level (dBm) | Level (dBc) |
|--------------------------|-------------|-------------|
| ~                        | ~           | ~           |
|                          |             |             |

12.5 kHz Channel Spacing      406.125 MHz @ 1 W      Emission Mask D

| Emission Frequency (MHz)                                                  | Level (dBm) | Level (dBc) |
|---------------------------------------------------------------------------|-------------|-------------|
| ~                                                                         | ~           | ~           |
|                                                                           |             |             |
| No emissions were detected at a level greater than 20 dB below the limit. |             |             |

12.5 kHz Channel Spacing      418.025 MHz @ 4 W      Emission Mask D

| Emission Frequency (MHz) | Level (dBm) | Level (dBc) |
|--------------------------|-------------|-------------|
| ~                        | ~           | ~           |
|                          |             |             |

12.5 kHz Channel Spacing      418.025 MHz @ 1 W      Emission Mask D

| Emission Frequency (MHz)                                                  | Level (dBm) | Level (dBc) |
|---------------------------------------------------------------------------|-------------|-------------|
| ~                                                                         | ~           | ~           |
|                                                                           |             |             |
| No emissions were detected at a level greater than 20 dB below the limit. |             |             |

12.5 kHz Channel Spacing      429.975 MHz @ 4 W      Emission Mask D

| Emission Frequency (MHz) | Level (dBm) | Level (dBc) |
|--------------------------|-------------|-------------|
| ~                        | ~           | ~           |
|                          |             |             |

12.5 kHz Channel Spacing      429.975 MHz @ 1 W      Emission Mask D

| Emission Frequency (MHz)                                                  | Level (dBm) | Level (dBc) |
|---------------------------------------------------------------------------|-------------|-------------|
| ~                                                                         | ~           | ~           |
|                                                                           |             |             |
| No emissions were detected at a level greater than 20 dB below the limit. |             |             |

Spurious Emissions (Tx Radiated) – Continued

12.5 kHz Channel Spacing

450.025 MHz @ 4 W

Emission Mask D

| Emission Frequency (MHz) | Level (dBm) | Level (dBc) |
|--------------------------|-------------|-------------|
| ~                        | ~           | ~           |
|                          |             |             |

12.5 kHz Channel Spacing

450.025 MHz @ 1 W

Emission Mask D

| Emission Frequency (MHz)                                                  | Level (dBm) | Level (dBc) |
|---------------------------------------------------------------------------|-------------|-------------|
| ~                                                                         | ~           | ~           |
|                                                                           |             |             |
| No emissions were detected at a level greater than 20 dB below the limit. |             |             |

12.5 kHz Channel Spacing

460.025 MHz @ 4 W

Emission Mask D

| Emission Frequency (MHz) | Level (dBm) | Level (dBc) |
|--------------------------|-------------|-------------|
| ~                        | ~           | ~           |
|                          |             |             |

12.5 kHz Channel Spacing

460.025 MHz @ 1 W

Emission Mask D

| Emission Frequency (MHz)                                                  | Level (dBm) | Level (dBc) |
|---------------------------------------------------------------------------|-------------|-------------|
| ~                                                                         | ~           | ~           |
|                                                                           |             |             |
| No emissions were detected at a level greater than 20 dB below the limit. |             |             |

12.5 kHz Channel Spacing

469.975 MHz @ 4 W

Emission Mask D

| Emission Frequency (MHz) | Level (dBm) | Level (dBc) |
|--------------------------|-------------|-------------|
| ~                        | ~           | ~           |
|                          |             |             |

12.5 kHz Channel Spacing

469.975 MHz @ 1 W

Emission Mask D

| Emission Frequency (MHz)                                                  | Level (dBm) | Level (dBc) |
|---------------------------------------------------------------------------|-------------|-------------|
| ~                                                                         | ~           | ~           |
|                                                                           |             |             |
| No emissions were detected at a level greater than 20 dB below the limit. |             |             |

Spurious Emissions (Tx Radiated) – Continued

12.5 kHz Channel Spacing

479.975 MHz @ 4 W

Emission Mask D

| Emission Frequency (MHz) | Level (dBm) | Level (dBc) |
|--------------------------|-------------|-------------|
| ~                        | ~           | ~           |
|                          |             |             |

12.5 kHz Channel Spacing

479.975 MHz @ 1 W

Emission Mask D

| Emission Frequency (MHz)                                                  | Level (dBm) | Level (dBc) |
|---------------------------------------------------------------------------|-------------|-------------|
| ~                                                                         | ~           | ~           |
|                                                                           |             |             |
| No emissions were detected at a level greater than 20 dB below the limit. |             |             |

LIMITS: FCC 47 CFR 2.1053

| Carrier Output Power | Emission Mask D<br>12.5 kHz Channel Spacing<br>$50 + 10 \log_{10}(P_{\text{Watts}})$ |         |
|----------------------|--------------------------------------------------------------------------------------|---------|
| 4 W                  | -20 dBm                                                                              | -56 dBc |
| 1 W                  | -20 dBm                                                                              | -50 dBc |

## Spurious Emissions (Tx Radiated) - Continued

### Open Area Test Site Results:

| 12.5 kHz Channel Spacing              | 469.975 MHz @ 4 W | Emission Mask D |
|---------------------------------------|-------------------|-----------------|
| Harmonics<br>Emission Frequency (MHz) | Level (dBm)       | Level (dBc)     |
| 939.950                               | -62.01            | -98.02          |
| 1409.925                              | -48.55            | -84.57          |
| 1879.900                              | -70.58            | -106.60         |
| 2349.875                              | -66.00            | -102.02         |
| 2819.850                              | -60.75            | -96.77          |
| 3289.825                              | -46.83            | -82.85          |

### Sample Calculation

|                             | Measurement                 |                  |                                 |                       | Result |        |
|-----------------------------|-----------------------------|------------------|---------------------------------|-----------------------|--------|--------|
|                             | Reference                   | Substitution     |                                 |                       |        |        |
| Emission<br>Frequency (MHz) | Reference<br>Level<br>(dBm) | Sig-gen<br>Level | Cable and<br>Attenuator<br>Gain | Antenna<br>Gain (dBd) | dBm    | dBc    |
| 1409.925                    | -89.00                      | -36.00           | -18.30                          | 5.75                  | -48.55 | -84.57 |
|                             |                             | A                | B                               | C                     | E      |        |

$$\text{Result (E)} = A + B + C$$

Photo: OATS Setup



## TRANSIENT FREQUENCY BEHAVIOR

SPECIFICATION: FCC 47 CFR 90.214

RSS-119 5.9

GUIDE: ANSI C63.26 6.5.2.2

### MEASUREMENT PROCEDURE:

1. Refer Annex A for equipment set up.
2. Measurements and plots were made following the ANSI procedure.

MEASUREMENT UNCERTAINTY: 130Hz

### MEASUREMENT RESULTS:

See the tables and plots on the following pages for 12.5 kHz channel spacing.

LIMIT CLAUSES: FCC 47 CFR 90.214

RSS-119 5.9

## Transient Frequency Behaviour

SPECIFICATION: FCC 47 CFR 90.214

RSS-119 5.9

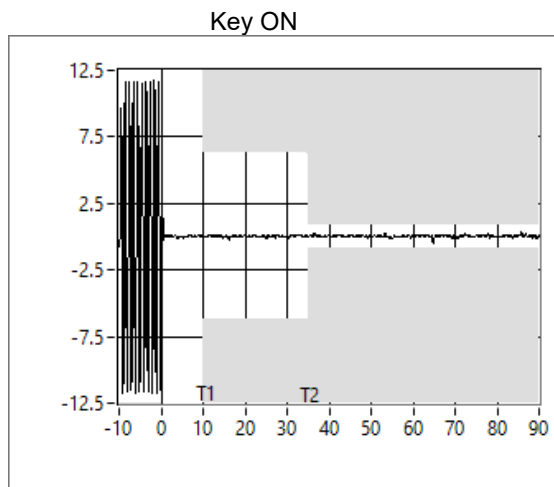
Tx FREQUENCY: 406.125 MHz

4 W

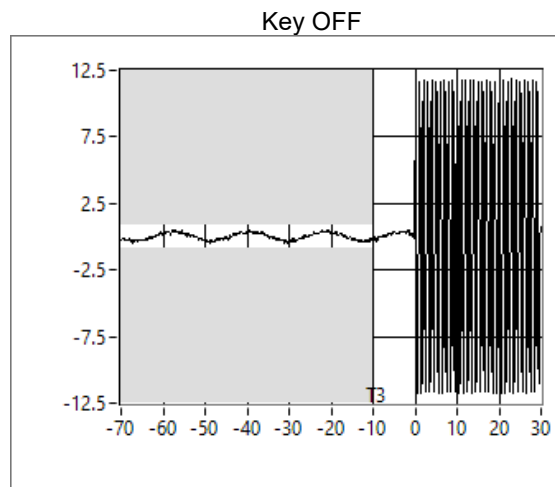
12.5 kHz Channel Spacing

| TRANSIENT RESPONSE PERIOD | CARRIER PEAK VARIATION FROM NORMAL |               |
|---------------------------|------------------------------------|---------------|
|                           | Key ON (kHz)                       | Key OFF (kHz) |
| t1                        | 1.2                                | N/A           |
| t2                        | -0.3                               | N/A           |
| t3                        | N/A                                | 3.5           |

|                                                                                                                     |     |                          |
|---------------------------------------------------------------------------------------------------------------------|-----|--------------------------|
| Confirm that during periods t1 and t3 the frequency difference does not exceed the value of one channel separation. | YES | NO                       |
|                                                                                                                     | ✓   | <input type="checkbox"/> |
| Confirm that during the period t2 the frequency difference does not exceed half a channel separation.               | YES | NO                       |
|                                                                                                                     | ✓   | <input type="checkbox"/> |
| Confirm that during the period t2 to t3 the frequency difference does not exceed the frequency error limit.         | YES | NO                       |
|                                                                                                                     | ✓   | <input type="checkbox"/> |



TARF 4423  
406.125000MHz 4Watts 12.50kHz Channel spacing



TARF 4423  
406.125000MHz 4Watts 12.50kHz Channel spacing

## Transient Frequency Behaviour

SPECIFICATION: FCC 47 CFR 90.214

RSS-119 5.9

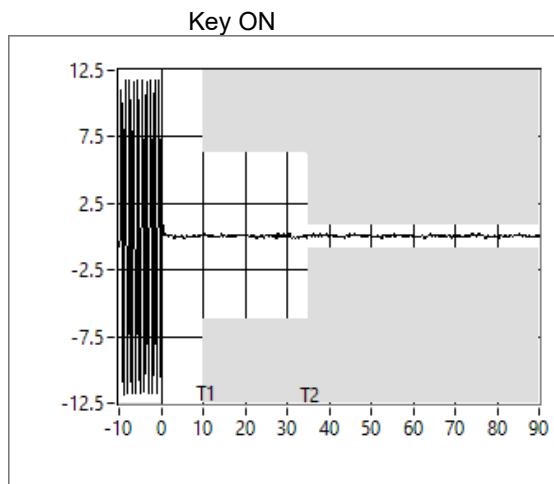
Tx FREQUENCY: 418.025 MHz

4 W

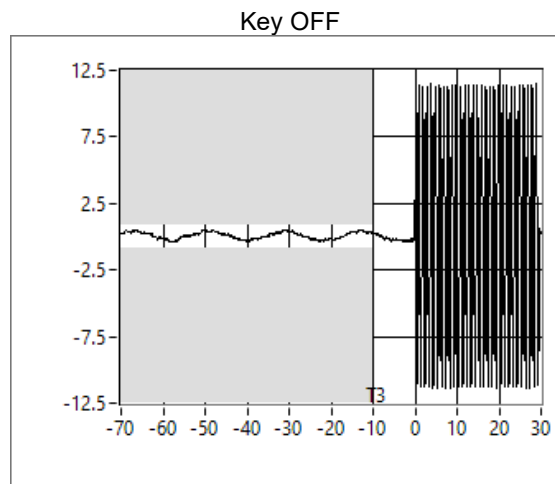
12.5 kHz Channel Spacing

| TRANSIENT RESPONSE PERIOD | CARRIER PEAK VARIATION FROM NORMAL |               |
|---------------------------|------------------------------------|---------------|
|                           | Key ON (kHz)                       | Key OFF (kHz) |
| t1                        | 0.8                                | N/A           |
| t2                        | 0.3                                | N/A           |
| t3                        | N/A                                | 2.7           |

|                                                                                                                     |     |                          |
|---------------------------------------------------------------------------------------------------------------------|-----|--------------------------|
| Confirm that during periods t1 and t3 the frequency difference does not exceed the value of one channel separation. | YES | NO                       |
|                                                                                                                     | ✓   | <input type="checkbox"/> |
| Confirm that during the period t2 the frequency difference does not exceed half a channel separation.               | YES | NO                       |
|                                                                                                                     | ✓   | <input type="checkbox"/> |
| Confirm that during the period t2 to t3 the frequency difference does not exceed the frequency error limit.         | YES | NO                       |
|                                                                                                                     | ✓   | <input type="checkbox"/> |



**TARF 4423**  
418.025000MHz 4Watts 12.50kHz Channel spacing



**TARF 4423**  
418.025000MHz 4Watts 12.50kHz Channel spacing

## Transient Frequency Behaviour

SPECIFICATION: FCC 47 CFR 90.214

RSS-119 5.9

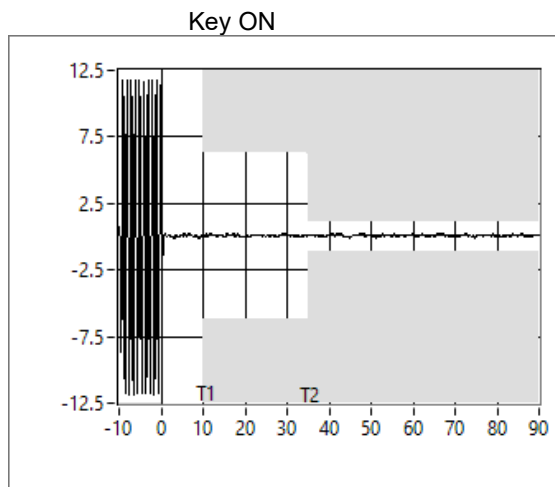
Tx FREQUENCY: 429.975 MHz

4 W

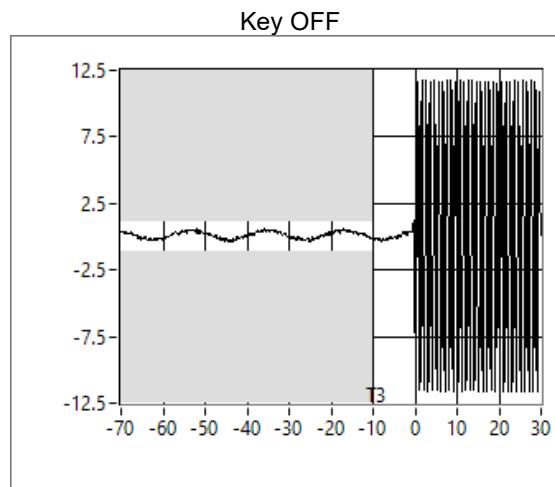
12.5 kHz Channel Spacing

| TRANSIENT RESPONSE PERIOD | CARRIER PEAK VARIATION FROM NORMAL |               |
|---------------------------|------------------------------------|---------------|
|                           | Key ON (kHz)                       | Key OFF (kHz) |
| t1                        | -1.1                               | N/A           |
| t2                        | 0.3                                | N/A           |
| t3                        | N/A                                | -2.9          |

|                                                                                                                     |     |                          |
|---------------------------------------------------------------------------------------------------------------------|-----|--------------------------|
| Confirm that during periods t1 and t3 the frequency difference does not exceed the value of one channel separation. | YES | NO                       |
|                                                                                                                     | ✓   | <input type="checkbox"/> |
| Confirm that during the period t2 the frequency difference does not exceed half a channel separation.               | YES | NO                       |
|                                                                                                                     | ✓   | <input type="checkbox"/> |
| Confirm that during the period t2 to t3 the frequency difference does not exceed the frequency error limit.         | YES | NO                       |
|                                                                                                                     | ✓   | <input type="checkbox"/> |



**TARF 4423**  
429.975000MHz 4Watts 12.50kHz Channel spacing



**TARF 4423**  
429.975000MHz 4Watts 12.50kHz Channel spacing

## Transient Frequency Behaviour

SPECIFICATION: FCC 47 CFR 90.214

RSS-119 5.9

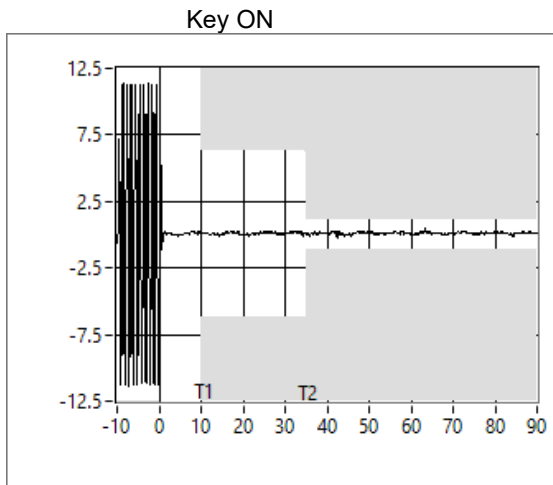
Tx FREQUENCY: 450.025 MHz

4 W

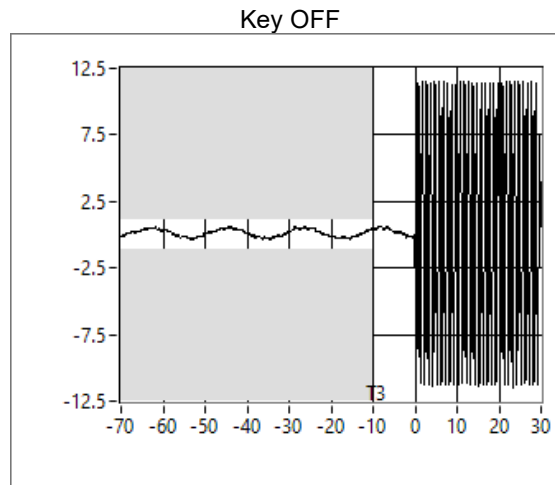
12.5 kHz Channel Spacing

| TRANSIENT RESPONSE PERIOD | CARRIER PEAK VARIATION FROM NORMAL |               |
|---------------------------|------------------------------------|---------------|
|                           | Key ON (kHz)                       | Key OFF (kHz) |
| t1                        | -1.1                               | N/A           |
| t2                        | 0.3                                | N/A           |
| t3                        | N/A                                | -1.0          |

|                                                                                                                     |     |                          |
|---------------------------------------------------------------------------------------------------------------------|-----|--------------------------|
| Confirm that during periods t1 and t3 the frequency difference does not exceed the value of one channel separation. | YES | NO                       |
|                                                                                                                     | ✓   | <input type="checkbox"/> |
| Confirm that during the period t2 the frequency difference does not exceed half a channel separation.               | YES | NO                       |
|                                                                                                                     | ✓   | <input type="checkbox"/> |
| Confirm that during the period t2 to t3 the frequency difference does not exceed the frequency error limit.         | YES | NO                       |
|                                                                                                                     | ✓   | <input type="checkbox"/> |



**TARF 4423**  
450.025000MHz 4Watts 12.50kHz Channel spacing



**TARF 4423**  
450.025000MHz 4Watts 12.50kHz Channel spacing

## Transient Frequency Behaviour

SPECIFICATION: FCC 47 CFR 90.214

RSS-119 5.9

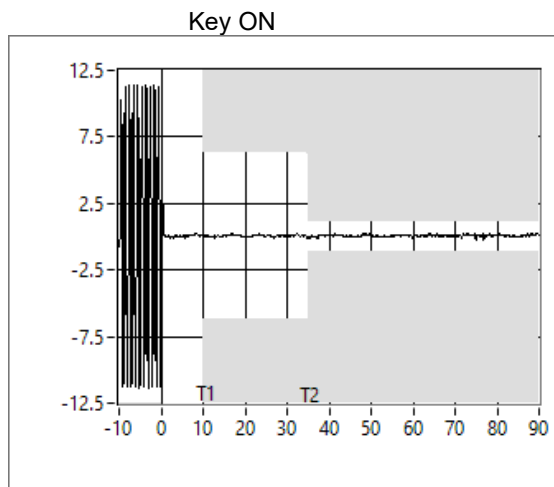
Tx FREQUENCY: 460.025 MHz

4 W

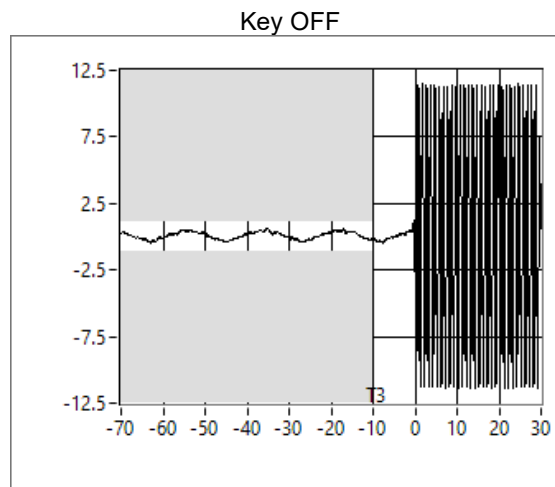
12.5 kHz Channel Spacing

| TRANSIENT RESPONSE PERIOD | CARRIER PEAK VARIATION FROM NORMAL |               |
|---------------------------|------------------------------------|---------------|
|                           | Key ON (kHz)                       | Key OFF (kHz) |
| t1                        | 2.2                                | N/A           |
| t2                        | 0.3                                | N/A           |
| t3                        | N/A                                | 1.2           |

|                                                                                                                     |     |                          |
|---------------------------------------------------------------------------------------------------------------------|-----|--------------------------|
| Confirm that during periods t1 and t3 the frequency difference does not exceed the value of one channel separation. | YES | NO                       |
|                                                                                                                     | ✓   | <input type="checkbox"/> |
| Confirm that during the period t2 the frequency difference does not exceed half a channel separation.               | YES | NO                       |
|                                                                                                                     | ✓   | <input type="checkbox"/> |
| Confirm that during the period t2 to t3 the frequency difference does not exceed the frequency error limit.         | YES | NO                       |
|                                                                                                                     | ✓   | <input type="checkbox"/> |



**TARF 4423**  
460.025000MHz 4Watts 12.50kHz Channel spacing



**TARF 4423**  
460.025000MHz 4Watts 12.50kHz Channel spacing

## Transient Frequency Behaviour

SPECIFICATION: FCC 47 CFR 90.214

RSS-119 5.9

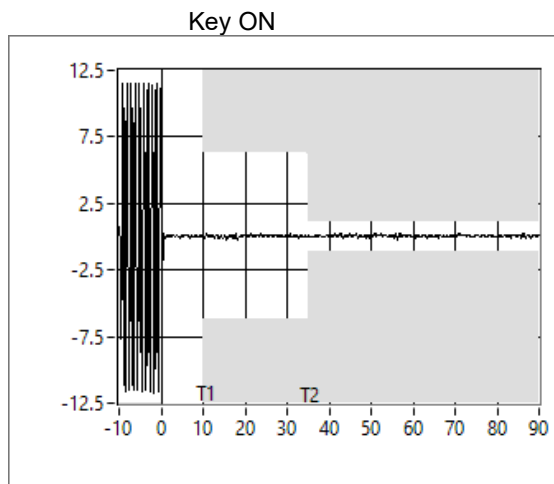
Tx FREQUENCY: 469.975 MHz

4 W

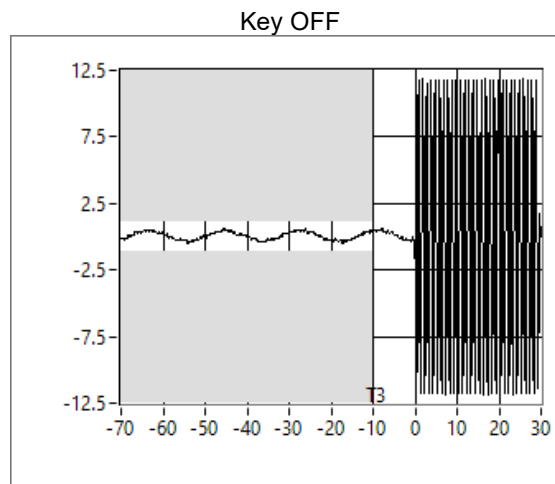
12.5 kHz Channel Spacing

| TRANSIENT RESPONSE PERIOD | CARRIER PEAK VARIATION FROM NORMAL |               |
|---------------------------|------------------------------------|---------------|
|                           | Key ON (kHz)                       | Key OFF (kHz) |
| t1                        | -1.0                               | N/A           |
| t2                        | -0.2                               | N/A           |
| t3                        | N/A                                | -1.1          |

|                                                                                                                     |     |                          |
|---------------------------------------------------------------------------------------------------------------------|-----|--------------------------|
| Confirm that during periods t1 and t3 the frequency difference does not exceed the value of one channel separation. | YES | NO                       |
|                                                                                                                     | ✓   | <input type="checkbox"/> |
| Confirm that during the period t2 the frequency difference does not exceed half a channel separation.               | YES | NO                       |
|                                                                                                                     | ✓   | <input type="checkbox"/> |
| Confirm that during the period t2 to t3 the frequency difference does not exceed the frequency error limit.         | YES | NO                       |
|                                                                                                                     | ✓   | <input type="checkbox"/> |



**TARF 4423**  
469.975000MHz 4Watts 12.50kHz Channel spacing



**TARF 4423**  
469.975000MHz 4Watts 12.50kHz Channel spacing

## Transient Frequency Behaviour

SPECIFICATION: FCC 47 CFR 90.214

RSS-119 5.9

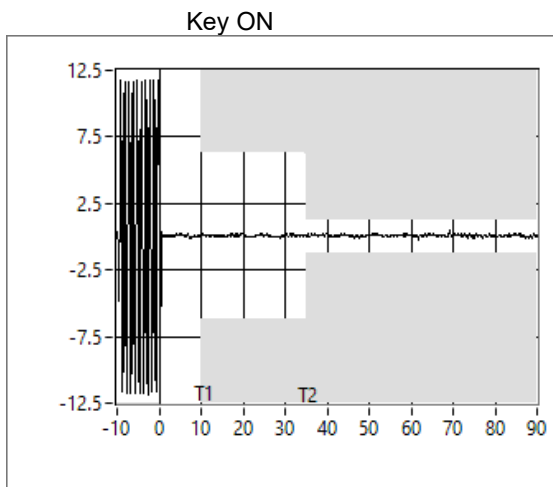
Tx FREQUENCY: 479.975 MHz

4 W

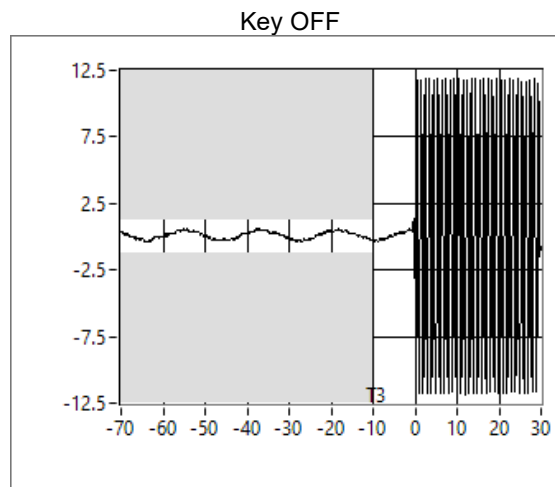
12.5 kHz Channel Spacing

| TRANSIENT RESPONSE PERIOD | CARRIER PEAK VARIATION FROM NORMAL |               |
|---------------------------|------------------------------------|---------------|
|                           | Key ON (kHz)                       | Key OFF (kHz) |
| t1                        | -2.8                               | N/A           |
| t2                        | 0.3                                | N/A           |
| t3                        | N/A                                | -2.0          |

|                                                                                                                     |     |                          |
|---------------------------------------------------------------------------------------------------------------------|-----|--------------------------|
| Confirm that during periods t1 and t3 the frequency difference does not exceed the value of one channel separation. | YES | NO                       |
|                                                                                                                     | ✓   | <input type="checkbox"/> |
| Confirm that during the period t2 the frequency difference does not exceed half a channel separation.               | YES | NO                       |
|                                                                                                                     | ✓   | <input type="checkbox"/> |
| Confirm that during the period t2 to t3 the frequency difference does not exceed the frequency error limit.         | YES | NO                       |
|                                                                                                                     | ✓   | <input type="checkbox"/> |



**TARF 4423**  
479.975000MHz 4Watts 12.50kHz Channel spacing



**TARF 4423**  
479.975000MHz 4Watts 12.50kHz Channel spacing

## Transient Frequency Behaviour

SPECIFICATION: FCC 47 CFR 90.214

RSS-119 5.9

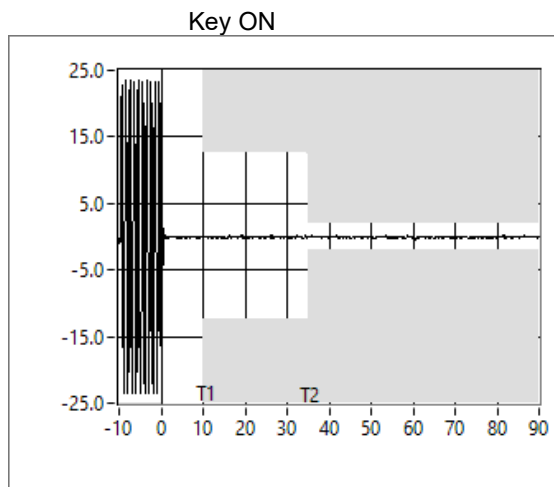
Tx FREQUENCY: 406.125 MHz

4 W

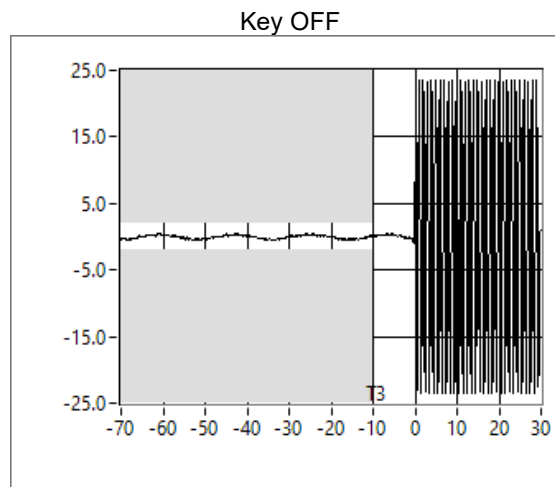
25.0 kHz Channel Spacing

| TRANSIENT RESPONSE PERIOD | CARRIER PEAK VARIATION FROM NORMAL |               |
|---------------------------|------------------------------------|---------------|
|                           | Key ON (kHz)                       | Key OFF (kHz) |
| t1                        | 1.1                                | N/A           |
| t2                        | -0.3                               | N/A           |
| t3                        | N/A                                | 5.9           |

|                                                                                                                     |     |                          |
|---------------------------------------------------------------------------------------------------------------------|-----|--------------------------|
| Confirm that during periods t1 and t3 the frequency difference does not exceed the value of one channel separation. | YES | NO                       |
|                                                                                                                     | ✓   | <input type="checkbox"/> |
| Confirm that during the period t2 the frequency difference does not exceed half a channel separation.               | YES | NO                       |
|                                                                                                                     | ✓   | <input type="checkbox"/> |
| Confirm that during the period t2 to t3 the frequency difference does not exceed the frequency error limit.         | YES | NO                       |
|                                                                                                                     | ✓   | <input type="checkbox"/> |



TARF 4423  
406.125000MHz 4Watts 25.00kHz Channel spacing



TARF 4423  
406.125000MHz 4Watts 25.00kHz Channel spacing

## Transient Frequency Behaviour

SPECIFICATION: FCC 47 CFR 90.214

RSS-119 5.9

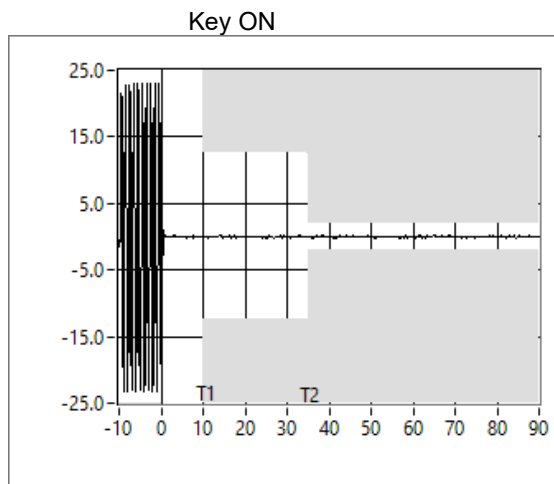
Tx FREQUENCY: 418.025 MHz

4 W

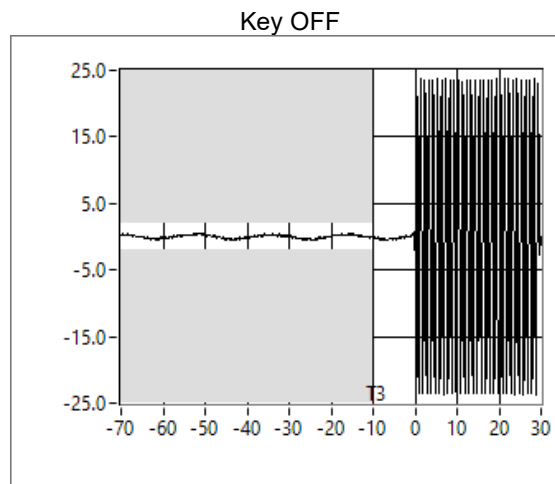
25.0 kHz Channel Spacing

| TRANSIENT RESPONSE PERIOD | CARRIER PEAK VARIATION FROM NORMAL |               |
|---------------------------|------------------------------------|---------------|
|                           | Key ON (kHz)                       | Key OFF (kHz) |
| t1                        | 0.9                                | N/A           |
| t2                        | 0.3                                | N/A           |
| t3                        | N/A                                | -1.9          |

|                                                                                                                     |     |                          |
|---------------------------------------------------------------------------------------------------------------------|-----|--------------------------|
| Confirm that during periods t1 and t3 the frequency difference does not exceed the value of one channel separation. | YES | NO                       |
|                                                                                                                     | ✓   | <input type="checkbox"/> |
| Confirm that during the period t2 the frequency difference does not exceed half a channel separation.               | YES | NO                       |
|                                                                                                                     | ✓   | <input type="checkbox"/> |
| Confirm that during the period t2 to t3 the frequency difference does not exceed the frequency error limit.         | YES | NO                       |
|                                                                                                                     | ✓   | <input type="checkbox"/> |



TARF 4423  
418.025000MHz 4Watts 25.00kHz Channel spacing



TARF 4423  
418.025000MHz 4Watts 25.00kHz Channel spacing

## Transient Frequency Behaviour

SPECIFICATION: FCC 47 CFR 90.214

RSS-119 5.9

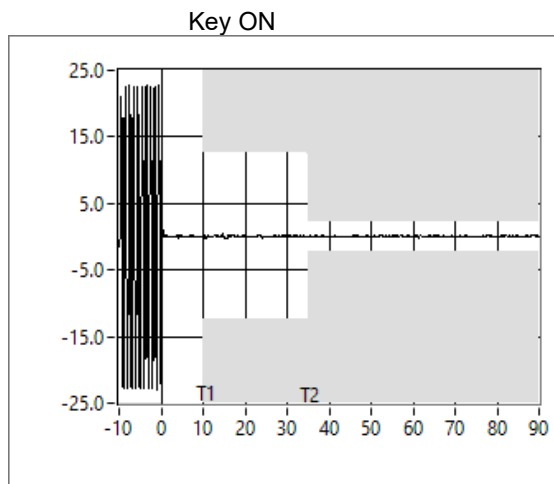
Tx FREQUENCY: 429.975 MHz

4 W

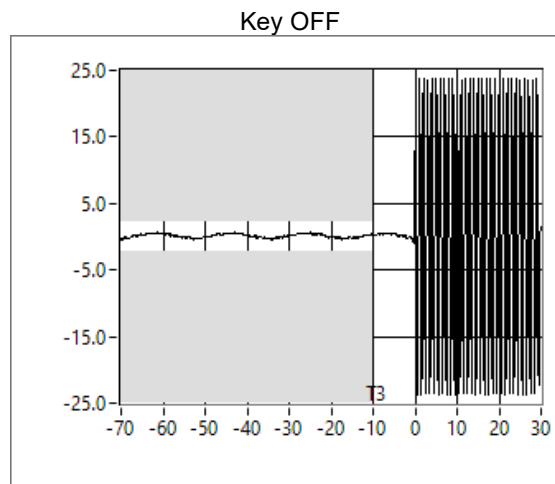
25.0 kHz Channel Spacing

| TRANSIENT RESPONSE PERIOD | CARRIER PEAK VARIATION FROM NORMAL |               |
|---------------------------|------------------------------------|---------------|
|                           | Key ON (kHz)                       | Key OFF (kHz) |
| t1                        | 0.9                                | N/A           |
| t2                        | 0.5                                | N/A           |
| t3                        | N/A                                | 8.8           |

|                                                                                                                     |     |                          |
|---------------------------------------------------------------------------------------------------------------------|-----|--------------------------|
| Confirm that during periods t1 and t3 the frequency difference does not exceed the value of one channel separation. | YES | NO                       |
|                                                                                                                     | ✓   | <input type="checkbox"/> |
| Confirm that during the period t2 the frequency difference does not exceed half a channel separation.               | YES | NO                       |
|                                                                                                                     | ✓   | <input type="checkbox"/> |
| Confirm that during the period t2 to t3 the frequency difference does not exceed the frequency error limit.         | YES | NO                       |
|                                                                                                                     | ✓   | <input type="checkbox"/> |



**TARF 4423**  
429.975000MHz 4Watts 25.00kHz Channel spacing



**TARF 4423**  
429.975000MHz 4Watts 25.00kHz Channel spacing

## Transient Frequency Behaviour

SPECIFICATION: FCC 47 CFR 90.214

RSS-119 5.9

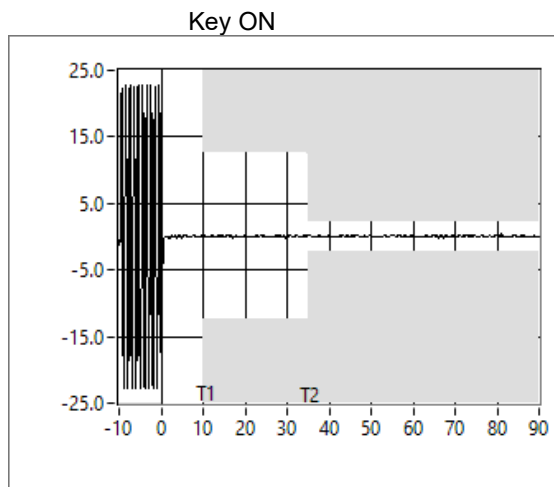
Tx FREQUENCY: 450.025 MHz

4 W

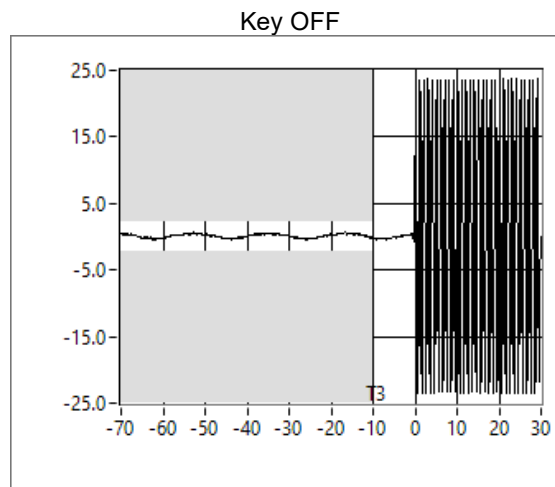
25.0 kHz Channel Spacing

| TRANSIENT RESPONSE PERIOD | CARRIER PEAK VARIATION FROM NORMAL |               |
|---------------------------|------------------------------------|---------------|
|                           | Key ON (kHz)                       | Key OFF (kHz) |
| t1                        | -1.6                               | N/A           |
| t2                        | 0.3                                | N/A           |
| t3                        | N/A                                | 4.4           |

|                                                                                                                     |     |                          |
|---------------------------------------------------------------------------------------------------------------------|-----|--------------------------|
| Confirm that during periods t1 and t3 the frequency difference does not exceed the value of one channel separation. | YES | NO                       |
|                                                                                                                     | ✓   | <input type="checkbox"/> |
| Confirm that during the period t2 the frequency difference does not exceed half a channel separation.               | YES | NO                       |
|                                                                                                                     | ✓   | <input type="checkbox"/> |
| Confirm that during the period t2 to t3 the frequency difference does not exceed the frequency error limit.         | YES | NO                       |
|                                                                                                                     | ✓   | <input type="checkbox"/> |



**TARF 4423**  
450.025000MHz 4Watts 25.00kHz Channel spacing



**TARF 4423**  
450.025000MHz 4Watts 25.00kHz Channel spacing

## Transient Frequency Behaviour

SPECIFICATION: FCC 47 CFR 90.214

RSS-119 5.9

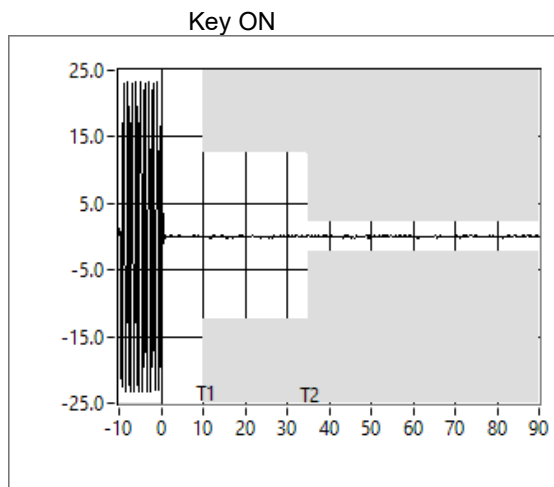
Tx FREQUENCY: 460.025 MHz

4 W

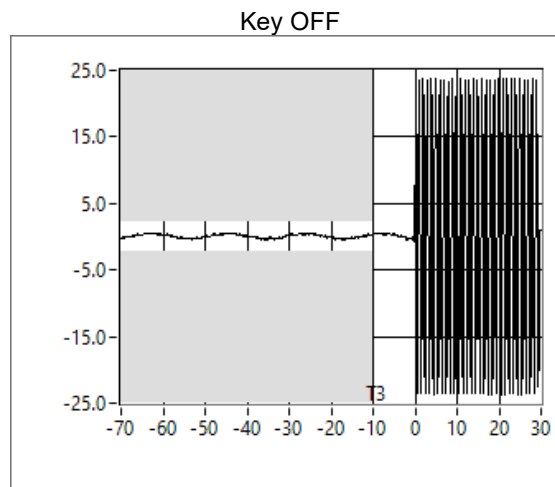
25.0 kHz Channel Spacing

| TRANSIENT RESPONSE PERIOD | CARRIER PEAK VARIATION FROM NORMAL |               |
|---------------------------|------------------------------------|---------------|
|                           | Key ON (kHz)                       | Key OFF (kHz) |
| t1                        | -0.9                               | N/A           |
| t2                        | -0.3                               | N/A           |
| t3                        | N/A                                | 6.0           |

|                                                                                                                     |     |                          |
|---------------------------------------------------------------------------------------------------------------------|-----|--------------------------|
| Confirm that during periods t1 and t3 the frequency difference does not exceed the value of one channel separation. | YES | NO                       |
|                                                                                                                     | ✓   | <input type="checkbox"/> |
| Confirm that during the period t2 the frequency difference does not exceed half a channel separation.               | YES | NO                       |
|                                                                                                                     | ✓   | <input type="checkbox"/> |
| Confirm that during the period t2 to t3 the frequency difference does not exceed the frequency error limit.         | YES | NO                       |
|                                                                                                                     | ✓   | <input type="checkbox"/> |



**TARF 4423**  
460.025000MHz 4Watts 25.00kHz Channel spacing



**TARF 4423**  
460.025000MHz 4Watts 25.00kHz Channel spacing

## Transient Frequency Behaviour

SPECIFICATION: FCC 47 CFR 90.214

RSS-119 5.9

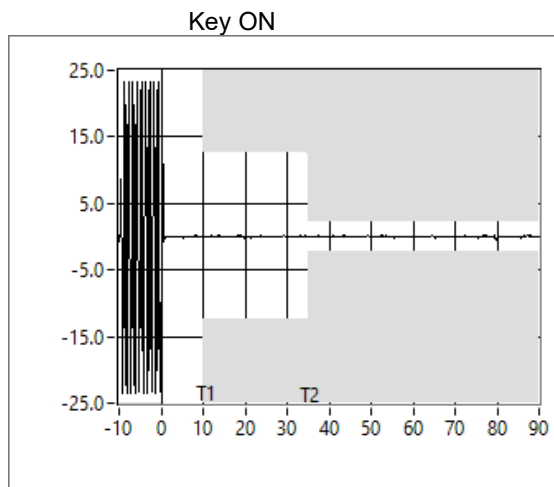
Tx FREQUENCY: 469.975 MHz

4 W

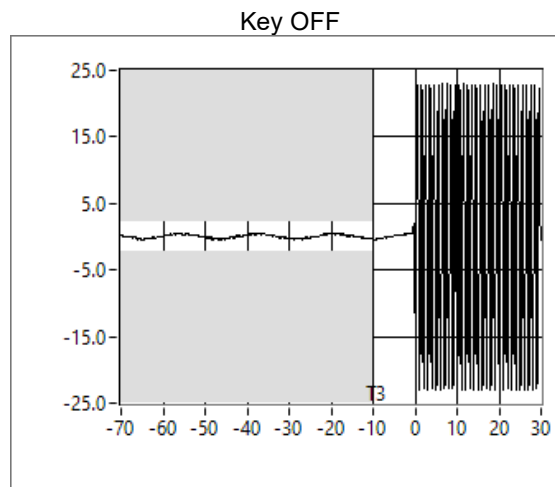
25.0 kHz Channel Spacing

| TRANSIENT RESPONSE PERIOD | CARRIER PEAK VARIATION FROM NORMAL |               |
|---------------------------|------------------------------------|---------------|
|                           | Key ON (kHz)                       | Key OFF (kHz) |
| t1                        | 5.7                                | N/A           |
| t2                        | 0.2                                | N/A           |
| t3                        | N/A                                | -5.0          |

|                                                                                                                     |     |                          |
|---------------------------------------------------------------------------------------------------------------------|-----|--------------------------|
| Confirm that during periods t1 and t3 the frequency difference does not exceed the value of one channel separation. | YES | NO                       |
|                                                                                                                     | ✓   | <input type="checkbox"/> |
| Confirm that during the period t2 the frequency difference does not exceed half a channel separation.               | YES | NO                       |
|                                                                                                                     | ✓   | <input type="checkbox"/> |
| Confirm that during the period t2 to t3 the frequency difference does not exceed the frequency error limit.         | YES | NO                       |
|                                                                                                                     | ✓   | <input type="checkbox"/> |



**TARF 4423**  
469.975000MHz 4Watts 25.00kHz Channel spacing



**TARF 4423**  
469.975000MHz 4Watts 25.00kHz Channel spacing

## Transient Frequency Behaviour

SPECIFICATION: FCC 47 CFR 90.214

RSS-119 5.9

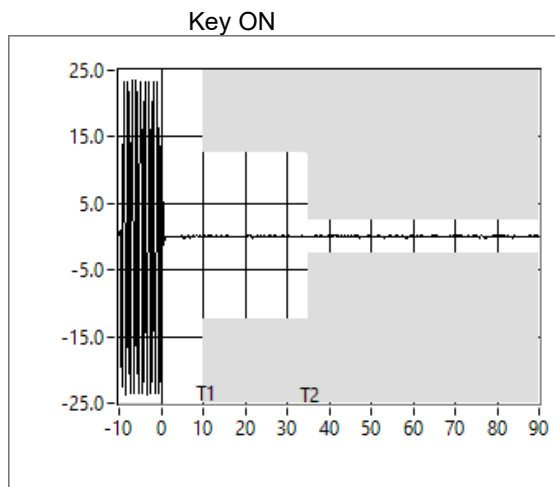
Tx FREQUENCY: 479.975 MHz

4 W

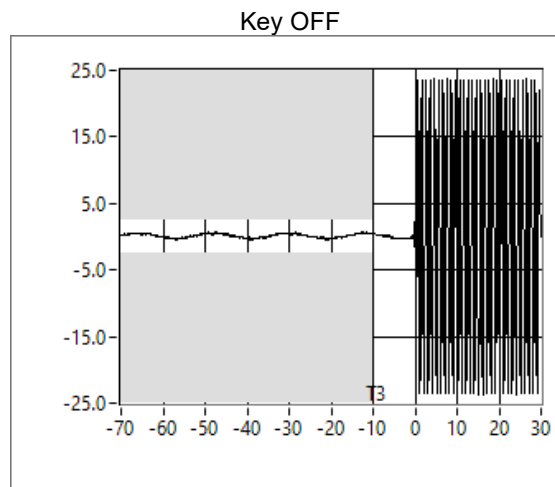
25.0 kHz Channel Spacing

| TRANSIENT RESPONSE PERIOD | CARRIER PEAK VARIATION FROM NORMAL |               |
|---------------------------|------------------------------------|---------------|
|                           | Key ON (kHz)                       | Key OFF (kHz) |
| t1                        | -1.1                               | N/A           |
| t2                        | 0.2                                | N/A           |
| t3                        | N/A                                | 2.3           |

|                                                                                                                     |     |                          |
|---------------------------------------------------------------------------------------------------------------------|-----|--------------------------|
| Confirm that during periods t1 and t3 the frequency difference does not exceed the value of one channel separation. | YES | NO                       |
|                                                                                                                     | ✓   | <input type="checkbox"/> |
| Confirm that during the period t2 the frequency difference does not exceed half a channel separation.               | YES | NO                       |
|                                                                                                                     | ✓   | <input type="checkbox"/> |
| Confirm that during the period t2 to t3 the frequency difference does not exceed the frequency error limit.         | YES | NO                       |
|                                                                                                                     | ✓   | <input type="checkbox"/> |



**TARF 4423**  
479.975000MHz 4Watts 25.00kHz Channel spacing



**TARF 4423**  
479.975000MHz 4Watts 25.00kHz Channel spacing

## Transient Frequency Behaviour

LIMIT: FCC 47 CFR 90.214

| TRANSIENT PERIODS | FREQUENCY RANGE   |                   |
|-------------------|-------------------|-------------------|
|                   | 150 MHz – 174 MHz | 421 MHz – 512 MHz |
| t1 (ms)           | 5 ms              | 10 ms             |
| t2 (ms)           | 20 ms             | 25 ms             |
| t3 (ms)           | 5 ms              | 10 ms             |

LIMIT: RSS-119 5.9

| Transient Frequency Behaviour for Equipment Designed to Operate on 12.5 kHz Channels |                              |                 |                 |
|--------------------------------------------------------------------------------------|------------------------------|-----------------|-----------------|
| TRANSIENT PERIODS                                                                    | Maximum Frequency Difference | FREQUENCY RANGE |                 |
|                                                                                      |                              | 138 – 174 MHz   | 406.1 – 470 MHz |
| t1 (ms)                                                                              | ± 12.5 kHz                   | 5 ms            | 10 ms           |
| t2 (ms)                                                                              | ± 6.25 kHz                   | 20 ms           | 25 ms           |
| t3 (ms)                                                                              | ± 12.5 kHz                   | 5 ms            | 10 ms           |

Note: RSS-119 5.9 - If the transmitter carrier output power rating is 6 Watts or less, the frequency difference during the time periods t1 and t3 may exceed the maximum frequency difference for these time periods.

## TRANSMITTER FREQUENCY STABILITY - TEMPERATURE

SPECIFICATION: FCC 47 CFR 2.1055 (a) (1)

RSS-119 5.3

GUIDE: ANSI C63.26 5.6.4

### MEASUREMENT PROCEDURE:

1. Refer Annex A for equipment set up.
2. The EUT was tested for frequency error from  $-30^{\circ}\text{C}$  to  $+50^{\circ}\text{C}$  in  $10^{\circ}\text{C}$  increments
3. The frequency error was recorded in parts per million (ppm).

MEASUREMENT UNCERTAINTY:  $\pm 0.05\text{ppm}$

### MEASUREMENT RESULTS:

See the plots on the following pages for 12.5 kHz channel spacing.

| Temperature<br>( $^{\circ}\text{C}$ ) | Error (ppm)    |                |                |                |                |                |                |
|---------------------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
|                                       | 406.125<br>MHz | 418.025<br>MHz | 429.975<br>MHz | 450.025<br>MHz | 460.025<br>MHz | 469.975<br>MHz | 479.975<br>MHz |
| -30                                   | -0.07          | -0.05          | -0.02          | -0.07          | -0.07          | -0.04          | -0.06          |
| -20                                   | -0.05          | -0.05          | -0.02          | -0.04          | -0.04          | -0.02          | -0.08          |
| -10                                   | -0.05          | -0.07          | 0.00           | -0.07          | -0.09          | -0.06          | -0.06          |
| 0                                     | -0.07          | -0.10          | -0.05          | -0.07          | -0.09          | -0.04          | -0.06          |
| 10                                    | -0.10          | -0.05          | 0.00           | -0.04          | -0.04          | -0.02          | -0.04          |
| 20                                    | 0.00           | 0.00           | 0.02           | 0.02           | 0.00           | 0.00           | 0.00           |
| 30                                    | 0.02           | 0.02           | 0.07           | 0.07           | 0.04           | 0.06           | 0.06           |
| 40                                    | 0.22           | 0.26           | 0.28           | 0.27           | 0.24           | 0.28           | 0.21           |
| 50                                    | 0.30           | 0.29           | 0.30           | 0.29           | 0.26           | 0.30           | 0.27           |

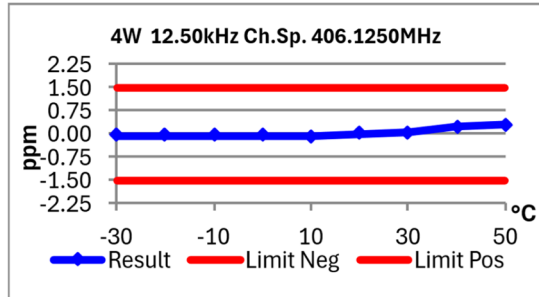
LIMIT: FCC 47 CFR 90.213

RSS-119 5.3

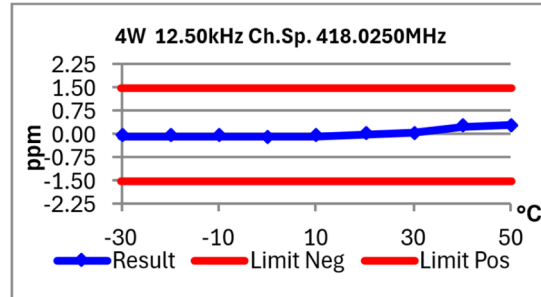
| Channel Spacing (kHz) | Frequency Error (ppm) |
|-----------------------|-----------------------|
| 12.5                  | 1.5                   |

## Transmitter Frequency Stability - Temperature

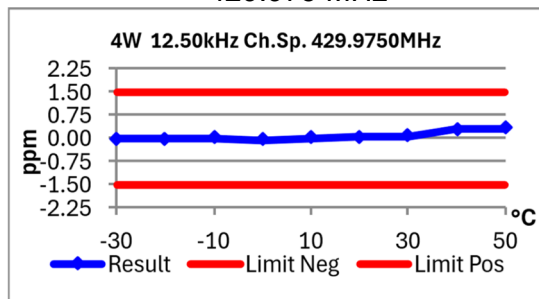
406.125 MHz



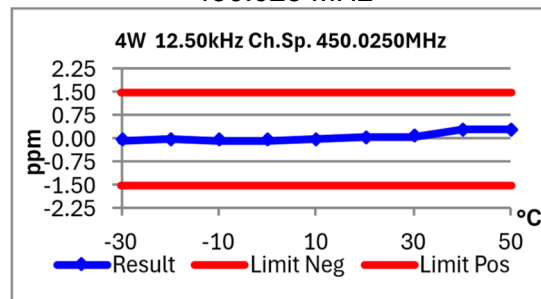
418.025 MHz



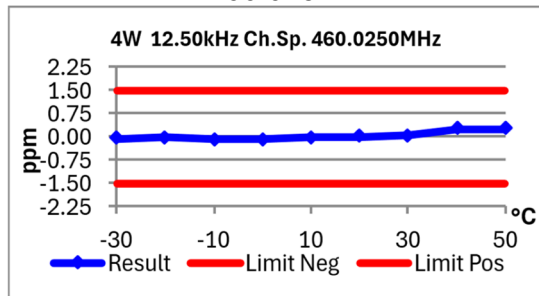
429.975 MHz



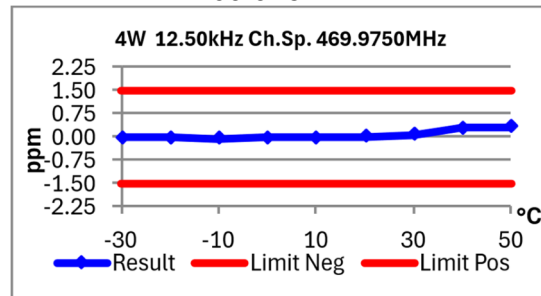
450.025 MHz



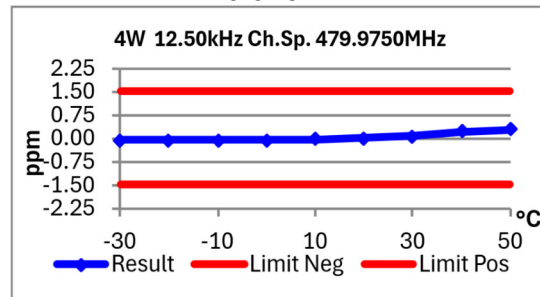
460.025 MHz



469.975 MHz



479.975 MHz



## TRANSMITTER FREQUENCY STABILITY - VOLTAGE

SPECIFICATION: FCC 47 CFR 2.1055 (d) (1)

RSS-119 5.3

GUIDE: ANSI C63.26 5.6.5

### MEASUREMENT PROCEDURE:

1. Refer Annex A for equipment set up.
2. The EUT was tested for frequency error at an input voltage to the radio of 85% to 115%.
3. The frequency error was recorded in parts per million (ppm).

MEASUREMENT UNCERTAINTY:  $\pm 0.05\text{ppm}$

### MEASUREMENT RESULTS:

|             | FREQUENCY ERROR (ppm)<br>12.5 kHz Ch. Spacing, 4 W Tx Power |                      |
|-------------|-------------------------------------------------------------|----------------------|
|             | 6.38 V <sub>DC</sub>                                        | 7.50 V <sub>DC</sub> |
| 406.125 MHz | -0.01                                                       | 0.00                 |
| 418.025 MHz | -0.01                                                       | 0.00                 |
| 429.975 MHz | 0.05                                                        | 0.07                 |
| 450.025 MHz | 0.07                                                        | 0.09                 |
| 460.025 MHz | 0.09                                                        | 0.11                 |
| 469.975 MHz | 0.13                                                        | 0.14                 |
| 479.975 MHz | 0.13                                                        | 0.14                 |

LIMIT CLAUSES: FCC 47 CFR 90.213

RSS-119 5.3

| Channel Spacing (kHz) | Frequency Error (ppm) |
|-----------------------|-----------------------|
| 12.5                  | 2.5                   |

## RECEIVER SPURIOUS EMISSIONS (CONDUCTED)

SPECIFICATION: FCC 47CFR 15.111

RSS-Gen 7.4

GUIDE: ANSI C63.26 5.7

### MEASUREMENT PROCEDURE:

1. Refer Annex A for Equipment set up diagram.
2. The frequency range examined was from 30 MHz to 3 times highest tunable frequency.
3. Spurious emissions which were attenuated more than 20 dB below the limit were not recorded.
4. A scan is performed with a resolution bandwidth of 100 kHz and a video bandwidth of 300 kHz for frequencies up to 1 GHz, and a resolution bandwidth of 1 MHz and a video bandwidth of 3 MHz for frequencies above 1 GHz
5. For each frequency range the spectrum analyser was loaded with the appropriate calibration figures to compensate for the cables and attenuator losses allowing the emission levels to be read directly with no further calculation.  
The calibrations are loaded as an overall reference level offset plus a set of correction factors for the required frequency band.

Spurious emissions which were attenuated by more than 20 dB below the limit were not recorded.

### Example of attenuation correction: (dB)

|                                 |       |                                  |
|---------------------------------|-------|----------------------------------|
| E5023 30dB 350W CK9178          | 32.21 |                                  |
| E5015 3m Blue                   | 1.06  |                                  |
| E5028 1m5 Blue                  | 0.41  |                                  |
| E3384 400_520MHz HPBRF          | 6.37  |                                  |
| Total Attenuation @ 812.250 MHz | 40.06 | Sum of component attenuation (a) |
| Amplitude offset                | 41.59 | (b)                              |
| Correction @ 812.250MHz         | -1.52 | (a-b)                            |

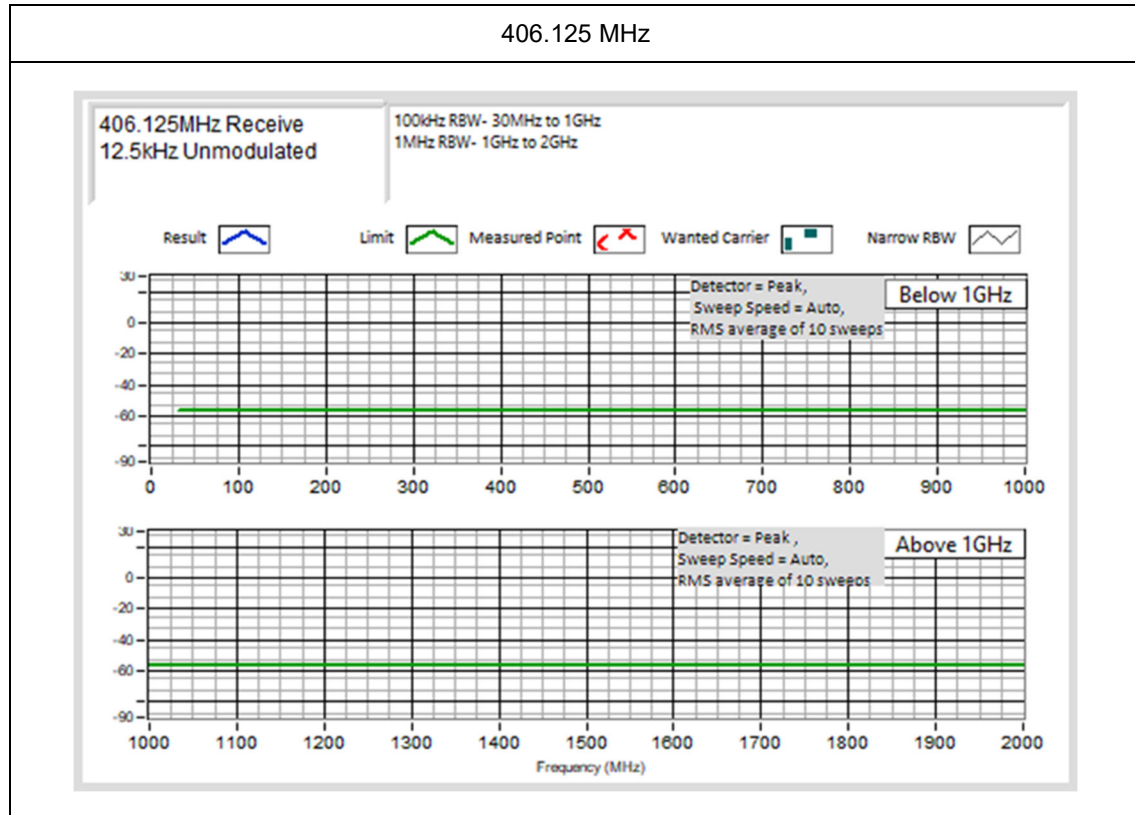
MEASUREMENT UNCERTAINTY:  $\pm 2.8\text{dB}$

### LIMIT CLAUSE: RSS-Gen 7.4

|       |               |      |          |
|-------|---------------|------|----------|
| LIMIT | 30 → 1000 MHz | 2 nW | - 57 dBm |
|       | > 1000 MHz    | 5 nW | - 53 dBm |

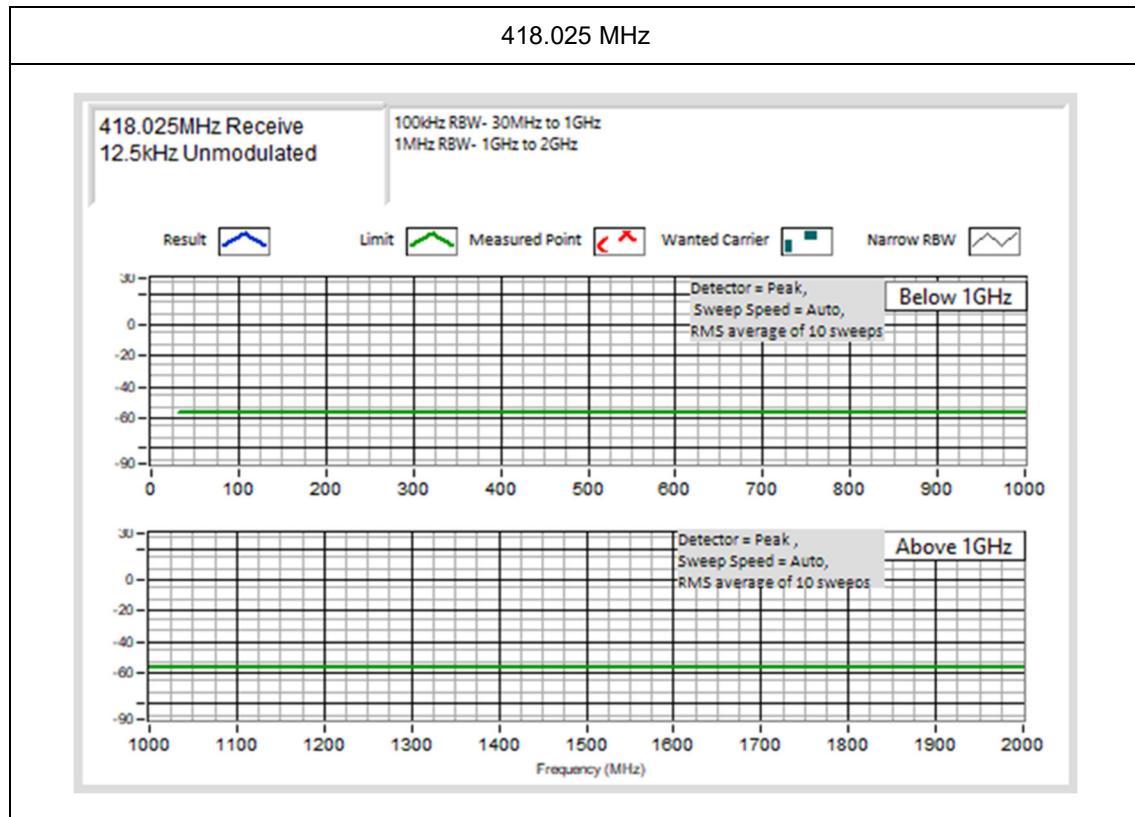
Receiver Spurious Emissions (Conducted) – Continued

| 406.125 MHz Receive / Tx Standby                      |            |             |
|-------------------------------------------------------|------------|-------------|
| Emission Frequency (MHz)                              | Level (nW) | Level (dBm) |
| ~                                                     | ~          | ~           |
| No emissions were detected within 20 dB of the limit. |            |             |



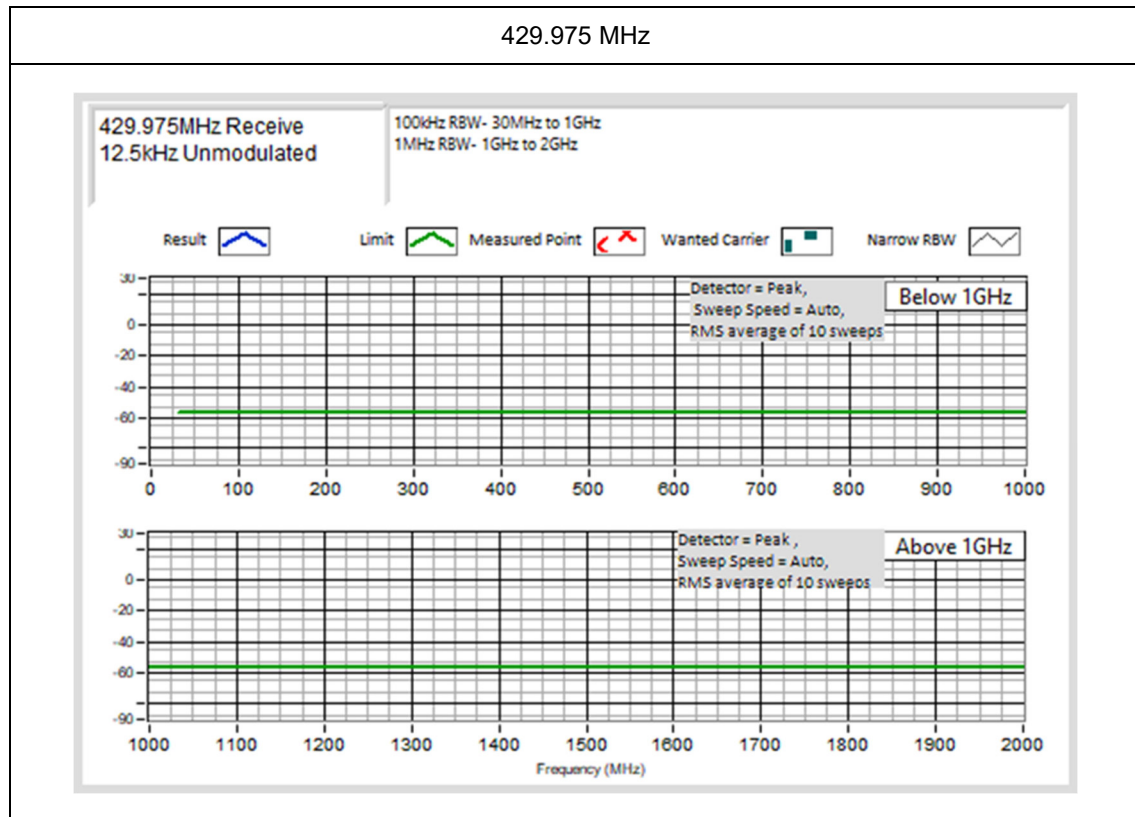
Receiver Spurious Emissions (Conducted) – Continued

| 418.025 MHz Receive / Tx Standby                      |            |             |
|-------------------------------------------------------|------------|-------------|
| Emission Frequency (MHz)                              | Level (nW) | Level (dBm) |
| ~                                                     | ~          | ~           |
| No emissions were detected within 20 dB of the limit. |            |             |



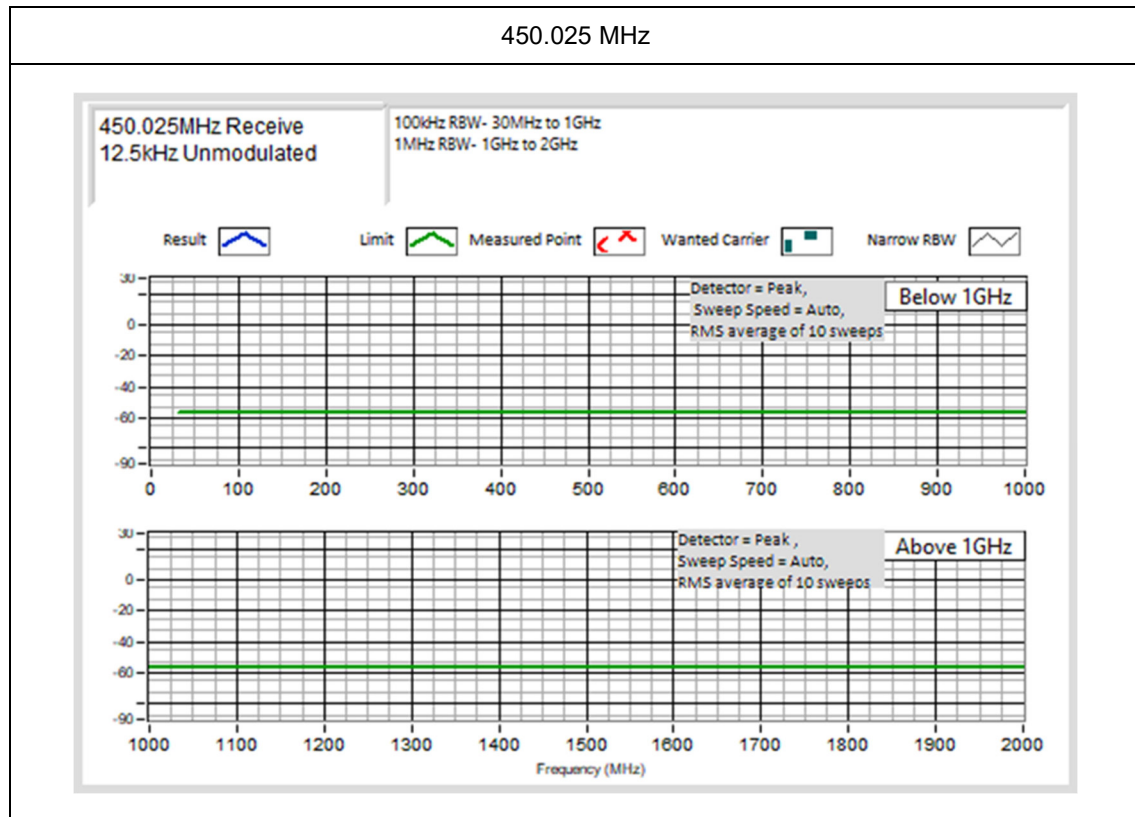
Receiver Spurious Emissions (Conducted) – Continued

| 429.975 MHz Receive / Tx Standby                      |            |             |
|-------------------------------------------------------|------------|-------------|
| Emission Frequency (MHz)                              | Level (nW) | Level (dBm) |
| ~                                                     | ~          | ~           |
| No emissions were detected within 20 dB of the limit. |            |             |



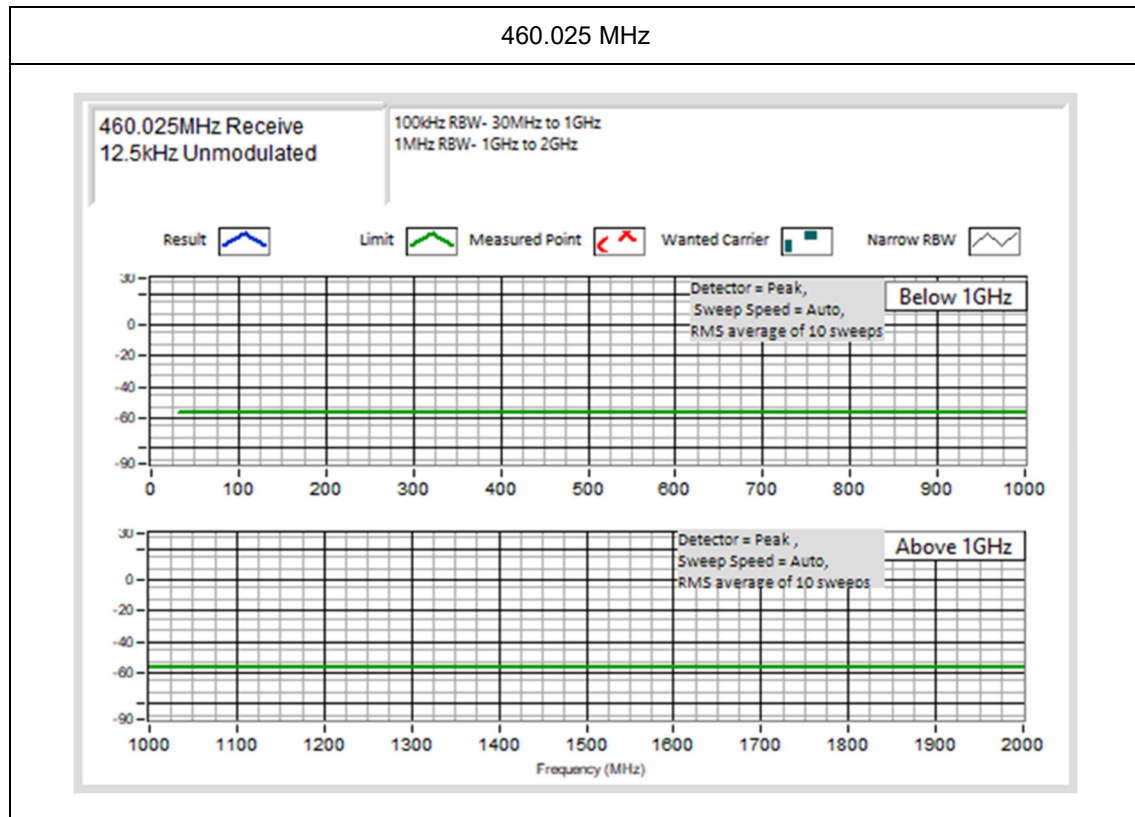
Receiver Spurious Emissions (Conducted) – Continued

| 450.025 MHz Receive / Tx Standby                      |            |             |
|-------------------------------------------------------|------------|-------------|
| Emission Frequency (MHz)                              | Level (nW) | Level (dBm) |
| ~                                                     | ~          | ~           |
| No emissions were detected within 20 dB of the limit. |            |             |



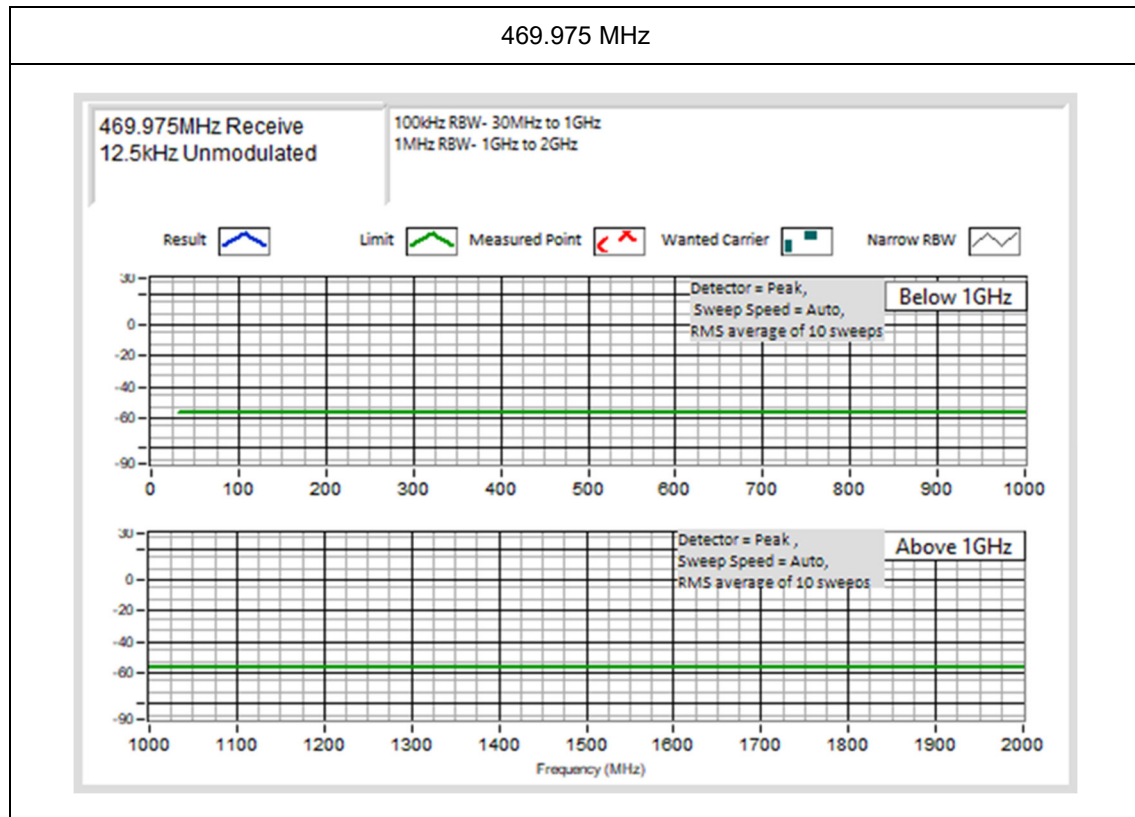
Receiver Spurious Emissions (Conducted) – Continued

| 460.025 MHz Receive / Tx Standby                      |            |             |
|-------------------------------------------------------|------------|-------------|
| Emission Frequency (MHz)                              | Level (nW) | Level (dBm) |
| ~                                                     | ~          | ~           |
| No emissions were detected within 20 dB of the limit. |            |             |



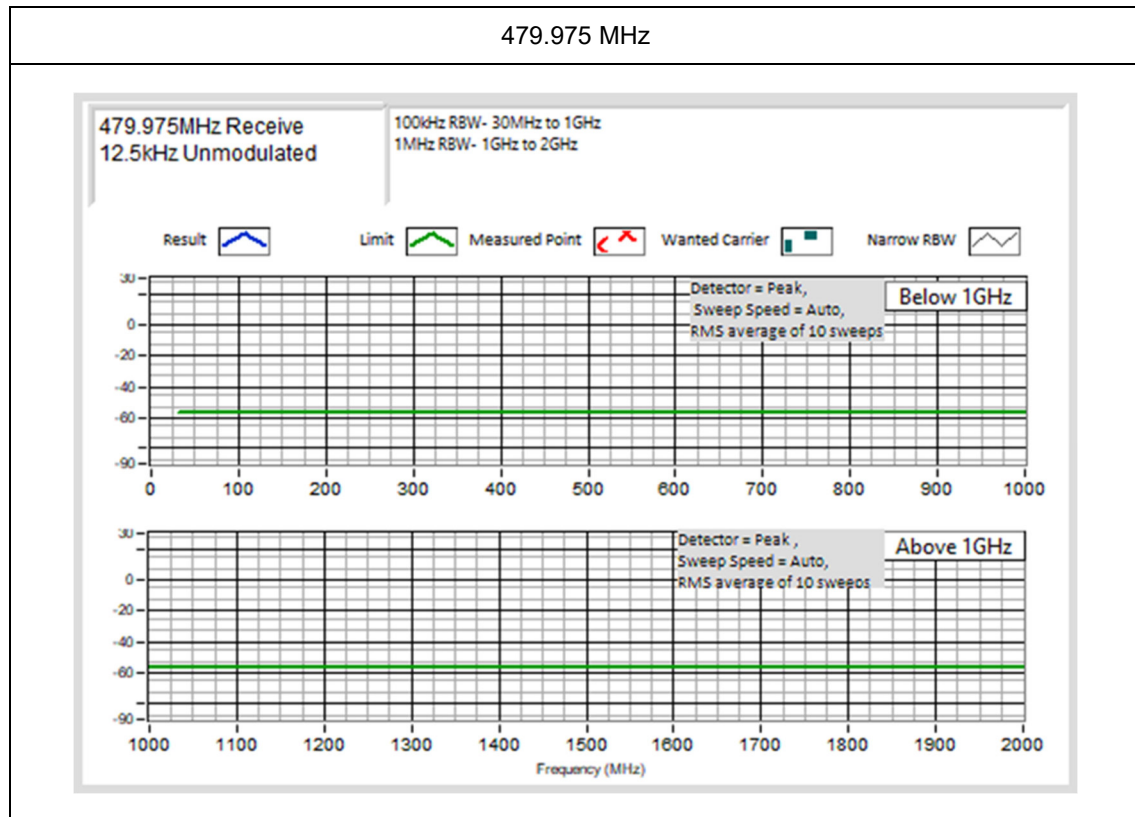
Receiver Spurious Emissions (Conducted) – Continued

| 469.975 MHz Receive / Tx Standby                      |            |             |
|-------------------------------------------------------|------------|-------------|
| Emission Frequency (MHz)                              | Level (nW) | Level (dBm) |
| ~                                                     | ~          | ~           |
| No emissions were detected within 20 dB of the limit. |            |             |



Receiver Spurious Emissions (Conducted) – Continued

| 479.975 MHz Receive / Tx Standby                      |            |             |
|-------------------------------------------------------|------------|-------------|
| Emission Frequency (MHz)                              | Level (nW) | Level (dBm) |
| ~                                                     | ~          | ~           |
| No emissions were detected within 20 dB of the limit. |            |             |



## TEST EQUIPMENT LIST

| Equipment Type             | Information                     | Manufacturer    | Model No                  | Serial No#       | Tait ID | Cal Due   |
|----------------------------|---------------------------------|-----------------|---------------------------|------------------|---------|-----------|
| Antenna                    | 18GHz DRG                       | Emco            | DRG3115                   | 2084             | E3076   |           |
| Antenna                    | 18GHz DRG                       | Emco            | DRG3115                   | 9512-4638        | E3560   | 20-Aug-27 |
| Antenna                    | Log Periodic                    | Schwarzbeck     | VUSLP                     | 9111-219         | E4617   | 07-Mar-27 |
| Antenna                    | Log Periodic                    | Schwarzbeck     | VUSLP                     | 9111-503         | E111375 | 07-Mar-27 |
| Antenna                    | Reverb - 1-18GHz DRG            | Schwarzbeck     | BBHA 9120 D               | 9120D-885        | E4857   |           |
| Antenna                    | Reverb - 1-18GHz DRG            | Schwarzbeck     | BBHA 9120 D               | 9120D-884        | E4858   |           |
| Audio Analyser             | TREVA2                          | Hewlett Packard | HP8903B                   | 2818A04275       | E3710   | 07-Oct-26 |
| Coax Cable                 | OATS Turntable Cable 1          | Intelcom        | RG214                     | OATS1            | E4621   | 06-Oct-26 |
| Coax Cable                 | OATS Tower Cable                | Intelcom        | RG214                     | OATS2            | E4622   | 06-Oct-26 |
| Coax Cable                 | 2m Black                        | Suhner          | RG214HF/Nm/<br>Nm/2000    | TeltestBlack2    | E4623   | 01-Oct-26 |
| Coax Cable                 | Reverb - 4.5m Multiflex 141     | TeltestBlue6    | MF 141                    | TeltestBlue6     | E4843   | 03-Oct-26 |
| Coax Cable                 | Reverb - 2m Multiflex 141       | TeltestBlue5    | MF 141                    | TeltestBlue5     | E4844   | 03-Oct-26 |
| Coax Cable                 | Reverb - 2m Multiflex 141       | TeltestBlue4    | MF 141                    | TeltestBlue4     | E4845   | 03-Oct-26 |
| Coax Cable                 | Reverb - 1m Multiflex 141       | TeltestBlue3    | MF 141                    | TeltestBlue3     | E4846   | 03-Oct-26 |
| Coax Cable                 | Reverb - 1m Multiflex 141       | TeltestBlue2    | MF 141                    | TeltestBlue2     | E4847   | 01-Oct-26 |
| Coax Cable                 | Reverb - 1m Multiflex 141       | TeltestBlue1    | MF 141                    | TeltestBlue1     | E4848   | 01-Oct-26 |
| Coax Cable                 | 2m Black                        | Suhner          | RG214HF/Nm/<br>Nm/2000    | TeltestBlack6    | E4849   | 03-Oct-26 |
| Coax Cable                 | OATS Turntable Cable 2          | Intelcom        | RG215                     | OATS3            | E4995   | 03-Oct-26 |
| Coax Cable                 | 2m Black                        | Suhner          | RG214HF/Nm/<br>Nm/2000    | TeltestBlack8    | E5005   | 01-Oct-26 |
| Coax Cable                 | 3m Blue                         | Suhner          | Sucoflex 126EA            | 503429/126E<br>A | E5015   | 01-Oct-26 |
| Coax Cable                 | 1.5m Blue                       | Suhner          | Sucoflex 126EA            | 502868/126E<br>A | E5028   | 07-Oct-26 |
| Filter High Pass/<br>Notch | 400 to 520MHz                   | Tait            |                           | N/A              | E3384   | 14-May-26 |
| Modulation<br>Analyser     | TREVA1                          | Hewlett Packard | HP8901B (Opt<br>002)      | 3704A05837       | E3786   | 10-Oct-26 |
| OATS                       | Controller                      | Electrometrics  | EM-4700                   | 119              | E4445   |           |
| OATS                       | Turntable                       | Electrometrics  | EM-4704A                  | 105              | E4446   |           |
| OATS                       | Antenna Tower                   | Electrometrics  | EM-4720-2                 | 112              | E4447   |           |
| Power Meter                | TREVA1 Power Head for<br>HP8901 | Hewlett Packard | HP11722A                  | 3111A05573       | E7054   | 11-Oct-26 |
| Power Supply               |                                 | Rohde & Schwarz | NGS M32/10<br>192.0810.31 | Fnr 434          | E3556   | 15-May-26 |
| Power Supply               | TREVA 1 60V/25A                 | Agilent         | N5767A                    | US23D6941R       | E11372  | 03-Oct-26 |
| Power Supply               | 40V/38A                         | Agilent         | N5766A                    | US09E4663L       | E4719   | 02-Oct-27 |
| Power Supply               | 60V/25A                         | Agilent         | N5767A                    | 3111A05573       | E4979   | 09-Oct-26 |
| RF Amplifier               | +21.7 dB 1GHz                   | Tait            | ZFL-1000LN                | E3660            | E3360   | 04-Aug-26 |
| RF Amplifier               | Pre-amplifier                   | Agilent         | 87405C                    | MY47010688       | E4941   | 10-Oct-26 |
| RF Attenuator              | 10dB 50W                        | Weinschel       | 24-10-34                  | AZ0401           | E3388   | 01-Oct-26 |
| RF Attenuator              | 30+3dB 350W                     | Weinschel       | 67-30-33 & BW-<br>N3W5+   | CK9178           | E5023   | 01-Oct-26 |

## TEST EQUIPMENT LIST

| Equipment Type             | Information                                    | Manufacturer    | Model No                | Serial No#    | Tait ID | Cal Due   |
|----------------------------|------------------------------------------------|-----------------|-------------------------|---------------|---------|-----------|
| RF Attenuator              | 10dB 50W                                       | Weinschel       | 24-10-34                | BC3293        | E4364   | 01-Oct-26 |
| RF Attenuator              | TREVA1 3dB                                     | Weinschel       | Model 1                 | BL9958        | E4081   | 01-Oct-26 |
| RF Attenuator              | TREVA1 20dB 150W                               | Weinschel       | 40-20-23                | MF817         | E4082   | 01-Oct-26 |
| RF Attenuator              | 3dB 0.5W                                       | Weinschel       | Model 1                 | CH6863        | E5013   | 01-Oct-26 |
| RF Chamber                 | S-LINE TEM CELL                                | Rohde & Schwarz | 1089.9296.02            | 338232/003    | E3636   | 18-Jun-27 |
| RF Chamber                 | Reverb - Stirrer controller for reverb chamber | Teseq           | Stirrer Controller      | 29765.1       | E4854   |           |
| RF Chamber                 | Reverb - 0.5 - 18GHz Reverberation Chamber     | Teseq           | RVC XS                  | 29765         | E4855   |           |
| RF Combiner                | TREVA1                                         | Minicircuits    | ZFSC-4-1                | -             | E4083   |           |
| RF Load                    | 50W                                            | Weinschel       | F1426                   | AE2490        | E3624   | 01-Oct-26 |
| RF Load                    | 150W                                           | Bird            | 8166                    | 524           | E3625   | 01-Oct-26 |
| Signal Generator           | Analog 3.2GHz                                  | Hewlett Packard | HP8648C                 | 3443U00543    | E3558   | 06-Oct-26 |
| Signal Generator           | Digital 3GHz                                   | Agilent         | E4438C                  | MY45093154    | E4600   | 11-Oct-26 |
| Signal Generator           | Digital 3GHz                                   | Agilent         | E4438C                  | MY49070242    | E4657   | 14-Oct-26 |
| Signal Generator           | TREVA1 Analog 3.2GHz                           | Agilent         | E8663D                  | MY50420224    | E4908   | 27-Jun-27 |
| Signal Generator           | Analog 12.75GHz                                | Rohde & Schwarz | SMB100A                 | 183236        | E11369  | 12-Oct-27 |
| Spectrum Analyser          | 13.2GHz                                        | Hewlett Packard | HP8562E                 | 3821A00779    | E3715   | 09-Oct-26 |
| Spectrum Analyser          | 13.2GHz                                        | Agilent         | PXA N9030A              | US49230269    | E4775   | 09-Oct-26 |
| Temp & Humidity datalogger |                                                | TP-Link TAPO    | T315                    | 22383M6000671 | E11377  | 02-Feb-26 |
| TREVA 1                    |                                                | Teltest         | -                       | 1             | -       | 22-May-26 |
| Testware                   | Frequency Vs Temperature                       |                 | TTEL_FREQTEMP_1.02.00   | -             | -       |           |
| Testware                   | Occupied Bandwidth                             |                 | TTEL_OCCBW_2.01.00      | -             | -       |           |
| Testware                   | Reverb Emissions                               |                 | TTEL_REVEMIS_3.00.00    | -             | -       |           |
| Testware                   | Sideband Spectrum                              |                 | TTEL_SBSPEC_1.01.00     | -             | -       |           |
| Testware                   | S-Line Radiated Emissions                      |                 | TTEL_SLINERADEM_2.01.00 | -             | -       |           |
| Testware                   | TREVA                                          |                 | TTEL_TREVA_2.03.00      | -             | -       |           |
| Testware                   | Spec An Correction Loader                      |                 | TTEL_SPECANCORR_1.01.00 | -             | -       |           |
| Testware                   | Radio Conducted Emissions                      |                 | TTEL_RADIOCOND_1.02.01  | -             | -       |           |

\* NOTE: Items without calibration dates are calibrated immediately before use, or set using calibrated instruments.

## ANNEX A – EUT PHOTOS



Front View



Back View



Upright Front View



Upright Back View