

1100 E Chalk Creek Road  
 Coalville, UT 84017  
 (435) 336-4433  
 FAX (435) 336-4436

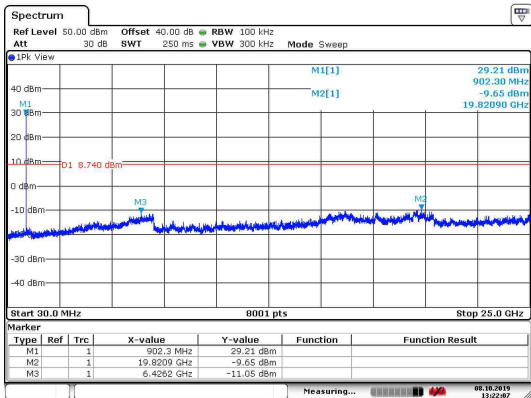
## Conducted Spurious

|                 |  |       |             |  |
|-----------------|--|-------|-------------|--|
| DNB Job Number: | 06022  | Date: | 10 Oct 2019 | <b>Conformance Standard</b><br><br>FCC Part 15 |
| Customer:       | Transcore                                      |       |             |  |
| Model Number:   | MPRXFH   |       |             |  |
| Description:    | Multiprotocol Reader Extreme- Frequency Hopper |       |             | <b>Clause</b><br>15.247(d)                     |

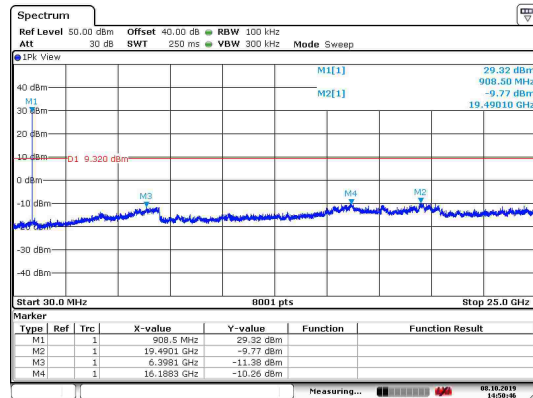
|                     |                   |                     |
|---------------------|-------------------|---------------------|
| Ambient Temperature | Relative Humidity | Barometric Pressure |
| 24 °C               | 32 %              | 101.30 kPa          |

EUT performed within the requirements of the applicable standard [X] Yes [ ] No *J Payne*

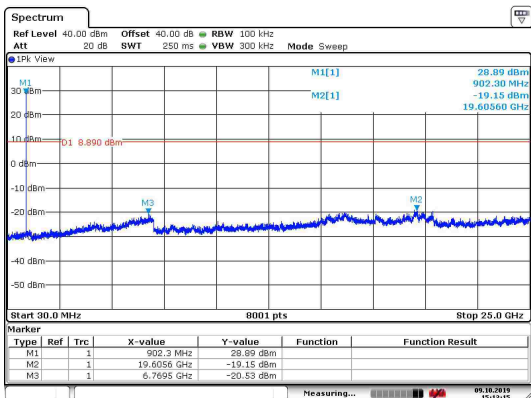
| Port | Channel | Modulation | Peak Output Power (dBm) | Reading (dBm) | -20dBc (dBm) | Pass/Fail |
|------|---------|------------|-------------------------|---------------|--------------|-----------|
| 0    | Low     | epc        | 28.89                   | 29.21         | 9.21         | Pass      |
| 1    | Low     | epc        | 28.91                   | 29.32         | 9.32         | Pass      |
| 2    | Low     | epc        | 28.81                   | 28.89         | 8.89         | Pass      |
| 3    | Low     | epc        | 28.85                   | 29.00         | 9            | Pass      |



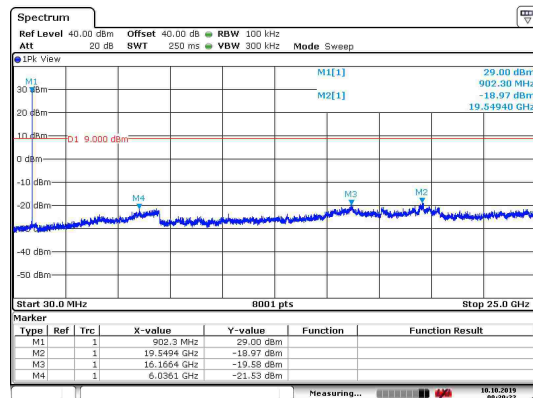
Date: 8.OCT.2019 13:22:07



Date: 8.OCT.2019 14:50:46



Date: 9.OCT.2019 15:13:15



Date: 10.OCT.2019 09:30:23

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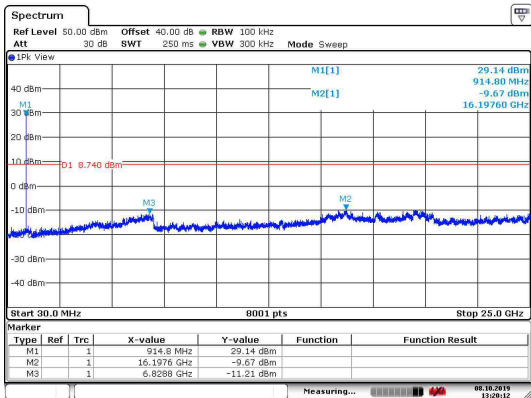
## Conducted Spurious

|                 |  |       |             |   |
|-----------------|--|-------|-------------|---|
| DNB Job Number: | 06022  | Date: | 10 Oct 2019 | <b>Conformance Standard</b><br><br>FCC Part 15<br><br><b>Clause 15.247(d)</b> |
| Customer:       | Transcore                                      |       |             |   |
| Model Number:   | MPRXFH   |       |             |   |
| Description:    | Multiprotocol Reader Extreme- Frequency Hopper |       |             |   |

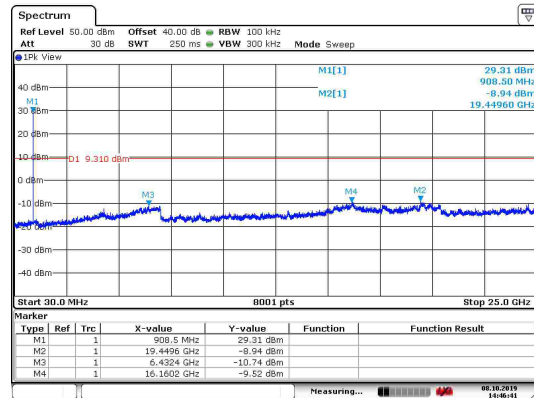
|                     |                   |                     |
|---------------------|-------------------|---------------------|
| Ambient Temperature | Relative Humidity | Barometric Pressure |
| 24 °C               | 32 %              | 101.30 kPa          |

EUT performed within the requirements of the applicable standard [X] Yes [ ] No *J Payne*

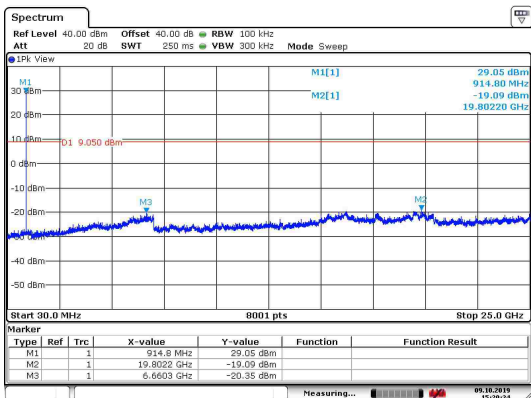
| Port | Channel | Modulation | Peak Output Power (dBm) | Reading (dBm) | -20dBc (dBm) | Pass/Fail |
|------|---------|------------|-------------------------|---------------|--------------|-----------|
| 0    | Mid     | epc        | 28.96                   | 29.14         | 9.14         | Pass      |
| 1    | Mid     | epc        | 28.92                   | 29.31         | 9.31         | Pass      |
| 2    | Mid     | epc        | 28.91                   | 29.05         | 9.05         | Pass      |
| 3    | Mid     | epc        | 28.92                   | 29.15         | 9.15         | Pass      |



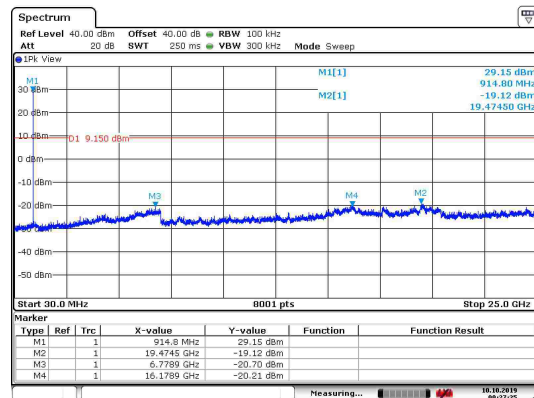
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Date: 9.OCT.2019 15:20:25

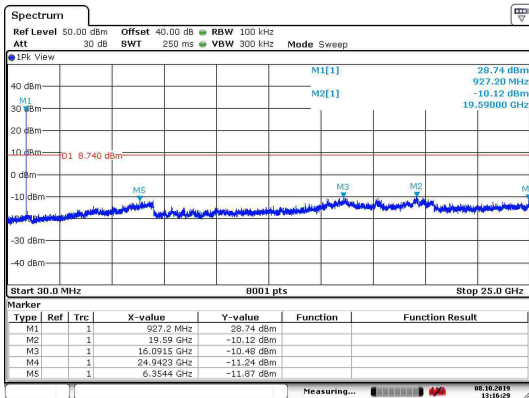


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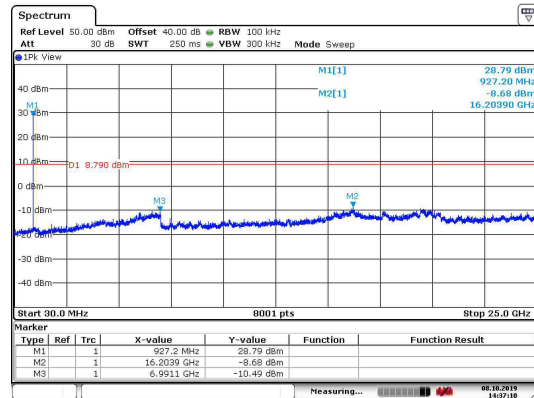
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## Conducted Spurious

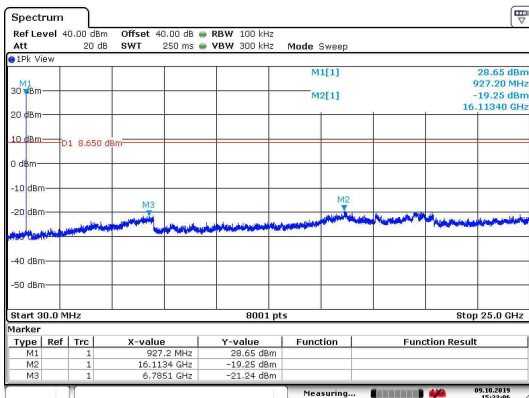
| DNB Job Number:  | 06022  | Date:             | 10 Oct 2019             | <b>Conformance Standard</b><br><br>FCC Part 15<br><br><b>Clause</b><br>15.247(d) |              |           |
|--|--|-------------------|-------------------------|--|--------------|-----------|
| Customer:  | Transcore                                      |                   |                         |  |              |           |
| Model Number:  | MPRXFH   |                   |                         |  |              |           |
| Description:   | Multiprotocol Reader Extreme- Frequency Hopper |                   |                         |  |              |           |
| Ambient Temperature  |  | Relative Humidity |                         | Barometric Pressure  |              |           |
| 24 °C  |  | 32 %              |                         | 101.30 kPa   |              |           |
| EUT performed within the requirements of the applicable standard [X] Yes [ ] No <i>J Payne</i> |  |                   |                         |  |              |           |
| Port   | Channel  | Modulation        | Peak Output Power (dBm) | Reading (dBm)  | -20dBc (dBm) | Pass/Fail |
| 0  | High   | epc               | 28.93                   | 28.74  | 8.74         | Pass      |
| 1  | High   | epc               | 28.94                   | 28.79  | 8.79         | Pass      |
| 2  | High   | epc               | 28.91                   | 28.65  | 8.65         | Pass      |
| 3  | High   | epc               | 28.94                   | 28.77  | 8.77         | Pass      |



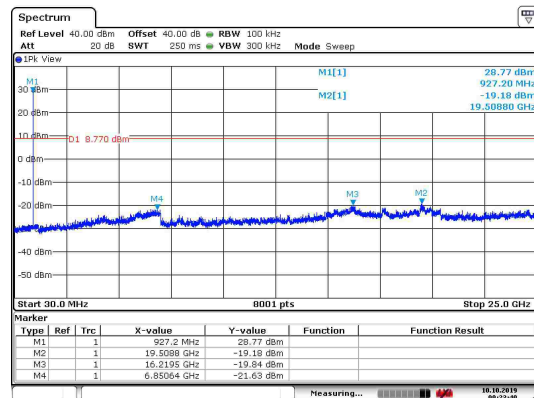
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Date: 9.OCT.2019 15:23:07



Date: 10.OCT.2019 09:23:41

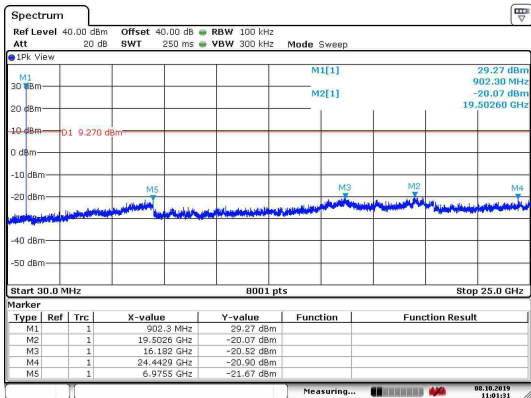
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## Conducted Spurious

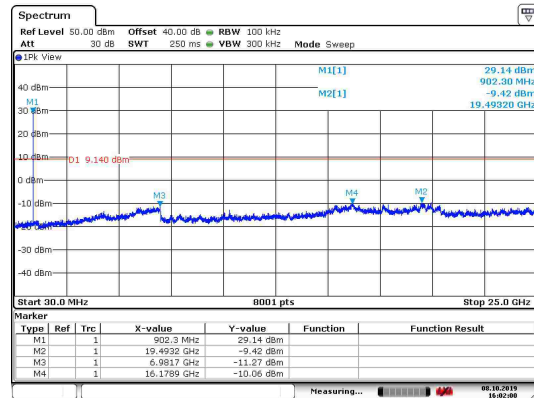
|                     |  |                   |             |   |
|---------------------|--|-------------------|-------------|---|
| DNB Job Number:     | 06022  | Date:             | 10 Oct 2019 | <b>Conformance Standard</b><br><br>FCC Part 15<br><br><b>Clause 15.247(d)</b> |
| Customer:           | Transcore                                      |                   |             |   |
| Model Number:       | MPRXFH   |                   |             |   |
| Description:        | Multiprotocol Reader Extreme- Frequency Hopper |                   |             |   |
| Ambient Temperature |  | Relative Humidity |             | Barometric Pressure   |
| 24 °C               |  | 32 %              |             | 101.30 kPa  |

EUT performed within the requirements of the applicable standard [X] Yes [ ] No *J Payne*

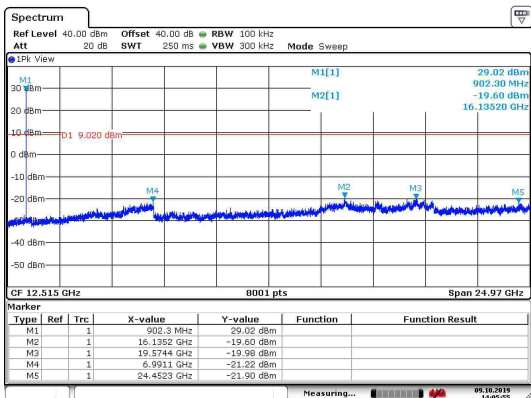
| Port | Channel | Modulation | Peak Output Power (dBm) | Reading (dBm) | -20dBc (dBm) | Pass/Fail |
|------|---------|------------|-------------------------|---------------|--------------|-----------|
| 0    | Low     | iag        | 28.87                   | 29.27         | 9.27         | Pass      |
| 1    | Low     | iag        | 28.74                   | 29.14         | 9.14         | Pass      |
| 2    | Low     | iag        | 28.74                   | 29.02         | 9.02         | Pass      |
| 3    | Low     | iag        | 28.89                   | 29.07         | 9.07         | Pass      |



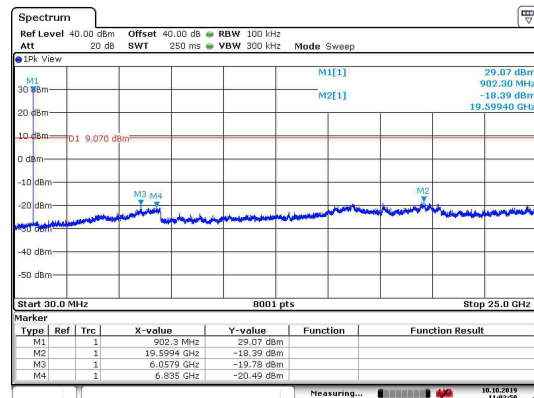
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Date: 9.OCT.2019 14:05:56



Date: 10.OCT.2019 11:02:50

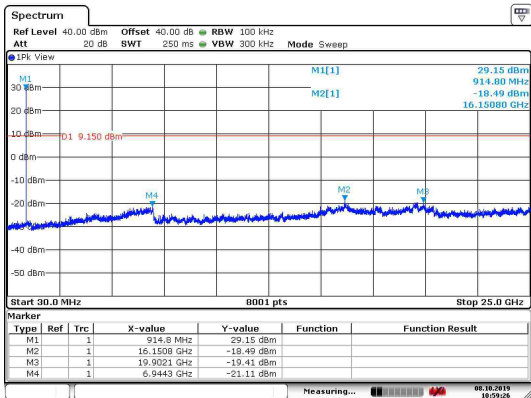
1100 E Chalk Creek Road  
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## Conducted Spurious

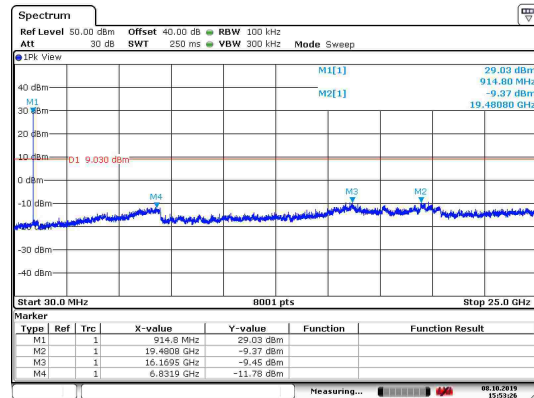
|                     |  |                   |             |  |
|---------------------|--|-------------------|-------------|--|
| DNB Job Number:     | 06022  | Date:             | 10 Oct 2019 | <b>Conformance Standard</b><br><br>FCC Part 15<br><br><b>Clause</b><br>15.247(d) |
| Customer:           | Transcore                                      |                   |             |  |
| Model Number:       | MPRXFH   |                   |             |  |
| Description:        | Multiprotocol Reader Extreme- Frequency Hopper |                   |             |  |
| Ambient Temperature |  | Relative Humidity |             | Barometric Pressure  |
| 24 °C               |  | 32 %              |             | 101.30 kPa   |

EUT performed within the requirements of the applicable standard [X] Yes [ ] No *J Payne*

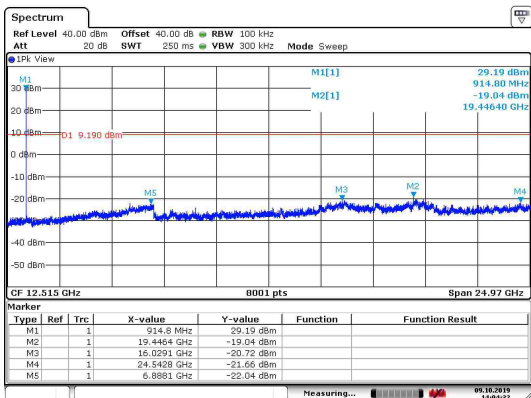
| Port | Channel | Modulation | Peak Output Power (dBm) | Reading (dBm) | -20dBc (dBm) | Pass/Fail |
|------|---------|------------|-------------------------|---------------|--------------|-----------|
| 0    | Mid     | iag        | 28.78                   | 29.15         | 9.15         | Pass      |
| 1    | Mid     | iag        | 28.90                   | 29.03         | 9.03         | Pass      |
| 2    | Mid     | iag        | 28.86                   | 29.19         | 9.19         | Pass      |
| 3    | Mid     | iag        | 28.76                   | 29.25         | 9.25         | Pass      |



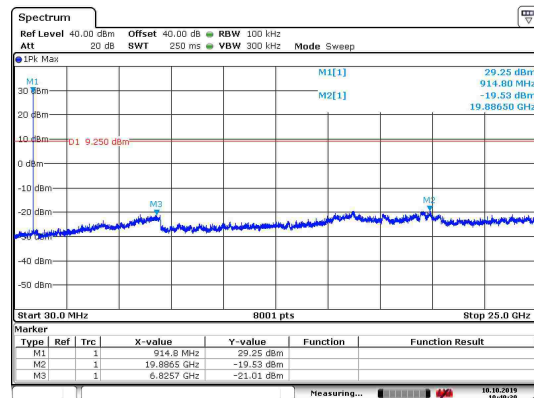
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Date: 8.OCT.2019 15:53:26



Date: 9.OCT.2019 14:04:33



Date: 10.OCT.2019 10:49:39

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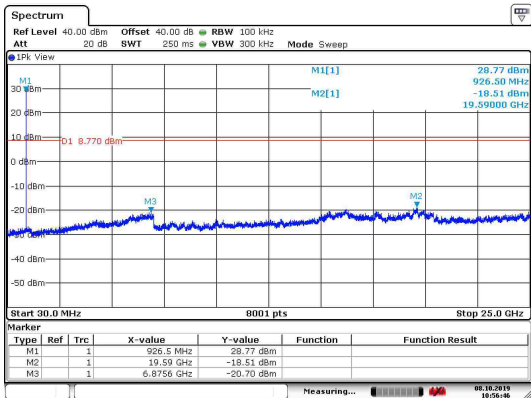
## Conducted Spurious

|                 |  |       |             |   |
|-----------------|--|-------|-------------|---|
| DNB Job Number: | 06022  | Date: | 10 Oct 2019 | <b>Conformance Standard</b><br><br>FCC Part 15<br><br><b>Clause 15.247(d)</b> |
| Customer:       | Transcore                                      |       |             |   |
| Model Number:   | MPRXFH   |       |             |   |
| Description:    | Multiprotocol Reader Extreme- Frequency Hopper |       |             |   |

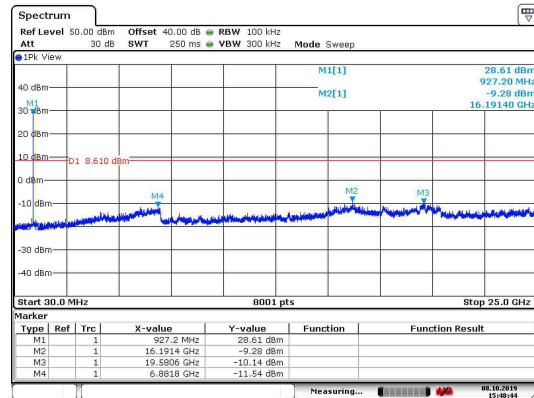
|                     |                   |                     |
|---------------------|-------------------|---------------------|
| Ambient Temperature | Relative Humidity | Barometric Pressure |
| 24 °C               | 32 %              | 101.30 kPa          |

EUT performed within the requirements of the applicable standard  Yes  No *J Payne*

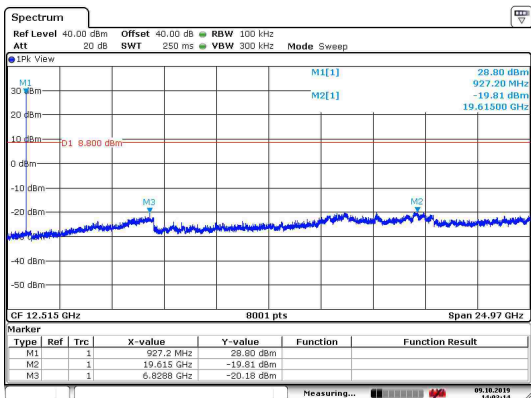
| Port | Channel | Modulation | Peak Output Power (dBm) | Reading (dBm) | -20dBc (dBm) | Pass/Fail |
|------|---------|------------|-------------------------|---------------|--------------|-----------|
| 0    | High    | iag        | 28.79                   | 28.77         | 8.77         | Pass      |
| 1    | High    | iag        | 28.94                   | 28.61         | 8.61         | Pass      |
| 2    | High    | iag        | 28.68                   | 28.80         | 8.8          | Pass      |
| 3    | High    | iag        | 28.79                   | 28.80         | 8.8          | Pass      |



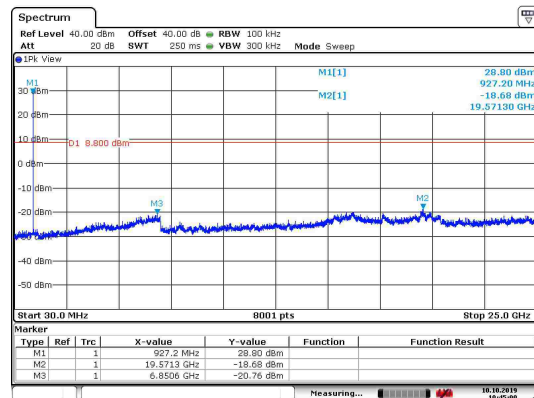
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Date: 8.OCT.2019 15:48:44



Date: 9.OCT.2019 14:03:15



Date: 10.OCT.2019 10:45:00

1100 E Chalk Creek Road  
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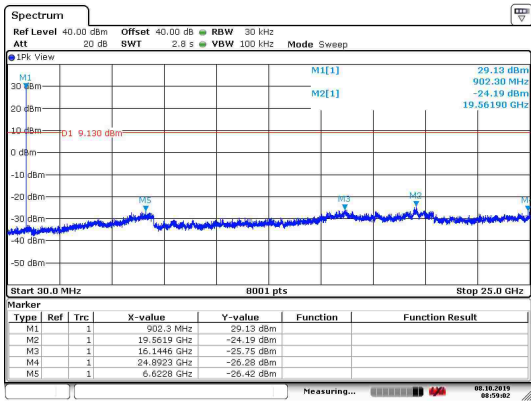
## Conducted Spurious

|                 |  |       |             |  |
|-----------------|--|-------|-------------|--|
| DNB Job Number: | 06022  | Date: | 10 Oct 2019 | <b>Conformance Standard</b><br><br>FCC Part 15 |
| Customer:       | Transcore                                      |       |             |  |
| Model Number:   | MPRXFH   |       |             |  |
| Description:    | Multiprotocol Reader Extreme- Frequency Hopper |       |             | <b>Clause</b><br>15.247(d)                     |

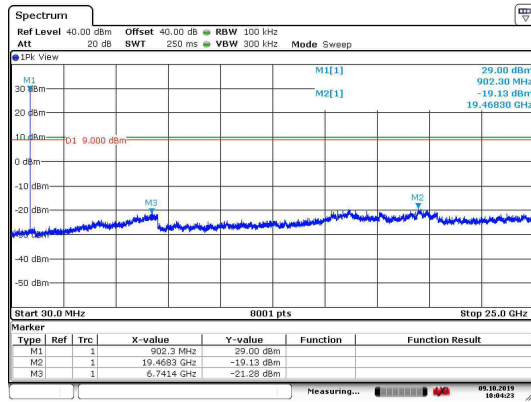
|                     |                   |                     |
|---------------------|-------------------|---------------------|
| Ambient Temperature | Relative Humidity | Barometric Pressure |
| 24 °C               | 32 %              | 101.30 kPa          |

EUT performed within the requirements of the applicable standard [X] Yes [ ] No *J Payne*

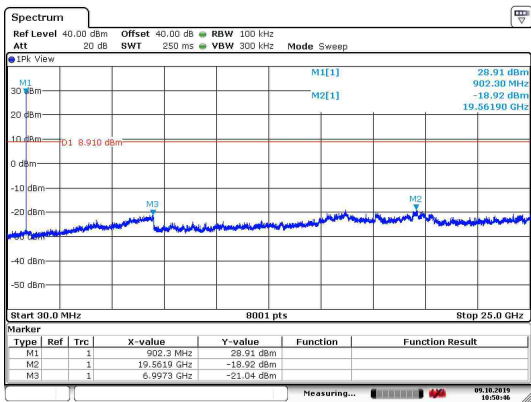
| Port | Channel | Modulation | Peak Output Power (dBm) | Reading (dBm) | -20dBc (dBm) | Pass/Fail |
|------|---------|------------|-------------------------|---------------|--------------|-----------|
| 0    | Low     | Sego       | 28.99                   | 29.13         | 9.13         | Pass      |
| 1    | Low     | Sego       | 28.98                   | 29.00         | 9            | Pass      |
| 2    | Low     | Sego       | 28.90                   | 28.91         | 8.91         | Pass      |
| 3    | Low     | Sego       | 28.93                   | 29.00         | 9            | Pass      |



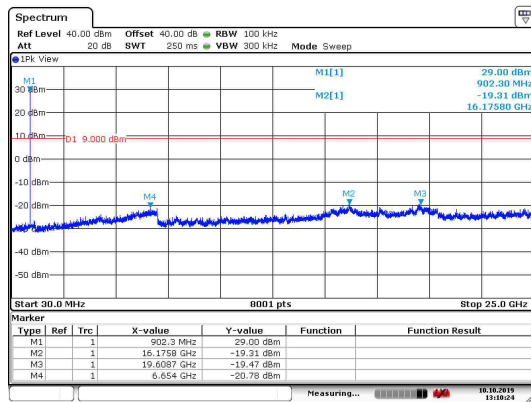
Date: 8.OCT.2019 08:59:01



Date: 9.OCT.2019 10:04:24



Date: 9.OCT.2019 10:50:46



Date: 10.OCT.2019 13:10:24

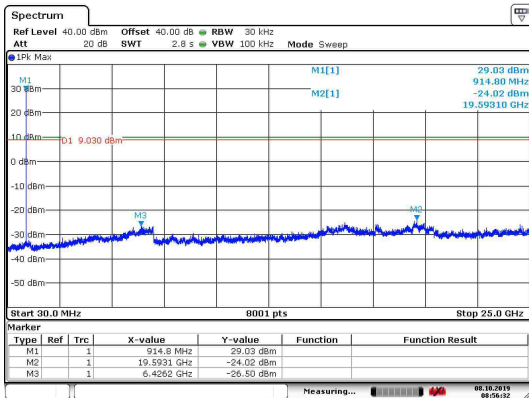
1100 E Chalk Creek Road  
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## Conducted Spurious

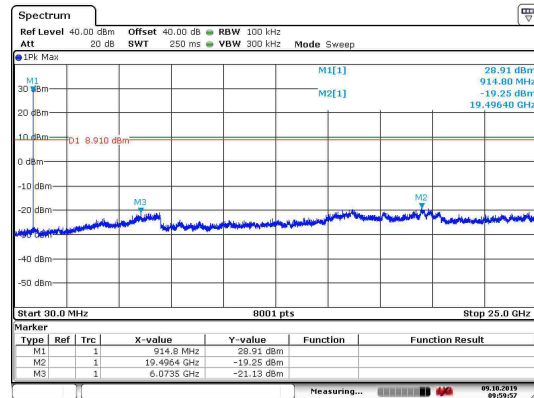
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|---------------------|--|-------------------|-------------|---|
| DNB Job Number:     | 06022  | Date:             | 10 Oct 2019 | <b>Conformance Standard</b><br><br>FCC Part 15<br><br><b>Clause 15.247(d)</b> |
| Customer:           | Transcore                                      |                   |             |   |
| Model Number:       | MPRXFH   |                   |             |   |
| Description:        | Multiprotocol Reader Extreme- Frequency Hopper |                   |             |   |
| Ambient Temperature |  | Relative Humidity |             | Barometric Pressure   |
| 24 °C               |  | 32 %              |             | 101.30 kPa  |

EUT performed within the requirements of the applicable standard [X] Yes [ ] No *J Payne*

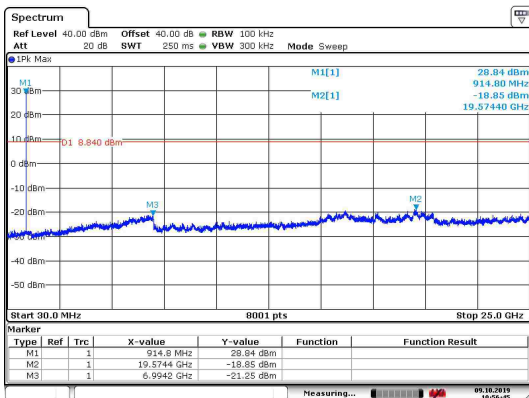
| Port | Channel | Modulation | Peak Output Power (dBm) | Reading (dBm) | -20dBc (dBm) | Pass/Fail |
|------|---------|------------|-------------------------|---------------|--------------|-----------|
| 0    | Mid     | Sego       | 28.92                   | 29.03         | 9.03         | Pass      |
| 1    | Mid     | Sego       | 29.02                   | 28.91         | 8.91         | Pass      |
| 2    | Mid     | Sego       | 28.80                   | 28.84         | 8.84         | Pass      |
| 3    | Mid     | Sego       | 28.99                   | 29.18         | 9.18         | Pass      |



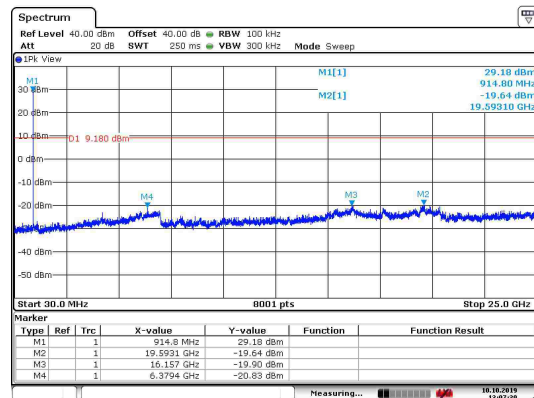
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Date: 9.OCT.2019 09:59:57



Date: 9.OCT.2019 10:56:46



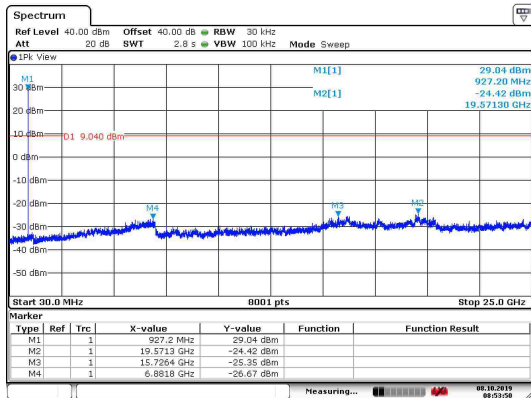
Date: 10.OCT.2019 13:07:39



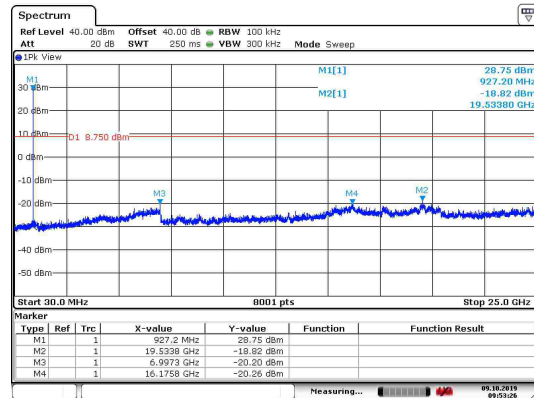
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## Conducted Spurious

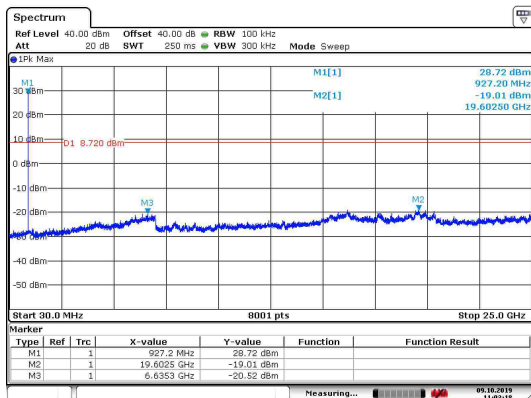
| DNB Job Number:  | 06022  | Date:             | 10 Oct 2019             | <b>Conformance Standard</b><br><br>FCC Part 15<br><br><b>Clause 15.247(d)</b> |              |           |
|--|--|-------------------|-------------------------|---|--------------|-----------|
| Customer:  | Transcore                                      |                   |                         |   |              |           |
| Model Number:  | MPRXFH   |                   |                         |   |              |           |
| Description:   | Multiprotocol Reader Extreme- Frequency Hopper |                   |                         |   |              |           |
| Ambient Temperature  |  | Relative Humidity |                         | Barometric Pressure   |              |           |
| 24 °C  |  | 32 %              |                         | 101.30 kPa  |              |           |
| EUT performed within the requirements of the applicable standard [X] Yes [ ] No <i>J Payne</i> |  |                   |                         |   |              |           |
| Port   | Channel  | Modulation        | Peak Output Power (dBm) | Reading (dBm)   | -20dBc (dBm) | Pass/Fail |
| 0  | High   | Sego              | 28.90                   | 29.04   | 9.04         | Pass      |
| 1  | High   | Sego              | 28.80                   | 28.75   | 8.75         | Pass      |
| 2  | High   | Sego              | 28.83                   | 28.72   | 8.72         | Pass      |
| 3  | High   | Sego              | 29.01                   | 28.79   | 8.79         | Pass      |



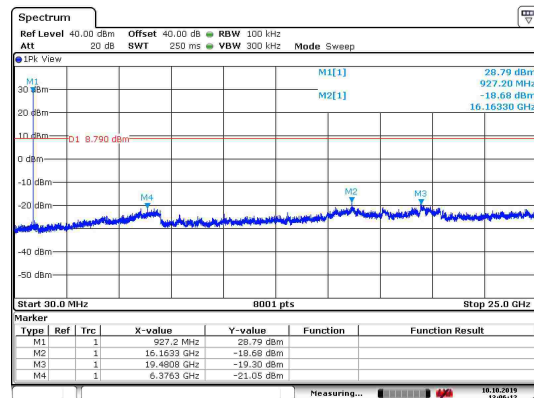
Date: 8.OCT.2019 08:53:50



Date: 9.OCT.2019 09:53:27



Date: 9.OCT.2019 11:03:19



Date: 10.OCT.2019 13:06:12

|   |  |                     |  |
|---|--|---------------------|--|
|   | 1100 E Chalk Creek Road<br>Coalville, UT 84017<br>(435) 336-4433<br>FAX (435) 336-4436 |                     | <b>Restricted Bands Spurious</b>               |
| DNB Job Number:   | 06022  | Date:               | 31 Jan 2020                                    |
| Customer:   | Transcore  |                     | <b>Conformance Standard</b><br><br>FCC Part 15 |
| Model Number:   | MPRXFH   |                     |  |
| Description:  | Multiprotocol Reader Extreme- Frequency Hopper   |                     | <b>Clause</b><br>15.247(d)                     |
|   | Test Procedure   |                     |  |
| Ambient Temperature   |  | Relative Humidity   |  |
| 24 °C   |  | 32 %                |  |
|   |  | Barometric Pressure |  |
|   |  | 101.30 kPa          |  |
| EUT performed within the requirements of the applicable standard <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <i>J Payne</i> |  |                     |  |

Test Procedure: ANSI C63.10-2013

## 11.12.2 Antenna-port conducted measurements

### 11.12.2.1 General

Antenna-port conducted measurements may also be used as an alternative to radiated measurements for determining compliance in the restricted frequency bands requirements. If conducted measurements are performed, then proper impedance matching must be ensured and an additional radiated test for cabinet/case emissions is required.

#### 11.12.2.2 General procedure for conducted measurements in restricted bands

The general procedure for conducted measurements in restricted bands is as follows:

- a) Measure the conducted output power (in dBm) using the detector specified by the appropriate regulatory agency (see 11.12.2.3 through 11.12.2.5 for guidance regarding measurement procedures for determining quasi-peak, peak, and average conducted output power, respectively).
- b) Add the maximum transmit antenna gain (in dBi) to the measured output power level to determine the EIRP (see 11.12.2.6 for guidance on determining the applicable antenna gain).
- c) Add the appropriate maximum ground reflection factor to the EIRP (6 dB for frequencies  $\leq$  30 MHz; 4.7 dB for frequencies between 30 MHz and 1000 MHz, inclusive; and 0 dB for frequencies  $>$  1000 MHz).
- d) For MIMO devices, measure the power of each chain and sum the EIRP of all chains in linear terms (i.e., watts and mW).

|   |  |                   |  |
|---|--|-------------------|--|
|   | 1100 E Chalk Creek Road<br>Coalville, UT 84017<br>(435) 336-4433<br>FAX (435) 336-4436 |                   | <b>Restricted Bands Spurious</b>               |
| DNB Job Number:   | 06022  | Date:             | 31 Jan 2020                                    |
| Customer:   | Transcore  |                   | <b>Conformance Standard</b><br><br>FCC Part 15 |
| Model Number:   | MPRXFH   |                   |  |
| Description:  | Multiprotocol Reader Extreme- Frequency Hopper   |                   | <b>Clause</b><br>15.247(d)                     |
|   | Test Procedure   |                   |  |
| Ambient Temperature   |  | Relative Humidity |  |
| 24 °C   |  | 32 %              |  |
| Barometric Pressure   |  |                   |  |
| 101.30 kPa  |  |                   |  |
| EUT performed within the requirements of the applicable standard <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <i>J Payne</i> |  |                   |  |

Test Procedure: ANSI C63.10-2013 - *Continued*

e) Convert the resultant EIRP to an equivalent electric field strength using the following relationship:

$$E = \text{EIRP} - 20 \log d + 104.8$$

where

$E$  is the electric field strength in dB $\mu$ V/m

EIRP is the equivalent isotropically radiated power in dBm

$d$  is the specified measurement distance in m

f) Compare the resultant electric field strength level with the applicable regulatory limit.

g) Perform the radiated spurious emission test.

Note: With respect to steps e) and f) a limit line (EIRP) based upon the dB $\mu$ V/m limit was calculated and put on the plots to satisfy the requirement of step f) above. Formula is:  $(E + 20 \log d) - 104.8 = (\text{EIRP limit})$ . The appropriate correction factor from step c) was included in the final calculation.

Limit Calculation:

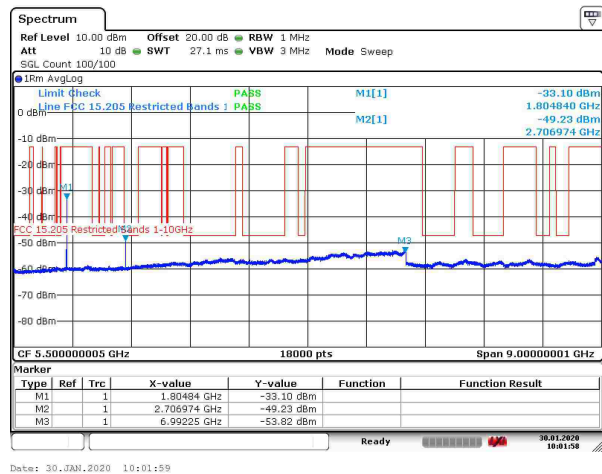
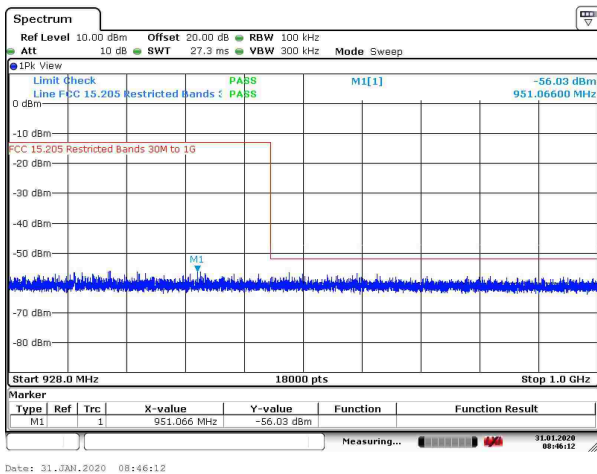
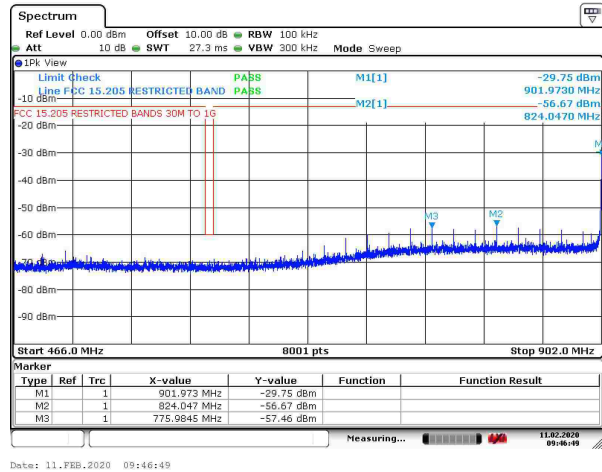
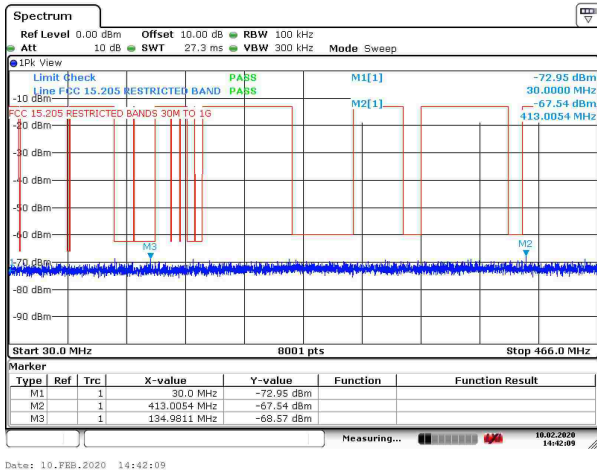
Formula:  $E - 104.8 + 20\log(3) - \text{antenna gain} - \text{ground reflection factor}$

|                    |                                    |              |
|--------------------|------------------------------------|--------------|
| 30 MHz - 88 MHz    | $40 - 104.8 + 20\log(d) - 6 - 4.7$ | = -65.96 dBm |
| 88 MHz - 216 MHz   | $43 - 104.8 + 20\log(d) - 6 - 4.7$ | = -62.46 dBm |
| 216 MHz - 960 MHz  | $46 - 104.8 + 20\log(d) - 6 - 4.7$ | = -59.96 dBm |
| 960 MHz - 1000 MHz | $54 - 104.8 + 20\log(d) - 6 - 4.7$ | = -51.96 dBm |
| > 1000 MHz         | $54 - 104.8 + 20\log(d) - 6 - 0$   | = -47.26 dBm |

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## Restricted Band Spurious

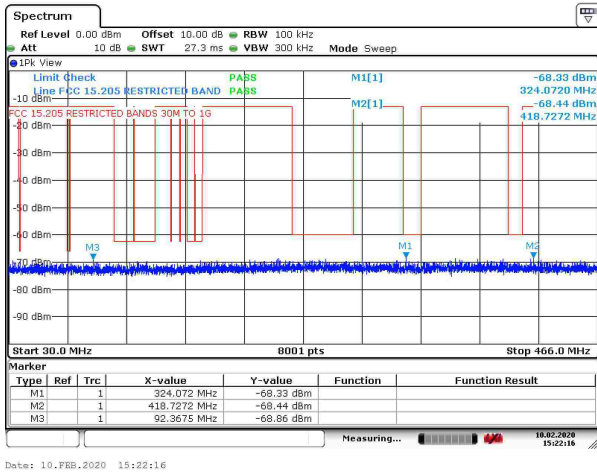
|  |  |                   |             |   |
|--|--|-------------------|-------------|---|
| DNB Job Number:  | 06022  | Date:             | 31 Jan 2020 | <b>Conformance Standard</b><br><br>FCC Part 15<br><br><b>Clause 15.247(d)</b> |
| Customer:  | Transcore                                      |                   |             |   |
| Model Number:  | MPRXFH   |                   |             |   |
| Description:   | Multiprotocol Reader Extreme- Frequency Hopper |                   |             |   |
| Ambient Temperature  |  | Relative Humidity |             | Barometric Pressure   |
| 23 °C  |  | 30 %              |             | 101.80 kPa  |
| EUT performed within the requirements of the applicable standard <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <i>CL Payne</i> |  |                   |             |   |
| Port   | Channel  | Modulation        | Pass/Fail   |   |
| 0  | Low  | ego               | Pass        |   |



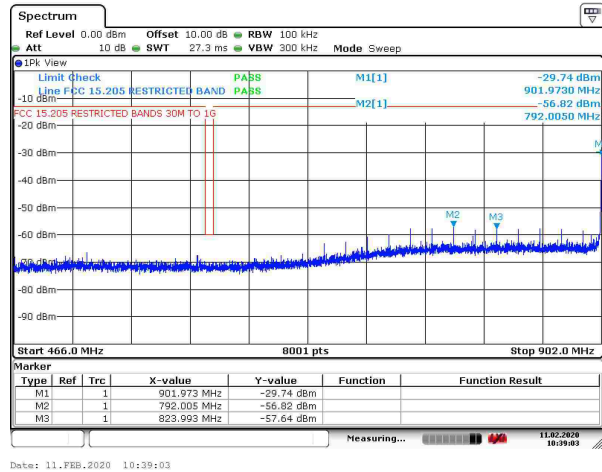
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## Restricted Band Spurious

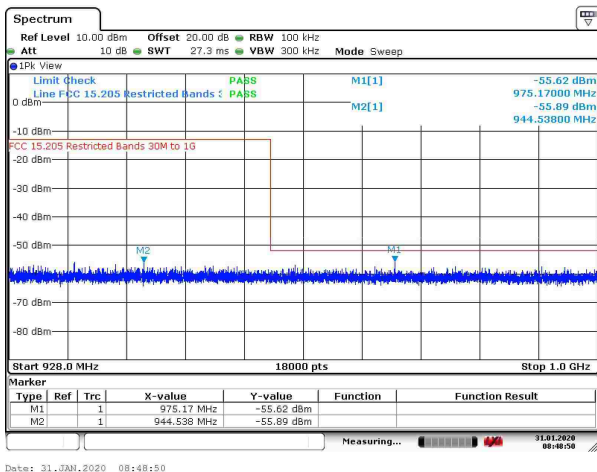
|  |  |                   |             |   |
|--|--|-------------------|-------------|---|
| DNB Job Number:  | 06022  | Date:             | 31 Jan 2020 | <b>Conformance Standard</b><br><br>FCC Part 15<br><br><b>Clause 15.247(d)</b> |
| Customer:  | Transcore                                      |                   |             |   |
| Model Number:  | MPRXFH   |                   |             |   |
| Description:   | Multiprotocol Reader Extreme- Frequency Hopper |                   |             |   |
| Ambient Temperature  |  | Relative Humidity |             | Barometric Pressure   |
| 23 °C  |  | 30 %              |             | 101.80 kPa  |
| EUT performed within the requirements of the applicable standard <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <i>CL Payne</i> |  |                   |             |   |
| Port   | Channel  | Modulation        | Pass/Fail   |   |
| 1  | Low  | ego               | Pass        |   |



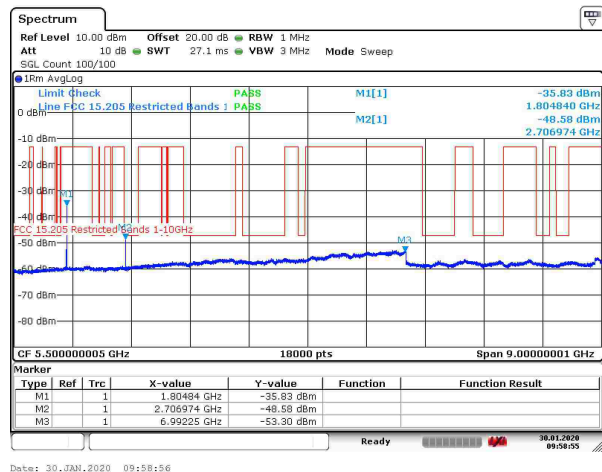
Date: 10.FEB.2020 15:22:16



Date: 11.FEB.2020 10:39:03



Date: 31.JAN.2020 08:48:50



Date: 30.JAN.2020 09:58:56