Measurement Protocol PAX

# General Information:

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| --- | --- | --- |
| Test date: 10/8/22 | Date prev. test: 28/8/21 | Test number: 2 |
| Tested by: Sarah Schoultz | PAX number: PB-014 | Installed at ant.: 2L |
| Comments: Removed from 2L due to problem. Suspected that the calibration is off | | |
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|  | | |
| Known problems: | | |
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|  | | |

# Setup:

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| --- | --- | --- | --- |
| Power supply: | OK 🗹 NOK 🗆 | Communication: | OK 🗹 NOK 🗆 |
| Supply current +6V: 1.106mA | | ssh obs@antcntl | |
| Supply current -6V: 0.107mA | | ssh ataant@ant0 | pw: q@n@t |
| Supply current +5V: 0.103mA | | telnet pax | “help” |
|  | | CTRL + ] | “close” |

# RF Test with VNA:

### VNA Setup:

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| --- | --- | --- |
| Load configuration: Passband\_PAX.csa | | |
| Freq Start: 1.0 GHz | Freq Stop: 13.0 GHz | Power Level: -20 dBm |
| Averaging: enabled | Averaging count: 15 | N. Points: 801 |
| VNA : Agilent N5230C 10MHz - 20GHz | | |

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| --- | --- | --- | --- | --- |
| VNA to PAX connection: | 1m ABC-CA18 Cable + 20dB Attenuator | | | |
| Input Power Level to PAX: (Measured) | @1GHz:  -40.2dBm | @4GHz:  -40.7dBm | @8GHz: -41.2dBm | @12GHz: -41.4dBm |

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| --- | --- |
| PAX to VNA connection: | 2m Fibre Cable + Fibre Diode + AOX Amplifier + 1m ABC-CA18 Cable |

### Measured Passband with Attenuator set to 7dB each (Complete Link):

|  |
| --- |
| X |

A picture containing table

Description automatically generated

|  |  |  |  |
| --- | --- | --- | --- |
| Flatness: | OK 🗹 NOK 🗆 | Unwanted Features: | Yes 🗆 No 🗹 |

|  |
| --- |
| Y |

A picture containing chart

Description automatically generated

|  |  |  |  |
| --- | --- | --- | --- |
| Flatness: | OK 🗹 NOK 🗆 | Unwanted Features: | Yes 🗆 No 🗹 |

### Power Sweep (Complete Link):

|  |  |  |
| --- | --- | --- |
| Load configuration: Power\_Sweep\_PAX.csa | | |
| Power Start: -40dBm | Power Stop: -20dBm | Frequency : 4.0GHz |
| PAM Attenuator: 0dB |  | N. Points: 801 |

|  |
| --- |
| X |

Chart

Description automatically generated

|  |  |  |  |
| --- | --- | --- | --- |
| Compression point: | OK 🗹 NOK 🗆 | Unwanted Features: | Yes 🗆 No 🗹 |

|  |
| --- |
| Y |

Chart, scatter chart

Description automatically generated

|  |  |  |  |
| --- | --- | --- | --- |
| Compression point: | OK 🗹 NOK 🗆 | Unwanted Features: | Yes 🗆 No 🗹 |

### Detector Calibration and Attenuator Sweep Pol X:

|  |  |  |
| --- | --- | --- |
| Load configuration: Detector\_Calibration\_PAX.csa | | |
| Freq : 4.0 GHz | Power Level: -20dBm | Sweep Time: -20sec |
| Sweep Mode: CW | Power Level at PAX Input (Measured): -40.6dBm | |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| X | | | | |
| CW Input Power [dBm]: | Attenuator Value A [dB]: | Attenuator Value: B [dB]: | Detector Value: | Power Meter  Value [dBm]: |
| -40.6 | 0 | 0 | - | 13.9 |
| -40.6 | 0 | 3 | - | 12.8 |
| -40.6 | 0 | 6 | - | 11.7 |
| -40.6 | 0 | 9 | 0.8465 | 9.4 |
| -40.6 | 0 | 12 | 0.6008 | 6.5 |
| -40.6 | 0 | 15 | 0.3742 | 3.7 |
| -40.6 | 0 | 18 | 0.2072 | 0.5 |
| -40.6 | 0 | 21 | 0.1152 | -2.6 |
| -40.6 | 3 | 21 | 0.0571 | -6.0 |
| -40.6 | 6 | 21 | 0.0302 | -9.0 |
| -40.6 | 9 | 21 | 0.0158 | -12.0 |
| -40.6 | 12 | 21 | 0.0084 | -15.0 |
| -40.6 | 15 | 21 | 0.0046 | -18.0 |
| -40.6 | 18 | 21 | 0.0026 | -21.3 |
| -40.6 | 21 | 21 | 0.0017 | -24.4 |
| -40.6 | 24 | 21 | 0.0012 | -27.2 |
| -40.6 | 27 | 21 | 0.0010 | -30.3 |
| -40.6 | 30 | 21 | 0.0009 | -33.4 |
| -40.6 | 30 | 24 | 0.0008 | -36.0 |
| -40.6 | 30 | 27 | 0.0008 | -38.5 |
| -40.6 | 30 | 30 | 0.0008 | -40.8 |

|  |  |  |
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| Use Noise Source: Atlantic AS6333 | | |
| Freq : 1.0 - 12.0GHz | Power Level: -41.8dBm |  |
| DC Supply: 28V |  | |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| X | | | | |
| CW Input Power [dBm]: | Attenuator Value A [dB]: | Attenuator Value: B [dB]: | Detector Value: | Power Meter  Value [dBm]: |
| -41.8 | 0 | 0 | - | 11.3 |
| -41.8 | 0 | 3 | - | 10.2 |
| -41.8 | 0 | 6 | 0.8466 | 8.6 |
| -41.8 | 0 | 9 | 0.7653 | 6.6 |
| -41.8 | 0 | 12 | 0.5468 | 3.9 |
| -41.8 | 0 | 15 | 0.3451 | 1.4 |
| -41.8 | 0 | 18 | 0.1864 | -1.8 |
| -41.8 | 0 | 21 | 0.1008 | -4.7 |
| -41.8 | 3 | 21 | 0.0528 | -7.6 |
| -41.8 | 6 | 21 | 0.0267 | -10.7 |
| -41.8 | 9 | 21 | 0.0139 | -13.6 |
| -41.8 | 12 | 21 | 0.0073 | -16.6 |
| -41.8 | 15 | 21 | 0.0043 | -19.3 |
| -41.8 | 18 | 21 | 0.0024 | -22.6 |
| -41.8 | 21 | 21 | 0.0016 | -25.6 |
| -41.8 | 24 | 21 | 0.0011 | -28.6 |
| -41.8 | 27 | 21 | 0.0010 | -31.3 |
| -41.8 | 30 | 21 | 0.0009 | -34.4 |
| -41.8 | 30 | 24 | 0.0009 | -37.0 |
| -41.8 | 30 | 27 | 0.0008 | -39.1 |
| -41.8 | 30 | 30 | 0.0008 | -41.2 |

### Detector Calibration and Attenuator Sweep Pol Y:

|  |  |  |
| --- | --- | --- |
| Load configuration: Detector\_Calibration\_PAX.csa | | |
| Freq : 4.0 GHz | Power Level: -20dBm | Sweep Time: -20sec |
| Sweep Mode: CW | Power Level at PAX Input (Measured): -40.6dBm | |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Y | | | | |
| CW Input Power [dBm]: | Attenuator Value A [dB]: | Attenuator Value: B [dB]: | Detector Value: | Power Meter  Value [dBm]: |
| -40.6 | 0 | 0 | - | 13.1 |
| -40.6 | 0 | 3 | - | 12.9 |
| -40.6 | 0 | 6 | - | 11.8 |
| -40.6 | 0 | 9 | - | 9.6 |
| -40.6 | 0 | 12 | 0.8472 | 6.7 |
| -40.6 | 0 | 15 | 0.6519 | 3.8 |
| -40.6 | 0 | 18 | 0.3516 | 0.6 |
| -40.6 | 0 | 21 | 0.1911 | -2.4 |
| -40.6 | 3 | 21 | 0.0922 | -5.9 |
| -40.6 | 6 | 21 | 0.0478 | -8.9 |
| -40.6 | 9 | 21 | 0.0246 | -11.9 |
| -40.6 | 12 | 21 | 0.0129 | -14.8 |
| -40.6 | 15 | 21 | 0.0070 | -17.8 |
| -40.6 | 18 | 21 | 0.0039 | -21.0 |
| -40.6 | 21 | 21 | 0.0024 | -24.1 |
| -40.6 | 24 | 21 | 0.0017 | -26.9 |
| -40.6 | 27 | 21 | 0.0013 | -29.9 |
| -40.6 | 30 | 21 | 0.0011 | -33.0 |
| -40.6 | 30 | 24 | 0.0011 | -35.6 |
| -40.6 | 30 | 27 | 0.0010 | -38.1 |
| -40.6 | 30 | 30 | 0.0010 | -40.3 |

|  |  |  |
| --- | --- | --- |
| Use Noise Source: Atlantic AS6333 | | |
| Freq : 1.0 - 12.0GHz | Power Level: -41.8dBm |  |
| DC Supply: 28V |  | |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Y | | | | |
| CW Input Power [dBm]: | Attenuator Value A [dB]: | Attenuator Value: B [dB]: | Detector Value: | Power Meter  Value [dBm]: |
| -41.8 | 0 | 0 | - | 11.5 |
| -41.8 | 0 | 3 | - | 10.4 |
| -41.8 | 0 | 6 | - | 8.8 |
| -41.8 | 0 | 9 | - | 6.7 |
| -41.8 | 0 | 12 | 0.8475 | 4.1 |
| -41.8 | 0 | 15 | 0.5958 | 1.5 |
| -41.8 | 0 | 18 | 0.3164 | -1.6 |
| -41.8 | 0 | 21 | 0.1684 | -4.5 |
| -41.8 | 3 | 21 | 0.0846 | -7.5 |
| -41.8 | 6 | 21 | 0.0417 | -10.6 |
| -41.8 | 9 | 21 | 0.0216 | -13.5 |
| -41.8 | 12 | 21 | 0.0111 | -16.5 |
| -41.8 | 15 | 21 | 0.0064 | -19.1 |
| -41.8 | 18 | 21 | 0.0035 | -22.4 |
| -41.8 | 21 | 21 | 0.0023 | -25.4 |
| -41.8 | 24 | 21 | 0.0016 | -28.3 |
| -41.8 | 27 | 21 | 0.0013 | -31.0 |
| -41.8 | 30 | 21 | 0.0011 | -34.1 |
| -41.8 | 30 | 24 | 0.0011 | -36.6 |
| -41.8 | 30 | 27 | 0.0010 | -38.8 |
| -41.8 | 30 | 30 | 0.0010 | -40.9 |

# Inspection:

### Visual:

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| --- | --- | --- |
| Fibre Connectors Clean | Comments: | OK 🗹 NOK 🗆 |
| Fibre Connector Mechanical | Comments: | OK **🗹** NOK **🗆** |
| RF Cable | Comments: | OK **🗹** NOK **🗆** |
| RF Connectors Clean | Comments: | OK **🗹** NOK **🗆** |
| RF Connector on PAM screws tight | Comments: | OK **🗹** NOK **🗆** |

### Functions:

|  |  |  |
| --- | --- | --- |
| Read Temperature Value | Comments: 27.6 | OK 🗹 NOK 🗆 |
| LNA Settings | Comments: | OK 🗆 NOK **🗆** |
| Temperature Stabilisation | Comments: | OK 🗆 NOK **🗆** |