Measurement Protocol PAX

# General Information:

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| --- | --- | --- |
| Test date: 30/8/22 | Date prev. test: NA | Test number: 1 |
| Tested by: Sarah Schoultz | PAX number: PB-002 | Installed at ant.: |
| Comments: | | |
|  | | |
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|  | | |
| Known problems: | | |
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|  | | |

# Setup:

|  |  |  |  |
| --- | --- | --- | --- |
| Power supply: | OK 🗹 NOK 🗆 | Communication: | OK 🗹 NOK 🗆 |
| Supply current +6V: 1.073mA | | ssh obs@antcntl | |
| Supply current -6V: 0.109mA | | ssh ataant@ant0 | pw: q@n@t |
| Supply current +5V: 0.108mA | | telnet pax | “help” |
|  | | CTRL + ] | “exit” |

# 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 |

|  |
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| X |

Chart

Description automatically generated

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

|  |
| --- |
| Y |

Chart

Description automatically generated

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

### Detector Calibration and Attenuator Sweep Pol X:

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| --- | --- | --- |
| 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 | - | 13.0 |
| -40.6 | 0 | 3 | - | 12.9 |
| -40.6 | 0 | 6 | - | 11.9 |
| -40.6 | 0 | 9 | - | 9.6 |
| -40.6 | 0 | 12 | 0.8467 | 6.7 |
| -40.6 | 0 | 15 | 0.6879 | 3.9 |
| -40.6 | 0 | 18 | 0.3802 | 0.6 |
| -40.6 | 0 | 21 | 0.2125 | -2.4 |
| -40.6 | 3 | 21 | 0.1052 | -5.9 |
| -40.6 | 6 | 21 | 0.0558 | -8.8 |
| -40.6 | 9 | 21 | 0.0289 | -11.9 |
| -40.6 | 12 | 21 | 0.0153 | -14.8 |
| -40.6 | 15 | 21 | 0.0082 | -17.8 |
| -40.6 | 18 | 21 | 0.0044 | -21.1 |
| -40.6 | 21 | 21 | 0.0026 | -24.1 |
| -40.6 | 24 | 21 | 0.0019 | -27.0 |
| -40.6 | 27 | 21 | 0.0014 | -30.2 |
| -40.6 | 30 | 21 | 0.0012 | -33.3 |
| -40.6 | 30 | 24 | 0.0011 | -35.9 |
| -40.6 | 30 | 27 | 0.0011 | -38.3 |
| -40.6 | 30 | 30 | 0.0011 | -40.6 |

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

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| --- | --- | --- | --- | --- |
| X | | | | |
| CW Input Power [dBm]: | Attenuator Value A [dB]: | Attenuator Value: B [dB]: | Detector Value: | Power Meter  Value [dBm]: |
| -41.8 | 0 | 0 | - | 11.4 |
| -41.8 | 0 | 3 | - | 10.4 |
| -41.8 | 0 | 6 | - | 8.8 |
| -41.8 | 0 | 9 | - | 6.7 |
| -41.8 | 0 | 12 | 0.8466 | 4.0 |
| -41.8 | 0 | 15 | 0.6066 | 1.5 |
| -41.8 | 0 | 18 | 0.3295 | -1.6 |
| -41.8 | 0 | 21 | 0.1809 | -4.5 |
| -41.8 | 3 | 21 | 0.0940 | -7.5 |
| -41.8 | 6 | 21 | 0.0476 | -10.6 |
| -41.8 | 9 | 21 | 0.0249 | -13.5 |
| -41.8 | 12 | 21 | 0.0129 | -16.4 |
| -41.8 | 15 | 21 | 0.0074 | -19.1 |
| -41.8 | 18 | 21 | 0.0039 | -22.4 |
| -41.8 | 21 | 21 | 0.0026 | -25.4 |
| -41.8 | 24 | 21 | 0.0017 | -28.4 |
| -41.8 | 27 | 21 | 0.0014 | -31.1 |
| -41.8 | 30 | 21 | 0.0012 | -34.3 |
| -41.8 | 30 | 24 | 0.0011 | -36.8 |
| -41.8 | 30 | 27 | 0.0011 | -39.0 |
| -41.8 | 30 | 30 | 0.0011 | -41 |

### 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 | - | 12.2 |
| -40.6 | 0 | 3 | - | 12.1 |
| -40.6 | 0 | 6 | - | 11.3 |
| -40.6 | 0 | 9 | - | 9.6 |
| -40.6 | 0 | 12 | - | 7.1 |
| -40.6 | 0 | 15 | 0.8494 | 4.4 |
| -40.6 | 0 | 18 | 0.5478 | 1.1 |
| -40.6 | 0 | 21 | 0.3131 | -2.0 |
| -40.6 | 3 | 21 | 0.1604 | -5.3 |
| -40.6 | 6 | 21 | 0.0854 | -8.4 |
| -40.6 | 9 | 21 | 0.0449 | -11.3 |
| -40.6 | 12 | 21 | 0.0235 | -14.3 |
| -40.6 | 15 | 21 | 0.0125 | -17.3 |
| -40.6 | 18 | 21 | 0.0066 | -20.6 |
| -40.6 | 21 | 21 | 0.0038 | -23.7 |
| -40.6 | 24 | 21 | 0.0026 | -26.5 |
| -40.6 | 27 | 21 | 0.0018 | -29.7 |
| -40.6 | 30 | 21 | 0.0015 | -32.9 |
| -40.6 | 30 | 24 | 0.0014 | -35.5 |
| -40.6 | 30 | 27 | 0.0013 | -38.0 |
| -40.6 | 30 | 30 | 0.0013 | -40.4 |

|  |  |  |
| --- | --- | --- |
| 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 | - | 10.9 |
| -41.8 | 0 | 3 | - | 10.0 |
| -41.8 | 0 | 6 | - | 8.6 |
| -41.8 | 0 | 9 | - | 6.7 |
| -41.8 | 0 | 12 | - | 4.3 |
| -41.8 | 0 | 15 | 0.8496 | 1.8 |
| -41.8 | 0 | 18 | 0.4952 | -1.4 |
| -41.8 | 0 | 21 | 0.2795 | -4.3 |
| -41.8 | 3 | 21 | 0.1480 | -7.3 |
| -41.8 | 6 | 21 | 0.0753 | -10.4 |
| -41.8 | 9 | 21 | 0.0395 | -13.3 |
| -41.8 | 12 | 21 | 0.0202 | -16.3 |
| -41.8 | 15 | 21 | 0.0113 | -19.0 |
| -41.8 | 18 | 21 | 0.0059 | -22.3 |
| -41.8 | 21 | 21 | 0.0035 | -25.4 |
| -41.8 | 24 | 21 | 0.0025 | -28.4 |
| -41.8 | 27 | 21 | 0.0019 | -31.2 |
| -41.8 | 30 | 21 | 0.0015 | -34.5 |
| -41.8 | 30 | 24 | 0.0014 | -37.0 |
| -41.8 | 30 | 27 | 0.0014 | -39.1 |
| -41.8 | 30 | 30 | 0.0013 | -41.2 |

# Inspection:

### Visual:

|  |  |  |
| --- | --- | --- |
| 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: 29.9 | OK 🗹 NOK 🗆 |
| LNA Settings | Comments: | OK 🗆 NOK **🗆** |
| Temperature Stabilisation | Comments: | OK 🗆 NOK **🗆** |