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-036 | Installed at ant.: |
| Comments: | | |
|  | | |
|  | | |
|  | | |
| Known problems: | | |
|  | | |
|  | | |
|  | | |

# Setup:

|  |  |  |  |
| --- | --- | --- | --- |
| Power supply: | OK 🗹 NOK 🗆 | Communication: | OK 🗹 NOK 🗆 |
| Supply current +6V: 1.056mA | | ssh obs@antcntl | |
| Supply current -6V: 0.109mA | | ssh ataant@ant0 | pw: q@n@t |
| Supply current +5V: 0.138mA | | telnet pax | “help” |
|  | | CTRL + ] | “exit” |

# RF Test with VNA:

### VNA Setup:

|  |  |  |
| --- | --- | --- |
| 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 |

Chart

Description automatically generated with low confidence

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

|  |
| --- |
| Y |

Chart

Description automatically generated with low confidence

|  |  |  |  |
| --- | --- | --- | --- |
| 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

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 | - | 13.5 |
| -40.6 | 0 | 3 | - | 13.3 |
| -40.6 | 0 | 6 | - | 11.7 |
| -40.6 | 0 | 9 | - | 9.1 |
| -40.6 | 0 | 12 | 0.8502 | 6.2 |
| -40.6 | 0 | 15 | 0.5916 | 3.4 |
| -40.6 | 0 | 18 | 0.3273 | 0.0 |
| -40.6 | 0 | 21 | 0.1856 | -3.0 |
| -40.6 | 3 | 21 | 0.0944 | -6.3 |
| -40.6 | 6 | 21 | 0.0490 | -9.3 |
| -40.6 | 9 | 21 | 0.0254 | -12.3 |
| -40.6 | 12 | 21 | 0.0133 | -15.3 |
| -40.6 | 15 | 21 | 0.0074 | -18.2 |
| -40.6 | 18 | 21 | 0.0040 | -21.5 |
| -40.6 | 21 | 21 | 0.0025 | -24.6 |
| -40.6 | 24 | 21 | 0.0018 | -27.6 |
| -40.6 | 27 | 21 | 0.0014 | -30.6 |
| -40.6 | 30 | 21 | 0.0013 | -33.8 |
| -40.6 | 30 | 24 | 0.0012 | -36.4 |
| -40.6 | 30 | 27 | 0.0011 | -38.8 |
| -40.6 | 30 | 30 | 0.0012 | -41.1 |

|  |  |  |
| --- | --- | --- |
| 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 | - | 11.6 |
| -41.8 | 0 | 3 | - | 10.3 |
| -41.8 | 0 | 6 | - | 8.5 |
| -41.8 | 0 | 9 | - | 6.2 |
| -41.8 | 0 | 12 | 0.8503 | 3.5 |
| -41.8 | 0 | 15 | 0.7163 | 0.9 |
| -41.8 | 0 | 18 | 0.4001 | -2.3 |
| -41.8 | 0 | 21 | 0.2297 | -5.2 |
| -41.8 | 3 | 21 | 0.1270 | -8.2 |
| -41.8 | 6 | 21 | 0.0646 | -11.3 |
| -41.8 | 9 | 21 | 0.0341 | -14.2 |
| -41.8 | 12 | 21 | 0.0173 | -17.2 |
| -41.8 | 15 | 21 | 0.0100 | -19.9 |
| -41.8 | 18 | 21 | 0.0052 | -23.3 |
| -41.8 | 21 | 21 | 0.0031 | -26.4 |
| -41.8 | 24 | 21 | 0.0021 | -29.4 |
| -41.8 | 27 | 21 | 0.0017 | -32.2 |
| -41.8 | 30 | 21 | 0.0013 | -35.4 |
| -41.8 | 30 | 24 | 0.0013 | -37.9 |
| -41.8 | 30 | 27 | 0.0012 | -40.0 |
| -41.8 | 30 | 30 | 0.0011 | -41.9 |

### 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 | - | 13.7 |
| -40.6 | 0 | 3 | - | 13.3 |
| -40.6 | 0 | 6 | - | 11.9 |
| -40.6 | 0 | 9 | 0.8508 | 9.3 |
| -40.6 | 0 | 12 | 0.7119 | 6.4 |
| -40.6 | 0 | 15 | 0.4472 | 3.6 |
| -40.6 | 0 | 18 | 0.2458 | 0.3 |
| -40.6 | 0 | 21 | 0.1404 | -2.7 |
| -40.6 | 3 | 21 | 0.0701 | -6.1 |
| -40.6 | 6 | 21 | 0.0365 | -9.0 |
| -40.6 | 9 | 21 | 0.0196 | -11.9 |
| -40.6 | 12 | 21 | 0.0106 | -14.9 |
| -40.6 | 15 | 21 | 0.0062 | -17.8 |
| -40.6 | 18 | 21 | 0.0035 | -21.1 |
| -40.6 | 21 | 21 | 0.0024 | -24.2 |
| -40.6 | 24 | 21 | 0.0020 | -26.9 |
| -40.6 | 27 | 21 | 0.0016 | -29.9 |
| -40.6 | 30 | 21 | 0.0015 | -33.0 |
| -40.6 | 30 | 24 | 0.0014 | -35.5 |
| -40.6 | 30 | 27 | 0.0014 | -38.0 |
| -40.6 | 30 | 30 | 0.0014 | -40.2 |

|  |  |  |
| --- | --- | --- |
| 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 | - | 11.8 |
| -41.8 | 0 | 3 | - | 10.6 |
| -41.8 | 0 | 6 | - | 8.9 |
| -41.8 | 0 | 9 | - | 6.7 |
| -41.8 | 0 | 12 | 0.8509 | 4.1 |
| -41.8 | 0 | 15 | 0.7258 | 1.5 |
| -41.8 | 0 | 18 | 0.4074 | -1.7 |
| -41.8 | 0 | 21 | 0.2356 | -4.6 |
| -41.8 | 3 | 21 | 0.1297 | -7.6 |
| -41.8 | 6 | 21 | 0.0669 | -10.7 |
| -41.8 | 9 | 21 | 0.0361 | -13.4 |
| -41.8 | 12 | 21 | 0.0188 | -16.4 |
| -41.8 | 15 | 21 | 0.0109 | -19.1 |
| -41.8 | 18 | 21 | 0.0058 | -22.4 |
| -41.8 | 21 | 21 | 0.0036 | -25.5 |
| -41.8 | 24 | 21 | 0.0025 | -28.2 |
| -41.8 | 27 | 21 | 0.0020 | -31.0 |
| -41.8 | 30 | 21 | 0.0016 | -34.2 |
| -41.8 | 30 | 24 | 0.0015 | -36.7 |
| -41.8 | 30 | 27 | 0.0015 | -38.8 |
| -41.8 | 30 | 30 | 0.0014 | -40.8 |

# 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: 29.6 | OK 🗹 NOK 🗆 |
| LNA Settings | Comments: | OK 🗆 NOK **🗆** |
| Temperature Stabilisation | Comments: | OK 🗆 NOK **🗆** |