Measurement Protocol PAX

# General Information:

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| --- | --- | --- |
| Test date: 09/20/2022 | Date prev. test: 09/19/22 | Test number: 3 |
| Tested by: Sebastian Obernberger | PAX number: 042 | Installed at ant.: 5E briefly |
| Comments: Y PAM from PAX 14 installed for X PAM | | |
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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: 1.109mA | | ssh obs@antcntl | |
| Supply current -6V: 0.123mA | | ssh ataant@paxtester | pw: q@n@t |
| Supply current +5V: 0.157mA | | 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):

|  |
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| X |

Table

Description automatically generated

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

|  |
| --- |
| Y |

A picture containing table

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 🗆 |

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| Y |

Chart

Description automatically generated with medium confidence

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| 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 | |

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| 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 | - | 12.8 |
| -40.6 | 0 | 6 | - | 11.5 |
| -40.6 | 0 | 9 | - | 9.3 |
| -40.6 | 0 | 12 | 0.8480 | 6.4 |
| -40.6 | 0 | 15 | 0.6470 | 3.6 |
| -40.6 | 0 | 18 | 0.3527 | 0.3 |
| -40.6 | 0 | 21 | 0.1932 | -2.7 |
| -40.6 | 3 | 21 | 0.0941 | -6.1 |
| -40.6 | 6 | 21 | 0.0490 | -9.1 |
| -40.6 | 9 | 21 | 0.0253 | -12.1 |
| -40.6 | 12 | 21 | 0.0133 | -15.1 |
| -40.6 | 15 | 21 | 0.0072 | -18.0 |
| -40.6 | 18 | 21 | 0.0039 | -21.3 |
| -40.6 | 21 | 21 | 0.0024 | -24.3 |
| -40.6 | 24 | 21 | 0.0017 | -27.1 |
| -40.6 | 27 | 21 | 0.0013 | -30.1 |
| -40.6 | 30 | 21 | 0.0011 | -33.2 |
| -40.6 | 30 | 24 | 0.0010 | -35.8 |
| -40.6 | 30 | 27 | 0.0010 | -38.3 |
| -40.6 | 30 | 30 | 0.0010 | -40.5 |

|  |  |  |
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| 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 | - | 11.3 |
| -41.8 | 0 | 3 | - | 10.2 |
| -41.8 | 0 | 6 | - | 8.5 |
| -41.8 | 0 | 9 | - | 6.4 |
| -41.8 | 0 | 12 | 0.8481 | 3.8 |
| -41.8 | 0 | 15 | 0.5782 | 1.2 |
| -41.8 | 0 | 18 | 0.3081 | -1.9 |
| -41.8 | 0 | 21 | 0.1649 | -4.8 |
| -41.8 | 3 | 21 | 0.0835 | -7.8 |
| -41.8 | 6 | 21 | 0.0413 | -10.9 |
| -41.8 | 9 | 21 | 0.0215 | -13.7 |
| -41.8 | 12 | 21 | 0.0110 | -16.7 |
| -41.8 | 15 | 21 | 0.0064 | -19.4 |
| -41.8 | 18 | 21 | 0.0034 | -22.6 |
| -41.8 | 21 | 21 | 0.0022 | -25.7 |
| -41.8 | 24 | 21 | 0.0015 | -28.6 |
| -41.8 | 27 | 21 | 0.0012 | -31.3 |
| -41.8 | 30 | 21 | 0.0011 | -34.4 |
| -41.8 | 30 | 24 | 0.0010 | -36.9 |
| -41.8 | 30 | 27 | 0.0010 | -39.0 |
| -41.8 | 30 | 30 | 0.0009 | -41.0 |

### 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 | |

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| --- | --- | --- | --- | --- |
| Y | | | | |
| CW Input Power [dBm]: | Attenuator Value A [dB]: | Attenuator Value: B [dB]: | Detector Value: | Power Meter  Value [dBm]: |
| -40.6 | 0 | 0 | - | 13.6 |
| -40.6 | 0 | 3 | - | 13.5 |
| -40.6 | 0 | 6 | - | 12.5 |
| -40.6 | 0 | 9 | - | 10.4 |
| -40.6 | 0 | 12 | 0.8521 | 7.5 |
| -40.6 | 0 | 15 | 0.5951 | 4.8 |
| -40.6 | 0 | 18 | 0.3080 | 1.4 |
| -40.6 | 0 | 21 | 0.1642 | -1.7 |
| -40.6 | 3 | 21 | 0.0794 | -5.0 |
| -40.6 | 6 | 21 | 0.0390 | -8.3 |
| -40.6 | 9 | 21 | 0.0195 | -11.5 |
| -40.6 | 12 | 21 | 0.0099 | -14.7 |
| -40.6 | 15 | 21 | 0.0056 | -17.7 |
| -40.6 | 18 | 21 | 0.0031 | -21.4 |
| -40.6 | 21 | 21 | 0.0022 | -24.6 |
| -40.6 | 24 | 21 | 0.0018 | -27.8 |
| -40.6 | 27 | 21 | 0.0015 | -30.9 |
| -40.6 | 30 | 21 | 0.0014 | -34.3 |
| -40.6 | 30 | 24 | 0.0014 | -36.9 |
| -40.6 | 30 | 27 | 0.0014 | -39.3 |
| -40.6 | 30 | 30 | 0.0013 | -41.6 |

|  |  |  |
| --- | --- | --- |
| 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 | - | 12.1 |
| -41.8 | 0 | 3 | - | 11.0 |
| -41.8 | 0 | 6 | - | 9.4 |
| -41.8 | 0 | 9 | - | 7.3 |
| -41.8 | 0 | 12 | 0.8522 | 4.62 |
| -41.8 | 0 | 15 | 0.5553 | 2.1 |
| -41.8 | 0 | 18 | 0.2856 | -1.1 |
| -41.8 | 0 | 21 | 0.1528 | -4.1 |
| -41.8 | 3 | 21 | 0.0804 | -7.1 |
| -41.8 | 6 | 21 | 0.0383 | -10.4 |
| -41.8 | 9 | 21 | 0.0197 | -13.5 |
| -41.8 | 12 | 21 | 0.0098 | -16.7 |
| -41.8 | 15 | 21 | 0.0058 | -19.5 |
| -41.8 | 18 | 21 | 0.0031 | -23.3 |
| -41.8 | 21 | 21 | 0.0022 | -26.6 |
| -41.8 | 24 | 21 | 0.0017 | -29.9 |
| -41.8 | 27 | 21 | 0.0015 | -32.7 |
| -41.8 | 30 | 21 | 0.0014 | -36.3 |
| -41.8 | 30 | 24 | 0.0014 | -38.8 |
| -41.8 | 30 | 27 | 0.0014 | -40.8 |
| -41.8 | 30 | 30 | 0.0013 | -42.7 |

# 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 **🗆** |

### Functions:

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