Measurement Protocol PAX

# General Information:

|  |  |  |
| --- | --- | --- |
| Test date: 09/19/22 | Date prev. test: 11/9/20 | Test number: |
| Tested by: Sebastian Obernberger | PAX number: 42 | Installed at ant: 5E briefly |
| Comments: | | |
|  | | |
|  | | |
|  | | |
| Known problems: Broken detector on X pole | | |
|  | | |
|  | | |
|  | | |

# Setup:

|  |  |  |  |
| --- | --- | --- | --- |
| 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:

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

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

|  |  |
| --- | --- |
| 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 chart

Description automatically generated

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

|  |
| --- |
| Y |

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 |

|  |
| --- |
| X |

Chart

Description automatically generated

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

|  |
| --- |
| Y |

A picture containing 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 | - | 12.3 |
| -40.6 | 0 | 3 | - | 12.1 |
| -40.6 | 0 | 6 | 0.8281 | 11.0 |
| -40.6 | 0 | 9 | 0.0009 | 9.1 |
| -40.6 | 0 | 12 | 0.0009 | 6.3 |
| -40.6 | 0 | 15 | 0.0009 | 3.6 |
| -40.6 | 0 | 18 | 0.0009 | 0.3 |
| -40.6 | 0 | 21 | 0.0009 | -2.8 |
| -40.6 | 3 | 21 | 0.0009 | -6.2 |
| -40.6 | 6 | 21 | 0.0009 | -9.2 |
| -40.6 | 9 | 21 | 0.0009 | -12.2 |
| -40.6 | 12 | 21 | 0.001 | -15.2 |
| -40.6 | 15 | 21 | 0.0009 | -18.1 |
| -40.6 | 18 | 21 | 0.0009 | -21.5 |
| -40.6 | 21 | 21 | 0.0009 | -24.6 |
| -40.6 | 24 | 21 | 0.0009 | -27.4 |
| -40.6 | 27 | 21 | 0.0009 | -30.4 |
| -40.6 | 30 | 21 | 0.0009 | -33.6 |
| -40.6 | 30 | 24 | 0.0009 | -36.3 |
| -40.6 | 30 | 27 | 0.0009 | -38.8 |
| -40.6 | 30 | 30 | 0.0009 | -41.2 |

|  |  |  |
| --- | --- | --- |
| 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 | - | 10.5 |
| -41.8 | 0 | 3 | 0.8280 | 9.5 |
| -41.8 | 0 | 6 | 0.6968 | 7.9 |
| -41.8 | 0 | 9 | 0.0009 | 5.8 |
| -41.8 | 0 | 12 | 0.0009 | 3.2 |
| -41.8 | 0 | 15 | 0.0009 | 0.7 |
| -41.8 | 0 | 18 | 0.0009 | -2.5 |
| -41.8 | 0 | 21 | 0.0009 | -5.4 |
| -41.8 | 3 | 21 | 0.0009 | -8.4 |
| -41.8 | 6 | 21 | 0.0009 | -11.6 |
| -41.8 | 9 | 21 | 0.0009 | -14.4 |
| -41.8 | 12 | 21 | 0.0009 | -17.4 |
| -41.8 | 15 | 21 | 0.0009 | -20.1 |
| -41.8 | 18 | 21 | 0.0009 | -23.5 |
| -41.8 | 21 | 21 | 0.0009 | -26.5 |
| -41.8 | 24 | 21 | 0.0009 | -29.5 |
| -41.8 | 27 | 21 | 0.0009 | -32.2 |
| -41.8 | 30 | 21 | 0.0009 | -35.5 |
| -41.8 | 30 | 24 | 0.0009 | -38.0 |
| -41.8 | 30 | 27 | 0.0009 | -40.1 |
| -41.8 | 30 | 30 | 0.0009 | -42.2 |

### 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 |  | 13.6 |
| -40.6 | 0 | 3 |  | 13.5 |
| -40.6 | 0 | 6 |  | 12.5 |
| -40.6 | 0 | 9 |  | 10.4 |
| -40.6 | 0 | 12 | 0.8516 | 7.5 |
| -40.6 | 0 | 15 | 0.5916 | 4.8 |
| -40.6 | 0 | 18 | 0.3054 | 1.4 |
| -40.6 | 0 | 21 | 0.1625 | -1.7 |
| -40.6 | 3 | 21 | 0.0785 | -5.0 |
| -40.6 | 6 | 21 | 0.0385 | -8.3 |
| -40.6 | 9 | 21 | 0.0193 | -11.4 |
| -40.6 | 12 | 21 | 0.0099 | -14.7 |
| -40.6 | 15 | 21 | 0.0056 | -17.7 |
| -40.6 | 18 | 21 | 0.0032 | -21.4 |
| -40.6 | 21 | 21 | 0.0022 | -24.6 |
| -40.6 | 24 | 21 | 0.0017 | -27.8 |
| -40.6 | 27 | 21 | 0.0016 | -30.9 |
| -40.6 | 30 | 21 | 0.0015 | -34.3 |
| -40.6 | 30 | 24 | 0.0015 | -36.9 |
| -40.6 | 30 | 27 | 0.0014 | -39.3 |
| -40.6 | 30 | 30 | 0.0014 | -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 | 0.8519 | 4.6 |
| -41.8 | 0 | 15 | 0.5558 | 2.1 |
| -41.8 | 0 | 18 | 0.2855 | -1.1 |
| -41.8 | 0 | 21 | 0.1524 | -4.1 |
| -41.8 | 3 | 21 | 0.0802 | -7.1 |
| -41.8 | 6 | 21 | 0.0381 | -10.4 |
| -41.8 | 9 | 21 | 0.0195 | -13.4 |
| -41.8 | 12 | 21 | 0.0098 | -16.7 |
| -41.8 | 15 | 21 | 0.0059 | -19.5 |
| -41.8 | 18 | 21 | 0.0032 | -23.3 |
| -41.8 | 21 | 21 | 0.0023 | -26.6 |
| -41.8 | 24 | 21 | 0.0017 | -29.9 |
| -41.8 | 27 | 21 | 0.0016 | -32.7 |
| -41.8 | 30 | 21 | 0.0015 | -36.3 |
| -41.8 | 30 | 24 | 0.0014 | -38.8 |
| -41.8 | 30 | 27 | 0.0014 | -40.8 |
| -41.8 | 30 | 30 | 0.0014 | -42.7 |

# 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 **🗆** |

### Functions:

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