Measurement Protocol PAX

# General Information:

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| --- | --- | --- |
| Test date: 11/8/20 | Date prev. test: NA | Test number: 1 |
| Tested by: Sarah Schoultz | PAX number: PB-010 | Installed at ant.: NA |
| Comments: Control board was replaced with PAX 17’s. Control board was replaced with PAX | | |
| 17’s | | |
|  | | |
|  | | |
| Known problems: Passbands aren’t ideal | | |
|  | | |
|  | | |
|  | | |

# Setup:

|  |  |  |  |
| --- | --- | --- | --- |
| Power supply: | OK 🗹 NOK 🗆 | Communication: | OK 🗹 NOK 🗆 |
| Supply current +6V: 1.114mA | | ssh obs@antcntl | |
| Supply current -6V: 0.094mA | | ssh ataant@ant0 | pw: q@n@t |
| Supply current +5V: 0.297mA | | 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 | | |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 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 screenshot of a cell phone

Description automatically generated

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

|  |
| --- |
| Y |

A screenshot of a cell phone

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 |

A screenshot of a cell phone

Description automatically generated

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

|  |
| --- |
| Y |

A screenshot of a cell phone

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 | - | 13.5 |
| -40.6 | 0 | 6 | - | 11.7 |
| -40.6 | 0 | 9 | 0.8544 | 9.1 |
| -40.6 | 0 | 12 | 0.6233 | 6.1 |
| -40.6 | 0 | 15 | 0.3893 | 3.3 |
| -40.6 | 0 | 18 | 0.2081 | -0.1 |
| -40.6 | 0 | 21 | 0.1171 | -3.0 |
| -40.6 | 3 | 21 | 0.0754 | -5.1 |
| -40.6 | 6 | 21 | 0.0314 | -9.2 |
| -40.6 | 9 | 21 | 0.0203 | -11.2 |
| -40.6 | 12 | 21 | 0.0089 | -15.3 |
| -40.6 | 15 | 21 | 0.0062 | -17.2 |
| -40.6 | 18 | 21 | 0.0032 | -21.5 |
| -40.6 | 21 | 21 | 0.0025 | -23.6 |
| -40.6 | 24 | 21 | 0.0019 | -27.5 |
| -40.6 | 27 | 21 | 0.0018 | -29.5 |
| -40.6 | 30 | 21 | 0.0016 | -33.7 |
| -40.6 | 30 | 24 | 0.0015 | -36.3 |
| -40.6 | 30 | 27 | 0.0015 | -38.6 |
| -40.6 | 30 | 30 | 0.0015 | -40.8 |

|  |  |  |
| --- | --- | --- |
| 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 | - | 12.1 |
| -41.8 | 0 | 3 | - | 10.8 |
| -41.8 | 0 | 6 | - | 8.9 |
| -41.8 | 0 | 9 | 0.8537 | 6.6 |
| -41.8 | 0 | 12 | 0.7947 | 3.9 |
| -41.8 | 0 | 15 | 0.5165 | 1.3 |
| -41.8 | 0 | 18 | 0.2797 | -2.0 |
| -41.8 | 0 | 21 | 0.1593 | -4.8 |
| -41.8 | 3 | 21 | 0.1095 | -6.7 |
| -41.8 | 6 | 21 | 0.0468 | -10.7 |
| -41.8 | 9 | 21 | 0.0296 | -12.7 |
| -41.8 | 12 | 21 | 0.0130 | -16.7 |
| -41.8 | 15 | 21 | 0.0093 | -18.5 |
| -41.8 | 18 | 21 | 0.0046 | -22.7 |
| -41.8 | 21 | 21 | 0.0036 | -24.9 |
| -41.8 | 24 | 21 | 0.0025 | -28.9 |
| -41.8 | 27 | 21 | 0.0023 | -30.8 |
| -41.8 | 30 | 21 | 0.0020 | -34.9 |
| -41.8 | 30 | 24 | 0.0019 | -37.4 |
| -41.8 | 30 | 27 | 0.0020 | -39.5 |
| -41.8 | 30 | 30 | 0.0019 | -41.4 |

### 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 | - | 13.3 |
| -40.6 | 0 | 3 | - | 13.2 |
| -40.6 | 0 | 6 | - | 12.1 |
| -40.6 | 0 | 9 | - | 9.7 |
| -40.6 | 0 | 12 | - | 6.7 |
| -40.6 | 0 | 15 | 0.8489 | 3.9 |
| -40.6 | 0 | 18 | 0.5084 | 0.6 |
| -40.6 | 0 | 21 | 0.2951 | -2.4 |
| -40.6 | 3 | 21 | 0.1518 | -5.7 |
| -40.6 | 6 | 21 | 0.0818 | -8.7 |
| -40.6 | 9 | 21 | 0.0428 | -11.7 |
| -40.6 | 12 | 21 | 0.0226 | -14.6 |
| -40.6 | 15 | 21 | 0.0118 | -17.6 |
| -40.6 | 18 | 21 | 0.0061 | -20.8 |
| -40.6 | 21 | 21 | 0.0034 | -23.9 |
| -40.6 | 24 | 21 | 0.0022 | -26.7 |
| -40.6 | 27 | 21 | 0.0015 | -29.8 |
| -40.6 | 30 | 21 | 0.0011 | -32.8 |
| -40.6 | 30 | 24 | 0.0010 | -35.4 |
| -40.6 | 30 | 27 | 0.0009 | -37.9 |
| -40.6 | 30 | 30 | 0.0008 | -40.1 |

|  |  |  |
| --- | --- | --- |
| 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 | - | 11.7 |
| -41.8 | 0 | 3 | - | 10.7 |
| -41.8 | 0 | 6 | - | 9.2 |
| -41.8 | 0 | 9 | - | 7.2 |
| -41.8 | 0 | 12 | - | 4.6 |
| -41.8 | 0 | 15 | 0.8484 | 2.2 |
| -41.8 | 0 | 18 | 0.5301 | -1.0 |
| -41.8 | 0 | 21 | 0.3066 | -3.9 |
| -41.8 | 3 | 21 | 0.1664 | -6.8 |
| -41.8 | 6 | 21 | 0.0857 | -9.9 |
| -41.8 | 9 | 21 | 0.0453 | -12.8 |
| -41.8 | 12 | 21 | 0.0232 | -15.8 |
| -41.8 | 15 | 21 | 0.0130 | -18.5 |
| -41.8 | 18 | 21 | 0.0067 | -21.8 |
| -41.8 | 21 | 21 | 0.0040 | -24.8 |
| -41.8 | 24 | 21 | 0.0025 | -27.8 |
| -41.8 | 27 | 21 | 0.0020 | -30.6 |
| -41.8 | 30 | 21 | 0.0015 | -33.8 |
| -41.8 | 30 | 24 | 0.0014 | -36.4 |
| -41.8 | 30 | 27 | 0.0013 | -38.5 |
| -41.8 | 30 | 30 | 0.0012 | -40.5 |

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