Measurement Protocol PAX

# General Information:

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| --- | --- | --- |
| Test date: 02/9/20 | Date prev. test: NA | Test number: 1 |
| Tested by: Sarah Schoultz | PAX number: PB-021 | Installed at ant.: NA |
| Comments: | | |
|  | | |
|  | | |
|  | | |
| Known problems: Y detectors broken | | |
|  | | |
|  | | |
|  | | |

# Setup:

|  |  |  |  |
| --- | --- | --- | --- |
| Power supply: | OK 🗹 NOK 🗆 | Communication: | OK 🗹 NOK 🗆 |
| Supply current +6V: 1.125mA | | ssh obs@antcntl | |
| Supply current -6V: 0.105mA | | ssh ataant@ant0 | pw: q@n@t |
| Supply current +5V: 0.181mA | | 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 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 | - | 9.9 |
| -40.6 | 0 | 3 | 0.8475 | 7.8 |
| -40.6 | 0 | 6 | 0.7835 | 5.1 |
| -40.6 | 0 | 9 | 0.5027 | 2.3 |
| -40.6 | 0 | 12 | 0.3046 | -0.7 |
| -40.6 | 0 | 15 | 0.1822 | -3.6 |
| -40.6 | 0 | 18 | 0.0926 | -7.1 |
| -40.6 | 0 | 21 | 0.0520 | -10.0 |
| -40.6 | 3 | 21 | 0.0258 | -13.3 |
| -40.6 | 6 | 21 | 0.0135 | -16.2 |
| -40.6 | 9 | 21 | 0.0071 | -19.3 |
| -40.6 | 12 | 21 | 0.0040 | -22.3 |
| -40.6 | 15 | 21 | 0.0024 | -25.2 |
| -40.6 | 18 | 21 | 0.0016 | -28.5 |
| -40.6 | 21 | 21 | 0.0012 | -31.6 |
| -40.6 | 24 | 21 | 0.0009 | -34.5 |
| -40.6 | 27 | 21 | 0.0009 | -37.3 |
| -40.6 | 30 | 21 | 0.0009 | -40.4 |
| -40.6 | 30 | 24 | 0.0008 | -42.5 |
| -40.6 | 30 | 27 | 0.0008 | -44.6 |
| -40.6 | 30 | 30 | 0.0008 | -46.1 |

|  |  |  |
| --- | --- | --- |
| 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 | - | 6.9 |
| -41.8 | 0 | 3 | 0.8469 | 5.1 |
| -41.8 | 0 | 6 | 0.7844 | 2.6 |
| -41.8 | 0 | 9 | 0.5263 | 0.2 |
| -41.8 | 0 | 12 | 0.3154 | -2.8 |
| -41.8 | 0 | 15 | 0.2008 | -5.3 |
| -41.8 | 0 | 18 | 0.0981 | -8.8 |
| -41.8 | 0 | 21 | 0.0539 | -11.5 |
| -41.8 | 3 | 21 | 0.0273 | -14.5 |
| -41.8 | 6 | 21 | 0.0139 | -17.5 |
| -41.8 | 9 | 21 | 0.0077 | -20.4 |
| -41.8 | 12 | 21 | 0.0043 | -23.5 |
| -41.8 | 15 | 21 | 0.0029 | -26.3 |
| -41.8 | 18 | 21 | 0.0019 | -29.5 |
| -41.8 | 21 | 21 | 0.0015 | -32.6 |
| -41.8 | 24 | 21 | 0.0013 | -35.5 |
| -41.8 | 27 | 21 | 0.0013 | -38.3 |
| -41.8 | 30 | 21 | 0.0012 | -41.4 |
| -41.8 | 30 | 24 | 0.0012 | -43.5 |
| -41.8 | 30 | 27 | 0.0012 | -45.1 |
| -41.8 | 30 | 30 | 0.0012 | -46.5 |

### 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 | 0.0008 | 13.5 |
| -40.6 | 0 | 3 | 0.0008 | 13.5 |
| -40.6 | 0 | 6 | 0.0008 | 12.9 |
| -40.6 | 0 | 9 | 0.0009 | 10.8 |
| -40.6 | 0 | 12 | 0.0008 | 7.9 |
| -40.6 | 0 | 15 | 0.0008 | 5.1 |
| -40.6 | 0 | 18 | 0.0008 | 1.8 |
| -40.6 | 0 | 21 | 0.0008 | -1.3 |
| -40.6 | 3 | 21 | 0.0008 | -4.7 |
| -40.6 | 6 | 21 | 0.0008 | -7.8 |
| -40.6 | 9 | 21 | 0.0008 | -10.8 |
| -40.6 | 12 | 21 | 0.0007 | -13.8 |
| -40.6 | 15 | 21 | 0.0008 | -16.8 |
| -40.6 | 18 | 21 | 0.0009 | -20.1 |
| -40.6 | 21 | 21 | 0.0008 | -23.2 |
| -40.6 | 24 | 21 | 0.0008 | -26.2 |
| -40.6 | 27 | 21 | 0.0008 | -29.3 |
| -40.6 | 30 | 21 | 0.0008 | -32.5 |
| -40.6 | 30 | 24 | 0.0008 | -35.2 |
| -40.6 | 30 | 27 | 0.0009 | -37.6 |
| -40.6 | 30 | 30 | 0.0008 | -39.9 |

|  |  |  |
| --- | --- | --- |
| 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 | 0.0012 | 11.9 |
| -41.8 | 0 | 3 | 0.0012 | 11.1 |
| -41.8 | 0 | 6 | 0.0012 | 9.6 |
| -41.8 | 0 | 9 | 0.0012 | 7.7 |
| -41.8 | 0 | 12 | 0.0012 | 5.0 |
| -41.8 | 0 | 15 | 0.0012 | 2.5 |
| -41.8 | 0 | 18 | 0.0011 | -0.7 |
| -41.8 | 0 | 21 | 0.0012 | -3.6 |
| -41.8 | 3 | 21 | 0.0012 | -6.6 |
| -41.8 | 6 | 21 | 0.0012 | -9.7 |
| -41.8 | 9 | 21 | 0.0012 | -12.6 |
| -41.8 | 12 | 21 | 0.0011 | -15.7 |
| -41.8 | 15 | 21 | 0.0012 | -18.3 |
| -41.8 | 18 | 21 | 0.0012 | -21.7 |
| -41.8 | 21 | 21 | 0.0012 | -24.8 |
| -41.8 | 24 | 21 | 0.0012 | -27.9 |
| -41.8 | 27 | 21 | 0.0012 | -30.6 |
| -41.8 | 30 | 21 | 0.0012 | -34.0 |
| -41.8 | 30 | 24 | 0.0012 | -36.5 |
| -41.8 | 30 | 27 | 0.0012 | -38.6 |
| -41.8 | 30 | 30 | 0.0012 | -40.7 |

# 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 **🗆** |
| RF Connector on PAM screws tight | Comments: | OK **🗹** NOK **🗆** |

### Functions:

|  |  |  |
| --- | --- | --- |
| Read Temperature Value | Comments: 32.6 | OK 🗹 NOK 🗆 |
| LNA Settings | Comments: | OK 🗆 NOK **🗆** |
| Temperature Stabilisation | Comments: | OK 🗆 NOK **🗆** |