Measurement Protocol PAX

# General Information:

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| --- | --- | --- |
| Test date: 03/09/20 | Date prev. test: 13/08/20 | Test number: 2 |
| Tested by: Sarah Schoultz | PAX number: PB-011 | Installed at ant.: |
| Comments: | | |
|  | | |
|  | | |
|  | | |
| Known problems: PAM passband is good and flat when tested (originally was PAX 32s of 41s | | |
| Xpol) so there is an issue in the Xpol fibre or Xpol board | | |
|  | | |
|  | | |

# Setup:

|  |  |  |  |
| --- | --- | --- | --- |
| Power supply: | OK 🗹 NOK 🗆 | Communication: | OK 🗹 NOK 🗆 |
| Supply current +6V: 1.115mA | | ssh obs@antcntl | |
| Supply current -6V: 0.116mA | | ssh ataant@paxtester | pw: q@n@t |
| Supply current +5V: 0.193mA | | 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 | - | 14.0 |
| -40.6 | 0 | 3 | - | 14.0 |
| -40.6 | 0 | 6 | - | 12.7 |
| -40.6 | 0 | 9 | - | 10.3 |
| -40.6 | 0 | 12 | 0.8573 | 7.4 |
| -40.6 | 0 | 15 | 0.5538 | 4.6 |
| -40.6 | 0 | 18 | 0.3095 | 1.2 |
| -40.6 | 0 | 21 | 0.1803 | -1.8 |
| -40.6 | 3 | 21 | 0.0911 | -5.1 |
| -40.6 | 6 | 21 | 0.0479 | -8.1 |
| -40.6 | 9 | 21 | 0.0267 | -10.9 |
| -40.6 | 12 | 21 | 0.0144 | -13.8 |
| -40.6 | 15 | 21 | 0.0082 | -16.8 |
| -40.6 | 18 | 21 | 0.0046 | -20.2 |
| -40.6 | 21 | 21 | 0.0031 | -23.3 |
| -40.6 | 24 | 21 | 0.0024 | -25.9 |
| -40.6 | 27 | 21 | 0.0020 | -28.9 |
| -40.6 | 30 | 21 | 0.0018 | -32.1 |
| -40.6 | 30 | 24 | 0.0017 | -34.6 |
| -40.6 | 30 | 27 | 0.0017 | -37.1 |
| -40.6 | 30 | 30 | 0.0017 | -39.4 |

|  |  |  |
| --- | --- | --- |
| Use Noise Source: Atlantic AS6333 | | |
| Freq : 1.0 - 12.0GHz | Power Level: -41.8dBm |  |
| DC Supply: 28V |  | |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| X | | | | |
| Input Power [dBm]: | Attenuator Value A [dB]: | Attenuator Value: B [dB]: | Detector Value: | Power Meter  Value [dBm]: |
| -41.8 | 0 | 0 | - | 12.4 |
| -41.8 | 0 | 3 | - | 11.0 |
| -41.8 | 0 | 6 | - | 9.1 |
| -41.8 | 0 | 9 | - | 6.8 |
| -41.8 | 0 | 12 | 0.8582 | 4.1 |
| -41.8 | 0 | 15 | 0.6455 | 1.5 |
| -41.8 | 0 | 18 | 0.3585 | -1.8 |
| -41.8 | 0 | 21 | 0.2106 | -4.6 |
| -41.8 | 3 | 21 | 0.1182 | -7.7 |
| -41.8 | 6 | 21 | 0.0612 | -10.7 |
| -41.8 | 9 | 21 | 0.0342 | -13.4 |
| -41.8 | 12 | 21 | 0.0179 | -16.3 |
| -41.8 | 15 | 21 | 0.0107 | -19.0 |
| -41.8 | 18 | 21 | 0.0057 | -22.5 |
| -41.8 | 21 | 21 | 0.0037 | -25.5 |
| -41.8 | 24 | 21 | 0.0027 | -28.2 |
| -41.8 | 27 | 21 | 0.0022 | -30.1 |
| -41.8 | 30 | 21 | 0.0019 | -34.2 |
| -41.8 | 30 | 24 | 0.0018 | -36.5 |
| -41.8 | 30 | 27 | 0.0017 | -38.6 |
| -41.8 | 30 | 30 | 0.0017 | -40.6 |

### 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 | - | 10.6 |
| -40.6 | 0 | 3 | - | 10.2 |
| -40.6 | 0 | 6 | - | 8.8 |
| -40.6 | 0 | 9 | 0.8508 | 6.8 |
| -40.6 | 0 | 12 | 0.6601 | 4.0 |
| -40.6 | 0 | 15 | 0.4460 | 1.4 |
| -40.6 | 0 | 18 | 0.2237 | -2.6 |
| -40.6 | 0 | 21 | 0.1315 | -5.5 |
| -40.6 | 3 | 21 | 0.0691 | -8.8 |
| -40.6 | 6 | 21 | 0.0378 | -11.7 |
| -40.6 | 9 | 21 | 0.0205 | -14.6 |
| -40.6 | 12 | 21 | 0.0113 | -17.5 |
| -40.6 | 15 | 21 | 0.0066 | -20.3 |
| -40.6 | 18 | 21 | 0.0036 | -24.0 |
| -40.6 | 21 | 21 | 0.0025 | -27.0 |
| -40.6 | 24 | 21 | 0.0020 | -29.7 |
| -40.6 | 27 | 21 | 0.0016 | -32.7 |
| -40.6 | 30 | 21 | 0.0015 | -35.8 |
| -40.6 | 30 | 24 | 0.0014 | -38.2 |
| -40.6 | 30 | 27 | 0.0014 | -40.4 |
| -40.6 | 30 | 30 | 0.0013 | -42.8 |

|  |  |  |
| --- | --- | --- |
| Use Noise Source: Atlantic AS6333 | | |
| Freq : 1.0 - 12.0GHz | Power Level: -41.8dBm |  |
| DC Supply: 28V |  | |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Y | | | | |
| Input Power [dBm]: | Attenuator Value A [dB]: | Attenuator Value: B [dB]: | Detector Value: | Power Meter  Value [dBm]: |
| -41.8 | 0 | 0 | - | 8.9 |
| -41.8 | 0 | 3 | - | 7.8 |
| -41.8 | 0 | 6 | - | 6.3 |
| -41.8 | 0 | 9 | 0.8508 | 4.5 |
| -41.8 | 0 | 12 | 0.7025 | 1.9 |
| -41.8 | 0 | 15 | 0.4824 | -0.5 |
| -41.8 | 0 | 18 | 0.2491 | -4.3 |
| -41.8 | 0 | 21 | 0.1450 | -7.1 |
| -41.8 | 3 | 21 | 0.0788 | -10.1 |
| -41.8 | 6 | 21 | 0.0416 | -13.1 |
| -41.8 | 9 | 21 | 0.0228 | -15.8 |
| -41.8 | 12 | 21 | 0.0122 | -18.7 |
| -41.8 | 15 | 21 | 0.0073 | -21.4 |
| -41.8 | 18 | 21 | 0.0039 | -25.0 |
| -41.8 | 21 | 21 | 0.0026 | -28.1 |
| -41.8 | 24 | 21 | 0.0020 | -30.8 |
| -41.8 | 27 | 21 | 0.0017 | -33.6 |
| -41.8 | 30 | 21 | 0.0015 | -36.8 |
| -41.8 | 30 | 24 | 0.0014 | -39.1 |
| -41.8 | 30 | 27 | 0.0014 | -41.2 |
| -41.8 | 30 | 30 | 0.0013 | -43.4 |

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