Measurement Protocol PAX

# General Information:

|  |  |  |
| --- | --- | --- |
| Test date: 06/03/20 | Date prev. test: NA | Test number: 1 |
| Tested by: Alex Pollak | PAX number: PB-031 | Installed at ant.: 5C |
| Comments: | | |
|  | | |
|  | | |
|  | | |
| Known problems: 10dB less gain at X, looks like fiber link | | |
|  | | |
|  | | |
|  | | |

# Setup:

|  |  |  |  |
| --- | --- | --- | --- |
| Power supply: | OK 🗹 NOK 🗆 | Communication: | OK 🗹 NOK 🗆 |
| Supply current +6V: 1.111A | | ssh ataant@paxtester | |
| Supply current -6V: 0.108A | |  | pw: q@n@t |
| Supply current +5V: 0.216A | | 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 | - | 14.2 |
| -40.6 | 0 | 3 | - | 14.2 |
| -40.6 | 0 | 6 | - | 12.9 |
| -40.6 | 0 | 9 | - | 10.4 |
| -40.6 | 0 | 12 | 0.8457 | 7.5 |
| -40.6 | 0 | 15 | 0.5525 | 4.7 |
| -40.6 | 0 | 18 | 0.3153 | 1.5 |
| -40.6 | 0 | 21 | 0.1836 | -1.6 |
| -40.6 | 3 | 21 | 0.0931 | -4.9 |
| -40.6 | 6 | 21 | 0.0487 | -7.9 |
| -40.6 | 9 | 21 | 0.0254 | -10.9 |
| -40.6 | 12 | 21 | 0.0136 | -13.8 |
| -40.6 | 15 | 21 | 0.0079 | -16.7 |
| -40.6 | 18 | 21 | 0.0045 | -19.9 |
| -40.6 | 21 | 21 | 0.0030 | -23.0 |
| -40.6 | 24 | 21 | 0.0022 | -25.8 |
| -40.6 | 27 | 21 | 0.0019 | -28.8 |
| -40.6 | 30 | 21 | 0.0017 | -31.9 |
| -40.6 | 30 | 24 | 0.0016 | -34.5 |
| -40.6 | 30 | 27 | 0.0016 | -37.0 |
| -40.6 | 30 | 30 | 0.0016 | -39.3 |

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| X | | | | |
| NS Input Power [dBm]: | Attenuator Value A [dB]: | Attenuator Value: B [dB]: | Detector Value: | Power Meter  Value [dBm]: |
| -41.8 | 0 | 0 | - | 12.3 |
| -41.8 | 0 | 3 | - | 11.0 |
| -41.8 | 0 | 6 | - | 9.3 |
| -41.8 | 0 | 9 | - | 7.1 |
| -41.8 | 0 | 12 | 0.8541 | 4.3 |
| -41.8 | 0 | 15 | 0.7949 | 1.8 |
| -41.8 | 0 | 18 | 0.4601 | -1.3 |
| -41.8 | 0 | 21 | 0.2701 | -4.2 |
| -41.8 | 3 | 21 | 0.1524 | -7.2 |
| -41.8 | 6 | 21 | 0.0793 | -10.3 |
| -41.8 | 9 | 21 | 0.0419 | -13.1 |
| -41.8 | 12 | 21 | 0.0218 | -16.1 |
| -41.8 | 15 | 21 | 0.0130 | -18.8 |
| -41.8 | 18 | 21 | 0.0069 | -22.0 |
| -41.8 | 21 | 21 | 0.0043 | -25.0 |
| -41.8 | 24 | 21 | 0.0030 | -28.0 |
| -41.8 | 27 | 21 | 0.0025 | -30.7 |
| -41.8 | 30 | 21 | 0.0021 | -33.9 |
| -41.8 | 30 | 24 | 0.0019 | -36.3 |
| -41.8 | 30 | 27 | 0.0018 | -38.5 |
| -41.8 | 30 | 30 | 0.0018 | -40.4 |

### 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 | - | 14.2 |
| -40.6 | 0 | 3 | - | 14.2 |
| -40.6 | 0 | 6 | - | 12.9 |
| -40.6 | 0 | 9 | 0.8583 | 10.2 |
| -40.6 | 0 | 12 | 0.7197 | 7.2 |
| -40.6 | 0 | 15 | 0.4406 | 4.3 |
| -40.6 | 0 | 18 | 0.2409 | 1.0 |
| -40.6 | 0 | 21 | 0.1342 | -2.1 |
| -40.6 | 3 | 21 | 0.0659 | -5.5 |
| -40.6 | 6 | 21 | 0.0345 | -8.4 |
| -40.6 | 9 | 21 | 0.0182 | -11.4 |
| -40.6 | 12 | 21 | 0.0099 | -14.3 |
| -40.6 | 15 | 21 | 0.0058 | -17.3 |
| -40.6 | 18 | 21 | 0.0034 | -20.6 |
| -40.6 | 21 | 21 | 0.0024 | -23.6 |
| -40.6 | 24 | 21 | 0.0019 | -26.5 |
| -40.6 | 27 | 21 | 0.0016 | -29.5 |
| -40.6 | 30 | 21 | 0.0015 | -32.6 |
| -40.6 | 30 | 24 | 0.0015 | -35.3 |
| -40.6 | 30 | 27 | 0.0014 | -37.8 |
| -40.6 | 30 | 30 | 0.0014 | -40.1 |

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Y | | | | |
| NS 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 | - | 11.1 |
| -41.8 | 0 | 6 | - | 9.2 |
| -41.8 | 0 | 9 | - | 6.9 |
| -41.8 | 0 | 12 | 0.8581 | 4.1 |
| -41.8 | 0 | 15 | 0.5887 | 1.4 |
| -41.8 | 0 | 18 | 0.3213 | -1.8 |
| -41.8 | 0 | 21 | 0.1791 | -4.7 |
| -41.8 | 3 | 21 | 0.0971 | -7.8 |
| -41.8 | 6 | 21 | 0.0495 | -10.8 |
| -41.8 | 9 | 21 | 0.0264 | -13.6 |
| -41.8 | 12 | 21 | 0.0139 | -16.5 |
| -41.8 | 15 | 21 | 0.0084 | -19.2 |
| -41.8 | 18 | 21 | 0.0046 | -22.6 |
| -41.8 | 21 | 21 | 0.0031 | -25.6 |
| -41.8 | 24 | 21 | 0.0024 | -28.5 |
| -41.8 | 27 | 21 | 0.0020 | -31.3 |
| -41.8 | 30 | 21 | 0.0019 | -34.4 |
| -41.8 | 30 | 24 | 0.0017 | -37.0 |
| -41.8 | 30 | 27 | 0.0016 | -39.1 |
| -41.8 | 30 | 30 | 0.0016 | -41.0 |

# LNA Bias Supply:

Note that the bias supply is tested without an LNA connected to the PAX box!

|  |  |
| --- | --- |
| Enable Supply: “lnabiaslatch” | Disable Supply: “lnabiasoff” |

|  |  |  |  |
| --- | --- | --- | --- |
| X | | Y | |
| Vg: | 0.15 | Vg: | 0.41 |
| Vd: | 1.54 | Vd: | 1.53 |
| Vm: | -0.99 | Vm: | -1.01 |
| Id: | 0.1 | Id: | 0.2 |
| Bias Supply: OK 🗹 NOK 🗆 | | Bias Supply: OK **🗹** NOK 🗆 | |

# 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: 30.2 | OK 🗹 NOK 🗆 |
| LNA Settings | Comments: | OK 🗆 NOK **🗆** |
| Temperature Stabilisation | Comments: | OK 🗆 NOK **🗆** |
| Software Version: | Date: 2007/11/15 18:00:00 Revision: 1.10 pax controller | OK **🗹** NOK **🗆** |