Measurement Protocol PAX

# General Information:

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| --- | --- | --- |
| Test date: 06/03/20 | Date prev. test: NA | Test number: 1 |
| Tested by: Alex Pollak | PAX number: PB-022 | Installed at ant.: 1F |
| Comments: x&y saturate at 1.8dBm for noise measurements | | |
|  | | |
|  | | |
|  | | |
| Known problems: Lid does not seem to close properly. | | |
|  | | |
|  | | |
|  | | |

# Setup:

|  |  |  |  |
| --- | --- | --- | --- |
| Power supply: | OK 🗹 NOK 🗆 | Communication: | OK 🗹 NOK 🗆 |
| Supply current +6V: 1.113A | | ssh ataant@paxtester | |
| Supply current -6V: 0.106A | |  | pw: q@n@t |
| Supply current +5V: 0.166A | | 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 social media post

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 | - | 13.1 |
| -40.6 | 0 | 3 | - | 13.2 |
| -40.6 | 0 | 6 | - | 12.6 |
| -40.6 | 0 | 9 | - | 10.6 |
| -40.6 | 0 | 12 | - | 7.7 |
| -40.6 | 0 | 15 | 0.8530 | 5.0 |
| -40.6 | 0 | 18 | 0.6000 | 1.7 |
| -40.6 | 0 | 21 | 0.3362 | -1.4 |
| -40.6 | 3 | 21 | 0.1699 | -4.7 |
| -40.6 | 6 | 21 | 0.0885 | -7.7 |
| -40.6 | 9 | 21 | 0.0446 | -10.8 |
| -40.6 | 12 | 21 | 0.0231 | -13.8 |
| -40.6 | 15 | 21 | 0.0123 | -16.7 |
| -40.6 | 18 | 21 | 0.0064 | -19.9 |
| -40.6 | 21 | 21 | 0.0035 | -23.1 |
| -40.6 | 24 | 21 | 0.0022 | -26.0 |
| -40.6 | 27 | 21 | 0.0016 | -29.0 |
| -40.6 | 30 | 21 | 0.0012 | -32.2 |
| -40.6 | 30 | 24 | 0.0010 | -34.8 |
| -40.6 | 30 | 27 | 0.0010 | -37.3 |
| -40.6 | 30 | 30 | 0.0009 | -39.7 |

|  |  |  |
| --- | --- | --- |
| 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 | - | 11.6 |
| -41.8 | 0 | 3 | - | 10.6 |
| -41.8 | 0 | 6 | - | 9.0 |
| -41.8 | 0 | 9 | - | 7.0 |
| -41.8 | 0 | 12 | - | 4.3 |
| -41.8 | 0 | 15 | 0.8524 | 1.8 |
| -41.8 | 0 | 18 | 0.4731 | -1.3 |
| -41.8 | 0 | 21 | 0.2603 | -4.2 |
| -41.8 | 3 | 21 | 0.1360 | -7.1 |
| -41.8 | 6 | 21 | 0.0668 | -10.2 |
| -41.8 | 9 | 21 | 0.0336 | -13.2 |
| -41.8 | 12 | 21 | 0.0168 | -16.2 |
| -41.8 | 15 | 21 | 0.0096 | -18.8 |
| -41.8 | 18 | 21 | 0.0051 | -22.1 |
| -41.8 | 21 | 21 | 0.0030 | -25.2 |
| -41.8 | 24 | 21 | 0.0021 | -28.2 |
| -41.8 | 27 | 21 | 0.0017 | -30.8 |
| -41.8 | 30 | 21 | 0.0013 | -34.1 |
| -41.8 | 30 | 24 | 0.0012 | -36.6 |
| -41.8 | 30 | 27 | 0.0012 | -38.7 |
| -41.8 | 30 | 30 | 0.0012 | -40.7 |

### 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 | - | 13.0 |
| -40.6 | 0 | 3 | - | 13.0 |
| -40.6 | 0 | 6 | - | 12.3 |
| -40.6 | 0 | 9 | - | 10.3 |
| -40.6 | 0 | 12 | - | 7.4 |
| -40.6 | 0 | 15 | 0.8501 | 4.6 |
| -40.6 | 0 | 18 | 0.7827 | 1.3 |
| -40.6 | 0 | 21 | 0.4541 | -1.7 |
| -40.6 | 3 | 21 | 0.2389 | -5.0 |
| -40.6 | 6 | 21 | 0.1265 | -8.1 |
| -40.6 | 9 | 21 | 0.0659 | -11.1 |
| -40.6 | 12 | 21 | 0.0338 | -14.2 |
| -40.6 | 15 | 21 | 0.0177 | -17.1 |
| -40.6 | 18 | 21 | 0.0087 | -20.4 |
| -40.6 | 21 | 21 | 0.0047 | -23.5 |
| -40.6 | 24 | 21 | 0.0028 | -26.4 |
| -40.6 | 27 | 21 | 0.0018 | -29.5 |
| -40.6 | 30 | 21 | 0.0012 | -32.7 |
| -40.6 | 30 | 24 | 0.0011 | -35.3 |
| -40.6 | 30 | 27 | 0.0010 | -37.8 |
| -40.6 | 30 | 30 | 0.0009 | -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 | - | 11.5 |
| -41.8 | 0 | 3 | - | 10.5 |
| -41.8 | 0 | 6 | - | 9.0 |
| -41.8 | 0 | 9 | - | 7.0 |
| -41.8 | 0 | 12 | - | 4.3 |
| -41.8 | 0 | 15 | 0.8500 | 1.8 |
| -41.8 | 0 | 18 | 0.6637 | -1.4 |
| -41.8 | 0 | 21 | 0.3792 | -4.3 |
| -41.8 | 3 | 21 | 0.2047 | -7.2 |
| -41.8 | 6 | 21 | 0.1017 | -10.4 |
| -41.8 | 9 | 21 | 0.0525 | -13.3 |
| -41.8 | 12 | 21 | 0.0258 | -16.4 |
| -41.8 | 15 | 21 | 0.0144 | -19.0 |
| -41.8 | 18 | 21 | 0.0071 | -22.4 |
| -41.8 | 21 | 21 | 0.0040 | -25.4 |
| -41.8 | 24 | 21 | 0.0025 | -28.5 |
| -41.8 | 27 | 21 | 0.0018 | -31.2 |
| -41.8 | 30 | 21 | 0.0014 | -34.5 |
| -41.8 | 30 | 24 | 0.0013 | -37.0 |
| -41.8 | 30 | 27 | 0.0011 | -39.1 |
| -41.8 | 30 | 30 | 0.0011 | -41.1 |

# 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: | 0.24 | Vg: | 0.0 |
| Vd: | 1.56 | Vd: | 1.56 |
| Vm: | -0.84 | Vm: | -0.84 |
| Id: | 0.1 | Id: | 0.1 |
| 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: 29.3 | 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 **🗆** |