Measurement Protocol PAX

# General Information:

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| --- | --- | --- |
| Test date: 14/08/20 | Date prev. test: 14/02/20 | Test number: 2 |
| Tested by: Sarah Schoultz | PAX number: PB-025 | Installed at ant.: |
| Comments: | | |
|  | | |
|  | | |
|  | | |
| Known problems: X has low gain & the detectors saturate around .7 so maybe there is a | | |
| broken amplifier | | |
|  | | |
|  | | |

# Setup:

|  |  |  |  |
| --- | --- | --- | --- |
| Power supply: | OK 🗹 NOK 🗆 | Communication: | OK 🗹 NOK 🗆 |
| Supply current +6V: 1.014A | | ssh obs@antcntl | |
| Supply current -6V: 0.109A | | ssh ataant@paxtester | pw: q@n@t |
| Supply current +5V: 0.194A | | 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 | - | 12.2 |
| -40.6 | 0 | 3 | - | 10.8 |
| -40.6 | 0 | 6 | 0.7021 | 9.1 |
| -40.6 | 0 | 9 | 0.6944 | 6.7 |
| -40.6 | 0 | 12 | 0.4153 | 3.7 |
| -40.6 | 0 | 15 | 0.2523 | 1.0 |
| -40.6 | 0 | 18 | 0.1285 | -2.4 |
| -40.6 | 0 | 21 | 0.0681 | -5.5 |
| -40.6 | 3 | 21 | 0.0345 | -8.6 |
| -40.6 | 6 | 21 | 0.0177 | -11.6 |
| -40.6 | 9 | 21 | 0.0092 | -14.6 |
| -40.6 | 12 | 21 | 0.0048 | -17.6 |
| -40.6 | 15 | 21 | 0.0028 | -20.4 |
| -40.6 | 18 | 21 | 0.0016 | -23.9 |
| -40.6 | 21 | 21 | 0.0011 | -27.0 |
| -40.6 | 24 | 21 | 0.0008 | -29.9 |
| -40.6 | 27 | 21 | 0.0007 | -32.8 |
| -40.6 | 30 | 21 | 0.0006 | -36.1 |
| -40.6 | 30 | 24 | 0.0006 | -38.7 |
| -40.6 | 30 | 27 | 0.0006 | -41.0 |
| -40.6 | 30 | 30 | 0.0006 | -43.2 |

|  |  |  |
| --- | --- | --- |
| 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 | - | 9.5 |
| -41.8 | 0 | 3 | - | 7.9 |
| -41.8 | 0 | 6 | 0.7029 | 5.8 |
| -41.8 | 0 | 9 | 0.5914 | 3.5 |
| -41.8 | 0 | 12 | 0.3600 | 0.6 |
| -41.8 | 0 | 15 | 0.2148 | -2.8 |
| -41.8 | 0 | 18 | 0.1106 | -5.2 |
| -41.8 | 0 | 21 | 0.0591 | -8.2 |
| -41.8 | 3 | 21 | 0.0310 | -11.2 |
| -41.8 | 6 | 21 | 0.0156 | -14.3 |
| -41.8 | 9 | 21 | 0.0085 | -17.1 |
| -41.8 | 12 | 21 | 0.0046 | -20.2 |
| -41.8 | 15 | 21 | 0.0029 | -23.0 |
| -41.8 | 18 | 21 | 0.0018 | -26.2 |
| -41.8 | 21 | 21 | 0.0013 | -29.3 |
| -41.8 | 24 | 21 | 0.0011 | -32.2 |
| -41.8 | 27 | 21 | 0.0010 | -35.0 |
| -41.8 | 30 | 21 | 0.0010 | -38.2 |
| -41.8 | 30 | 24 | 0.0009 | -40.6 |
| -41.8 | 30 | 27 | 0.0009 | -42.6 |
| -41.8 | 30 | 30 | 0.0009 | -44.4 |

### 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 | - | 14.0 |
| -40.6 | 0 | 3 | - | 14.0 |
| -40.6 | 0 | 6 | - | 12.6 |
| -40.6 | 0 | 9 | - | 9.8 |
| -40.6 | 0 | 12 | 0.8541 | 6.8 |
| -40.6 | 0 | 15 | 0.5490 | 3.9 |
| -40.6 | 0 | 18 | 0.3092 | 0.7 |
| -40.6 | 0 | 21 | 0.1746 | -2.4 |
| -40.6 | 3 | 21 | 0.0914 | -5.6 |
| -40.6 | 6 | 21 | 0.0487 | -8.5 |
| -40.6 | 9 | 21 | 0.0261 | -11.3 |
| -40.6 | 12 | 21 | 0.0139 | -14.2 |
| -40.6 | 15 | 21 | 0.0079 | -17.0 |
| -40.6 | 18 | 21 | 0.0039 | -20.6 |
| -40.6 | 21 | 21 | 0.0025 | -23.6 |
| -40.6 | 24 | 21 | 0.0018 | -26.2 |
| -40.6 | 27 | 21 | 0.0014 | -29.1 |
| -40.6 | 30 | 21 | 0.0011 | -32.1 |
| -40.6 | 30 | 24 | 0.0011 | -34.8 |
| -40.6 | 30 | 27 | 0.0010 | -37.3 |
| -40.6 | 30 | 30 | 0.0010 | -39.7 |

|  |  |  |
| --- | --- | --- |
| 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 | - | 12.4 |
| -41.8 | 0 | 3 | - | 11.1 |
| -41.8 | 0 | 6 | - | 9.3 |
| -41.8 | 0 | 9 | - | 7.0 |
| -41.8 | 0 | 12 | 0.8537 | 4.2 |
| -41.8 | 0 | 15 | 0.7140 | 1.5 |
| -41.8 | 0 | 18 | 0.4052 | -1.6 |
| -41.8 | 0 | 21 | 0.2311 | -4.6 |
| -41.8 | 3 | 21 | 0.1307 | -7.5 |
| -41.8 | 6 | 21 | 0.0684 | -10.5 |
| -41.8 | 9 | 21 | 0.0375 | -13.2 |
| -41.8 | 12 | 21 | 0.0196 | -16.1 |
| -41.8 | 15 | 21 | 0.0116 | -18.7 |
| -41.8 | 18 | 21 | 0.0058 | -22.3 |
| -41.8 | 21 | 21 | 0.0035 | -25.4 |
| -41.8 | 24 | 21 | 0.0025 | -28.0 |
| -41.8 | 27 | 21 | 0.0019 | -30.7 |
| -41.8 | 30 | 21 | 0.0016 | -33.8 |
| -41.8 | 30 | 24 | 0.0015 | -36.3 |
| -41.8 | 30 | 27 | 0.0014 | -38.5 |
| -41.8 | 30 | 30 | 0.0013 | -40.6 |

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