Measurement Protocol PAX

# General Information:

|  |  |  |
| --- | --- | --- |
| Test date: 14/9/20 | Date prev. test: NA | Test number: 1 |
| Tested by: Sarah Schoultz | PAX number: PB-024 | Installed at ant.: NA |
| Comments: | | |
|  | | |
|  | | |
|  | | |
| Known problems: Y detector saturates at 1.5dBm on noise measurement & bumpy | | |
| passbands | | |
|  | | |
|  | | |

# Setup:

|  |  |  |  |
| --- | --- | --- | --- |
| Power supply: | OK 🗹 NOK 🗆 | Communication: | OK 🗹 NOK 🗆 |
| Supply current +6V: 1.109mA | | ssh obs@antcntl | |
| Supply current -6V: 0.141mA | | ssh ataant@ant0 | pw: q@n@t |
| Supply current +5V: 0.153mA | | 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 | - | 13.8 |
| -40.6 | 0 | 3 | - | 13.7 |
| -40.6 | 0 | 6 | - | 12.4 |
| -40.6 | 0 | 9 | 0.8558 | 9.9 |
| -40.6 | 0 | 12 | 0.7323 | 6.9 |
| -40.6 | 0 | 15 | 0.4556 | 4.0 |
| -40.6 | 0 | 18 | 0.2508 | 0.7 |
| -40.6 | 0 | 21 | 0.1413 | -2.4 |
| -40.6 | 3 | 21 | 0.0689 | -5.9 |
| -40.6 | 6 | 21 | 0.0355 | -8.9 |
| -40.6 | 9 | 21 | 0.0183 | -11.9 |
| -40.6 | 12 | 21 | 0.0097 | -14.9 |
| -40.6 | 15 | 21 | 0.0056 | -17.9 |
| -40.6 | 18 | 21 | 0.0032 | -21.2 |
| -40.6 | 21 | 21 | 0.0021 | -24.3 |
| -40.6 | 24 | 21 | 0.0016 | -27.2 |
| -40.6 | 27 | 21 | 0.0014 | -30.3 |
| -40.6 | 30 | 21 | 0.0012 | -33.4 |
| -40.6 | 30 | 24 | 0.0012 | -36.1 |
| -40.6 | 30 | 27 | 0.0012 | -38.5 |
| -40.6 | 30 | 30 | 0.0011 | -40.6 |

|  |  |  |
| --- | --- | --- |
| 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 | - | 12.6 |
| -41.8 | 0 | 3 | - | 11.5 |
| -41.8 | 0 | 6 | - | 9.8 |
| -41.8 | 0 | 9 | - | 7.6 |
| -41.8 | 0 | 12 | 0.8563 | 4.8 |
| -41.8 | 0 | 15 | 0.7163 | 2.2 |
| -41.8 | 0 | 18 | 0.3979 | -1.0 |
| -41.8 | 0 | 21 | 0.2265 | -4.0 |
| -41.8 | 3 | 21 | 0.1244 | -7.1 |
| -41.8 | 6 | 21 | 0.0633 | -10.2 |
| -41.8 | 9 | 21 | 0.0330 | -13.1 |
| -41.8 | 12 | 21 | 0.0170 | -16.1 |
| -41.8 | 15 | 21 | 0.0099 | -18.8 |
| -41.8 | 18 | 21 | 0.0053 | -22.1 |
| -41.8 | 21 | 21 | 0.0032 | -25.3 |
| -41.8 | 24 | 21 | 0.0024 | -28.3 |
| -41.8 | 27 | 21 | 0.0020 | -31.1 |
| -41.8 | 30 | 21 | 0.0017 | -34.3 |
| -41.8 | 30 | 24 | 0.0016 | -36.9 |
| -41.8 | 30 | 27 | 0.0015 | -39.0 |
| -41.8 | 30 | 30 | 0.0014 | -41.0 |

### 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 | - | 13.6 |
| -40.6 | 0 | 3 | - | 13.2 |
| -40.6 | 0 | 6 | - | 11.6 |
| -40.6 | 0 | 9 | - | 9.3 |
| -40.6 | 0 | 12 | 0.8559 | 6.4 |
| -40.6 | 0 | 15 | 0.6699 | 3.6 |
| -40.6 | 0 | 18 | 0.3759 | 0.3 |
| -40.6 | 0 | 21 | 0.2178 | -2.7 |
| -40.6 | 3 | 21 | 0.1107 | -6.0 |
| -40.6 | 6 | 21 | 0.0571 | -9.1 |
| -40.6 | 9 | 21 | 0.0300 | -12.1 |
| -40.6 | 12 | 21 | 0.0156 | -15.1 |
| -40.6 | 15 | 21 | 0.0086 | -18.1 |
| -40.6 | 18 | 21 | 0.0047 | -21.4 |
| -40.6 | 21 | 21 | 0.0030 | -24.6 |
| -40.6 | 24 | 21 | 0.0022 | -27.5 |
| -40.6 | 27 | 21 | 0.0017 | -30.6 |
| -40.6 | 30 | 21 | 0.0015 | -33.9 |
| -40.6 | 30 | 24 | 0.0015 | -36.3 |
| -40.6 | 30 | 27 | 0.0014 | -38.7 |
| -40.6 | 30 | 30 | 0.0014 | -40.8 |

|  |  |  |
| --- | --- | --- |
| 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 | - | 11.2 |
| -41.8 | 0 | 3 | - | 10.3 |
| -41.8 | 0 | 6 | - | 8.7 |
| -41.8 | 0 | 9 | - | 6.7 |
| -41.8 | 0 | 12 | - | 4.0 |
| -41.8 | 0 | 15 | 0.8543 | 1.5 |
| -41.8 | 0 | 18 | 0.4876 | -1.7 |
| -41.8 | 0 | 21 | 0.2833 | -4.5 |
| -41.8 | 3 | 21 | 0.1554 | -7.6 |
| -41.8 | 6 | 21 | 0.0783 | -10.8 |
| -41.8 | 9 | 21 | 0.0414 | -13.7 |
| -41.8 | 12 | 21 | 0.0209 | -16.7 |
| -41.8 | 15 | 21 | 0.0121 | -19.5 |
| -41.8 | 18 | 21 | 0.0065 | -22.9 |
| -41.8 | 21 | 21 | 0.0040 | -26.0 |
| -41.8 | 24 | 21 | 0.0027 | -29.0 |
| -41.8 | 27 | 21 | 0.0023 | -31.8 |
| -41.8 | 30 | 21 | 0.0019 | -35.1 |
| -41.8 | 30 | 24 | 0.0018 | -37.5 |
| -41.8 | 30 | 27 | 0.0018 | -39.6 |
| -41.8 | 30 | 30 | 0.0017 | -41.5 |

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