Measurement Protocol PAX

# General Information:

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| --- | --- | --- |
| Test date: 13/08/20 | Date prev. test: | Test number: 1 |
| Tested by: Sarah Schoultz | PAX number: PB-011 | Installed at ant.: |
| Comments: | | |
|  | | |
|  | | |
|  | | |
| Known problems: Low gain in X & for noise run X saturates at -1.5dBm | | |
|  | | |
|  | | |
|  | | |

# Setup:

|  |  |  |  |
| --- | --- | --- | --- |
| Power supply: | OK 🗹 NOK 🗆 | Communication: | OK 🗹 NOK 🗆 |
| Supply current +6V: 1.124mA | | ssh obs@antcntl | |
| Supply current -6V: 0.115mA | | ssh ataant@paxtester | pw: q@n@t |
| Supply current +5V: 0.343mA | | 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 | - | 10.6 |
| -40.6 | 0 | 3 | - | 10.2 |
| -40.6 | 0 | 6 | - | 7.8 |
| -40.6 | 0 | 9 | - | 5.8 |
| -40.6 | 0 | 12 | 0.8547 | 2.0 |
| -40.6 | 0 | 15 | 0.7868 | 0.2 |
| -40.6 | 0 | 18 | 0.3453 | -4.3 |
| -40.6 | 0 | 21 | 0.2318 | -6.4 |
| -40.6 | 3 | 21 | 0.1234 | -9.5 |
| -40.6 | 6 | 21 | 0.0657 | -12.4 |
| -40.6 | 9 | 21 | 0.0337 | -15.5 |
| -40.6 | 12 | 21 | 0.0178 | -18.4 |
| -40.6 | 15 | 21 | 0.0100 | -21.1 |
| -40.6 | 18 | 21 | 0.0049 | -24.9 |
| -40.6 | 21 | 21 | 0.0029 | -27.9 |
| -40.6 | 24 | 21 | 0.0020 | -30.9 |
| -40.6 | 27 | 21 | 0.0016 | -33.7 |
| -40.6 | 30 | 21 | 0.0013 | -36.9 |
| -40.6 | 30 | 24 | 0.0011 | -40.5 |
| -40.6 | 30 | 27 | 0.0012 | -42.0 |
| -40.6 | 30 | 30 | 0.0012 | -44.7 |

|  |  |  |
| --- | --- | --- |
| 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 | - | 7.9 |
| -41.8 | 0 | 3 | - | 7.3 |
| -41.8 | 0 | 6 | - | 5.2 |
| -41.8 | 0 | 9 | - | 3.7 |
| -41.8 | 0 | 12 | - | 0.2 |
| -41.8 | 0 | 15 | 0.8540 | -1.5 |
| -41.8 | 0 | 18 | 0.4302 | -5.7 |
| -41.8 | 0 | 21 | 0.2860 | -7.7 |
| -41.8 | 3 | 21 | 0.1573 | -10.6 |
| -41.8 | 6 | 21 | 0.0814 | -13.6 |
| -41.8 | 9 | 21 | 0.0424 | -16.4 |
| -41.8 | 12 | 21 | 0.0220 | -19.4 |
| -41.8 | 15 | 21 | 0.0129 | -22.0 |
| -41.8 | 18 | 21 | 0.0063 | -25.6 |
| -41.8 | 21 | 21 | 0.0039 | -28.7 |
| -41.8 | 24 | 21 | 0.0027 | -31.8 |
| -41.8 | 27 | 21 | 0.0022 | -34.4 |
| -41.8 | 30 | 21 | 0.0019 | -37.8 |
| -41.8 | 30 | 24 | 0.0017 | -41.1 |
| -41.8 | 30 | 27 | 0.0016 | -42.4 |
| -41.8 | 30 | 30 | 0.0016 | -44.9 |

### 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 | - | 10.3 |
| -40.6 | 0 | 6 | - | 8.9 |
| -40.6 | 0 | 9 | 0.8518 | 6.9 |
| -40.6 | 0 | 12 | 0.6630 | 4.0 |
| -40.6 | 0 | 15 | 0.4483 | 1.5 |
| -40.6 | 0 | 18 | 0.2259 | -2.5 |
| -40.6 | 0 | 21 | 0.1329 | -5.5 |
| -40.6 | 3 | 21 | 0.0700 | -8.7 |
| -40.6 | 6 | 21 | 0.0381 | -11.6 |
| -40.6 | 9 | 21 | 0.0206 | -14.5 |
| -40.6 | 12 | 21 | 0.0111 | -17.4 |
| -40.6 | 15 | 21 | 0.0064 | -20.3 |
| -40.6 | 18 | 21 | 0.0033 | -23.9 |
| -40.6 | 21 | 21 | 0.0022 | -27.0 |
| -40.6 | 24 | 21 | 0.0015 | -29.7 |
| -40.6 | 27 | 21 | 0.0012 | -32.6 |
| -40.6 | 30 | 21 | 0.0010 | -35.7 |
| -40.6 | 30 | 24 | 0.0010 | -38.1 |
| -40.6 | 30 | 27 | 0.0010 | -40.4 |
| -40.6 | 30 | 30 | 0.0010 | -42.7 |

|  |  |  |
| --- | --- | --- |
| 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 | - | 8.8 |
| -41.8 | 0 | 3 | - | 7.7 |
| -41.8 | 0 | 6 | - | 6.2 |
| -41.8 | 0 | 9 | 0.8509 | 4.4 |
| -41.8 | 0 | 12 | 0.6924 | 1.8 |
| -41.8 | 0 | 15 | 0.4744 | -0.7 |
| -41.8 | 0 | 18 | 0.2458 | -4.4 |
| -41.8 | 0 | 21 | 0.1434 | -7.2 |
| -41.8 | 3 | 21 | 0.0780 | -10.2 |
| -41.8 | 6 | 21 | 0.0413 | -13.2 |
| -41.8 | 9 | 21 | 0.0227 | -15.9 |
| -41.8 | 12 | 21 | 0.0123 | -18.8 |
| -41.8 | 15 | 21 | 0.0073 | -21.5 |
| -41.8 | 18 | 21 | 0.0039 | -25.1 |
| -41.8 | 21 | 21 | 0.0027 | -28.2 |
| -41.8 | 24 | 21 | 0.0021 | -30.9 |
| -41.8 | 27 | 21 | 0.0018 | -33.7 |
| -41.8 | 30 | 21 | 0.0016 | -36.9 |
| -41.8 | 30 | 24 | 0.0016 | -39.2 |
| -41.8 | 30 | 27 | 0.0015 | -41.3 |
| -41.8 | 30 | 30 | 0.0015 | -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: 34.9 | OK 🗹 NOK 🗆 |
| LNA Settings | Comments: | OK**🗹** NOK **🗆** |
| Temperature Stabilisation | Comments: | OK 🗆 NOK **🗆** |
|  |  | OK 🗆 NOK **🗆** |