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-028 | Installed at ant.: |
| Comments: | | |
|  | | |
|  | | |
|  | | |
| Known problems: Y saturates at 1dBm on noise measurement & bowl shape passbands. | | |
| Maybe broken slope supporters or filters | | |
|  | | |
|  | | |

# Setup:

|  |  |  |  |
| --- | --- | --- | --- |
| Power supply: | OK 🗹 NOK 🗆 | Communication: | OK 🗹 NOK 🗆 |
| Supply current +6V: 1.127mA | | ssh obs@antcntl | |
| Supply current -6V: 0.106mA | | ssh ataant@paxtester | pw: q@n@t |
| Supply current +5V: 0.267mA | | 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 | - | 9.2 |
| -40.6 | 0 | 3 | 0.8543 | 6.6 |
| -40.6 | 0 | 6 | 0.6359 | 3.7 |
| -40.6 | 0 | 9 | 0.3657 | 0.6 |
| -40.6 | 0 | 12 | 0.2067 | -2.4 |
| -40.6 | 0 | 15 | 0.1176 | -5.2 |
| -40.6 | 0 | 18 | 0.0609 | -8.4 |
| -40.6 | 0 | 21 | 0.0339 | -11.3 |
| -40.6 | 3 | 21 | 0.0171 | -14.4 |
| -40.6 | 6 | 21 | 0.0093 | -17.2 |
| -40.6 | 9 | 21 | 0.0048 | -20.4 |
| -40.6 | 12 | 21 | 0.0028 | -23.2 |
| -40.6 | 15 | 21 | 0.0017 | -26.1 |
| -40.6 | 18 | 21 | 0.0011 | -29.7 |
| -40.6 | 21 | 21 | 0.0009 | -32.6 |
| -40.6 | 24 | 21 | 0.0008 | -35.6 |
| -40.6 | 27 | 21 | 0.0007 | -38.4 |
| -40.6 | 30 | 21 | 0.0007 | -41.4 |
| -40.6 | 30 | 24 | 0.0006 | -43.6 |
| -40.6 | 30 | 27 | 0.0006 | -45.4 |
| -40.6 | 30 | 30 | 0.0006 | -46.9 |

|  |  |  |
| --- | --- | --- |
| 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 | - | 6.3 |
| -41.8 | 0 | 3 | 0.8535 | 4.5 |
| -41.8 | 0 | 6 | 0.8519 | 2.0 |
| -41.8 | 0 | 9 | 0.5197 | -0.8 |
| -41.8 | 0 | 12 | 0.2890 | -3.8 |
| -41.8 | 0 | 15 | 0.1772 | -6.3 |
| -41.8 | 0 | 18 | 0.0859 | -9.5 |
| -41.8 | 0 | 21 | 0.0468 | -12.3 |
| -41.8 | 3 | 21 | 0.0241 | -15.3 |
| -41.8 | 6 | 21 | 0.0129 | -18.1 |
| -41.8 | 9 | 21 | 0.0069 | -21.1 |
| -41.8 | 12 | 21 | 0.0041 | -24.0 |
| -41.8 | 15 | 21 | 0.0027 | -26.7 |
| -41.8 | 18 | 21 | 0.0017 | -30.2 |
| -41.8 | 21 | 21 | 0.0014 | -33.2 |
| -41.8 | 24 | 21 | 0.0012 | -36.2 |
| -41.8 | 27 | 21 | 0.0011 | -38.9 |
| -41.8 | 30 | 21 | 0.0010 | -41.9 |
| -41.8 | 30 | 24 | 0.0010 | -44.1 |
| -41.8 | 30 | 27 | 0.0010 | -45.7 |
| -41.8 | 30 | 30 | 0.0010 | -47.1 |

### 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 | - | 10.0 |
| -40.6 | 0 | 3 | - | 9.4 |
| -40.6 | 0 | 6 | - | 7.9 |
| -40.6 | 0 | 9 | - | 5.7 |
| -40.6 | 0 | 12 | 0.8411 | 2.7 |
| -40.6 | 0 | 15 | 0.5915 | 0.1 |
| -40.6 | 0 | 18 | 0.3331 | -3.4 |
| -40.6 | 0 | 21 | 0.1936 | -6.4 |
| -40.6 | 3 | 21 | 0.1020 | -9.7 |
| -40.6 | 6 | 21 | 0.0544 | -12.7 |
| -40.6 | 9 | 21 | 0.0286 | -15.7 |
| -40.6 | 12 | 21 | 0.0150 | -18.7 |
| -40.6 | 15 | 21 | 0.0081 | -21.6 |
| -40.6 | 18 | 21 | 0.0042 | -25.0 |
| -40.6 | 21 | 21 | 0.0025 | -28.1 |
| -40.6 | 24 | 21 | 0.0017 | -31.0 |
| -40.6 | 27 | 21 | 0.0013 | -34.0 |
| -40.6 | 30 | 21 | 0.0010 | -37.3 |
| -40.6 | 30 | 24 | 0.0010 | -40.0 |
| -40.6 | 30 | 27 | 0.0009 | -42.2 |
| -40.6 | 30 | 30 | 0.0009 | -44.5 |

|  |  |  |
| --- | --- | --- |
| 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 | - | 8.2 |
| -41.8 | 0 | 3 | - | 7.2 |
| -41.8 | 0 | 6 | - | 5.7 |
| -41.8 | 0 | 9 | - | 3.7 |
| -41.8 | 0 | 12 | 0.8403 | 1.0 |
| -41.8 | 0 | 15 | 0.6131 | -1.6 |
| -41.8 | 0 | 18 | 0.3514 | -4.8 |
| -41.8 | 0 | 21 | 0.2018 | -7.8 |
| -41.8 | 3 | 21 | 0.1100 | -10.8 |
| -41.8 | 6 | 21 | 0.0565 | -13.9 |
| -41.8 | 9 | 21 | 0.0298 | -16.7 |
| -41.8 | 12 | 21 | 0.0152 | -19.8 |
| -41.8 | 15 | 21 | 0.0086 | -22.5 |
| -41.8 | 18 | 21 | 0.0046 | -25.9 |
| -41.8 | 21 | 21 | 0.0029 | -29.0 |
| -41.8 | 24 | 21 | 0.0021 | -32.1 |
| -41.8 | 27 | 21 | 0.0017 | -34.9 |
| -41.8 | 30 | 21 | 0.0014 | -38.3 |
| -41.8 | 30 | 24 | 0.0013 | -40.9 |
| -41.8 | 30 | 27 | 0.0013 | -43.0 |
| -41.8 | 30 | 30 | 0.0013 | -45.1 |

# 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 **🗆** |