Measurement Protocol PAX

# General Information:

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| --- | --- | --- |
| Test date: 31/8/20 | Date prev. test: NA | Test number: 1 |
| Tested by: Sarah Schoultz | PAX number: PB-032 | Installed at ant.: NA |
| Comments: Y passband slopes down from 5dBm to -10dBm | | |
|  | | |
|  | | |
|  | | |
| Known problems: Y passband indicates there is filter or slope supporter broken | | |
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|  | | |

# Setup:

|  |  |  |  |
| --- | --- | --- | --- |
| Power supply: | OK 🗹 NOK 🗆 | Communication: | OK 🗹 NOK 🗆 |
| Supply current +6V: 1.111mA | | ssh obs@antcntl | |
| Supply current -6V: 0.131mA | | ssh ataant@ant0 | pw: q@n@t |
| Supply current +5V: 0.141mA | | telnet pax | “help” |
|  | | CTRL + ] | “close” |

# RF Test with VNA:

### VNA Setup:

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| --- | --- | --- |
| 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 | | |

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| --- | --- | --- | --- | --- |
| 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 close up of a map

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 | - | 14.1 |
| -40.6 | 0 | 3 | - | 13.0 |
| -40.6 | 0 | 6 | - | 10.7 |
| -40.6 | 0 | 9 | 0.8604 | 7.8 |
| -40.6 | 0 | 12 | 0.5932 | 5.0 |
| -40.6 | 0 | 15 | 0.3305 | 1.6 |
| -40.6 | 0 | 18 | 0.1930 | -1.4 |
| -40.6 | 0 | 21 | 0.0970 | -4.8 |
| -40.6 | 3 | 21 | 0.0507 | -7.8 |
| -40.6 | 6 | 21 | 0.0279 | -10.5 |
| -40.6 | 9 | 21 | 0.0147 | -13.5 |
| -40.6 | 12 | 21 | 0.0080 | -16.4 |
| -40.6 | 15 | 21 | 0.0042 | -19.9 |
| -40.6 | 18 | 21 | 0.0026 | -22.9 |
| -40.6 | 21 | 21 | 0.0018 | -25.5 |
| -40.6 | 24 | 21 | 0.0014 | -28.6 |
| -40.6 | 27 | 21 | 0.0011 | -31.8 |
| -40.6 | 30 | 21 | 0.0011 | -34.3 |
| -40.6 | 30 | 24 | 0.0011 | -34.3 |
| -40.6 | 30 | 27 | 0.0011 | -36.8 |
| -40.6 | 30 | 30 | 0.0010 | -39.1 |

|  |  |  |
| --- | --- | --- |
| 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 | - | 12.5 |
| -41.8 | 0 | 3 | - | 11.4 |
| -41.8 | 0 | 6 | - | 9.8 |
| -41.8 | 0 | 9 | - | 7.8 |
| -41.8 | 0 | 12 | 0.8599 | 5.1 |
| -41.8 | 0 | 15 | 0.8513 | 2.6 |
| -41.8 | 0 | 18 | 0.4836 | -0.7 |
| -41.8 | 0 | 21 | 0.2874 | -3.5 |
| -41.8 | 3 | 21 | 0.1627 | -6.6 |
| -41.8 | 6 | 21 | 0.0851 | -9.6 |
| -41.8 | 9 | 21 | 0.0476 | -12.3 |
| -41.8 | 12 | 21 | 0.0245 | -15.3 |
| -41.8 | 15 | 21 | 0.0142 | -17.9 |
| -41.8 | 18 | 21 | 0.0071 | -21.4 |
| -41.8 | 21 | 21 | 0.0042 | -24.4 |
| -41.8 | 24 | 21 | 0.0028 | -27.2 |
| -41.8 | 27 | 21 | 0.0021 | -30.0 |
| -41.8 | 30 | 21 | 0.0017 | -33.2 |
| -41.8 | 30 | 24 | 0.0015 | -35.6 |
| -41.8 | 30 | 27 | 0.0014 | -37.8 |
| -41.8 | 30 | 30 | 0.0014 | -39.9 |

### 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 | - | 12.7 |
| -40.6 | 0 | 3 | 0.8601 | 9.1 |
| -40.6 | 0 | 6 | 0.6279 | 6.0 |
| -40.6 | 0 | 9 | 0.3771 | 3.0 |
| -40.6 | 0 | 12 | 0.2149 | -0.1 |
| -40.6 | 0 | 15 | 0.1230 | -2.9 |
| -40.6 | 0 | 18 | 0.0613 | -6.2 |
| -40.6 | 0 | 21 | 0.0318 | -9.3 |
| -40.6 | 3 | 21 | 0.0170 | -12.2 |
| -40.6 | 6 | 21 | 0.0096 | -15.0 |
| -40.6 | 9 | 21 | 0.0054 | -18.0 |
| -40.6 | 12 | 21 | 0.0034 | -20.9 |
| -40.6 | 15 | 21 | 0.0022 | -23.8 |
| -40.6 | 18 | 21 | 0.0017 | -27.0 |
| -40.6 | 21 | 21 | 0.0014 | -30.0 |
| -40.6 | 24 | 21 | 0.0013 | -32.7 |
| -40.6 | 27 | 21 | 0.0013 | -35.5 |
| -40.6 | 30 | 21 | 0.0012 | -38.3 |
| -40.6 | 30 | 24 | 0.0012 | -40.8 |
| -40.6 | 30 | 27 | 0.0012 | -43.1 |
| -40.6 | 30 | 30 | 0.0012 | -45.2 |

|  |  |  |
| --- | --- | --- |
| 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 | 0.8596 | 9.0 |
| -41.8 | 0 | 3 | 0.8510 | 6.0 |
| -41.8 | 0 | 6 | 0.4677 | 2.9 |
| -41.8 | 0 | 9 | 0.2609 | 0.0 |
| -41.8 | 0 | 12 | 0.1382 | -3.0 |
| -41.8 | 0 | 15 | 0.0772 | -5.8 |
| -41.8 | 0 | 18 | 0.0385 | -8.9 |
| -41.8 | 0 | 21 | 0.0206 | -11.9 |
| -41.8 | 3 | 21 | 0.0108 | -15.1 |
| -41.8 | 6 | 21 | 0.0061 | -18.1 |
| -41.8 | 9 | 21 | 0.0039 | -20.9 |
| -41.8 | 12 | 21 | 0.0027 | -23.9 |
| -41.8 | 15 | 21 | 0.0021 | -26.7 |
| -41.8 | 18 | 21 | 0.0018 | -29.8 |
| -41.8 | 21 | 21 | 0.0017 | -32.9 |
| -41.8 | 24 | 21 | 0.0016 | -35.6 |
| -41.8 | 27 | 21 | 0.0015 | -38.3 |
| -41.8 | 30 | 21 | 0.0015 | -41.2 |
| -41.8 | 30 | 24 | 0.0015 | -43.4 |
| -41.8 | 30 | 27 | 0.0016 | -45.2 |
| -41.8 | 30 | 30 | 0.0015 | -46.7 |

# Inspection:

### Visual:

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| --- | --- | --- |
| 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: 31.7 | OK 🗹 NOK 🗆 |
| LNA Settings | Comments: | OK 🗆 NOK **🗆** |
| Temperature Stabilisation | Comments: | OK 🗆 NOK **🗆** |