Measurement Protocol PAX

# General Information:

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| --- | --- | --- |
| Test date: 07/8/20 | Date prev. test: NA | Test number: 1 |
| Tested by: Sarah Schoultz | PAX number: PB-016 | Installed at ant.: NA |
| Comments: | | |
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|  | | |
|  | | |
| Known problems: X saturates at 1.7dbm for both x measurements. Bumpy passbands. | | |
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|  | | |
|  | | |

# Setup:

|  |  |  |  |
| --- | --- | --- | --- |
| Power supply: | OK 🗹 NOK 🗆 | Communication: | OK 🗹 NOK 🗆 |
| Supply current +6V: 1.1023mA | | ssh obs@antcntl | |
| Supply current -6V: 0.130mA | | ssh ataant@ant0 | pw: q@n@t |
| Supply current +5V: 0.157mA | | 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 screen with text

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 | - | 13.2 |
| -40.6 | 0 | 3 | - | 13.2 |
| -40.6 | 0 | 6 | - | 12.2 |
| -40.6 | 0 | 9 | - | 9.9 |
| -40.6 | 0 | 12 | - | 7.0 |
| -40.6 | 0 | 15 | 0.8530 | 4.1 |
| -40.6 | 0 | 18 | 0.5691 | 0.7 |
| -40.6 | 0 | 21 | 0.3234 | -2.3 |
| -40.6 | 3 | 21 | 0.1662 | -5.6 |
| -40.6 | 6 | 21 | 0.0870 | -8.7 |
| -40.6 | 9 | 21 | 0.0449 | -11.7 |
| -40.6 | 12 | 21 | 0.0229 | -14.7 |
| -40.6 | 15 | 21 | 0.0119 | -17.6 |
| -40.6 | 18 | 21 | 0.0058 | -20.9 |
| -40.6 | 21 | 21 | 0.0031 | -24.0 |
| -40.6 | 24 | 21 | 0.0018 | -26.9 |
| -40.6 | 27 | 21 | 0.0011 | -30.0 |
| -40.6 | 30 | 21 | 0.0007 | -33.2 |
| -40.6 | 30 | 24 | 0.0006 | -36.9 |
| -40.6 | 30 | 27 | 0.0005 | -38.3 |
| -40.6 | 30 | 30 | 0.0005 | -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 | - | 11.6 |
| -41.8 | 0 | 3 | - | 10.6 |
| -41.8 | 0 | 6 | - | 9.0 |
| -41.8 | 0 | 9 | - | 7.0 |
| -41.8 | 0 | 12 | - | 4.3 |
| -41.8 | 0 | 15 | 0.8524 | 1.7 |
| -41.8 | 0 | 18 | 0.5893 | -1.6 |
| -41.8 | 0 | 21 | 0.3320 | -4.5 |
| -41.8 | 3 | 21 | 0.1782 | -7.4 |
| -41.8 | 6 | 21 | 0.0892 | -10.6 |
| -41.8 | 9 | 21 | 0.0461 | -13.4 |
| -41.8 | 12 | 21 | 0.0227 | -16.5 |
| -41.8 | 15 | 21 | 0.0126 | -19.1 |
| -41.8 | 18 | 21 | 0.0062 | -22.4 |
| -41.8 | 21 | 21 | 0.0034 | -25.5 |
| -41.8 | 24 | 21 | 0.0021 | -28.5 |
| -41.8 | 27 | 21 | 0.0015 | -31.3 |
| -41.8 | 30 | 21 | 0.0011 | -34.5 |
| -41.8 | 30 | 24 | 0.0009 | -37.1 |
| -41.8 | 30 | 27 | 0.0008 | -39.2 |
| -41.8 | 30 | 30 | 0.0008 | -41.2 |

### 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 | - | 13.2 |
| -40.6 | 0 | 3 | - | 13.1 |
| -40.6 | 0 | 6 | - | 12.0 |
| -40.6 | 0 | 9 | - | 9.5 |
| -40.6 | 0 | 12 | - | 6.6 |
| -40.6 | 0 | 15 | 0.8514 | 3.8 |
| -40.6 | 0 | 18 | 0.4833 | 0.5 |
| -40.6 | 0 | 21 | 0.2719 | -2.5 |
| -40.6 | 3 | 21 | 0.1421 | -5.7 |
| -40.6 | 6 | 21 | 0.0708 | -8.9 |
| -40.6 | 9 | 21 | 0.0356 | -12.0 |
| -40.6 | 12 | 21 | 0.0175 | -15.3 |
| -40.6 | 15 | 21 | 0.0093 | -18.3 |
| -40.6 | 18 | 21 | 0.0045 | -21.9 |
| -40.6 | 21 | 21 | 0.0026 | -25.1 |
| -40.6 | 24 | 21 | 0.0017 | -28.3 |
| -40.6 | 27 | 21 | 0.0014 | -31.4 |
| -40.6 | 30 | 21 | 0.0012 | -34.8 |
| -40.6 | 30 | 24 | 0.0010 | -37.3 |
| -40.6 | 30 | 27 | 0.0010 | -39.6 |
| -40.6 | 30 | 30 | 0.0010 | -41.7 |

|  |  |  |
| --- | --- | --- |
| 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 | - | 11.5 |
| -41.8 | 0 | 3 | - | 10.6 |
| -41.8 | 0 | 6 | - | 9.2 |
| -41.8 | 0 | 9 | - | 7.3 |
| -41.8 | 0 | 12 | - | 4.8 |
| -41.8 | 0 | 15 | 0.8509 | 2.4 |
| -41.8 | 0 | 18 | 0.5472 | -0.8 |
| -41.8 | 0 | 21 | 0.3071 | -3.6 |
| -41.8 | 3 | 21 | 0.1585 | -6.6 |
| -41.8 | 6 | 21 | 0.0733 | -10.1 |
| -41.8 | 9 | 21 | 0.0364 | -13.1 |
| -41.8 | 12 | 21 | 0.0172 | -16.4 |
| -41.8 | 15 | 21 | 0.0096 | -19.1 |
| -41.8 | 18 | 21 | 0.0047 | -22.9 |
| -41.8 | 21 | 21 | 0.0029 | -26.2 |
| -41.8 | 24 | 21 | 0.0020 | -29.5 |
| -41.8 | 27 | 21 | 0.0017 | -32.3 |
| -41.8 | 30 | 21 | 0.0014 | -35.9 |
| -41.8 | 30 | 24 | 0.0013 | -38.4 |
| -41.8 | 30 | 27 | 0.0013 | -40.3 |
| -41.8 | 30 | 30 | 0.0013 | -42.2 |

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