Measurement Protocol PAX

# General Information:

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| --- | --- | --- |
| Test date: 14/08/19 | Date prev. test: 09/12/19 | Test number: 2 |
| Tested by: Sarah Schoultz | PAX number: PB-038 | Installed at ant.: NA |
| Comments: Control board was replaced with PAX 7’s | | |
|  | | |
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|  | | |
| Known problems: Bumpy Y passband | | |
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|  | | |

# Setup:

|  |  |  |  |
| --- | --- | --- | --- |
| Power supply: | OK 🗹 NOK 🗆 | Communication: | OK 🗹 NOK 🗆 |
| Supply current +6V: 1.107mA | | ssh obs@antcntl | |
| Supply current -6V: 0.120mA | | ssh ataant@ant0 | pw: q@n@t |
| Supply current +5V: 0.200mA | | 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 | | |

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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 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 | - | 14.2 |
| -40.6 | 0 | 3 | - | 14.2 |
| -40.6 | 0 | 6 | - | 12.9 |
| -40.6 | 0 | 9 | 0.8544 | 10.3 |
| -40.6 | 0 | 12 | 0.6442 | 7.2 |
| -40.6 | 0 | 15 | 0.3929 | 4.3 |
| -40.6 | 0 | 18 | 0.2106 | 1.0 |
| -40.6 | 0 | 21 | 0.1150 | -2.1 |
| -40.6 | 3 | 21 | 0.0568 | -5.4 |
| -40.6 | 6 | 21 | 0.0293 | -8.4 |
| -40.6 | 9 | 21 | 0.0155 | -11.4 |
| -40.6 | 12 | 21 | 0.0083 | -14.4 |
| -40.6 | 15 | 21 | 0.0048 | -17.3 |
| -40.6 | 18 | 21 | 0.0027 | -20.7 |
| -40.6 | 21 | 21 | 0.0018 | -23.8 |
| -40.6 | 24 | 21 | 0.0014 | -26.6 |
| -40.6 | 27 | 21 | 0.0012 | -29.7 |
| -40.6 | 30 | 21 | 0.0011 | -32.9 |
| -40.6 | 30 | 24 | 0.0010 | -35.5 |
| -40.6 | 30 | 27 | 0.0010 | -38.1 |
| -40.6 | 30 | 30 | 0.0010 | -40.5 |

|  |  |  |
| --- | --- | --- |
| 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 | - | 12.4 |
| -41.8 | 0 | 3 | - | 11.2 |
| -41.8 | 0 | 6 | - | 9.3 |
| -41.8 | 0 | 9 | - | 7.0 |
| -41.8 | 0 | 12 | 0.8539 | 4.2 |
| -41.8 | 0 | 15 | 0.5567 | 1.5 |
| -41.8 | 0 | 18 | 0.3014 | -1.7 |
| -41.8 | 0 | 21 | 0.1666 | -4.7 |
| -41.8 | 3 | 21 | 0.0902 | -7.7 |
| -41.8 | 6 | 21 | 0.0456 | -10.8 |
| -41.8 | 9 | 21 | 0.0245 | -13.6 |
| -41.8 | 12 | 21 | 0.0127 | -16.6 |
| -41.8 | 15 | 21 | 0.0076 | -19.4 |
| -41.8 | 18 | 21 | 0.0041 | -22.8 |
| -41.8 | 21 | 21 | 0.0027 | -25.9 |
| -41.8 | 24 | 21 | 0.0020 | -28.8 |
| -41.8 | 27 | 21 | 0.0017 | -31.7 |
| -41.8 | 30 | 21 | 0.0015 | -35.0 |
| -41.8 | 30 | 24 | 0.0015 | -37.5 |
| -41.8 | 30 | 27 | 0.0014 | -39.6 |
| -41.8 | 30 | 30 | 0.0014 | -41.6 |

### 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 | - | 14.1 |
| -40.6 | 0 | 3 | - | 14.1 |
| -40.6 | 0 | 6 | - | 13.1 |
| -40.6 | 0 | 9 | 0.8544 | 10.6 |
| -40.6 | 0 | 12 | 0.6166 | 7.5 |
| -40.6 | 0 | 15 | 0.3755 | 4.7 |
| -40.6 | 0 | 18 | 0.1990 | 1.3 |
| -40.6 | 0 | 21 | 0.1061 | -1.8 |
| -40.6 | 3 | 21 | 0.0514 | -5.2 |
| -40.6 | 6 | 21 | 0.0272 | -8.1 |
| -40.6 | 9 | 21 | 0.0141 | -11.2 |
| -40.6 | 12 | 21 | 0.0078 | -14.1 |
| -40.6 | 15 | 21 | 0.0045 | -17.1 |
| -40.6 | 18 | 21 | 0.0027 | -20.5 |
| -40.6 | 21 | 21 | 0.0019 | -23.6 |
| -40.6 | 24 | 21 | 0.0016 | -26.5 |
| -40.6 | 27 | 21 | 0.0013 | -29.7 |
| -40.6 | 30 | 21 | 0.0013 | -32.9 |
| -40.6 | 30 | 24 | 0.0012 | -35.6 |
| -40.6 | 30 | 27 | 0.0012 | -38.1 |
| -40.6 | 30 | 30 | 0.0012 | -40.5 |

|  |  |  |
| --- | --- | --- |
| 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 | - | 12.7 |
| -41.8 | 0 | 3 | - | 11.6 |
| -41.8 | 0 | 6 | - | 9.8 |
| -41.8 | 0 | 9 | 0.8539 | 7.5 |
| -41.8 | 0 | 12 | 0.5464 | 4.6 |
| -41.8 | 0 | 15 | 0.3397 | 2.0 |
| -41.8 | 0 | 18 | 0.1776 | -1.2 |
| -41.8 | 0 | 21 | 0.0956 | -4.2 |
| -41.8 | 3 | 21 | 0.0507 | -7.2 |
| -41.8 | 6 | 21 | 0.0262 | -10.3 |
| -41.8 | 9 | 21 | 0.0141 | -13.2 |
| -41.8 | 12 | 21 | 0.0077 | -16.2 |
| -41.8 | 15 | 21 | 0.0049 | -18.9 |
| -41.8 | 18 | 21 | 0.0031 | -22.3 |
| -41.8 | 21 | 21 | 0.0023 | -25.4 |
| -41.8 | 24 | 21 | 0.0019 | -28.5 |
| -41.8 | 27 | 21 | 0.0018 | -31.3 |
| -41.8 | 30 | 21 | 0.0017 | -34.6 |
| -41.8 | 30 | 24 | 0.0016 | -37.2 |
| -41.8 | 30 | 27 | 0.0016 | -39.3 |
| -41.8 | 30 | 30 | 0.0016 | -41.4 |

# 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 **🗆** |
| RF Connector on PAM screws tight | Comments: | OK **🗹** NOK **🗆** |

### Functions:

|  |  |  |
| --- | --- | --- |
| Read Temperature Value | Comments: 31.3 | OK 🗹 NOK 🗆 |
| LNA Settings | Comments: | OK 🗆 NOK **🗆** |
| Temperature Stabilisation | Comments: | OK 🗆 NOK **🗆** |
| Software Version: |  | OK **🗹** NOK **🗆** |