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-043 | Installed at ant.: |
| Comments: | | |
|  | | |
|  | | |
|  | | |
| Known problems: | | |
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|  | | |

# Setup:

|  |  |  |  |
| --- | --- | --- | --- |
| Power supply: | OK 🗹 NOK 🗆 | Communication: | OK 🗹 NOK 🗆 |
| Supply current +6V: 1.128mA | | ssh obs@antcntl | |
| Supply current -6V: 0.108mA | | ssh ataant@paxtester | pw: q@n@t |
| Supply current +5V: 0.279mA | | 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 |

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| --- | --- |
| 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

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| --- | --- | --- | --- |
| 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 | - | 13.1 |
| -40.6 | 0 | 3 | - | 13.1 |
| -40.6 | 0 | 6 | - | 12.8 |
| -40.6 | 0 | 9 | - | 9.5 |
| -40.6 | 0 | 12 | - | 8.2 |
| -40.6 | 0 | 15 | 0.8616 | 5.5 |
| -40.6 | 0 | 18 | 0.6212 | 0.4 |
| -40.6 | 0 | 21 | 0.4951 | -0.9 |
| -40.6 | 3 | 21 | 0.2673 | -4.3 |
| -40.6 | 6 | 21 | 0.1465 | -7.3 |
| -40.6 | 9 | 21 | 0.0779 | -10.3 |
| -40.6 | 12 | 21 | 0.0408 | -13.3 |
| -40.6 | 15 | 21 | 0.0216 | -16.2 |
| -40.6 | 18 | 21 | 0.0109 | -19.5 |
| -40.6 | 21 | 21 | 0.0062 | -22.6 |
| -40.6 | 24 | 21 | 0.0038 | -25.5 |
| -40.6 | 27 | 21 | 0.0026 | -28.6 |
| -40.6 | 30 | 21 | 0.0020 | -31.8 |
| -40.6 | 30 | 24 | 0.0016 | -36.1 |
| -40.6 | 30 | 27 | 0.0016 | -38.7 |
| -40.6 | 30 | 30 | 0.0015 | -39.6 |

|  |  |  |
| --- | --- | --- |
| 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 | - | 11.7 |
| -41.8 | 0 | 3 | - | 10.5 |
| -41.8 | 0 | 6 | - | 9.8 |
| -41.8 | 0 | 9 | - | 6.3 |
| -41.8 | 0 | 12 | - | 5.2 |
| -41.8 | 0 | 15 | 0.8610 | 2.7 |
| -41.8 | 0 | 18 | 0.5464 | -2.3 |
| -41.8 | 0 | 21 | 0.4407 | -3.5 |
| -41.8 | 3 | 21 | 0.2471 | -6.6 |
| -41.8 | 6 | 21 | 0.1302 | -9.7 |
| -41.8 | 9 | 21 | 0.0704 | -12.5 |
| -41.8 | 12 | 21 | 0.0361 | -15.6 |
| -41.8 | 15 | 21 | 0.0202 | -18.3 |
| -41.8 | 18 | 21 | 0.0104 | -21.6 |
| -41.8 | 21 | 21 | 0.0061 | -24.7 |
| -41.8 | 24 | 21 | 0.0039 | -27.7 |
| -41.8 | 27 | 21 | 0.0030 | -30.6 |
| -41.8 | 30 | 21 | 0.0024 | -33.9 |
| -41.8 | 30 | 24 | 0.0021 | -38.0 |
| -41.8 | 30 | 27 | 0.0020 | -40.2 |
| -41.8 | 30 | 30 | 0.0019 | -41.0 |

### 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 | - | 13.3 |
| -40.6 | 0 | 3 | - | 13.3 |
| -40.6 | 0 | 6 | - | 12.8 |
| -40.6 | 0 | 9 | - | 10.6 |
| -40.6 | 0 | 12 | 0.8535 | 7.6 |
| -40.6 | 0 | 15 | 0.8043 | 4.8 |
| -40.6 | 0 | 18 | 0.4478 | 1.5 |
| -40.6 | 0 | 21 | 0.2470 | -1.61 |
| -40.6 | 3 | 21 | 0.1234 | -5.0 |
| -40.6 | 6 | 21 | 0.0649 | -8.0 |
| -40.6 | 9 | 21 | 0.0335 | -11.0 |
| -40.6 | 12 | 21 | 0.0176 | -14.0 |
| -40.6 | 15 | 21 | 0.0092 | -17.0 |
| -40.6 | 18 | 21 | 0.0049 | -20.3 |
| -40.6 | 21 | 21 | 0.0029 | -23.4 |
| -40.6 | 24 | 21 | 0.0020 | -26.3 |
| -40.6 | 27 | 21 | 0.0014 | -29.5 |
| -40.6 | 30 | 21 | 0.0012 | -32.7 |
| -40.6 | 30 | 24 | 0.0011 | -35.4 |
| -40.6 | 30 | 27 | 0.0011 | -37.9 |
| -40.6 | 30 | 30 | 0.0010 | -40.2 |

|  |  |  |
| --- | --- | --- |
| 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 | - | 12.0 |
| -41.8 | 0 | 3 | - | 11.2 |
| -41.8 | 0 | 6 | - | 9.8 |
| -41.8 | 0 | 9 | - | 7.9 |
| -41.8 | 0 | 12 | 0.8529 | 5.4 |
| -41.8 | 0 | 15 | 0.7503 | 2.8 |
| -41.8 | 0 | 18 | 0.4125 | -0.3 |
| -41.8 | 0 | 21 | 0.2261 | -3.2 |
| -41.8 | 3 | 21 | 0.1170 | -6.2 |
| -41.8 | 6 | 21 | 0.0585 | -9.3 |
| -41.8 | 9 | 21 | 0.0305 | -12.2 |
| -41.8 | 12 | 21 | 0.0157 | -15.2 |
| -41.8 | 15 | 21 | 0.0090 | -17.9 |
| -41.8 | 18 | 21 | 0.0049 | -21.3 |
| -41.8 | 21 | 21 | 0.0031 | -24.4 |
| -41.8 | 24 | 21 | 0.0022 | -27.5 |
| -41.8 | 27 | 21 | 0.0018 | -30.3 |
| -41.8 | 30 | 21 | 0.0017 | -33.7 |
| -41.8 | 30 | 24 | 0.0015 | -36.3 |
| -41.8 | 30 | 27 | 0.0015 | -38.4 |
| -41.8 | 30 | 30 | 0.0014 | -40.5 |

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