Measurement Protocol PAX

# General Information:

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| --- | --- | --- |
| Test date: 03/08/20 | Date prev. test: | Test number: 1 |
| Tested by: Sarah Schoultz | PAX number: PB-029 | Installed at ant.: |
| Comments: Y passband and power sweep are both unusual | | |
|  | | |
|  | | |
|  | | |
| Known problems: | | |
|  | | |
|  | | |
|  | | |

# Setup:

|  |  |  |  |
| --- | --- | --- | --- |
| Power supply: | OK 🗹 NOK 🗆 | Communication: | OK 🗹 NOK 🗆 |
| Supply current +6V: 1.093mA | | ssh obs@antcntl | |
| Supply current -6V: 0.165mA | | ssh ataant@paxtester | pw: q@n@t |
| Supply current +5V: 0.220mA | | 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 | - | 13.7 |
| -40.6 | 0 | 6 | - | 11.8 |
| -40.6 | 0 | 9 | 0.8613 | 9.3 |
| -40.6 | 0 | 12 | 0.6662 | 6.4 |
| -40.6 | 0 | 15 | 0.4115 | 3.5 |
| -40.6 | 0 | 18 | 0.2291 | 0.2 |
| -40.6 | 0 | 21 | 0.1298 | -2.8 |
| -40.6 | 3 | 21 | 0.0641 | -6.1 |
| -40.6 | 6 | 21 | 0.0317 | -9.3 |
| -40.6 | 9 | 21 | 0.0161 | -12.4 |
| -40.6 | 12 | 21 | 0.0080 | -15.5 |
| -40.6 | 15 | 21 | 0.0043 | -18.5 |
| -40.6 | 18 | 21 | 0.0022 | -22.0 |
| -40.6 | 21 | 21 | 0.0013 | -25.2 |
| -40.6 | 24 | 21 | 0.0009 | -28.3 |
| -40.6 | 27 | 21 | 0.0007 | -31.4 |
| -40.6 | 30 | 21 | 0.0006 | -34.8 |
| -40.6 | 30 | 24 | 0.0006 | -37.3 |
| -40.6 | 30 | 27 | 0.0006 | -39.6 |
| -40.6 | 30 | 30 | 0.0006 | -41.7 |

|  |  |  |
| --- | --- | --- |
| 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 | - | 12.3 |
| -41.8 | 0 | 3 | - | 11.0 |
| -41.8 | 0 | 6 | - | 9.1 |
| -41.8 | 0 | 9 | - | 6.8 |
| -41.8 | 0 | 12 | 0.8611 | 4.1 |
| -41.8 | 0 | 15 | 0.6275 | 1.4 |
| -41.8 | 0 | 18 | 0.3592 | -1.6 |
| -41.8 | 0 | 21 | 0.2054 | -4.5 |
| -41.8 | 3 | 21 | 0.1119 | -7.6 |
| -41.8 | 6 | 21 | 0.0546 | -10.9 |
| -41.8 | 9 | 21 | 0.0281 | -13.9 |
| -41.8 | 12 | 21 | 0.0137 | -17.0 |
| -41.8 | 15 | 21 | 0.0078 | -19.8 |
| -41.8 | 18 | 21 | 0.0038 | -23.4 |
| -41.8 | 21 | 21 | 0.0022 | -26.6 |
| -41.8 | 24 | 21 | 0.0015 | -29.7 |
| -41.8 | 27 | 21 | 0.0011 | -32.6 |
| -41.8 | 30 | 21 | 0.0009 | -36.0 |
| -41.8 | 30 | 24 | 0.0008 | -38.4 |
| -41.8 | 30 | 27 | 0.0009 | -40.4 |
| -41.8 | 30 | 30 | 0.0008 | -42.2 |

### 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 | - | 14.1 |
| -40.6 | 0 | 3 | - | 14.1 |
| -40.6 | 0 | 6 | - | 12.6 |
| -40.6 | 0 | 9 | 0.8620 | 9.9 |
| -40.6 | 0 | 12 | 0.6301 | 6.9 |
| -40.6 | 0 | 15 | 0.3906 | 4.1 |
| -40.6 | 0 | 18 | 0.2114 | 0.8 |
| -40.6 | 0 | 21 | 0.1152 | -2.3 |
| -40.6 | 3 | 21 | 0.0573 | -5.6 |
| -40.6 | 6 | 21 | 0.0300 | -8.6 |
| -40.6 | 9 | 21 | 0.0158 | -11.6 |
| -40.6 | 12 | 21 | 0.0088 | -14.6 |
| -40.6 | 15 | 21 | 0.0051 | -17.5 |
| -40.6 | 18 | 21 | 0.0033 | -20.8 |
| -40.6 | 21 | 21 | 0.0023 | -23.9 |
| -40.6 | 24 | 21 | 0.0019 | -26.8 |
| -40.6 | 27 | 21 | 0.0017 | -29.8 |
| -40.6 | 30 | 21 | 0.0016 | -33.0 |
| -40.6 | 30 | 24 | 0.0016 | -35.6 |
| -40.6 | 30 | 27 | 0.0015 | -38.1 |
| -40.6 | 30 | 30 | 0.0016 | -40.4 |

|  |  |  |
| --- | --- | --- |
| 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 | - | 12.4 |
| -41.8 | 0 | 3 | - | 11.1 |
| -41.8 | 0 | 6 | - | 9.2 |
| -41.8 | 0 | 9 | 0.8619 | 6.9 |
| -41.8 | 0 | 12 | 0.6916 | 4.1 |
| -41.8 | 0 | 15 | 0.4366 | 1.5 |
| -41.8 | 0 | 18 | 0.2387 | -1.7 |
| -41.8 | 0 | 21 | 0.1319 | -4.6 |
| -41.8 | 3 | 21 | 0.0707 | -7.6 |
| -41.8 | 6 | 21 | 0.0363 | -10.7 |
| -41.8 | 9 | 21 | 0.0196 | -13.6 |
| -41.8 | 12 | 21 | 0.0106 | -16.6 |
| -41.8 | 15 | 21 | 0.0065 | -19.3 |
| -41.8 | 18 | 21 | 0.0040 | -22.6 |
| -41.8 | 21 | 21 | 0.0029 | -25.7 |
| -41.8 | 24 | 21 | 0.0023 | -28.6 |
| -41.8 | 27 | 21 | 0.0021 | -31.4 |
| -41.8 | 30 | 21 | 0.0019 | -34.6 |
| -41.8 | 30 | 24 | 0.0019 | -37.1 |
| -41.8 | 30 | 27 | 0.0019 | -39.3 |
| -41.8 | 30 | 30 | 0.0018 | -41.3 |

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