Measurement Protocol PAX

# General Information:

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| --- | --- | --- |
| Test date: 24/07/20 | Date prev. test: 19/02/20 | Test number: 2 |
| Tested by: Sarah Schoultz | PAX number: PB-009 | Installed at ant.: 3C |
| Comments: | | |
|  | | |
|  | | |
|  | | |
| Known problems: Bumpy passbands | | |
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|  | | |
|  | | |

# Setup:

|  |  |  |  |
| --- | --- | --- | --- |
| Power supply: | OK 🗹 NOK 🗆 | Communication: | OK 🗹 NOK 🗆 |
| Supply current +6V: 0.165 | | ssh obs@antcntl | |
| Supply current -6V: 1.121 | | ssh ataant@paxtester | pw: q@n@t |
| Supply current +5V: 0.230 | | 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 |

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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 | - | 13.2 |
| -40.6 | 0 | 6 | - | 12.6 |
| -40.6 | 0 | 9 | - | 10.5 |
| -40.6 | 0 | 12 | - | 7.6 |
| -40.6 | 0 | 15 | 0.8570 | 4.8 |
| -40.6 | 0 | 18 | 0.5092 | 1.5 |
| -40.6 | 0 | 21 | 0.2892 | -1.6 |
| -40.6 | 3 | 21 | 0.1460 | -5.0 |
| -40.6 | 6 | 21 | 0.0773 | -8.0 |
| -40.6 | 9 | 21 | 0.0404 | -11.0 |
| -40.6 | 12 | 21 | 0.0213 | -14.0 |
| -40.6 | 15 | 21 | 0.0113 | -17.0 |
| -40.6 | 18 | 21 | 0.0059 | -20.2 |
| -40.6 | 21 | 21 | 0.0034 | -23.3 |
| -40.6 | 24 | 21 | 0.0023 | -26.2 |
| -40.6 | 27 | 21 | 0.0017 | -29.3 |
| -40.6 | 30 | 21 | 0.0014 | -32.5 |
| -40.6 | 30 | 24 | 0.0012 | -35.2 |
| -40.6 | 30 | 27 | 0.0012 | -37.6 |
| -40.6 | 30 | 30 | 0.0011 | -39.9 |

|  |  |  |
| --- | --- | --- |
| 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 | - | 10.6 |
| -41.8 | 0 | 6 | - | 9.0 |
| -41.8 | 0 | 9 | - | 6.9 |
| -41.8 | 0 | 12 | 0.8568 | 4.2 |
| -41.8 | 0 | 15 | 0.7292 | 1.7 |
| -41.8 | 0 | 18 | 0.4006 | -1.5 |
| -41.8 | 0 | 21 | 0.2227 | -4.4 |
| -41.8 | 3 | 21 | 0.1157 | -7.4 |
| -41.8 | 6 | 21 | 0.0582 | -10.5 |
| -41.8 | 9 | 21 | 0.0305 | -13.4 |
| -41.8 | 12 | 21 | 0.0157 | -16.3 |
| -41.8 | 15 | 21 | 0.0090 | -19.1 |
| -41.8 | 18 | 21 | 0.0048 | -22.3 |
| -41.8 | 21 | 21 | 0.0031 | -25.4 |
| -41.8 | 24 | 21 | 0.0021 | -28.4 |
| -41.8 | 27 | 21 | 0.0017 | -31.1 |
| -41.8 | 30 | 21 | 0.0015 | -34.3 |
| -41.8 | 30 | 24 | 0.0014 | -36.9 |
| -41.8 | 30 | 27 | 0.0013 | -38.9 |
| -41.8 | 30 | 30 | 0.0014 | -40.9 |

### 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 | - | 13.4 |
| -40.6 | 0 | 3 | - | 13.5 |
| -40.6 | 0 | 6 | - | 12.9 |
| -40.6 | 0 | 9 | - | 10.8 |
| -40.6 | 0 | 12 | 0.8548 | 7.9 |
| -40.6 | 0 | 15 | 0.7222 | 5.0 |
| -40.6 | 0 | 18 | 0.4188 | 1.8 |
| -40.6 | 0 | 21 | 0.2426 | -1.3 |
| -40.6 | 3 | 21 | 0.1261 | -4.7 |
| -40.6 | 6 | 21 | 0.0677 | -7.7 |
| -40.6 | 9 | 21 | 0.0356 | -10.7 |
| -40.6 | 12 | 21 | 0.0187 | -13.7 |
| -40.6 | 15 | 21 | 0.0100 | -16.7 |
| -40.6 | 18 | 21 | 0.0052 | -19.9 |
| -40.6 | 21 | 21 | 0.0030 | -23.0 |
| -40.6 | 24 | 21 | 0.0020 | -25.9 |
| -40.6 | 27 | 21 | 0.0015 | -28.9 |
| -40.6 | 30 | 21 | 0.0011 | -32.1 |
| -40.6 | 30 | 24 | 0.0011 | -34.7 |
| -40.6 | 30 | 27 | 0.0010 | -37.24 |
| -40.6 | 30 | 30 | 0.0010 | -39.6 |

|  |  |  |
| --- | --- | --- |
| 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 | - | 11.9 |
| -41.8 | 0 | 3 | - | 10.8 |
| -41.8 | 0 | 6 | - | 9.2 |
| -41.8 | 0 | 9 | - | 7.1 |
| -41.8 | 0 | 12 | 0.8451 | 4.4 |
| -41.8 | 0 | 15 | 0.5435 | 1.8 |
| -41.8 | 0 | 18 | 0.3046 | -1.3 |
| -41.8 | 0 | 21 | 0.1727 | -4.2 |
| -41.8 | 3 | 21 | 0.0916 | -7.2 |
| -41.8 | 6 | 21 | 0.0468 | -10.3 |
| -41.8 | 9 | 21 | 0.0248 | -13.2 |
| -41.8 | 12 | 21 | 0.0128 | -16.2 |
| -41.8 | 15 | 21 | 0.0074 | -18.9 |
| -41.8 | 18 | 21 | 0.0040 | -22.2 |
| -41.8 | 21 | 21 | 0.0025 | -25.3 |
| -41.8 | 24 | 21 | 0.0019 | -28.3 |
| -41.8 | 27 | 21 | 0.0015 | -31.0 |
| -41.8 | 30 | 21 | 0.0012 | -34.3 |
| -41.8 | 30 | 24 | 0.0013 | -36.8 |
| -41.8 | 30 | 27 | 0.0013 | -38.8 |
| -41.8 | 30 | 30 | 0.0012 | -40.8 |

# 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 **🗆** |

### Functions:

|  |  |  |
| --- | --- | --- |
| Read Temperature Value | Comments: 27.3 | OK 🗹 NOK 🗆 |
| LNA Settings | Comments: | OK**🗹** NOK **🗆** |
| Temperature Stabilisation | Comments: | OK 🗆 NOK **🗆** |
|  |  | OK 🗆 NOK **🗆** |