Measurement Protocol PAX

# General Information:

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| --- | --- | --- |
| Test date: 24/07/20 | Date prev. test: | Test number: 1 |
| Tested by: Sarah Schoultz | PAX number: PB-015 | Installed at ant.: |
| Comments: | | |
|  | | |
|  | | |
|  | | |
| Known problems: Bumpy X passband | | |
|  | | |
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|  | | |

# Setup:

|  |  |  |  |
| --- | --- | --- | --- |
| Power supply: | OK 🗹 NOK 🗆 | Communication: | OK 🗹 NOK 🗆 |
| Supply current +6V: 1.104mA | | ssh obs@antcntl | |
| Supply current -6V: 0.112mA | | ssh ataant@paxtester | pw: q@n@t |
| Supply current +5V: 0.199mA | | 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 |

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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

|  |  |  |  |
| --- | --- | --- | --- |
| 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 | - | 14.1 |
| -40.6 | 0 | 3 | - | 14.1 |
| -40.6 | 0 | 6 | - | 13.0 |
| -40.6 | 0 | 9 | - | 10.5 |
| -40.6 | 0 | 12 | 0.8726 | 7.6 |
| -40.6 | 0 | 15 | 0.6035 | 4.7 |
| -40.6 | 0 | 18 | 0.3499 | 1.5 |
| -40.6 | 0 | 21 | 0.2076 | -1.5 |
| -40.6 | 3 | 21 | 0.1098 | -4.8 |
| -40.6 | 6 | 21 | 0.0600 | -7.9 |
| -40.6 | 9 | 21 | 0.0338 | -10.9 |
| -40.6 | 12 | 21 | 0.0206 | -13.9 |
| -40.6 | 15 | 21 | 0.0141 | -16.9 |
| -40.6 | 18 | 21 | 0.0105 | -20.1 |
| -40.6 | 21 | 21 | 0.0089 | -23.3 |
| -40.6 | 24 | 21 | 0.0081 | -26.2 |
| -40.6 | 27 | 21 | 0.0077 | -29.3 |
| -40.6 | 30 | 21 | 0.0075 | -32.6 |
| -40.6 | 30 | 24 | 0.0074 | -35.1 |
| -40.6 | 30 | 27 | 0.0073 | -37.6 |
| -40.6 | 30 | 30 | 0.0073 | -39.8 |

|  |  |  |
| --- | --- | --- |
| 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 | - | 12.5 |
| -41.8 | 0 | 3 | - | 11.3 |
| -41.8 | 0 | 6 | - | 9.6 |
| -41.8 | 0 | 9 | - | 7.4 |
| -41.8 | 0 | 12 | - | 4.7 |
| -41.8 | 0 | 15 | 0.8730 | 2.1 |
| -41.8 | 0 | 18 | 0.5318 | -1.0 |
| -41.8 | 0 | 21 | 0.3204 | -3.9 |
| -41.8 | 3 | 21 | 0.1888 | -6.9 |
| -41.8 | 6 | 21 | 0.1010 | -10.0 |
| -41.8 | 9 | 21 | 0.0560 | -12.9 |
| -41.8 | 12 | 21 | 0.0314 | -16.0 |
| -41.8 | 15 | 21 | 0.0209 | -18.6 |
| -41.8 | 18 | 21 | 0.0137 | -21.9 |
| -41.8 | 21 | 21 | 0.0104 | -25.1 |
| -41.8 | 24 | 21 | 0.0089 | -28.2 |
| -41.8 | 27 | 21 | 0.0083 | -30.9 |
| -41.8 | 30 | 21 | 0.0079 | -34.3 |
| -41.8 | 30 | 24 | 0.0077 | -36.7 |
| -41.8 | 30 | 27 | 0.0077 | -38.8 |
| -41.8 | 30 | 30 | 0.0075 | -40.7 |

### 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 | - | 13.3 |
| -40.6 | 0 | 6 | - | 11.8 |
| -40.6 | 0 | 9 | 0.8622 | 9.3 |
| -40.6 | 0 | 12 | 0.6753 | 6.6 |
| -40.6 | 0 | 15 | 0.4212 | 3.5 |
| -40.6 | 0 | 18 | 0.2337 | 0.3 |
| -40.6 | 0 | 21 | 0.1321 | -2.8 |
| -40.6 | 3 | 21 | 0.0661 | -6.1 |
| -40.6 | 6 | 21 | 0.0341 | -9.1 |
| -40.6 | 9 | 21 | 0.0180 | -12.1 |
| -40.6 | 12 | 21 | 0.0097 | -15.1 |
| -40.6 | 15 | 21 | 0.0056 | -18.1 |
| -40.6 | 18 | 21 | 0.0034 | -21.3 |
| -40.6 | 21 | 21 | 0.0024 | -24.4 |
| -40.6 | 24 | 21 | 0.0019 | -27.3 |
| -40.6 | 27 | 21 | 0.0016 | -30.4 |
| -40.6 | 30 | 21 | 0.0015 | -33.6 |
| -40.6 | 30 | 24 | 0.0015 | -36.1 |
| -40.6 | 30 | 27 | 0.0015 | -38.5 |
| -40.6 | 30 | 30 | 0.0015 | -40.6 |

|  |  |  |
| --- | --- | --- |
| 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 | - | 12.3 |
| -41.8 | 0 | 3 | - | 11.0 |
| -41.8 | 0 | 6 | - | 9.2 |
| -41.8 | 0 | 9 | - | 6.9 |
| -41.8 | 0 | 12 | 0.8620 | 4.1 |
| -41.8 | 0 | 15 | 0.5745 | 1.5 |
| -41.8 | 0 | 18 | 0.3193 | -1.7 |
| -41.8 | 0 | 21 | 0.1826 | -4.6 |
| -41.8 | 3 | 21 | 0.1009 | -7.6 |
| -41.8 | 6 | 21 | 0.0514 | -10.7 |
| -41.8 | 9 | 21 | 0.0274 | -13.6 |
| -41.8 | 12 | 21 | 0.0143 | -16.6 |
| -41.8 | 15 | 21 | 0.0085 | -19.3 |
| -41.8 | 18 | 21 | 0.0048 | -22.6 |
| -41.8 | 21 | 21 | 0.0032 | -25.7 |
| -41.8 | 24 | 21 | 0.0024 | -28.6 |
| -41.8 | 27 | 21 | 0.0020 | -31.4 |
| -41.8 | 30 | 21 | 0.0019 | -34.7 |
| -41.8 | 30 | 24 | 0.0017 | -37.1 |
| -41.8 | 30 | 27 | 0.0017 | -39.2 |
| -41.8 | 30 | 30 | 0.0017 | -41.0 |

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