Measurement Protocol PAM

# General Information:

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| Test date: 25/08/19 | Date prev. test: | Test number: 1 |
| Tested by: Sarah Schoultz | PAM number: 15 | Installed at ant.: NA |
| Comments: Power meter value would jump up and down at each attenuator setting. The | | |
| highest value is showed at each attenuation was recorded. REALLY BAD passband | | |
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|  | | |
| Known problems: Likely broken amplifiers (bad passband) and broken attenuators (root of | | |
| the power issue). Perhaps broken detectors too | | |
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# Setup:

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| --- | --- | --- | --- |
| Power supply: | OK 🗹 NOK 🗆 | Communication: | OK 🗹 NOK 🗆 |
| Supply current +6V: 1.134mA | | ssh obs@antcntl | |
| Supply current -6V: 0.116mA | | ssh ataant@ant0 | pw: q@n@t |
| Supply current +5V: 0.304mA | | 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):

A screenshot of a cell phone screen with text

Description automatically generated

|  |  |  |  |
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| Flatness: | OK 🗆 NOK 🗹 | Unwanted Features: | Yes 🗹 No 🗆 |

### Power Sweep (Complete Link):

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| --- | --- | --- |
| Load configuration: Power\_Sweep\_PAX.csa | | |
| Power Start: -40dBm | Power Stop: -20dBm | Frequency : 4.0GHz |
| PAM Attenuator: 0dB |  | N. Points: 801 |

A screenshot of a cell phone

Description automatically generated

|  |  |  |  |
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| Compression point: | OK 🗆 NOK 🗹 | Unwanted Features: | Yes 🗹 No 🗆 |

### Detector Calibration and Attenuator Sweep:

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| 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 | |

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|  | | | | |
| CW Input Power [dBm]: | Attenuator Value A [dB]: | Attenuator Value: B [dB]: | Detector Value: | Power Meter  Value [dBm]: |
| -40.6 | 0 | 0 | 0.0009 | -27.0 |
| -40.6 | 0 | 3 | 0.0010 | -29.6 |
| -40.6 | 0 | 6 | 0.0014 | -32.6 |
| -40.6 | 0 | 9 | 0.0010 | -35.0 |
| -40.6 | 0 | 12 | 0.0008 | -37.4 |
| -40.6 | 0 | 15 | 0.0009 | -38.9 |
| -40.6 | 0 | 18 | 0.0008 | -40.4 |
| -40.6 | 0 | 21 | 0.0009 | -41.3 |
| -40.6 | 3 | 21 | 0.0009 | -43.8 |
| -40.6 | 6 | 21 | 0.0009 | -46.1 |
| -40.6 | 9 | 21 | 0.0009 | -47.9 |
| -40.6 | 12 | 21 | 0.0008 | -49.3 |
| -40.6 | 15 | 21 | 0.0008 | 50.1 |
| -40.6 | 18 | 21 | 0.0009 | 50.7 |
| -40.6 | 21 | 21 | 0.0009 | 51.0 |
| -40.6 | 24 | 21 | 0.0009 | 51.2 |
| -40.6 | 27 | 21 | 0.0008 | -51.2 |
| -40.6 | 30 | 21 | 0.0009 | -51.3 |
| -40.6 | 30 | 24 | 0.0008 | -52.3 |
| -40.6 | 30 | 27 | 0.0008 | -51.3 |
| -40.6 | 30 | 30 | 0.0008 | -51.3 |

|  |  |  |
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| Use Noise Source: Atlantic AS6333 | | |
| Freq : 1.0 - 12.0GHz | Power Level: -41.8dBm |  |
| DC Supply: 28V |  | |

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| --- | --- | --- | --- | --- |
|  | | | | |
| CW Input Power [dBm]: | Attenuator Value A [dB]: | Attenuator Value: B [dB]: | Detector Value: | Power Meter  Value [dBm]: |
| -41.8 | 0 | 0 | 0.0025 | -26.2 |
| -41.8 | 0 | 3 | 0.0020 | -28.9 |
| -41.8 | 0 | 6 | 0.0017 | -31.9 |
| -41.8 | 0 | 9 | 0.0015 | -34.4 |
| -41.8 | 0 | 12 | 0.0014 | -36.8 |
| -41.8 | 0 | 15 | 0.0013 | -38.5 |
| -41.8 | 0 | 18 | 0.0014 | -40.2 |
| -41.8 | 0 | 21 | 0.0013 | -41.1 |
| -41.8 | 3 | 21 | 0.0013 | -43.6 |
| -41.8 | 6 | 21 | 0.0013 | -46.0 |
| -41.8 | 9 | 21 | 0.0013 | -47.8 |
| -41.8 | 12 | 21 | 0.0013 | -49.3 |
| -41.8 | 15 | 21 | 0.0013 | -50.1 |
| -41.8 | 18 | 21 | 0.0013 | -50.7 |
| -41.8 | 21 | 21 | 0.0013 | -51.0 |
| -41.8 | 24 | 21 | 0.0013 | -51.2 |
| -41.8 | 27 | 21 | 0.0013 | -51.2 |
| -41.8 | 30 | 21 | 0.0013 | -51.3 |
| -41.8 | 30 | 24 | 0.0013 | -51.3 |
| -41.8 | 30 | 27 | 0.0013 | -51.3 |
| -41.8 | 30 | 30 | 0.0013 | -51.3 |