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| Traveler Title | **C100 Cryomodule Acceptance Test – Low Power RF Measurements** | | | | |
| Traveler Abstract | *Low Power RF Acceptance Testing of the R100 Cryomodule in the Cryomodule Test Facility (CMTF). This traveler controls and documents the Low Power RF Measurements performed on the C100 cryomodule prior to installation in the accelerator.* | | | | |
| Traveler ID | R100-CM-ACTS-LPRF | | | | |
| Traveler Revision | R1 | | | | |
| Traveler Author | M. Drury | | | | |
| Traveler Date | 6/22/11 | | | | |
| NCR Emails | drury,hogan | | | | |
| Approval Names | M. Drury | J. Hogan | M. Wiseman | C. Reece | J. Hogan |
| Approval Signatures |  |  |  |  |  |
| Approval Dates |  |  |  |  |  |
| Approval Title | Author | Reviewer | Reviewer | Reviewer | Project Manager |

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| References | List and Hyperlink all documents related to this traveler. This includes, but is not limited to: safety (THAs, SOPs, etc), drawings, procedures, and facility related documents. | | | |
| [A-08-007-OSP](https://jlabdoc.jlab.org/docushare/dsweb/Get/Document-20964/A-08-007-OSP.pdf)  CMTF Operational Safety Procedure | [Conduct of Operations for the CMTF](https://jlabdoc.jlab.org/docushare/dsweb/Get/Document-7460/CMTF%20COO%202008.doc) | CRM-120-7030-1000  Cavity String and Instrumentation Flow Schematic | [CRM-120-8020-0040 End Can Wiring Schematic](file:///M:\asd\asddata\CMTF\C100%20Cryomodule%20Tests\CRM1208020-0040-RevA%20EndCanWiring.pdf) |  |
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| Revision Note |  |
| R1 | Initial release of this Traveler. |

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| **Part Description:** | C100 Cryomodule S/N: [[CMSN]] <<CMSN>> |
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| **Step No** | **Instructions** | **Data Inputs** |
| 1 | Record the Cavity ID’s for each cavity position. (Note: Cavity 1-Supply side, Cavity 8-Return side) | [[Cavity 1 ID]] <<CAVSN>>  [[Cavity 2 ID]] <<CAVSN>>  [[Cavity 3 ID]] <<CAVSN>>  [[Cavity 4 ID]] <<CAVSN>>  [[Cavity 5 ID]] <<CAVSN>>  [[Cavity 6 ID]] <<CAVSN>>  [[Cavity 7 ID]] <<CAVSN>>  [[Cavity 8 ID]] <<CAVSN>> |

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| **Step No** | **Instructions** | | | | **Data Inputs** | | | |
| 2 | Measure the **Warm Cavity Passband Frequencies.** See the procedure C100-CMTF-CM-CAV-LPRF-PASS, for detailed instructions.  Record warm frequencies in MHz in the table below.  Use the file upload to save additional information of interest.  **This measurement must be completed prior to the start of the cooldown and before any movement of the tuners.** | | | | [[WarmPassbandOperator]] <<USERNAME>>  [[WarmPassbandTimestamp]] <<TIMESTAMP>>  [[WarmPassbandComment]] <<COMMENT>>  [[WarmPassbandFiles]] <<FILEUPLOAD>> | | | |
| **Cavity** | **1/7pi (MHz)** | **2/7pi (MHz)** | **3/7pi (MHz)** | **4/7pi (MHz)** | | **5/7pi (MHz)** | **6/7pi (MHz)** | **Pi (MHz)** |
| **1** | [[C1Warm17Pi]] <<FLOAT>> | [[C1Warm27Pi]] <<FLOAT>> | [[C1Warm37Pi]] <<FLOAT>> | [[C1Warm47Pi]] <<FLOAT>> | | [[C1Warm57Pi]] <<FLOAT>> | [[C1Warm67Pi]] <<FLOAT>> | [[C1WarmPi]] <<FLOAT>> |
| **2** | [[C2Warm17Pi]] <<FLOAT>> | [[C2Warm27Pi]] <<FLOAT>> | [[C2Warm37Pi]] <<FLOAT>> | [[C2Warm47Pi]] <<FLOAT>> | | [[C2Warm57Pi]] <<FLOAT>> | [[C2Warm67Pi]] <<FLOAT>> | [[C2WarmPi]] <<FLOAT>> |
| **3** | [[C3Warm17Pi]] <<FLOAT>> | [[C3Warm27Pi]] <<FLOAT>> | [[C3Warm37Pi]] <<FLOAT>> | [[C3Warm47Pi]] <<FLOAT>> | | [[C3Warm57Pi]] <<FLOAT>> | [[C3Warm67Pi]] <<FLOAT>> | [[C3WarmPi]] <<FLOAT>> |
| **4** | [[C4Warm17Pi]] <<FLOAT>> | [[C4Warm27Pi]] <<FLOAT>> | [[C4Warm37Pi]] <<FLOAT>> | [[C4Warm47Pi]] <<FLOAT>> | | [[C4Warm57Pi]] <<FLOAT>> | [[C4Warm67Pi]] <<FLOAT>> | [[C4WarmPi]] <<FLOAT>> |
| **5** | [[C5Warm17Pi]] <<FLOAT>> | [[C5Warm27Pi]] <<FLOAT>> | [[C5Warm37Pi]] <<FLOAT>> | [[C5Warm47Pi]] <<FLOAT>> | | [[C5Warm57Pi]] <<FLOAT>> | [[C5Warm67Pi]] <<FLOAT>> | [[C5WarmPi]] <<FLOAT>> |
| **6** | [[C6Warm17Pi]] <<FLOAT>> | [[C6Warm27Pi]] <<FLOAT>> | [[C6Warm37Pi]] <<FLOAT>> | [[C6Warm47Pi]] <<FLOAT>> | | [[C6Warm57Pi]] <<FLOAT>> | [[C6Warm67Pi]] <<FLOAT>> | [[C6WarmPi]] <<FLOAT>> |
| **7** | [[C7Warm17Pi]] <<FLOAT>> | [[C7Warm27Pi]] <<FLOAT>> | [[C7Warm37Pi]] <<FLOAT>> | [[C7Warm47Pi]] <<FLOAT>> | | [[C7Warm57Pi]] <<FLOAT>> | [[C7Warm67Pi]] <<FLOAT>> | [[C7WarmPi]] <<FLOAT>> |
| **8** | [[C8Warm17Pi]] <<FLOAT>> | [[C8Warm27Pi]] <<FLOAT>> | [[C8Warm37Pi]] <<FLOAT>> | [[C8Warm47Pi]] <<FLOAT>> | | [[C8Warm57Pi]] <<FLOAT>> | [[C8Warm67Pi]] <<FLOAT>> | [[C8WarmPi]] <<FLOAT>> |

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| **Step No** | **Instructions** | **Data Inputs** |
| 3 | Complete the **Mechanical Tuner Range and Hysteresis** test for Cavities 1-8. See the procedure C100-CMTF-CM-CAV-TUNE-MRNG for detailed instructions. Note any problems in the comment blocks.  Record the requested information in the tables below. | [[C1MechRangeTech]] <<USERNAME>>  [[C1MechRangeCompleteTime]] <<TIMESTAMP>>  [[C1MechRangeComments]] <<COMMENT>>  [[C2MechRangeTech]] <<USERNAME>>  [[C2MechRangeCompleteTime]] <<TIMESTAMP>>  [[C2MechRangeComments]] <<COMMENT>>  [[C3MechRangeTech]] <<USERNAME>>  [[C3MechRangeCompleteTime]] <<TIMESTAMP>>  [[C3MechRangeComments]] <<COMMENT>>  [[C4MechRangeTech]] <<USERNAME>>  [[C4MechRangeCompleteTime]] <<TIMESTAMP>>  [[C4MechRangeComments]] <<COMMENT>>  [[C5MechRangeTech]] <<USERNAME>>  [[C5MechRangeCompleteTime]] <<TIMESTAMP>>  [[C5MechRangeComments]] <<COMMENT>>  [[C6MechRangeTech]] <<USERNAME>>  [[C6MechRangeCompleteTime]] <<TIMESTAMP>>  [[C6MechRangeComments]] <<COMMENT>>  [[C7MechRangeTech]] <<USERNAME>>  [[C7MechRangeCompleteTime]] <<TIMESTAMP>>  [[C7MechRangeComments]] <<COMMENT>>  [[C8MechRangeTech]] <<USERNAME>>  [[C8MechRangeCompleteTime]] <<TIMESTAMP>>  [[C8MechRangeComments]] <<COMMENT>> |

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| **Step No** | **Instructions** | | | | | |
| 4 | Record the requested information from the **Mechanical Tuner Range Test** in the table below. See the procedure C100-CMTF-CM-CAV-TUNE-MRNG for detailed instructions. Use comment blocks on preceding pages for details.  **Note:** These numbers cannot be finalized until the **Pressure Sensitivity Measurements** are complete. See Step21 in C100-CM-HPRF-ACTS. | | | | | |
| **Cavity** | **Start Frequency**  **(MHz)** | **Min Frequency**  **(MHz)** | **Low Limit Switch**  **Activated?** | **Max Frequency**  **(MHz)** | **High Limit Switch**  **Activated?** | **Tuner Range**  **(kHz)** |
| **1** | [[C1StrtFreq]] <<FLOAT>> | [[C1MinFreq]] <<FLOAT>> | [[C1LoLimitActive]] <<YESNO>> | [[C1MaxFreq]] <<FLOAT>> | [[C1HiLimitActive]] <<YESNO>> | [[C1MechTuneRange]] <<FLOAT>> |
| **2** | [[C2StrtFreq]] <<FLOAT>> | [[C2MinFreq]] <<FLOAT>> | [[C2LoLimitActive]] <<YESNO>> | [[C2MaxFreq]] <<FLOAT>> | [[C2HiLimitActive]] <<YESNO>> | [[C2MechTuneRange]] <<FLOAT>> |
| **3** | [[C3StrtFreq]] <<FLOAT>> | [[C3MinFreq]] <<FLOAT>> | [[C3LoLimitActive]] <<YESNO>> | [[C3MaxFreq]] <<FLOAT>> | [[C3HiLimitActive]] <<YESNO>> | [[C3MechTuneRange]] <<FLOAT>> |
| **4** | [[C4StrtFreq]] <<FLOAT>> | [[C4MinFreq]] <<FLOAT>> | [[C4LoLimitActive]] <<YESNO>> | [[C4MaxFreq]] <<FLOAT>> | [[C4HiLimitActive]] <<YESNO>> | [[C4MechTuneRange]] <<FLOAT>> |
| **5** | [[C5StrtFreq]] <<FLOAT>> | [[C5MinFreq]] <<FLOAT>> | [[C5LoLimitActive]] <<YESNO>> | [[C5MaxFreq]] <<FLOAT>> | [[C5HiLimitActive]] <<YESNO>> | [[C5MechTuneRange]] <<FLOAT>> |
| **6** | [[C6StrtFreq]] <<FLOAT>> | [[C6MinFreq]] <<FLOAT>> | [[C6LoLimitActive]] <<YESNO>> | [[C6MaxFreq]] <<FLOAT>> | [[C6HiLimitActive]] <<YESNO>> | [[C6MechTuneRange]] <<FLOAT>> |
| **7** | [[C7StrtFreq]] <<FLOAT>> | [[C7MinFreq]] <<FLOAT>> | [[C7LoLimitActive]] <<YESNO>> | [[C7MaxFreq]] <<FLOAT>> | [[C7HiLimitActive]] <<YESNO>> | [[C7MechTuneRange]] <<FLOAT>> |
| **8** | [[C8StrtFreq]] <<FLOAT>> | [[C8MinFreq]] <<FLOAT>> | [[C8LoLimitActive]] <<YESNO>> | [[C8MaxFreq]] <<FLOAT>> | [[C8HiLimitActive]] <<YESNO>> | [[C8MechTuneRange]] <<FLOAT>> |

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| **Step No** | **Instructions** | | | | |
| 5 | Record the requested information from the **Mechanical Tuner Hysteresis Test** in the table below. See the procedure C100-CMTF-CM-CAV-TUNE-MRNG for detailed instructions. Use comment blocks on preceding pages for details.  Use the Mech Tuner Range and Hysteresis Spreadsheet link to open a blank spreadsheet for each cavity. Copy the data from the computer generated text files for both the Range and Hysteresis tests into the spreadsheet. Process the spreadsheet as necessary and then upload below.  **Note:** The spreadsheets must not be finalized until the **Pressure Sensitivity Measurements** are complete.See Step 21 in C100-CM-HPRF-ACTS. | | | | |
| **Cavity** | **Average dFreq / dSteps**  **(Hz/usteps)** | **Max Hysteresis**  **(Hz)** | **Final Frequency (MHz)** | **File Upload** | **Comments** |
| **1** | [[C1MechTune\_dFdStep]] <<FLOAT>> | [[C1MechTuneHyst]] <<FLOAT>> | [[C1MechTuneFinalFreq]] <<FLOAT>> | [[C1MechTuneFile]] <<FILEUPLOAD>> | [[C1MechHystComments]] <<COMMENT>> |
| **2** | [[C2MechTune\_dFdStep]] <<FLOAT>> | [[C2MechTuneHyst]] <<FLOAT>> | [[C2MechTuneFinalFreq]] <<FLOAT>> | [[C2MechTuneFile]] <<FILEUPLOAD>> | [[C2MechHystComments]] <<COMMENT>> |
| **3** | [[C3MechTune\_dFdStep]] <<FLOAT>> | [[C3MechTuneHyst]] <<FLOAT>> | [[C3MechTuneFinalFreq]] <<FLOAT>> | [[C3MechTuneFile]] <<FILEUPLOAD>> | [[C3MechHystComments]] <<COMMENT>> |
| **4** | [[C4MechTune\_dFdStep]] <<FLOAT>> | [[C4MechTuneHyst]] <<FLOAT>> | [[C4MechTuneFinalFreq]] <<FLOAT>> | [[C4MechTuneFile]] <<FILEUPLOAD>> | [[C4MechHystComments]] <<COMMENT>> |
| **5** | [[C5MechTune\_dFdStep]] <<FLOAT>> | [[C5MechTuneHyst]] <<FLOAT>> | [[C5MechTuneFinalFreq]] <<FLOAT>> | [[C5MechTuneFile]] <<FILEUPLOAD>> | [[C5MechHystComments]] <<COMMENT>> |
| **6** | [[C6MechTune\_dFdStep]] <<FLOAT>> | [[C6MechTuneHyst]] <<FLOAT>> | [[C6MechTuneFinalFreq]] <<FLOAT>> | [[C6MechTuneFile]] <<FILEUPLOAD>> | [[C6MechHystComments]] <<COMMENT>> |
| **7** | [[C7MechTune\_dFdStep]] <<FLOAT>> | [[C7MechTuneHyst]] <<FLOAT>> | [[C7MechTuneFinalFreq]] <<FLOAT>> | [[C7MechTuneFile]] <<FILEUPLOAD>> | [[C7MechHystComments]] <<COMMENT>> |
| **8** | [[C8MechTune\_dFdStep]] <<FLOAT>> | [[C8MechTuneHyst]] <<FLOAT>> | [[C8MechTuneFinalFreq]] <<FLOAT>> | [[C8MechTuneFile]] <<FILEUPLOAD>> | [[C8MechHystComments]] <<COMMENT>> |

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| **Step No** | **Instructions** | **Data Inputs** |
| 6 | Measure the **Cold Cavity Passband Frequencies** (in MHz). See the procedure C100-CMTF-CM-CAV-LPRF-PASS, for detailed instructions.  Record the warm frequencies (in MHz) and Loaded Q’s (QL) in the tables that follow.  Use file upload to save additional information of interest.  **This measurement must be completed only after the Mechanical Tuner Range and Hysteresis Test is complete.** | [[C1ColdPassbandTech]] <<USERNAME>>  [[C1ColdPassbandComplete]] <<TIMESTAMP>>  [[C1ColdPassbandComment]] <<COMMENT>>  [[C2ColdPassbandTech]] <<USERNAME>>  [[C2ColdPassbandComplete]] <<TIMESTAMP>>  [[C2ColdPassbandComment]] <<COMMENT>>  [[C3ColdPassbandTech]] <<USERNAME>>  [[C3ColdPassbandComplete]] <<TIMESTAMP>>  [[C3ColdPassbandComment]] <<COMMENT>>  [[C4ColdPassbandTech]] <<USERNAME>>  [[C4ColdPassbandComplete]] <<TIMESTAMP>>  [[C4ColdPassbandComment]] <<COMMENT>>  [[C5ColdPassbandTech]] <<USERNAME>>  [[C5ColdPassbandComplete]] <<TIMESTAMP>>  [[C5ColdPassbandComment]] <<COMMENT>>  [[C6ColdPassbandTech]] <<USERNAME>>  [[C6ColdPassbandComplete]] <<TIMESTAMP>>  [[C6ColdPassbandComment]] <<COMMENT>>  [[C7ColdPassbandTech]] <<USERNAME>>  [[C7ColdPassbandComplete]] <<TIMESTAMP>>  [[C7ColdPassbandComment]] <<COMMENT>>  [[C8ColdPassbandTech]] <<USERNAME>>  [[C8ColdPassbandComplete]] <<TIMESTAMP>>  [[C8ColdPassbandComment]] <<COMMENT>> |

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| **Step No** | **Instructions** | | | | | | |
| **7** | **Enter the Passband Frequencies for Cold Tuned Cavities Below** | | | | | | |
| **Cavity** | **1/7pi (MHz)** | **2/7pi (MHz)** | **3/7pi (MHz)** | **4/7pi (MHz)** | **5/7pi (MHz)** | **6/7pi (MHz)** | **Pi (MHz)** |
| **1** | [[C1Cold17Pi]] <<FLOAT>> | [[C1Cold27Pi]] <<FLOAT>> | [[C1Cold37Pi]] <<FLOAT>> | [[C1Cold47Pi]] <<FLOAT>> | [[C1Cold57Pi]] <<FLOAT>> | [[C1Cold67Pi]] <<FLOAT>> | [[C1ColdPi]] <<FLOAT>> |
| **2** | [[C2Cold17Pi]] <<FLOAT>> | [[C2Cold27Pi]] <<FLOAT>> | [[C2Cold37Pi]] <<FLOAT>> | [[C2Cold47Pi]] <<FLOAT>> | [[C2Cold57Pi]] <<FLOAT>> | [[C2Cold67Pi]] <<FLOAT>> | [[C2ColdPi]] <<FLOAT>> |
| **3** | [[C3Cold17Pi]] <<FLOAT>> | [[C3Cold27Pi]] <<FLOAT>> | [[C3Cold37Pi]] <<FLOAT>> | [[C3Cold47Pi]] <<FLOAT>> | [[C3Cold57Pi]] <<FLOAT>> | [[C3Cold67Pi]] <<FLOAT>> | [[C3ColdPi]] <<FLOAT>> |
| **4** | [[C4Cold17Pi]] <<FLOAT>> | [[C4Cold27Pi]] <<FLOAT>> | [[C4Cold37Pi]] <<FLOAT>> | [[C4Cold47Pi]] <<FLOAT>> | [[C4Cold57Pi]] <<FLOAT>> | [[C4Cold67Pi]] <<FLOAT>> | [[C4ColdPi]] <<FLOAT>> |
| **5** | [[C5Cold17Pi]] <<FLOAT>> | [[C5Cold27Pi]] <<FLOAT>> | [[C5Cold37Pi]] <<FLOAT>> | [[C5Cold47Pi]] <<FLOAT>> | [[C5Cold57Pi]] <<FLOAT>> | [[C5Cold67Pi]] <<FLOAT>> | [[C5ColdPi]] <<FLOAT>> |
| **6** | [[C6Cold17Pi]] <<FLOAT>> | [[C6Cold27Pi]] <<FLOAT>> | [[C6Cold37Pi]] <<FLOAT>> | [[C6Cold47Pi]] <<FLOAT>> | [[C6Cold57Pi]] <<FLOAT>> | [[C6Cold67Pi]] <<FLOAT>> | [[C6ColdPi]] <<FLOAT>> |
| **7** | [[C7Cold17Pi]] <<FLOAT>> | [[C7Cold27Pi]] <<FLOAT>> | [[C7Cold37Pi]] <<FLOAT>> | [[C7Cold47Pi]] <<FLOAT>> | [[C7Cold57Pi]] <<FLOAT>> | [[C7Cold67Pi]] <<FLOAT>> | [[C7ColdPi]] <<FLOAT>> |
| **8** | [[C8Cold17Pi]] <<FLOAT>> | [[C8Cold27Pi]] <<FLOAT>> | [[C8Cold37Pi]] <<FLOAT>> | [[C8Cold47Pi]] <<FLOAT>> | [[C8Cold57Pi]] <<FLOAT>> | [[C8Cold67Pi]] <<FLOAT>> | [[C8ColdPi]] <<FLOAT>> |

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| **Step No** | **Instructions** | | | | | | | **Instructions** | **Data Inputs** |
| **8** | **Enter the Loaded Q’s for Cold Tuned Cavities Below** | | | | | | |
| **Cavity** | **1/7pi** | **2/7pi** | **3/7pi** | **4/7pi** | **5/7pi** | **6/7pi** | **Pi** |
| **1** | [[C1QLoad17]] <<SCINOT>> | [[C1QLoad27]] <<SCINOT>> | [[C1QLoad37]] <<SCINOT>> | [[C1QLoad47]] <<SCINOT>> | [[C1QLoad57]] <<SCINOT>> | [[C1QLoad67]] <<SCINOT>> | [[C1QLoadPi]] <<SCINOT>> |
| **2** | [[C2QLoad17]] <<SCINOT>> | [[C2QLoad27]] <<SCINOT>> | [[C2QLoad37]] <<SCINOT>> | [[C2QLoad47]] <<SCINOT>> | [[C2QLoad57]] <<SCINOT>> | [[C2QLoad67]] <<SCINOT>> | [[C2QLoadPi]] <<SCINOT>> |
| **3** | [[C3QLoad17]] <<SCINOT>> | [[C3QLoad27]] <<SCINOT>> | [[C3QLoad37]] <<SCINOT>> | [[C3QLoad47]] <<SCINOT>> | [[C3QLoad57]] <<SCINOT>> | [[C3QLoad67]] <<SCINOT>> | [[C3QLoadPi]] <<SCINOT>> |
| **4** | [[C4QLoad17]] <<SCINOT>> | [[C4QLoad27]] <<SCINOT>> | [[C4QLoad37]] <<SCINOT>> | [[C4QLoad47]] <<SCINOT>> | [[C4QLoad57]] <<SCINOT>> | [[C4QLoad67]] <<SCINOT>> | [[C4QLoadPi]] <<SCINOT>> |
| **5** | [[C5QLoad17]] <<SCINOT>> | [[C5QLoad27]] <<SCINOT>> | [[C5QLoad37]] <<SCINOT>> | [[C5QLoad47]] <<SCINOT>> | [[C5QLoad57]] <<SCINOT>> | [[C5QLoad67]] <<SCINOT>> | [[C5QLoadPi]] <<SCINOT>> |
| **6** | [[C6QLoad17]] <<SCINOT>> | [[C6QLoad27]] <<SCINOT>> | [[C6QLoad37]] <<SCINOT>> | [[C6QLoad47]] <<SCINOT>> | [[C6QLoad57]] <<SCINOT>> | [[C6QLoad67]] <<SCINOT>> | [[C6QLoadPi]] <<SCINOT>> |
| **7** | [[C7QLoad17]] <<SCINOT>> | [[C7QLoad27]] <<SCINOT>> | [[C7QLoad37]] <<SCINOT>> | [[C7QLoad47]] <<SCINOT>> | [[C7QLoad57]] <<SCINOT>> | [[C7QLoad67]] <<SCINOT>> | [[C7QLoadPi]] <<SCINOT>> |
| **8** | [[C8QLoad17]] <<SCINOT>> | [[C8QLoad27]] <<SCINOT>> | [[C8QLoad37]] <<SCINOT>> | [[C8QLoad47]] <<SCINOT>> | [[C8QLoad57]] <<SCINOT>> | [[C8QLoad67]] <<SCINOT>> | [[C8QLoadPi]] <<SCINOT>> |

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| **Step No** | **Instructions** | | | | | |
| 9 | Complete the **Mechanical Tuner Resolution Test** for Cavity 1 - 8. See the procedure CP-RNS-CMM-CRY-TUNR-MRES for detailed instructions.  Record the measured **Mechanical Tuner Resolution** (in Hz) along with the corresponding tuner step increment (in usteps) in the table below.  Use the Mechanical Tuner Resolution Spreadsheet link to open a blank spreadsheet. Copy the data from the computer generated text files into the spreadsheet. Process the spreadsheet as necessary and then upload below. | | | | | |
| **Cavity** | **Operator** | **Time**  **Completed** | **Resolution**  **(Hz)** | **Increment**  **(usteps)** | **File Upload** | **Comments** |
| **1** | [[C1MResTech]] <<USERNAME>> | [[C1MResComplete]] <<TIMESTAMP>> | [[C1MRes]] <<FLOAT>> | [[C1MResStepInc]] <<FLOAT>> | [[C1MResFile]] <<FILEUPLOAD>> | [[C1MResComments]] <<COMMENT>> |
| **2** | [[C2MResTech]] <<USERNAME>> | [[C2MResComplete]] <<TIMESTAMP>> | [[C2MRes]] <<FLOAT>> | [[C2MResStepInc]] <<FLOAT>> | [[C2MResFile]] <<FILEUPLOAD>> | [[C2MResComments]] <<COMMENT>> |
| **3** | [[C3MResTech]] <<USERNAME>> | [[C3MResComplete]] <<TIMESTAMP>> | [[C3MRes]] <<FLOAT>> | [[C3MResStepInc]] <<FLOAT>> | [[C3MResFile]] <<FILEUPLOAD>> | [[C3MResComments]] <<COMMENT>> |
| **4** | [[C4MResTech]] <<USERNAME>> | [[C4MResComplete]] <<TIMESTAMP>> | [[C4MRes]] <<FLOAT>> | [[C4MResStepInc]] <<FLOAT>> | [[C4MResFile]] <<FILEUPLOAD>> | [[C4MResComments]] <<COMMENT>> |
| **5** | [[C5MResTech]] <<USERNAME>> | [[C5MResComplete]] <<TIMESTAMP>> | [[C5MRes]] <<FLOAT>> | [[C5MResStepInc]] <<FLOAT>> | [[C5MResFile]] <<FILEUPLOAD>> | [[C5MResComments]] <<COMMENT>> |
| **6** | [[C6MResTech]] <<USERNAME>> | [[C6MResComplete]] <<TIMESTAMP>> | [[C6MRes]] <<FLOAT>> | [[C6MResStepInc]] <<FLOAT>> | [[C6MResFile]] <<FILEUPLOAD>> | [[C6MResComments]] <<COMMENT>> |
| **7** | [[C7MResTech]] <<USERNAME>> | [[C7MResComplete]] <<TIMESTAMP>> | [[C7MRes]] <<FLOAT>> | [[C7MResStepInc]] <<FLOAT>> | [[C7MResFile]] <<FILEUPLOAD>> | [[C7MResComments]] <<COMMENT>> |
| **8** | [[C8MResTech]] <<USERNAME>> | [[C8MResComplete]] <<TIMESTAMP>> | [[C8MRes]] <<FLOAT>> | [[C8MResStepInc]] <<FLOAT>> | [[C8MResFile]] <<FILEUPLOAD>> | [[C8MResComments]] <<COMMENT>> |

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| **Step No** | **Instructions** | | | | | |
| 10 | Record the requested information from the **Piezo Tuner Range and Hysteresis Test** in the table below. See the procedure, C100-CMTF-CM-CAV-TUNE-PRNG for detailed instructions. Enter the requested information in the table below.  Use the Piezo Tuner Range and Hysteresis Spreadsheet link to open a blank spreadsheet. Copy the data from the computer generated text files into the spreadsheet. Process the spreadsheet as necessary and then upload below.  **Note:** The spreadsheets cannot be finalized until the **Pressure Sensitivity Measurements** are complete. See Step 21 in C100-CM-HPRF-ACTS. | | | | | |
| **Cavity** | **Operator** | **Time Complete** | **Piezo Tuner Range (kHz)** | **Piezo Tuner Hysteresis (Hz)** | **File Upload** | **Comments** |
| **1** | [[C1PRngTech]] <<USERNAME>> | [[C1PRngComplete]] <<TIMESTAMP>> | [[C1PRange]] <<FLOAT>> | [[C1PRngHysteresis]] <<FLOAT>> | [[C1PRngFile]] <<FILEUPLOAD>> | [[C1PRngComments]] <<COMMENT>> |
| **2** | [[C2PRngTech]] <<USERNAME>> | [[C2PRngComplete]] <<TIMESTAMP>> | [[C2PRange]] <<FLOAT>> | [[C2PRngHysteresis]] <<FLOAT>> | [[C2PRngFile]] <<FILEUPLOAD>> | [[C2PRngComments]] <<COMMENT>> |
| **3** | [[C3PRngTech]] <<USERNAME>> | [[C3PRngComplete]] <<TIMESTAMP>> | [[C3PRange]] <<FLOAT>> | [[C3PRngHysteresis]] <<FLOAT>> | [[C3PRngFile]] <<FILEUPLOAD>> | [[C3PRngComments]] <<COMMENT>> |
| **4** | [[C4PRngTech]] <<USERNAME>> | [[C4PRngComplete]] <<TIMESTAMP>> | [[C4PRange]] <<FLOAT>> | [[C4PRngHysteresis]] <<FLOAT>> | [[C4PRngFile]] <<FILEUPLOAD>> | [[C4PRngComments]] <<COMMENT>> |
| **5** | [[C5PRngTech]] <<USERNAME>> | [[C5PRngComplete]] <<TIMESTAMP>> | [[C5PRange]] <<FLOAT>> | [[C5PRngHysteresis]] <<FLOAT>> | [[C5PRngFile]] <<FILEUPLOAD>> | [[C5PRngComments]] <<COMMENT>> |
| **6** | [[C6PRngTech]] <<USERNAME>> | [[C6PRngComplete]] <<TIMESTAMP>> | [[C6PRange]] <<FLOAT>> | [[C6PRngHysteresis]] <<FLOAT>> | [[C6PRngFile]] <<FILEUPLOAD>> | [[C6PRngComments]] <<COMMENT>> |
| **7** | [[C7PRngTech]] <<USERNAME>> | [[C7PRngComplete]] <<TIMESTAMP>> | [[C7PRange]] <<FLOAT>> | [[C7PRngHysteresis]] <<FLOAT>> | [[C7PRngFile]] <<FILEUPLOAD>> | [[C7PRngComments]] <<COMMENT>> |
| **8** | [[C8PRngTech]] <<USERNAME>> | [[C8PRngComplete]] <<TIMESTAMP>> | [[C8PRange]] <<FLOAT>> | [[C8PRngHysteresis]] <<FLOAT>> | [[C8PRngFile]] <<FILEUPLOAD>> | [[C8PRngComments]] <<COMMENT>> |

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| **Step No** | **Instructions** | | | | | |
| 11 | Record the measured **Piezo Tuner Resolution** (in Hz) along with the corresponding voltage increment.  Use the Piezo Tuner Resolution Spreadsheet link to open a blank spreadsheet. Copy the data from the computer generated text files into the spreadsheet. Process the spreadsheet as necessary and then upload below. | | | | | |
| **Cavity** | **Operator** | **Time Complete** | **Resolution**  **(Hz)** | **Increment**  **(V)** | **File Upload** | **Comments** |
| **1** | [[C1PResTech]] <<USERNAME>> | [[C1PResComplete]] <<TIMESTAMP>> | [[C1PResolution]] <<FLOAT>> | [[C1PResVoltInc]] <<FLOAT>> | [[C1PResFile]] <<FILEUPLOAD>> | [[C1PResComments]] <<COMMENT>> |
| **2** | [[C2PResTech]] <<USERNAME>> | [[C2PResComplete]] <<TIMESTAMP>> | [[C2PResolution]] <<FLOAT>> | [[C2PResVoltInc]] <<FLOAT>> | [[C2PResFile]] <<FILEUPLOAD>> | [[C2PResComments]] <<COMMENT>> |
| **3** | [[C3PResTech]] <<USERNAME>> | [[C3PResComplete]] <<TIMESTAMP>> | [[C3PResolution]] <<FLOAT>> | [[C3PResVoltInc]] <<FLOAT>> | [[C3PResFile]] <<FILEUPLOAD>> | [[C3PResComments]] <<COMMENT>> |
| **4** | [[C4PResTech]] <<USERNAME>> | [[C4PResComplete]] <<TIMESTAMP>> | [[C4PResolution]] <<FLOAT>> | [[C4PResVoltInc]] <<FLOAT>> | [[C4PResFile]] <<FILEUPLOAD>> | [[C4PResComments]] <<COMMENT>> |
| **5** | [[C5PResTech]] <<USERNAME>> | [[C5PResComplete]] <<TIMESTAMP>> | [[C5PResolution]] <<FLOAT>> | [[C5PResVoltInc]] <<FLOAT>> | [[C5PResFile]] <<FILEUPLOAD>> | [[C5PResComments]] <<COMMENT>> |
| **6** | [[C6PResTech]] <<USERNAME>> | [[C6PResComplete]] <<TIMESTAMP>> | [[C6PResolution]] <<FLOAT>> | [[C6PResVoltInc]] <<FLOAT>> | [[C6PResFile]] <<FILEUPLOAD>> | [[C6PResComments]] <<COMMENT>> |
| **7** | [[C7PResTech]] <<USERNAME>> | [[C7PResComplete]] <<TIMESTAMP>> | [[C7PResolution]] <<FLOAT>> | [[C7PResVoltInc]] <<FLOAT>> | [[C7PResFile]] <<FILEUPLOAD>> | [[C7PResComments]] <<COMMENT>> |
| **8** | [[C8PResTech]] <<USERNAME>> | [[C8PResComplete]] <<TIMESTAMP>> | [[C8PResolution]] <<FLOAT>> | [[C8PResVoltInc]] <<FLOAT>> | [[C8PResFile]] <<FILEUPLOAD>> | [[C8PResComments]] <<COMMENT>> |

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| **Step No** | **Instructions** | | | |
| 12 | Complete the **Piezo Tuner Impulse Response Test** for Cavity 1-8. See the procedure C100-CMTF-CM-CAV-TUNE-IMPR for detailed instructions.  Copy data for each test, including oscilloscope traces, into the Piezo Tuner Impulse Response Spreadsheet Template and process as necessary. Upload the processed file. | | | |
| **Cavity** | **Operator** | **Time Completed** | **File Upload** | **Comments** |
| **1** | [[C1PiezoImpRspnseTech]] <<USERNAME>> | [[C1PiezoImpRspnseComplete]] <<TIMESTAMP>> | [[C1PiezoImpRspnseFile]] <<FILEUPLOAD>> | [[C1PiezoImpRspnseComments]] <<COMMENT>> |
| **2** | [[C2PiezoImpRspnseTech]] <<USERNAME>> | [[C2PiezoImpRspnseComplete]] <<TIMESTAMP>> | [[C2PiezoImpRspnseFile]] <<FILEUPLOAD>> | [[C2PiezoImpRspnseComments]] <<COMMENT>> |
| **3** | [[C3PiezoImpRspnseTech]] <<USERNAME>> | [[C3PiezoImpRspnseComplete]] <<TIMESTAMP>> | [[C3PiezoImpRspnseFile]] <<FILEUPLOAD>> | [[C3PiezoImpRspnseComments]] <<COMMENT>> |
| **4** | [[C4PiezoImpRspnseTech]] <<USERNAME>> | [[C4PiezoImpRspnseComplete]] <<TIMESTAMP>> | [[C4PiezoImpRspnseFile]] <<FILEUPLOAD>> | [[C4PiezoImpRspnseComments]] <<COMMENT>> |
| **5** | [[C5PiezoImpRspnseTech]] <<USERNAME>> | [[C5PiezoImpRspnseComplete]] <<TIMESTAMP>> | [[C5PiezoImpRspnseFile]] <<FILEUPLOAD>> | [[C6PiezoImpRspnseComments]] <<COMMENT>> |
| **6** | [[C6PiezoImpRspnseTech]] <<USERNAME>> | [[C6PiezoImpRspnseComplete]] <<TIMESTAMP>> | [[C6PiezoImpRspnseFile]] <<FILEUPLOAD>> | [[C6PiezoImpRspnseComments]] <<COMMENT>> |
| **7** | [[C7PiezoImpRspnseTech]] <<USERNAME>> | [[C7PiezoImpRspnseComplete]] <<TIMESTAMP>> | [[C7PiezoImpRspnseFile]] <<FILEUPLOAD>> | [[C7PiezoImpRspnseComments]] <<COMMENT>> |
| **8** | [[C8PiezoImpRspnseTech]] <<USERNAME>> | [[C8PiezoImpRspnseComplete]] <<TIMESTAMP>> | [[C8PiezoImpRspnseFile]] <<FILEUPLOAD>> | [[C8PiezoImpRspnseComments]] <<COMMENT>> |

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| **Step No** | **Instructions** | | | |
| 13 | Complete **Microphonics Measurements** on Cavity 1-8. See the procedure C100-CMTF-CM-CAV-LPRF-MICR for detailed instructions. Copy data for each test, including oscilloscope traces, into the Microphonics Spreadsheet Template and process as necessary. Upload the processed file. | | | |
| **Cavity** | **Operator** | **Time Completed** | **Upload File** | **Comments** |
| **1** | [[C1MicroPhonicsTech]] <<USERNAME>> | [[C1MicroPhonicsComplete]] <<TIMESTAMP>> | [[C1MicroPhonicsFile]] <<FILEUPLOAD>> | [[C1MicroPhonicsComments]] <<COMMENT>> |
| **2** | [[C2MicroPhonicsTech]] <<USERNAME>> | [[C2MicroPhonicsComplete]] <<TIMESTAMP>> | [[C2MicroPhonicsFile]] <<FILEUPLOAD>> | [[C2MicroPhonicsComments]] <<COMMENT>> |
| **3** | [[C3MicroPhonicsTech]] <<USERNAME>> | [[C3MicroPhonicsComplete]] <<TIMESTAMP>> | [[C3MicroPhonicsFile]] <<FILEUPLOAD>> | [[C3MicroPhonicsComments]] <<COMMENT>> |
| **4** | [[C4MicroPhonicsTech]] <<USERNAME>> | [[C4MicroPhonicsComplete]] <<TIMESTAMP>> | [[C4MicroPhonicsFile]] <<FILEUPLOAD>> | [[C4MicroPhonicsComments]] <<COMMENT>> |
| **5** | [[C5MicroPhonicsTech]] <<USERNAME>> | [[C5MicroPhonicsComplete]] <<TIMESTAMP>> | [[C5MicroPhonicsFile]] <<FILEUPLOAD>> | [[C5MicroPhonicsComments]] <<COMMENT>> |
| **6** | [[C6MicroPhonicsTech]] <<USERNAME>> | [[C6MicroPhonicsComplete]] <<TIMESTAMP>> | [[C6MicroPhonicsFile]] <<FILEUPLOAD>> | [[C6MicroPhonicsComments]] <<COMMENT>> |
| **7** | [[C7MicroPhonicsTech]] <<USERNAME>> | [[C7MicroPhonicsComplete]] <<TIMESTAMP>> | [[C7MicroPhonicsFile]] <<FILEUPLOAD>> | [[C7MicroPhonicsComments]] <<COMMENT>> |
| **8** | [[C8MicroPhonicsTech]] <<USERNAME>> | [[C8MicroPhonicsComplete]] <<TIMESTAMP>> | [[C8MicroPhonicsFile]] <<FILEUPLOAD>> | [[C8MicroPhonicsComments]] <<COMMENT>> |

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| **Step No** | **Instructions** | | | |
| 14 | Complete the **Mechanical Mode Mapping Measurement** for Cavity 1-8. Check off completion of the procedure at right. See procedure C100-CMTF-CM-CAV-LPRF-MODE for detailed instructions. Copy data for each test, including oscilloscope traces, into the Mechanical Modes Spreadsheet Template and process as necessary. Upload the processed file. Enter any requested information in the table below. | | | |
| **Cavity** | **Operator** | **Time Completed** | **Upload File** | **Comments** |
| **1** | [[C1MechModeTech]] <<USERNAME>> | [[C1MechModeComplete]] <<TIMESTAMP>> | [[C1MechModeFile]] <<FILEUPLOAD>> | [[C1MechModeComments]] <<COMMENT>> |
| **2** | [[C2MechModeTech]] <<USERNAME>> | [[C2MechModeComplete]] <<TIMESTAMP>> | [[C2MechModeFile]] <<FILEUPLOAD>> | [[C2MechModeComments]] <<COMMENT>> |
| **3** | [[C3MechModeTech]] <<USERNAME>> | [[C3MechModeComplete]] <<TIMESTAMP>> | [[C3MechModeFile]] <<FILEUPLOAD>> | [[C3MechModeComments]] <<COMMENT>> |
| **4** | [[C4MechModeTech]] <<USERNAME>> | [[C4MechModeComplete]] <<TIMESTAMP>> | [[C4MechModeFile]] <<FILEUPLOAD>> | [[C4MechModeComments]] <<COMMENT>> |
| **5** | [[C5MechModeTech]] <<USERNAME>> | [[C5MechModeComplete]] <<TIMESTAMP>> | [[C5MechModeFile]] <<FILEUPLOAD>> | [[C5MechModeComments]] <<COMMENT>> |
| **6** | [[C6MechModeTech]] <<USERNAME>> | [[C6MechModeComplete]] <<TIMESTAMP>> | [[C6MechModeFile]] <<FILEUPLOAD>> | [[C6MechModeComments]] <<COMMENT>> |
| **7** | [[C7MechModeTech]] <<USERNAME>> | [[C7MechModeComplete]] <<TIMESTAMP>> | [[C7MechModeFile]] <<FILEUPLOAD>> | [[C7MechModeComments]] <<COMMENT>> |
| **8** | [[C8MechModeTech]] <<USERNAME>> | [[C8MechModeComplete]] <<TIMESTAMP>> | [[C8MechModeFile]] <<FILEUPLOAD>> | [[C8MechModeComments]] <<COMMENT>> |

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| **Step No** | **Instructions** | | | | |
| 15 | Complete the **HOM Survey** for Cavities 1 – 8 as described in C100-CMTF-CM-CAV-LPRF-HOM using the HOM QA Spreadsheet Template. Upload the completed spreadsheet. Note whether each cavity meets specification. If a cavity does not pass the HOM Survey, an NCR must be generated. | | | | |
| **Cavity** | **Operator** | **Time Complete** | **File Upload** | **Pass / Fail?** | **Comments** |
| **1** | [[C1HOMTech]] <<USERNAME>> | [[C1HOMComplete]] <<TIMESTAMP>> | [[C1HOMFile]] <<FILEUPLOAD>> | [[C1HOMPass]] <<YESNO>> | [[C1HOMComments]] <<COMMENT>> |
| **2** | [[C2HOMTech]] <<USERNAME>> | [[C2HOMComplete]] <<TIMESTAMP>> | [[C2HOMFile]] <<FILEUPLOAD>> | [[C2HOMPass]] <<YESNO>> | [[C2HOMComments]] <<COMMENT>> |
| **3** | [[C3HOMTech]] <<USERNAME>> | [[C3HOMComplete]] <<TIMESTAMP>> | [[C3HOMFile]] <<FILEUPLOAD>> | [[C3HOMPass]] <<YESNO>> | [[C3HOMComments]] <<COMMENT>> |
| **4** | [[C4HOMTech]] <<USERNAME>> | [[C4HOMComplete]] <<TIMESTAMP>> | [[C4HOMFile]] <<FILEUPLOAD>> | [[C4HOMPass]] <<YESNO>> | [[C4HOMComments]] <<COMMENT>> |
| **5** | [[C5HOMTech]] <<USERNAME>> | [[C5HOMComplete]] <<TIMESTAMP>> | [[C5HOMFile]] <<FILEUPLOAD>> | [[C5HOMPass]] <<YESNO>> | [[C5HOMComments]] <<COMMENT>> |
| **6** | [[C6HOMTech]] <<USERNAME>> | [[C6HOMComplete]] <<TIMESTAMP>> | [[C6HOMFile]] <<FILEUPLOAD>> | [[C16HOMPass]] <<YESNO>> | [[C6HOMComments]] <<COMMENT>> |
| **7** | [[C7HOMTech]] <<USERNAME>> | [[C7HOMComplete]] <<TIMESTAMP>> | [[C7HOMFile]] <<FILEUPLOAD>> | [[C7HOMPass]] <<YESNO>> | [[C7HOMComments]] <<COMMENT>> |
| **8** | [[C8HOMTech]] <<USERNAME>> | [[C8HOMComplete]] <<TIMESTAMP>> | [[C1HOMFile]] <<FILEUPLOAD>> | [[C1HOMPass]] <<YESNO>> | [[C8HOMComments]] <<COMMENT>> |

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| **Step No** | **Instructions** | **Data Inputs** |
| 16 | Detune all eight cavities to their original starting frequencies as recorded in column one of the table in Step 4 (Start Frequencies). This step must be completed prior to starting the warm up of the cryomodule at the end of Acceptance Tests.  Record the final frequencies to the right. | [[FinalDetuneOperator]] <<USERNAME>>  [[FinalDetuneTimeComplete]] <<TIMESTAMP>>  [[FinalDetuneComments]] <<COMMENT>>  [[C1FinalColdFrequency]] <<FLOAT>>  [[C2FinalColdFrequency]] <<FLOAT>>  [[C3FinalColdFrequency]] <<FLOAT>>  [[C4FinalColdFrequency]] <<FLOAT>>  [[C5FinalColdFrequency]] <<FLOAT>>  [[C6FinalColdFrequency]] <<FLOAT>>  [[C7FinalColdFrequency]] <<FLOAT>>  [[C8FinalColdFrequency]] <<FLOAT>> |