QC2: Gap Test Rejection Criteria

Visual Test

Manual Accept/Reject

Leak and Spacer Test

- **Number of popped spacer = 0**. Reject if greater than zero.
- Gas Leak Test Rejection Parameters

Gap Type	Kodel Pressure Drop Values [mbar/10min]	Slope [mbar/msec]	Leak Rate [mbar.l/h]	Assembly Sites Pressure Drop [mbar/10min]	Assembly Sites Leak Rate [mbar.l/h]
Bottom Size2	0.4	6.67e-7	5.62	0.2	2.81
TW Size 2	0.3	5.0e-7	1.65	0.1	0.55
TN Size 2	0.3	5.0e-7	2.31	0.1	0.77
Bottom Size 3	0.5	8.34e-7	11.8	0.4	9.44
TW Size 3	0.3	5.0e-7	2	0.1	0.67
TN Size 3	0.4	6.67e-7	6.3	0.3	4.73

Resistivity Test

No Rejection on Resistivity Test (test performed only for reference values)

Dark Current Test (I)

- Measurement Date – Gas Flash Start > 24h. Data import rejected if less than 24h.
- Current @ HV Reject (Imon@10000V) <= **10uA** (Bottom Gaps) or **5uA** (Top Gaps)
- Ohmic Current (Imon@6000V) <= **1.5uA** per gap (2-comp-gas-mix/no SF6) or **0.5uA** per gap (3-comp-gas-mix/with SF6)

Dark Current Test (II)

- Maximal Current should be less or equal than

GAP TYPE	Stability Rejection Current [microA]
Bottom Size2	3.5
TW Size 2	2
TN Size 2	2
Bottom Size 3	5.1
TW Size 3	3.5
TN Size 3	2

- No OVC spikes
- Current (Imon) increase <= 50%   [I(120)/I(60)<=1.5]

QC3: Chamber Test Rejection Criteria

QC3.1 Chamber Assembly Tests

Visual Test
Manual Accept/Reject

Leak Test
➕ Gas Leak Test Rejection Parameters

Chamber Type	Chamber Pressure Drop [mbar/10min]	Slope [mbar/msec]	Leak Rate [mbar.l/h]
RE4-2 TOP	0.05	8.34e-8	0.551
RE4-2 BOTTOM	0.05	8.34e-8	0.702
RE4-3 TOP	0.1	1.67e-7	1.34
RE4-3 BOTTOM	0.1	1.67e-7	2.37

Cooling Test
➕ Chamber Type RE4-2 Rejection Limit: 5.48 mbar/h = 7.261e-5 mbar.l/s
➕ Chamber Type RE4-3 Rejection Limit: 7.55 mbar/h = 1.3778e-4 mbar.l/s

Connectivity Test
Manual Accept/Reject. All strips should be connected. If numerous strips are disconnected, the problem should be fixed (change of Adapter Board, Front End Board, wires, additional soldering etc…) If single strips are disconnected with no possibility of reparation those should be written down in the comments.

Electrical Test
➕ Part I: LV Analog Current (3 FEBs, 12 chips) <= 0.42 A
➕ Part I: LV Digital Current (3 FEBs, 12 chips) <= 0.90 A
➕ Part II: All 12 Vth (threshold discriminator) values should be measured or adjusted to 215 mV
➕ Part II: All 12 Vmon (monostable) values should be measured or adjusted to 3500 mV

QC3.2 Chamber Cosmic Tests

Dark Current Test (I)
➕ Measurement Date – Gas Flash Start > 24h. Data import rejected if less than 24h.
➕ Current @ HV Reject (Imon@10000V) <= **10uA** (Bottom Gaps) or **5uA** (Top Gaps). HV_{eff}=10000V should exist for 3-component gas mixture otherwise the file is not imported.
➕ Ohmic Current (Imon@6000V) <= **0.5uA** per gap (3-comp-gas-mix/with SF6). HV_{eff}=6000V should exist.

Cosmic Ray Test Results
➕ Efficiency >= **95%**
➕ Mean Cluster Size <= **3**
➕ Noise Rate <= **5Hz/cm²**

➕ Dark Current <= **10uA** (Bottom Gaps) or **5uA** (Top Gaps)

QC4: Super Module Test Rejection Criteria

QC4.1 Final Chamber Tests

Connectivity Test

Manual Accept/Reject. All strips should be connected. If numerous strips are disconnected, the problem should be fixed (change of Adapter Board, Front End Board, wires, additional soldering etc…). If single strips are disconnected with no possibility of reparation those should be written down in the comments.

Electrical Test

➕ Part I: LV Analog Current (3 FEBs, 12 chips) <= 0.42 A
➕ Part I: LV Digital Current (3 FEBs, 12 chips) <= 0.90 A
➕ Part II: All 12 Vth (threshold discriminator) values should be measured or adjusted to 215 mV
➕ Part II: All 12 Vmon (monostable) values should be measured or adjusted to 3500 mV

Leak Test

➕ Gas Leak Test Rejection Parameters

Chamber Type	Chamber Pressure Drop [mbar/10min]	Slope [mbar/msec]	Leak Rate [mbar.l/h]
RE4-2 TOP	0.05	8.34e-8	0.551
RE4-2 BOTTOM	0.05	8.34e-8	0.702
RE4-3 TOP	0.1	1.67e-7	1.34
RE4-3 BOTTOM	0.1	1.67e-7	2.37

Dark Current Test (I)

➕ Measurement Date – Gas Flash Start > 24h. Data import rejected if less than 24h.
➕ Current @ HV Reject (Imon@10000V) <=**5uA** (Top & Bottom HV Layer). HV_eff=10000V should exist for 3-component gas mixture otherwise the file is not imported.
➕ Ohmic Current (Imon@6000V) <= **1uA** per HV layer (3-comp-gas-mix/with SF6). HV_eff=6000V should exist.

QC4.2 Stability Long-term Test

Dark Current Test (II)

➕ Maximal Current should be less or equal than

CHAMBER TYPE	Stability Rejection Current [microA]
RE4-2	5
RE4-3	5

➕ No OVC spikes
➕ Current (Imon) increase <= 50%

- Ohmic Current (Imon@6000V) should be less than 1 microA.
- HV_eff value of 6000V should be existing otherwise file is not imported
- Nominal HV_eff value should be in the range [9200, 10000]V otherwise the file is not imported.

QC4.3 Super Module Tests

Cooling Test
Not yet prepared

Leak Test
Not yet prepared