

MRI Checklist for MED-EL CI models

Mi1200 SYNCHRONY | Mi1200 SYNCHRONY PIN | Mi1210 SYNCHRONY ST
Mi1250 SYNCHRONY 2 | Mi1250 SYNCHRONY 2 PIN

If the conditions or instructions herein are NOT followed, **INJURY** to the patient and/or **DAMAGE** to the implant may result!
→ **VALID** for all intracochlear electrode variants
→ **VALID** for all body regions
In case of additional implants, e.g. a hearing implant in the other ear: MRI safety guidelines for this implant need to be considered in addition.



The external components of the MED-EL Implant System (audio processor and accessories) are MR Unsafe and need to be removed prior to scanning.



The implant components of the MED-EL Implant System are MR Conditional.



GENERAL CONDITIONS

→ PERMITTED STATIC MAGNETIC FIELD STRENGTH	0.2 T, 1.0 T, 1.5 T, 3.0 T						
→ MAXIMUM PERMITTED SAR (at 0.2T, 1.0T, 1.5T)	NORMAL OPERATING MODE 3.2W/kg (Head), 2.0W/kg (Whole-Body)						
→ MAXIMUM PERMITTED SAR (at 3.0T)	<table border="0"> <tr> <td>Head</td> <td>1.6W/kg</td> </tr> <tr> <td>Whole Body <35 cm from the top of the head</td> <td>1.0W/kg</td> </tr> <tr> <td>Whole Body ≥35 cm from the top of the head</td> <td>2.0W/kg</td> </tr> </table>	Head	1.6W/kg	Whole Body <35 cm from the top of the head	1.0W/kg	Whole Body ≥35 cm from the top of the head	2.0W/kg
Head	1.6W/kg						
Whole Body <35 cm from the top of the head	1.0W/kg						
Whole Body ≥35 cm from the top of the head	2.0W/kg						

NOTE: For head examinations and examinations of the body that are less than 35 cm from the top of the head, the MRI system must have the ability to set a reduced maximum specific absorption rate (SAR) or to display the estimated maximum SAR value.

PREPARATION

- PATIENT ID CARD** OK
Request patient ID card in order to identify the implant type
- IMAGE ARTEFACT** YES → continue (with step 3.)
Is an accurate diagnosis possible even with the expected image artefact? NO → decide if the magnet should be removed

MAGNET REMOVAL YES → continue (with step 3.)
Has the implant magnet been surgically removed? NO → STOP
- AUDITORY/NON-AUDITORY SENSATIONS** OK
Inform the patient about possible auditory and non-auditory sensations during the examination.
NOTE: The likelihood and intensity of auditory and non-auditory sensations can be reduced by selecting sequences with a lower Specific Absorption Rate (SAR) and slower gradient slew rates.
- HEAD ORIENTATION** (only applicable at 1.0T, 1.5T, 3.0T) OK
Inform the patient not to tilt their head to either side.
- EXTERNAL COMPONENTS** OK
Remove audio processor and accessories before entering the scanner room.

– **OPTIONAL HEAD BANDAGE** OK
A supportive head bandage over the implant using an elastic bandage wrapped tightly around the head for at least three times can optionally be used.

NOTE: In rare cases the patient might perceive a clicking sound upon entry in the MRI scanner tube.

EXECUTION

NOTE: To reduce the likelihood and degree of patient discomfort, the patient should keep their head away from the scanner wall near the entrance of the scanner.

- PATIENT POSITIONING** (only applicable at 1.0T, 1.5T, 3.0T) OK
The patient should be lying in the scanner in a supine, prone or side position with the head kept straight.
NOTE: When lower extremities are to be examined, it is recommended that patient's legs are positioned in the scanner first.
- OPERATING MODE** (only applicable at 0.2T, 1.0T, 1.5T) OK
Run sequences in "Normal Operating Mode" only.
NOTE: max. 3.2W/kg for Head scans, 2.0W/kg for Whole-Body scans
- OPERATING MODE** (only applicable at 3.0T) OK
Apply maximum permitted SAR according to following table only:

SAR (Head)	SAR (Whole-Body)	
	<35 cm from the top of the head	≥35 cm from the top of the head
1.6W/kg	1.0W/kg	2.0W/kg
- ACCESSORIES** (only applicable at 3.0T) OK
Do not utilise head transmit coils or multi-channel transmit coils.

NOTE: In rare cases temporary pain or discomfort may occur in the implant area during MRI even if all protocols and bandaging instructions are followed.



MRI Checklist for MED-EL ABI models

Mi1200 SYNCHRONY ABI | Mi1200 SYNCHRONY PIN ABI

If the conditions or instructions herein are NOT followed, **INJURY** to the patient and/or **DAMAGE** to the implant may result!
 → **VALID** for ABI electrode variant
 → **VALID** for all body regions
 In case of additional implants, e.g. a hearing implant in the other ear: MRI safety guidelines for this implant need to be considered in addition.

	The external components of the MED-EL Implant System (audio processor and accessories) are MR Unsafe and need to be removed prior to scanning.	
	The implant components of the MED-EL Implant System are MR Conditional.	

GENERAL CONDITIONS

→ PERMITTED STATIC MAGNETIC FIELD STRENGTH	0.2 T, 1.0 T, 1.5 T
→ MAXIMUM PERMITTED SAR	NORMAL OPERATING MODE 3.2 W/kg (Head), 2.0 W/kg (Whole-Body)

PREPARATION

1. **PATIENT ID CARD** OK
Request patient ID card in order to identify the implant type
2. **IMAGE ARTEFACT** YES → continue (with step 3.)
Is an accurate diagnosis possible even with the expected image artefact? NO → decide if the magnet should be removed

MAGNET REMOVAL
Has the implant magnet been surgically removed? YES → continue (with step 3.)
 NO → STOP
3. **AUDITORY/NON-AUDITORY SENSATIONS** OK
Inform the patient about possible auditory and non-auditory sensations during the examination.
NOTE: The likelihood and intensity of auditory and non-auditory sensations can be reduced by selecting sequences with a lower Specific Absorption Rate (SAR) and slower gradient slew rates.
4. **HEAD ORIENTATION** (only applicable at 1.0T, 1.5T) OK
Inform the patient not to tilt their head to either side.
5. **EXTERNAL COMPONENTS** OK
Remove audio processor and accessories before entering the scanner room.
- **OPTIONAL HEAD BANDAGE** OK
A supportive head bandage over the implant using an elastic bandage wrapped tightly around the head for at least three times can be used.

NOTE: In rare cases the patient might perceive a clicking sound upon entry in the MRI scanner tube.

EXECUTION

NOTE: To reduce the likelihood and degree of patient discomfort, the patient should keep their head away from the scanner wall near the entrance of the scanner.

1. **PATIENT POSITIONING** (only applicable at 1.0T, 1.5T) OK
The patient should be lying in the scanner in a supine, prone or side position with the head kept straight.
NOTE: When lower extremities are to be examined, it is recommended that patient's legs are positioned in the scanner first.
2. **OPERATING MODE** OK
Apply "Normal Operating Mode" only.
NOTE: max. 3.2W/kg for Head scans, 2.0W/kg for Whole-Body scans





NOTE: In rare cases temporary pain or discomfort may occur in the implant area during MRI even if all protocols and bandaging instructions are followed.



MRI Checklist for MED-EL CI and ABI models

Mi1000 CONCERTO | Mi1000 CONCERTO PIN | SONATA
 Mi1000 CONCERTO ABI | Mi1000 CONCERTO PIN ABI

If the conditions or instructions herein are NOT followed, **INJURY** to the patient and/or **DAMAGE** to the implant may result!
 → **VALID** for all electrode variants
 → **VALID** for all body regions
 In case of additional implants, e.g. a hearing implant in the other ear:
 MRI safety guidelines for this implant need to be considered in addition.

	The external components of the MED-EL Implant System (audio processor and accessories) are MR Unsafe and need to be removed prior to scanning.	
	The implant components of the MED-EL Implant System are MR Conditional.	

GENERAL CONDITIONS

→ PERMITTED STATIC MAGNETIC FIELD STRENGTH	0.2 T, 1.0 T, 1.5 T
→ MAXIMUM PERMITTED SAR	NORMAL OPERATING MODE, i.e. 3.2 W/kg (Head), 2.0 W/kg (Whole-Body)

PREPARATION

1. PATIENT ID CARD Request patient ID card in order to identify the implant type	<input type="radio"/> OK
2. IMAGE ARTEFACT Is an accurate diagnosis possible even with the expected image artefact?	<input type="radio"/> YES → continue <input type="radio"/> NO → STOP
3. AUDITORY/NON-AUDITORY SENSATIONS Inform the patient about possible auditory and non-auditory sensations during the examination. NOTE: The likelihood and intensity of auditory and non-auditory sensations can be reduced by selecting sequences with a lower Specific Absorption Rate (SAR) and slower gradient slew rates.	<input type="radio"/> OK
4. HEAD ORIENTATION (only applicable at 1.0T, 1.5T) Inform the patient not to tilt their head to either side.	<input type="radio"/> OK
5. EXTERNAL COMPONENTS Remove audio processor and accessories before entering the scanner room.	<input type="radio"/> OK
6. HEAD BANDAGE (only applicable at 1.0T, 1.5T) Place a supportive headband over the implant. NOTE: The bandage may be an elastic bandage wrapped tightly around the head at least three times.	<input type="radio"/> OK

EXECUTION

NOTE: To reduce the likelihood and degree of patient discomfort, the patient should keep their head away from the scanner wall near the entrance of the scanner.

1. PATIENT POSITIONING (only applicable at 1.0T, 1.5T) The patient should be lying in the scanner in a supine, prone or side position with the head kept straight. NOTE: When lower extremities are to be examined, it is recommended that patient's legs are positioned in the scanner first to minimise any risk of weakening the implant magnet.	<input type="radio"/> OK
2. OPERATING MODE Run sequences in "Normal Operating Mode" only. NOTE: max. 3.2W/kg for Head scans, 2.0W/kg for Whole-Body scans	<input type="radio"/> OK

NOTE: In rare cases temporary pain or discomfort may occur in the implant area during MRI even if all protocols and bandaging instructions are followed.

MRI Checklist for MED-EL CI and ABI models

PULSAR | C40+ | C40
PULSAR ABI | C40+ ABI

If the conditions or instructions herein are NOT followed, **INJURY** to the patient and/or **DAMAGE** to the implant may result!
→ **VALID** for all electrode variants
→ **VALID** for all body regions
→ **VALID** for unilateral as well as bilateral implant provision

	The external components of the MED-EL Implant System (audio processor and accessories) are MR Unsafe and need to be removed prior to scanning.	
	The implant components of the MED-EL Implant System are MR Conditional.	

GENERAL CONDITIONS

→ PERMITTED STATIC MAGNETIC FIELD STRENGTH	0.2 T, 1.0 T, 1.5 T
→ MAXIMUM PERMITTED SAR	NORMAL OPERATING MODE, i.e. 3.2 W/kg (Head), 2.0 W/kg (Whole-Body)

PREPARATION

1. PATIENT ID CARD Request patient ID card in order to identify the implant type	<input type="radio"/> OK
2. IMPLANT CONDITION Is the implant housing mechanically intact? (not fractured or shattered)	<input type="radio"/> YES → continue <input type="radio"/> NO → STOP
3. IMPLANTATION STATUS Has the implant been implanted for at least six months?	<input type="radio"/> YES → continue <input type="radio"/> NO → STOP
4. BONE THICKNESS Is the bone underneath the implant at least 0.4mm thick?	<input type="radio"/> YES → continue <input type="radio"/> NO → STOP
5. IMAGE ARTEFACT Is an accurate diagnosis possible even with the expected image artefact?	<input type="radio"/> YES → continue <input type="radio"/> NO → STOP
6. AUDITORY/NON-AUDITORY SENSATIONS Inform the patient about possible auditory and non-auditory sensations during the examination. NOTE: The likelihood and intensity of auditory and non-auditory sensations can be reduced by selecting sequences with a lower Specific Absorption Rate (SAR) and slower gradient slew rates.	<input type="radio"/> OK
7. HEAD ORIENTATION (only applicable at 1.0T, 1.5T) Inform the patient not to tilt their head to either side.	<input type="radio"/> OK
8. EXTERNAL COMPONENTS Remove audio processor and accessories before entering the scanner room.	<input type="radio"/> OK
9. HEAD BANDAGE (only applicable at 1.0T, 1.5T) Place a supportive headband over the implant. NOTE: The bandage may be an elastic bandage wrapped tightly around the head at least three times.	<input type="radio"/> OK

EXECUTION

NOTE: To reduce the likelihood and degree of patient discomfort, the patient should keep their head away from the scanner wall near the entrance of the scanner.

1. PATIENT POSITIONING (only applicable at 1.0T, 1.5T) The patient should be lying in the scanner in a supine, prone or side position with the head kept straight. NOTE: When lower extremities are to be examined, it is recommended that patient's legs are positioned in the scanner first to minimise any risk of weakening the implant magnet.	<input type="radio"/> OK
2. OPERATING MODE Run sequences in "Normal Operating Mode" only. NOTE: max. 3.2 W/kg for Head scans, 2.0 W/kg for Whole-Body scans	<input type="radio"/> OK

NOTE: In rare cases temporary pain or discomfort may occur in the implant area during MRI even if all protocols and bandaging instructions are followed.