

Introduction

To ensure the integrity of audio messages that are transferred to customers or when loaded to a player, MegaVoice uses an MD5 checksum test on all its audio message folders.

An MD5 checksum is a 32-character hexadecimal number that is computed on a file. If two files have the same MD5 checksum value, then there is a very high probability that the two files are the same.

For a tutorial on MD5 checksum, click on this link: https://www.youtube.com/watch?v=2tuRHBkvbgs

The idea is that a file containing the checksums for all files in the message will be stored in the root of an audio message and transfer *with* the audio message – whether it is to another computer, another network, cloud storage or to a player. This checksum file will be ignored by MegaVoice players during playback and will not cause any problems with the performance of the player.

By including the original checksum values within the audio message folder, the same checksum test can be easily performed against the audio folder once it reaches its destination. Verifying this will ensure the following:

- None of the original files are missing
- No new files have been added
- The files in the target destination match those from the source (no truncation or corruption, no structure or name changes)

This document will provide instructions on how to acquire and use a free utility named "Md5Checker" to perform the MD5 checksum calculation against all files in an audio folder, save the checksums to a special file and then perform the verification *after* the audio folder has been copied elsewhere or loaded to a player.

- 1. If you don't have Md5Checker, click on this link (www.getmd5checker.com/download) to download the correct program for your operating system. In most cases, the download file will be saved to your "Downloads" folder, but you may choose to save it elsewhere. The downloaded file is a ZIP file (compressed folder).
- 2. Once the download completes, navigate to where you saved the file, extract the ZIP file contents, and copy the program (the "Md5Checker.exe" file) to the location of your choice. MegaVoice recommends saving the program to the Desktop. Md5Checker is a simple self-contained (portable) program so there is no installation.
 NOTE: If you decide to move the program to another location on your computer after it has been used, be aware that there is a hidden file ("Md5Checker.ini") where the program settings are stored. You must move that file along with the EXE file, or your saved settings will be lost!

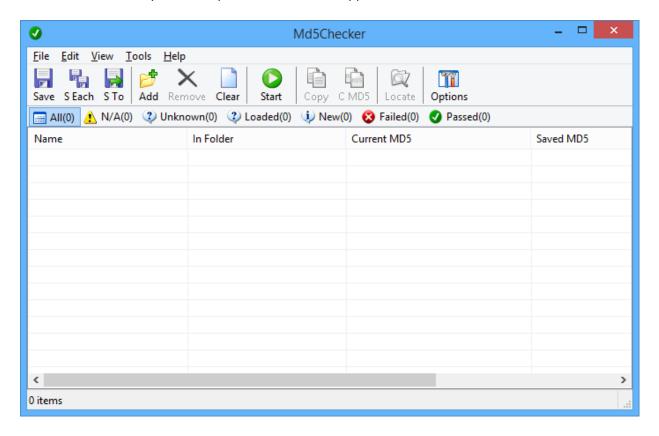


3. Once Md5Checker is ready, double-click on the icon to start the program.



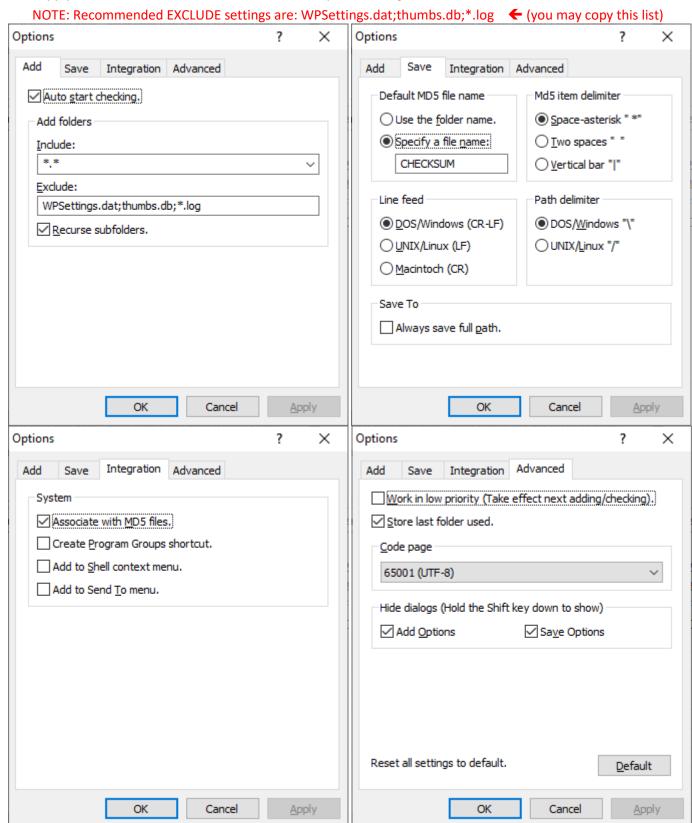
Setup

1. This is the screen you will be presented when the application starts.





2. Before using the application, let's make sure the recommended settings are selected. Click on the "Options" icon on the tool ribbon (or from the menu, Tools | Options). The Options dialog has 4 tabs with various settings. They are shown below. Please make sure your settings match. After making changes, click on "Apply" to save them and then "OK" to exit the Options dialog.





Finalizing a message before creating an MD5 file

If the audio message you are preparing was received from an outside source, the folder and file names should be inspected. There are two potential issues that can cause MD5 matching problems for both folders and files:

- 1. Use of foreign alphabetic characters in the name.
- 2. Use of unusual symbols or editing characters that appear as spaces.

Here are some examples:

Name	Date modified	Туре	Size
01_Guias	12/2/2020 16:00	File folder	
02_Genesis	12/2/2020 16:00	File folder	
03_Exodo	12/2/2020 16:00	File folder	
04_Levitico	12/2/2020 16:00	File folder	
☐ 05_N�meros	12/2/2020 16:01	File folder	
06_Deuteronomio	12/2/2020 16:01	File folder	
07_Josue	12/2/2020 16:01	File folder	
08_Jueces	12/2/2020 16:01	File folder	
Name		Date modified	Туре
🔒 El lado oscuro del amor.pdf		8/1/2019 10:21	Adobe Acrobat D
🔒 El lugar de la mujer en la iglesia local.pdf		6/20/2018 13:48	Adobe Acrobat D
<u></u>		-,,	Adobe Acrobat biii
🔑 El milenio .pdf		7/18/2018 15:11	Adobe Acrobat D
El milenio .pdf El proximo suceso en el programa de Dios.pd	f	7/18/2018 15:11 7/17/2018 14:59	
			Adobe Acrobat D
El proximo suceso en el programa de Dios.pd		7/17/2018 14:59	Adobe Acrobat D Adobe Acrobat D
El proximo suceso en el programa de Dios.pd Es posible que una persona salva jam s se pi		7/17/2018 14:59 10/2/2018 14:25	Adobe Acrobat D Adobe Acrobat D Adobe Acrobat D
 El proximo suceso en el programa de Dios.pd Es posible que una persona salva jam♦s se pi Fe+0=Salvacion.pdf 		7/17/2018 14:59 10/2/2018 14:25 1/20/2016 14:57	Adobe Acrobat D Adobe Acrobat D Adobe Acrobat D Adobe Acrobat D

As shown above, sometimes foreign alphabetic characters are not understood and show as � (or other character) on your system. These characters can potentially cause Md5Checker to not match on another system. It is recommended to review all folder and file names for obvious problems as highlighted above and edit them to use recognized characters.

There are also cases where unusual characters in folder and file names appear as a space or a blank to the eye but are really unprintable characters that just appear as blanks.

If you encounter a name mismatch of a folder or file name, and don't see an obvious cause for it, the best thing to do is to edit the folder or file name, delete all "spaces" and replace them with a "space" from your system.

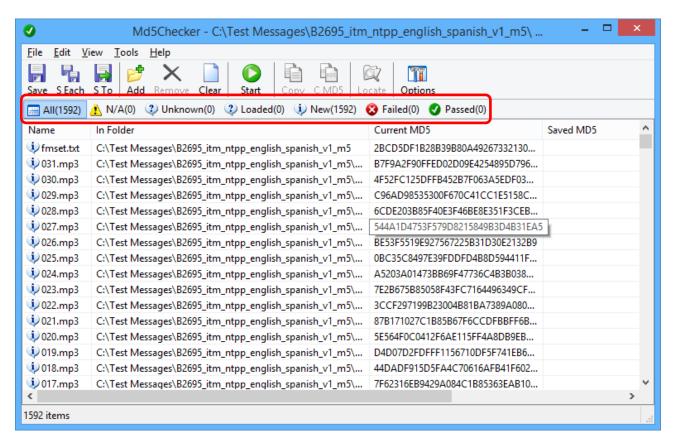


Creating an MD5 for a folder or message

- 1. Once an audio message has been completed and tested on the target player, and ready for distribution, it should be "branded" with an MD5 checksum file. The file *should* be stored in the "root" of the message and will be included as part of the message whenever and however it is distributed to others.
- 2. If there was a previous list of files loaded, first click the Clear "Clear" icon. Then drag the audio folder in question onto the white grid area of Md5Checker.

Alternatively, you could click on the Add button, navigate to the folder in question and open it.

3. The application will begin to load all the files and calculate checksums for each. They are displayed in the "Current MD5" column for each file. The initial calculation is fast, and a progress bar is displayed on the bottom of the screen. When the process completes, "Loaded" will be zero and "New" should be the grand total of files in the audio message (which should also match the number shown for "All").

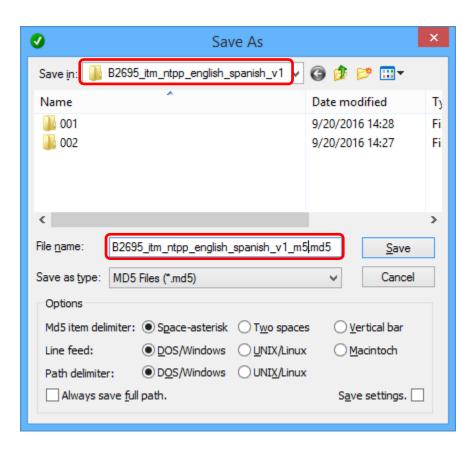




4. Once the checksums have been calculated, we want to save them to a single file. Click on the STO (Save To) icon on the tool ribbon. You will be presented with a dialog like that below. The default location is the "root" of the audio folder that was just used to calculate the checksums. This is where we want to save the file.

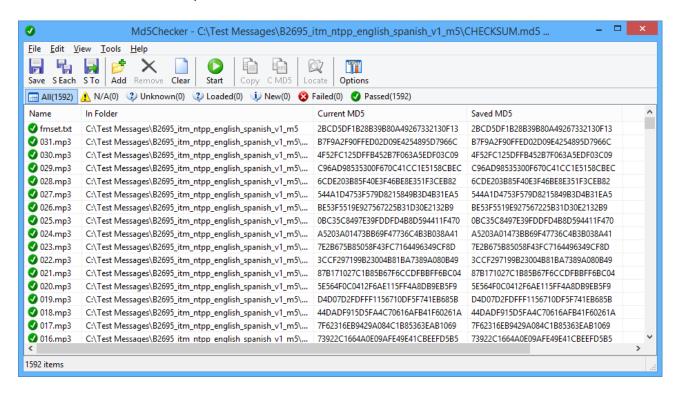
The filename defaults to "CHECKSUM.md5" but it should be <u>changed</u> to match the name of the audio message (as in the example below). This is to clearly identify what message this MD5 file is for. Make sure to add the extension ".md5" to the File Name.

This file contains the entire list of files and their associated checksum values. Click the "Save" button to save the file.





5. Once you click the "Save To" button, the file will be created and the main screen will populate the "Saved MD5" column with the values, which are identical to those in the "Current MD5" column.



6. At this point, we have "branded" the selected audio message with the official checksums. This audio folder may now be copied or transmitted elsewhere.

If any of the files within this folder are changed in any way, even if they are only renamed or moved to different folders, the checksum process must be re-run and a new checksum file created, replacing the previous file. This must be done *before* transmitting this audio folder.

It is <u>not</u> recommended to use foreign language characters in folder or file names. This may be problematic for recipients of the audio to check it on their end. Please see <u>Checking MD5 when foreign language characters in folder or file names folder or file names for details.</u>

- 7. The ".MD5" file in the root folder is intended to travel with the audio message so that it can be verified by others once received using Md5Checker. Every recipient should be instructed to verify the contents once they have received and saved it to their computers, but before loading to any players.
- 8. Now that you have created the MD5 file, you should verify your work. Clear the contents in MD5Checker, drag the folder onto Md5Checker again, and verify that all files passed (All = Passed).



Verifying a folder or message

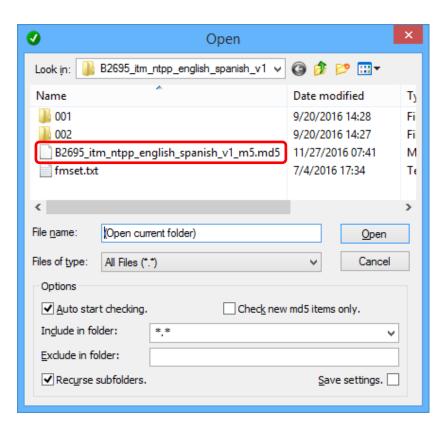


- 1. If Md5Checker is open and has already been used to check a message, first click on the "Clear" icon on the tool ribbon to clear the previous list of files.
- 2. The easiest way to open a new audio folder in Md5Checker is to drag the folder into the white grid area of the screen. This will also work for a player (Drive volume) or a microSD card loaded in a card reader.
- 3. Md5Checker should immediately begin checking each file in the folder against the embedded MD5 file. If it does not, please examine the message folder in question to make sure there is an MD5 file present in the root.

It's conceivable that the file is missing the ".md5" extension which would prevent Md5Checker from performing the check.

If there is not an MD5 file in the root, please stop here and notify the party that sent this message. In most cases, it is sufficient to send only the MD5 file, add it to the message received on the remote end and re-check.

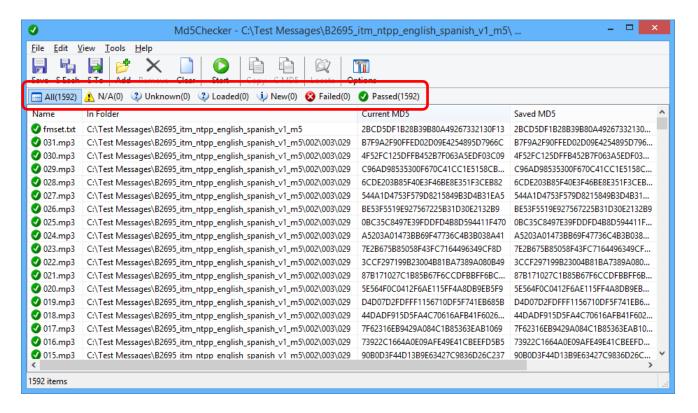
If it still does not pass the check, request them to re-send the entire message with the correct MD5 file.





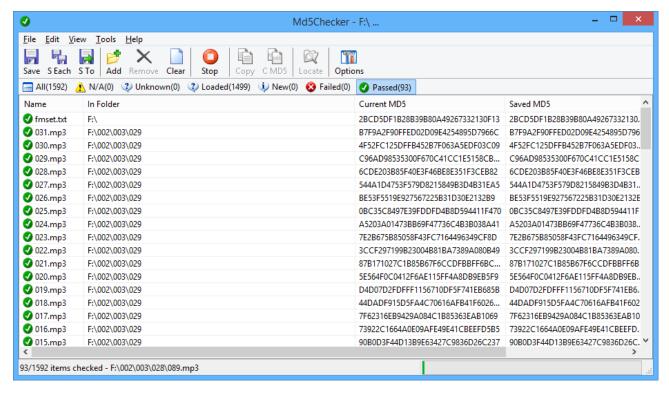
4. While the checksum is being verified, the progress status will be displayed at the bottom of the screen. Once complete, you get a summary count of all the files discovered and compared against what was stored in the MD5 file. Each of the summary buttons (circled in red) may be clicked and only the files within that group will be displayed.

In our example below, all files passed the checksum comparison and there were none that were missing, added or failed the checksum test (different). The number shown in "All" should equal the number shown in "Passed".





- 5. Now let's check a player that was loaded with the same audio message.
- 6. Clear the previous contents and simply "drag" the player volume into the white grid area of Md5Checker. Due to the presence of the MD5 file in the root, the check process will begin automatically. In our example, the player is "F:\".
- 7. This screen example shows the checking process *in progress*. 93 files out of the total 1592 have been checked (and "Passed") as is seen in the status message at the bottom of the screen. "Loaded" shows 1499 files waiting to be checked and will reduce to zero once complete.

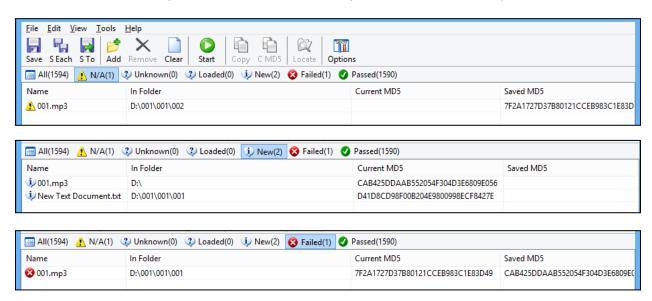


8. When the process completes, the number for "Passed" should equal the number for "All". If not, you will need to investigate the differences and resolve them. See Troubleshooting MD5 problems for failure examples.



Troubleshooting MD5 problems

- 1. To illustrate how Md5Checker will notify of differences detected when running the check against a folder where some of the files have been changed, we will <u>intentionally</u> make the following changes on a player loaded with a message that includes an MD5 checksum file. The player is the "D:" volume on the computer.
 - a. Move file $D:\001\001\001.mp3$ to $D:\(the root)$
 - b. Add file "New Text Document.txt" to folder D:\001\001\
 - c. Move file D:\001\001\002\001.mp3 to folder D:\001\001\001\
- 2. In Md5Checker, to perform the check against the player, click on the Clear "Clear" icon, then drag the D: drive onto MD5Checker.
 - a. One file is flagged under "N/A". This is the missing 001.mp3 file we moved from D:\001\001\002\ to D:\001\001\\001\. The checksum file has record of it but is reporting it's no longer there.
 - b. Two files are flagged under "New". The first is the 001.mp3 file we moved from D:\001\001\001\ to the root. The second is the "New Text Document.txt" file we added to folder D:\001\001\001\.
 - c. One file is flagged under "Failed". This is the 001.mp3 file moved from D:\001\001\001\001\001\to D:\001\001\001\. Moving it overwrote the original file, so the checksums for that file do not match.
 - d. All the other files passed (matched) because they were not moved or tampered with.





Check list for distribution of new audio messages.

- 1. Make sure the new audio message is complete! "Complete" means:
 - 1.1. All files and folders have been correctly defined and verified for contents.
 - 1.2. Any renaming of files or folders has been done. Avoid using foreign characters in file or folder names. See <u>Finalizing a message before creating an MD5 file</u> or <u>Checking MD5 when foreign language characters in folder or file names for details on problems that can be caused by this.</u>
 - 1.3. The message has been fully tested on the target player for correct playback and navigation.
- 2. Create and verify an MD5 checksum file for the new audio folder.
 - 2.1. This process assumes Md5Checker has been configured correctly per the instructions in <u>Verifying a folder</u> <u>or message</u>.
 - 2.2. Open Md5Checker and drag the new audio folder into the application grid. Alternatively, you can use the



"Add folder" icon.

2.3. Once all checksums have been calculated, save them to a file:



- 2.3.1.Click on the STo ("Save To") icon. **Do not use "Save" or "S Each"!**
- 2.3.2.Change the suggested name of the MD5 file from "CHECKSUM" to the full name of the audio message. For example, if the audio message folder is named "B1234 ITM Hebrew French", the MD5 file should be named "B1234 ITM Hebrew French.md5".
- 2.3.3. Save the file. "Save To" will, by default, save the file to the "root" of the audio message folder.
- 2.4. <u>Test</u> the newly created MD5 file. Either click the Clear (Clear) button then drag the audio folder into Md5Checker to execute the test, or close and restart Md5Checker and perform the test. The results should show that #All = #Passed = #of expected files in the message. If the results are not good, step #2 should be repeated.
- 3. When transferring the audio message, the MD5 file will "travel" with it since it is contained in the root folder.



- 4. Once the message has been transferred to any new destination, no matter to where, the <u>first</u> thing that should be done is to check the transferred message in Md5Checker. All files should show as "Passed" (the number for "All" should equal the number for "Passed"). This will ensure no corruption occurred during the transfer.
 - 4.1. If Md5Checker does not show that the number for "All" equals the number for "Passed", the results should be closely examined to determine where exactly the problem(s) lie.
 - 4.2. If all the files are present, but some of them show as "Failed", that indicates that there were problems during the transfer and the "Failed" files are somehow corrupt. If the number of Failed files is not that many (the user will have to decide the number), it could save time to re-send only those files, replacing the failed files, and checked again. If the number of Failed files is too great, then the entire message should be re-sent replacing the prior message and re-checked.
 - 4.3. If there are other errors, such as some files show as "New", "N/A" or "Unknown", that indicates that the MD5 file does not match the contents of the folder it is attached to, **or** changes were made to the message *after* the MD5 file was created. The reasons for this could be many, most likely the target folder was changed **after** the MD5 was created. In this case, the process should be started over.
- 5. If any changes to the message must be made, they should be made on the **source computer** and the entire process started over from the beginning.

MEGAVOICE breaking the silence

Using Md5Checker to Verify Folder or Player Contents

Checking MD5 when foreign language characters in folder or file names

- 1. If the audio folder that is being checked contains folders and/or files with foreign characters in their names, it is necessary to make sure that the same <u>code page</u> that was in use on the source computer is set in Md5Checker so that it can correctly execute the comparison. If this is not done, then Md5Checker will see all the folders and files with the foreign characters in their names as either "N/A" or "New" because they don't match against the MD5 file.
 - 1.1. For this reason, it is <u>not</u> recommended to use foreign characters in file or folder names. It adds a level of complexity to the verification process that is unnecessary. It is best to identify and replace all foreign characters with a different character that is universal.
- 2. But if you do receive an audio message like this, you will need to request the sender provide you with the code page that was in use on the source computer when they created their MD5 checksum file.
- 3. If the sender does not know what code page is active on their computer, it is easy to determine.
 - 3.1. Have them open a command prompt window. From the Start menu, key in "command prompt" in the "find" box. Then click on the "Command Prompt" item that should be displayed above.
 - 3.2. In the Command Prompt window, key in the command: chcp.
 - 3.3. The active code page number will be displayed.

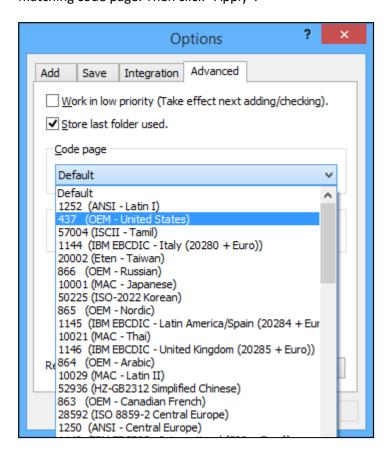


4. Have them send the active code page number to you.



breaking the silence

Options 5. Once you have the active code page number, in Md5Checker, click on the "Options" icon on the tool ribbon, and then select the "Advanced" tab. Click on the "Code page" drop list, find and select the matching code page. Then click "Apply".



- 6. Try the MD5 comparison again to see if it succeeds this time...
- 7. If the active code page number sent to you did not work, try any of the code page numbers in the list that reference the language in question and try again (there may be several).
- Once you are finished checking this audio message folder, remember to reset the code page on the Options "Advanced" tab back to "65001 (UTF-8)".
- 9. If the above exercise did not help, it would be best to rename any folders or files in the message and remove the foreign or unusual characters. Then regenerate the MD5 file and test it.

MEGAVOICE breaking the silence

Using Md5Checker to Verify Folder or Player Contents

Important Notes

If the SLS program (<u>officially unsupported now</u>) is used to load a player with an audio message folder that contains an MD5 checksum file, keep in mind that SLS will only copy MP3, WAV or WMA type files. There is no way to force SLS to copy the MD5 file. But if you want to verify a player after it has been loaded, you can manually copy the MD5 file from the source audio folder to the root of the player and then execute the test.

Using Actions or SaberCopy (recommended) does not have this problem, as all the files in the selected audio message will be copied to the target.

The presence of the MD5 file on the player does not cause any problems with the navigation among the files on the player. The file is simply ignored by the firmware. In the case of a single level file structure (all files in the root of the player), the MD5 file will be omitted intentionally by SaberCopy since it checks the file types against a specific list for the player in question.

As of the date of this document, all MegaVoice players have been tested to verify this.

If someone in the field reports a problem concerning the contents of an audio message, and the copy they received does not include the MD5 file in the root, it is possible to send them <u>only</u> the associated MD5 file along with instructions on the use of the Md5Checker program so that they can check their audio message. All they would have to do is to copy the MD5 file to the root of their copy of the message and execute Md5Checker against it.

The MD5 file, even though it was generated after the fact, should still work correctly. If there are differences, Md5Checker will find them.

If you are trying to check an audio folder that has foreign language characters in the folder or file names and some of them are not passing the test, see <u>Finalizing a message before creating an MD5 file</u> or <u>Checking MD5</u> when foreign language characters in folder or file names.