Using Md5Checker to Verify Folder or Player Contents

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

To learn more about MD5 checksum, click on the link below:

https://www.youtube.com/watch?v=2tuRHBkvbgs

The checksum file will be stored in the root of the audio message and transfer *with* the audio message – whether it is to another computer, a Dropbox account 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)

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 your desktop or other location of your choice. If you store the program in a location other than your desktop, you can create a shortcut to it from your desktop. Md5Checker is a simple self-contained program. There is no installation.


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

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

   a. Md5Checker provides online help with FAQs that address the most common questions. From the menu, click on Help | Online Help.
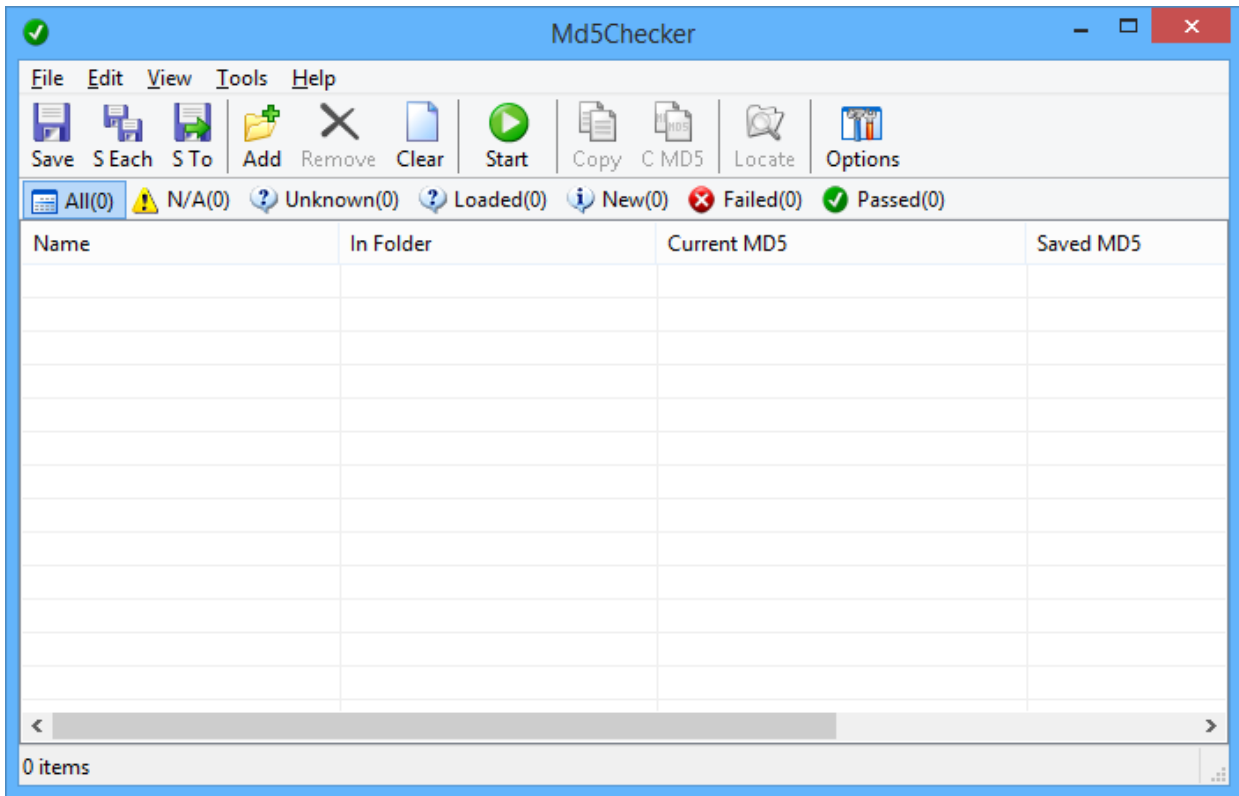
5. Before using the application, let's make sure the recommended settings are selected. Click on the "Options" icon on the tool ribbon. The Options dialog has 4 tabs with various settings. They are shown below. Please make sure your settings match. After making changes, click on "Apply" to save them and then "OK" to exit the Options dialog.
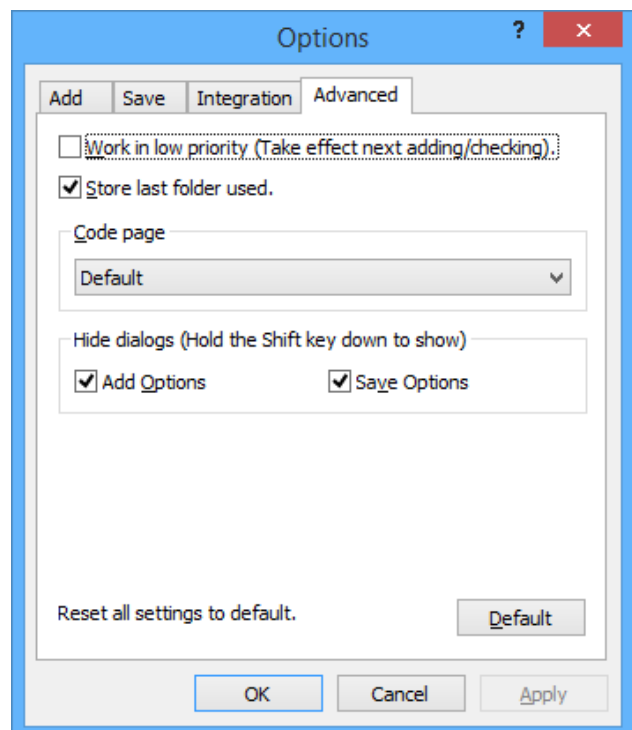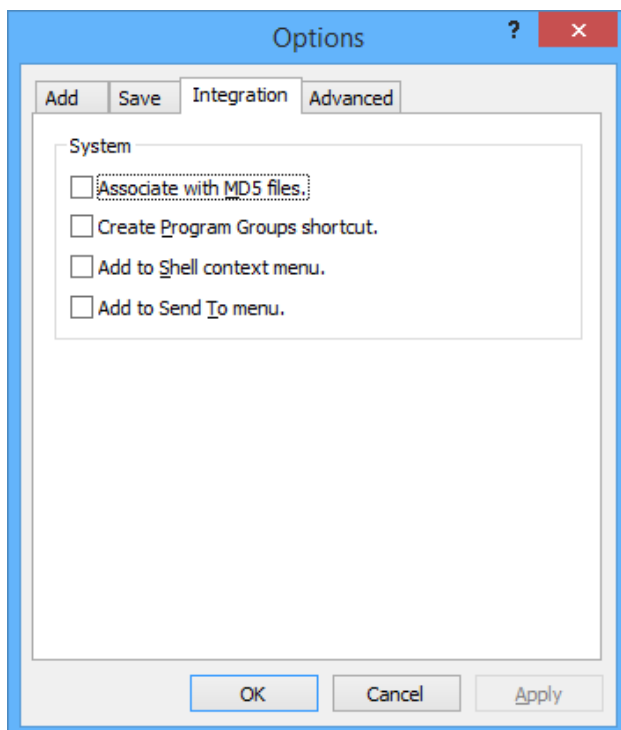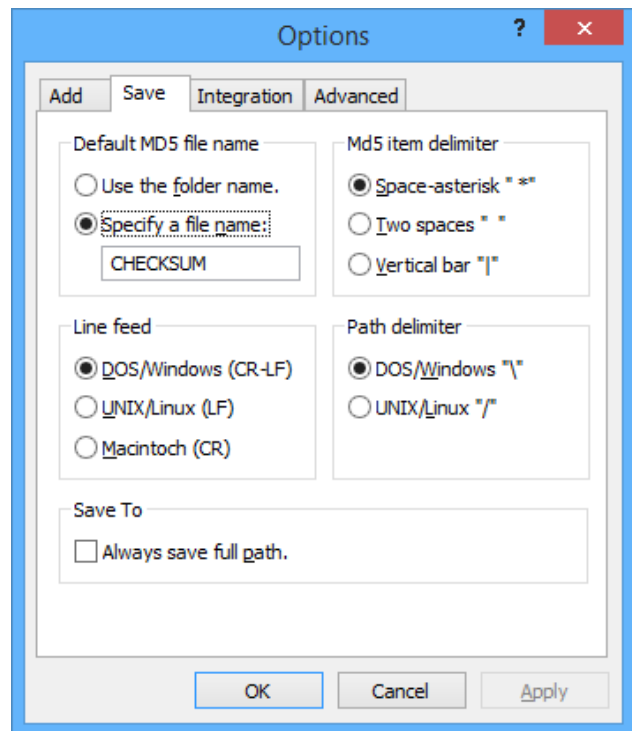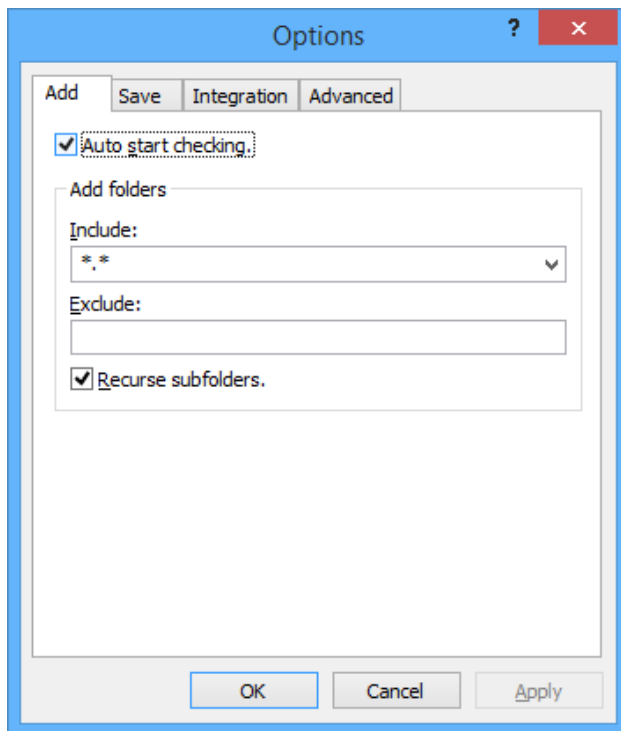
Now that we have Md5Checker set up and ready for use, let's get started.

If you are a typical user that has received an audio message from MegaVoice and are loading players with audio you have received from MegaVoice, go to Basic: Checking an audio message received or loaded.

If you are an advanced user that produces audio messages for distribution to others, go to Advanced: Branding audio messages for distribution.

Basic: Checking an audio message received or loaded

1. Most users will only need to verify that the audio they received from MegaVoice has not been damaged in any way during transit, or that a player loaded with that audio has the complete message.
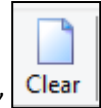
2. If Md5Checker is open and has already been used to check a message, first click on the "Clear" icon on the tool ribbon to clear the previous list of files.

⚠️ 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 (volume) or a microSD card loaded in a card reader.

3. Click on the "Add (folder)" icon on the tool ribbon. Make sure the player is connected to the computer, navigate to the audio folder you wish to check, and click the "Open" button.
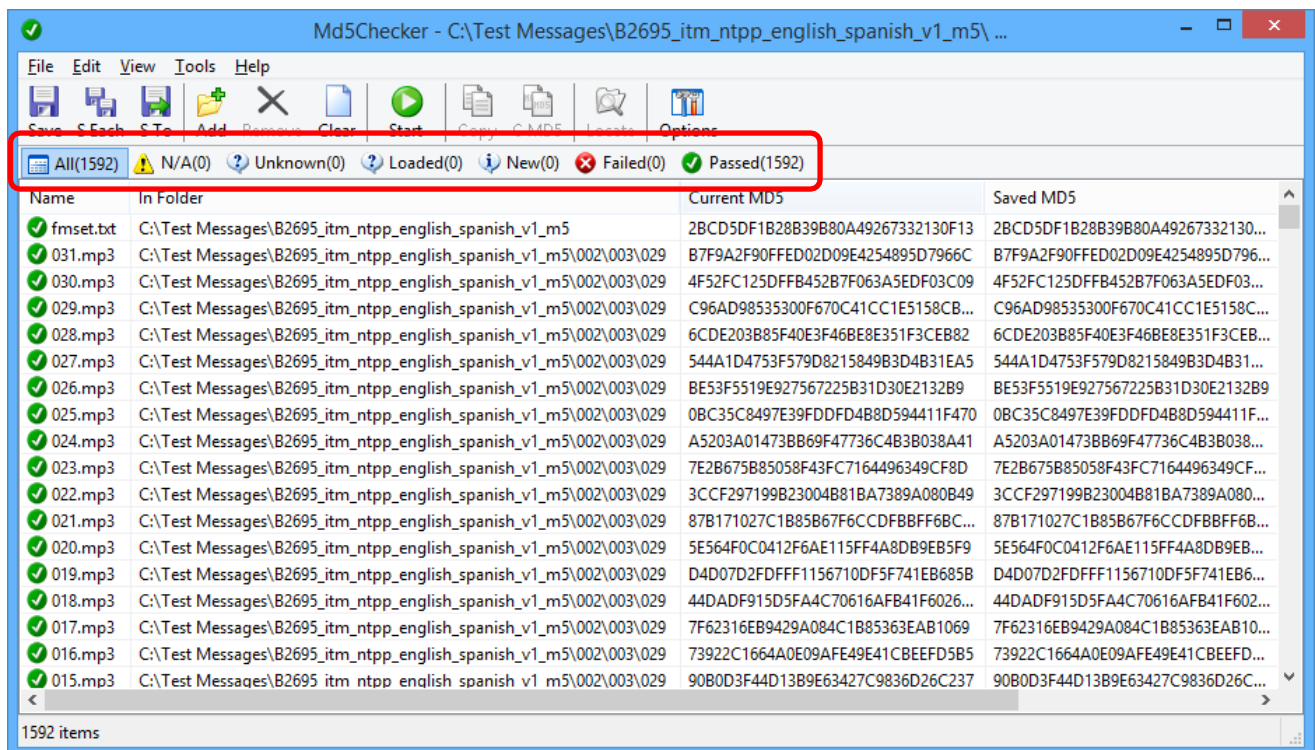
⚠️ Note the presence of the MD5 file in the root. If there is not an MD5 file in the root, notify the audio department at MegaVoice.
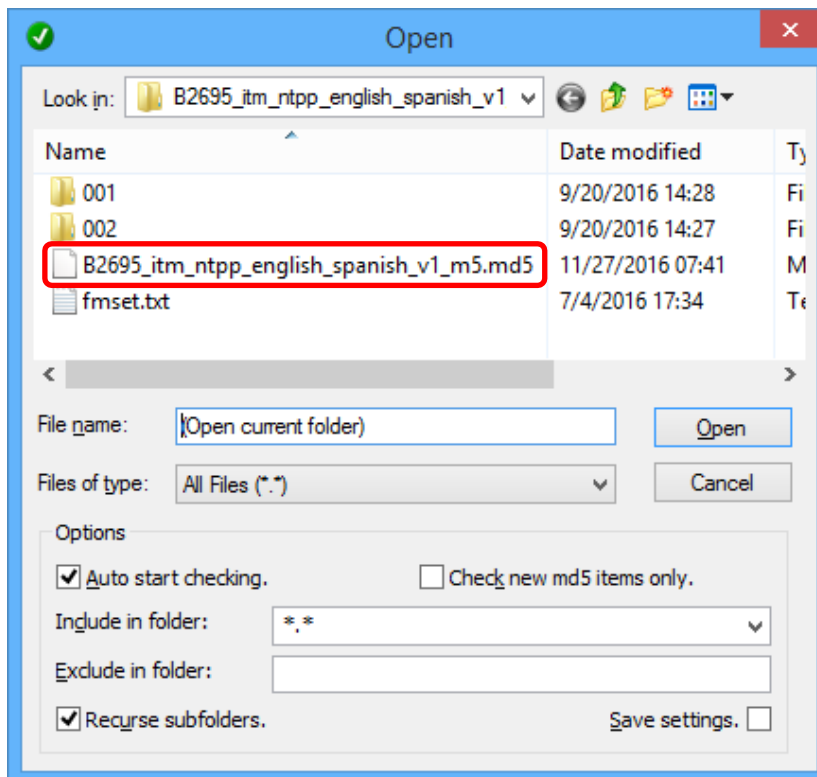
4. As soon as you click on "Open" (or "drop" the folder in), Md5Checker will automatically begin to load all the files, compute checksums and compare them against the MD5 file present in the root. This is because "Auto start checking" is checked on the Open dialog.

5. 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".

6. Now let's check a player that was loaded with the same audio message.

7. 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:**".

8. 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.
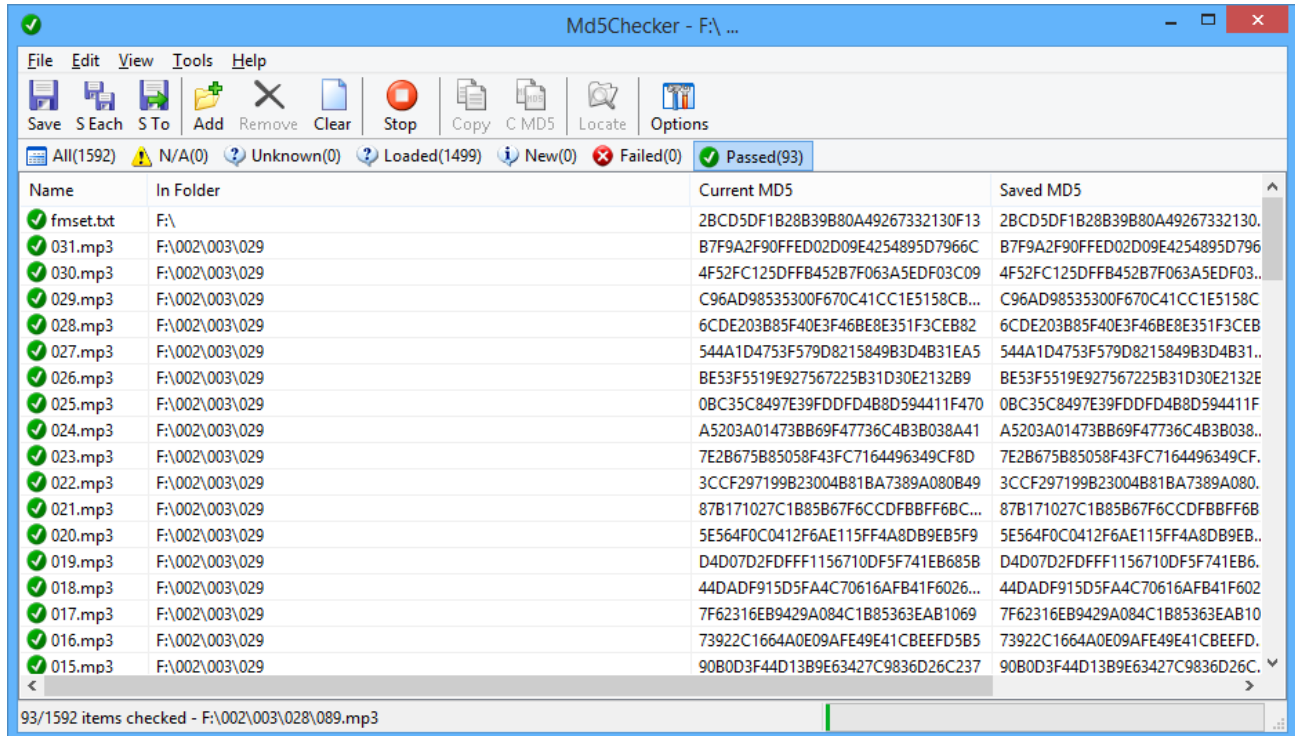
9. When the process completes, the number for "Passed" should equal the number for "All". If not, you will need to investigate the differences and resolve them. See Example of how Md5Checker detects problems for failure examples.

Advanced: Branding audio messages for distribution

1. This section is for those that prepare audio messages and distribute them to others for the loading of players. Once an audio message is complete and ready for distribution, it should be "branded" with an MD5 checksum file. The file will 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.
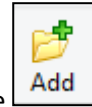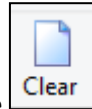
2. If there was a previous list of files loaded, first click the [Clear] "Clear" icon. Then click on the [Add] "Add (folder)" icon on the tool ribbon or, from the menu, choose Edit | Add/Open to add the audio folder that is to be "branded" with checksums.

   ⚠ 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 (volume) or a microSD card loaded in a card reader.
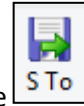
3. You will get the following "Open" dialog. Here you will navigate to the source audio folder for the checksum calculation. Once you navigate to the folder desired (so that it appears in the "Look in" field at the top), click the "Open" button.
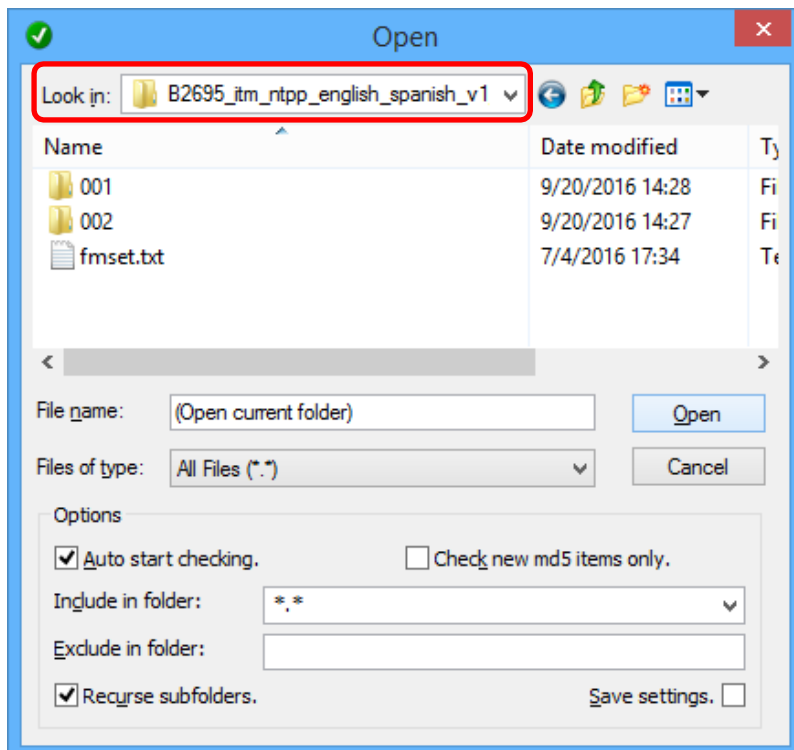
4. Once you click "Open", the application will begin to load all the files and calculate checksums for each. They are displayed in the "Current MD5" column for each file. The initial calculation is pretty fast and a progress bar is displayed on the bottom of the screen. When the process completes, "Loaded" 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").
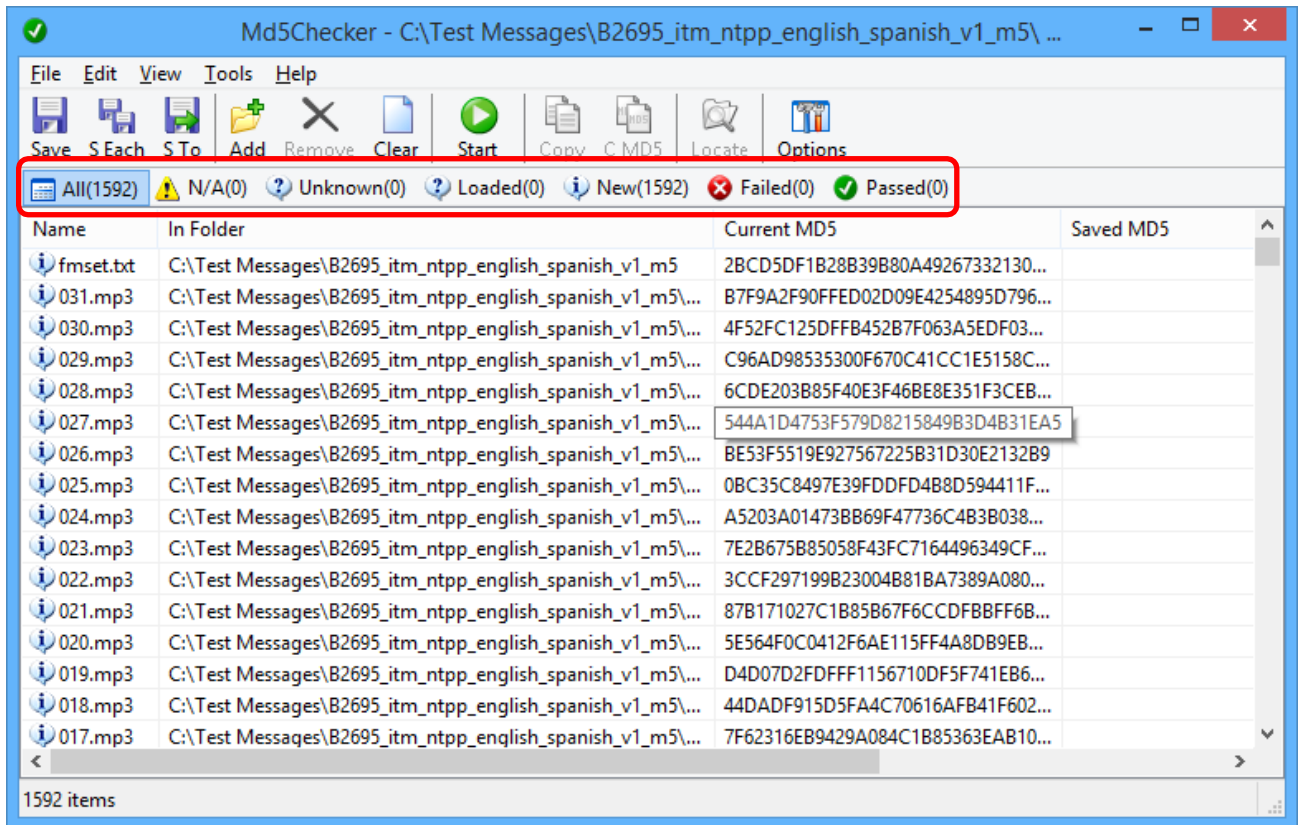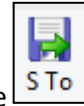
5. Once the checksums have been calculated, we want to save them to a single file. Click on the ![S To icon] (Save to) icon on the tool ribbon. You will be presented with a dialog like that below. The default location is the "root" of the audio folder that was just used to calculate the checksums. This is where we want to save the file.
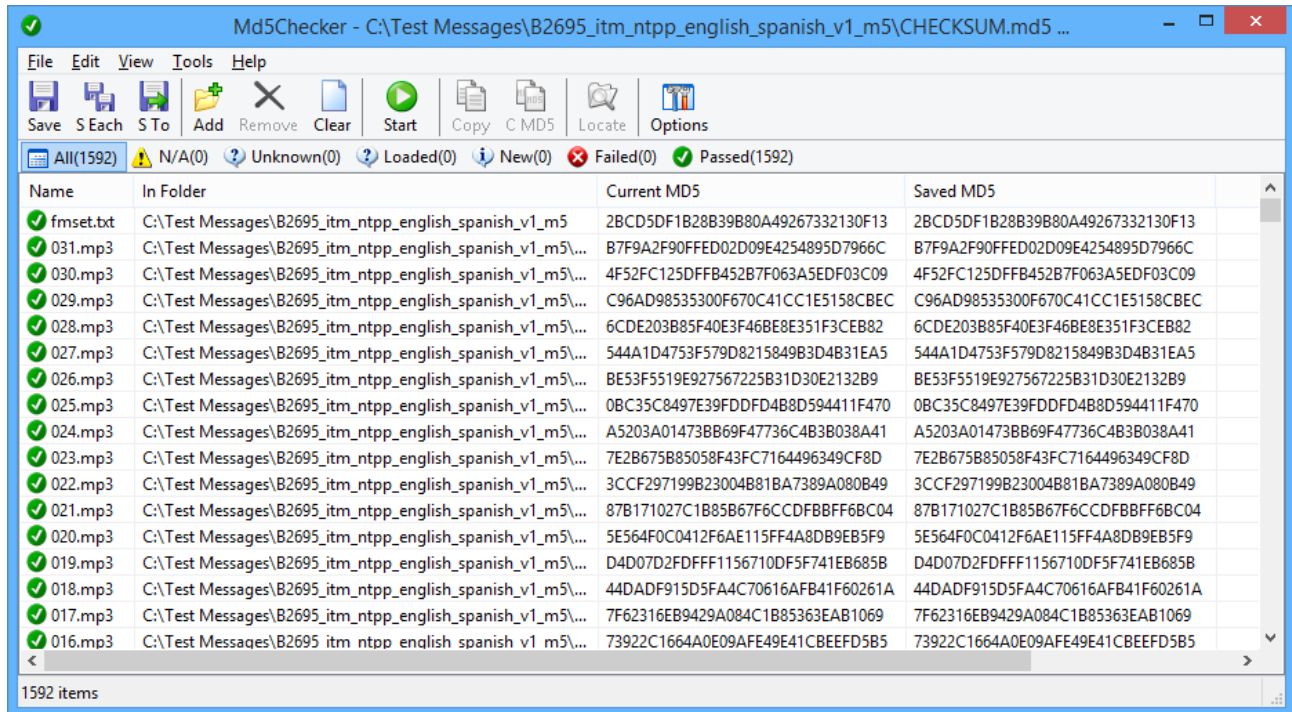
    The filename defaults to "CHECKSUM.md5" but it should be <u>changed</u> to match the name of the audio message (as in the example below). This file contains the entire list of files and their associated checksum values. Click the "Save" button to save the file.

    ⚠ Md5Checker does offer an option to use the folder name as the name of the MD5 file, but that <u>only</u> applies to the "Save" function, which creates a checksum file in *each* folder of the audio message. We do not recommend using this method, but rather "Save To" which generates a single file of checksums for *all* the files in the message.
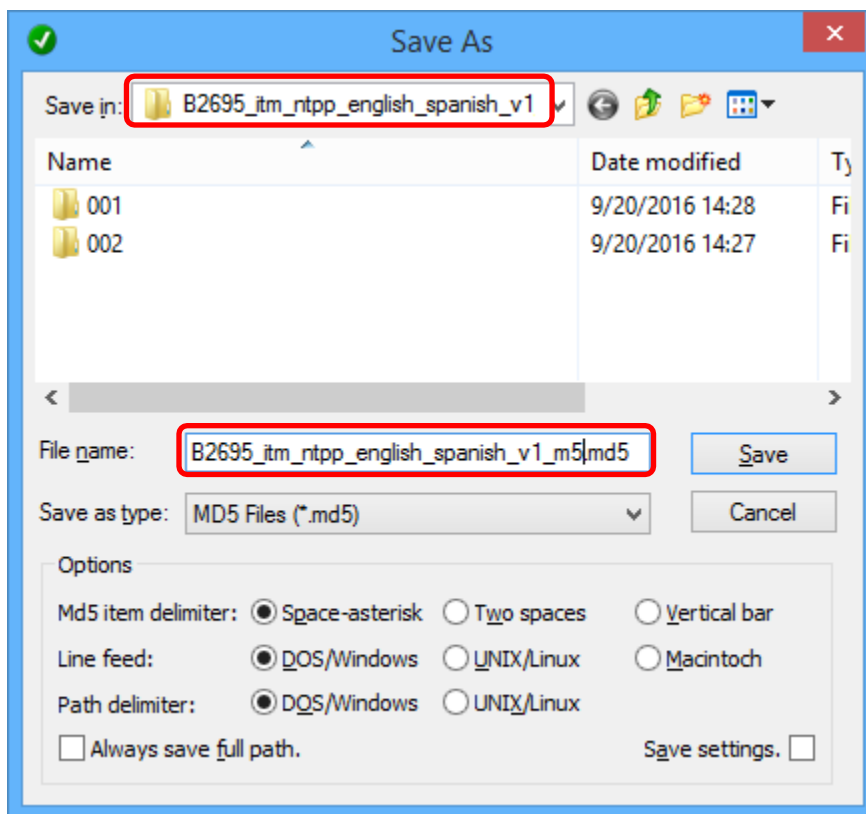
6. Once you click the "Save To" button, the file will be created and the main screen will populate the "Saved MD5" column with the values, which are identical to those in the "Current MD5" column.

7. 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 _not_ 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 Using foreign language characters in folder or file names for details.

8. 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. Every recipient should be instructed to verify the contents once they have received and saved it to their computers.

Example of how Md5Checker detects 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 tampered with, 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\001.mp3 to D:\ (the root)
   b. Add file "New Text Document.txt" to folder D:\001\001\001\
   c. Move file D:\001\001\002\001.mp3 to folder D:\001\001\001\
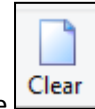
2. In Md5Checker, to perform the check against the player, click on the [Clear] "Clear" icon, then click on the [Add] "Add (folder)" icon. Navigate to the player (drive D:) and click the "Open" button (or simply "drag" the "D:" volume to the screen). Scanning begins immediately. From left to right, here are the results:

   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\002\ to D:\001\001\001\. The checksums for that file do not match.

   d. All the other files passed (matched) because they were not moved or tampered with.

Name	In Folder	Current MD5	Saved MD5
⚠ 001.mp3	D:\001\001\002		7F2A1727D37B80121CCEB983C1E83D

All(1594) — N/A(1) — Unknown(0) — Loaded(0) — **New(2)** — Failed(1) — Passed(1590)

Name	In Folder	Current MD5	Saved MD5
ⓘ 001.mp3	D:\	CAB425DDAAB552054F304D3E6809E056	
ⓘ New Text Document.txt	D:\001\001\001	D41D8CD98F00B204E9800998ECF8427E	

All(1594) — N/A(1) — Unknown(0) — Loaded(0) — New(2) — **Failed(1)** — Passed(1590)

| Name	In Folder	Current MD5	Saved MD5
❌ 001.mp3	D:\001\001\001	7F2A1727D37B80121CCEB983C1E83D49	CAB425DDAAB552054F304D3E6809E(

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 Using foreign language characters in folder or file names for details on this.

   1.3. The message has been fully tested on the target player for correct playback and navigation.

2. Create an MD5 checksum file for the new audio folder.

   2.1. This process assumes MD5Checker has been configured correctly per the instructions in Using Md5Checker to Verify Folder or Player Contents.
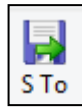
   2.2. Open MD5Checker and drag the new audio folder into the application grid. Alternatively, you can use the

    "Add folder" icon.

   2.3. Once all checksums have been calculated, save them to a file:
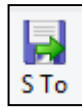
   2.3.1. Click on the ("Save To") icon. **Do not use "Save" or "S Each"!**

   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. Test the newly created MD5 file. Either click the (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 = #expected files. 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.

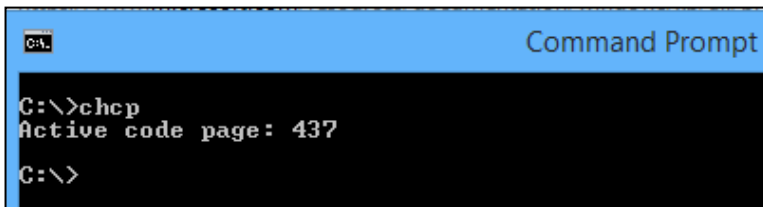4. Once the message has been transferred to any new destination, no matter to where, the **<u>first</u>** thing that should be done is to check the transferred message in MD5Checker. All files should show as "Passed" (the number for "All" should equal the number for "Passed"). This will ensure no corruption 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. In that case, the transferred folder should be deleted on the target computer, copied again and checked again.

    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. 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 **<u>source computer</u>** and the entire process started over from the beginning.

Using 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 code page 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 *not* recommended to use foreign characters in file or folder names. It adds a level of complexity to the verification process that is unnecessary.

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.

```
Command Prompt

C:\>chcp
Active code page: 437

C:\>
```
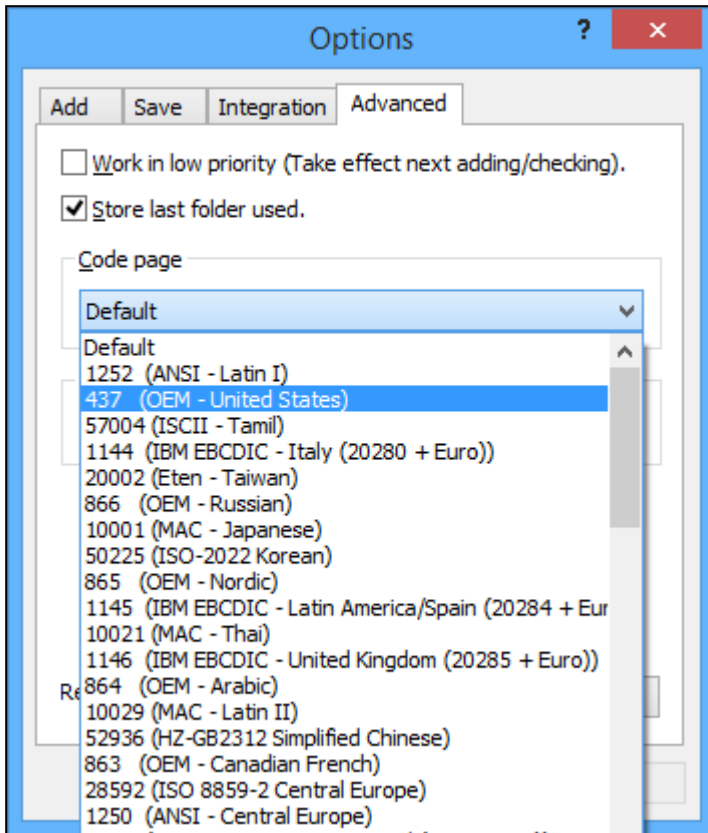
4. Have them send the active code page number to you.
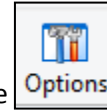
5. Once you have the active code page number, in MD5Checker, click on the [Options] "Options" icon on the tool ribbon, and then select the "Advanced" tab. Click on the "Code page" drop list, find and select the matching code page. Then click "Apply".

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).

8. ⚠️ Once you are finished checking this audio message folder, remember to reset the code page on the Options "Advanced" tab back to "Default".

Important Notes

⚠️ If SLS 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 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. The following players have been tested to verify this: *Story Teller, Envoy S series, Envoy E series, Messenger 5*.

⚠️ 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 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, will 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 Using foreign language characters in folder or file names.