



AN UNCOMMON SENSE OF THE CONSUMER™

# Multi-Channel Encoding Monitor

## Getting the most out of your Nielsen PPM Monitor - Analytics

### Purpose of Document

The Nielsen Audio Multi-Channel Encoding Monitor (MCEM) is the latest version of the PPM encoding monitor.

The new monitor includes a web interface that provides details about the station's current encoding status. It also includes insights about encoding performance with new minute level encodability and detectability graphs and reports.

This document highlights some of the additional insights that a user can gain by analyzing data available from this platform.

Specifically the document will cover an example analysis that can be run on detectability data downloaded from the Multi-Channel Encoding Monitor to assist station engineers and programmers in understanding and aiding proper reaction to different encoding outages.

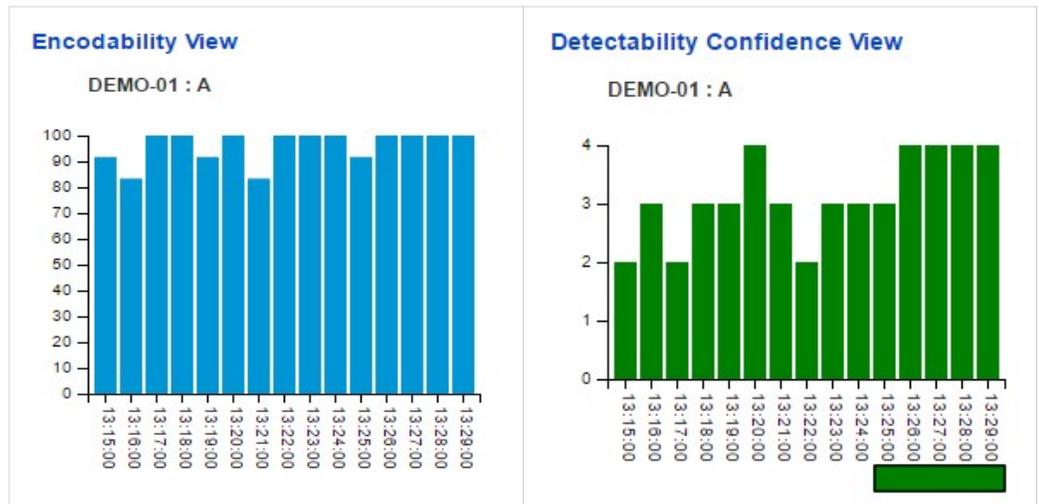


Fig. 1 Web Interface View of Encodability & Detectability Graphs

### Overview of Encodability and Detectability

ENCODABILITY is an objective measure of an audio signal's capacity to be PPM-encoded. Encodability is determined by dividing the number of PPM codes inserted into the left and right signal channels by the maximum possible number of codes that could be inserted.

DETECTABILITY is a subjective assessment from 0 (worst) to 4 (best) of the likelihood a Panelist's meter will detect PPM codes in an audio source. Detectability is determined by averaging the audio's message signal strength over the past 60 seconds and comparing that average to a set of thresholds. Detectability is an estimate, however, because it is not possible for the algorithm to take into account all of the factors in any particular Panelist's listening environment (i.e. radio volume, meter position, background noise, etc.) that could affect the code being detected.

### Downloading Encodability and Detectability Data to Gain Additional Insights



When connected to the Multi-Channel Encoding Monitor's web interface, all users have the ability to view a rolling 15 minute window of their stations encodability and detectability scores.

On this screen, users are also presented a link to download the prior 60 days worth of encodability and detectability data. The data set downloaded through this link contains additional insights that can be used to help a Station Engineer diagnose a potential encoding issue including audio level input to the monitor, raw message signal strength, number of bars reported, and name of encoder detected [i.e. Primary or Backup].

### Example of Downloaded Encodability and Detectability Data

time_utc	id_channel	channel_set_name	chr_alias	mss	rms	number_of_bars
10/24/2016 0:00	1	A	DEMO-01Primary	3.42	-41	3
10/24/2016 0:01	1	A	DEMO-01Primary	3.36	-49	3
10/24/2016 0:02	1	A	DEMO-01Primary	4.01	-45	4
10/24/2016 0:03	1	A	DEMO-01Primary	4.10	-59	4
10/24/2016 0:04	1	A	DEMO-01Primary	4.02	-49	4
10/24/2016 0:05	1	A	DEMO-01Primary	4.13	-47	4
10/24/2016 0:06	1	A	DEMO-01Primary	4.29	-48	4
10/24/2016 0:07	1	A	DEMO-01Primary	4.24	-36	4
10/24/2016 0:08	1	A	DEMO-01Primary	4.39	-38	4
10/24/2016 0:09	1	A	DEMO-01Primary	3.78	-36	4
10/24/2016 0:10	1	A	DEMO-01Primary	3.68	-35	4
10/24/2016 0:11	1	A	DEMO-01Primary	3.80	-40	4
10/24/2016 0:12	1	A	DEMO-01Primary	3.45	-46	3
10/24/2016 0:13	1	A	DEMO-01Primary	2.92	-48	2
10/24/2016 0:14	1	A	DEMO-01Primary	3.04	-48	3
10/24/2016 0:15	1	A	DEMO-01Primary	3.35	-46	3

Fig. 2 Example Detectability Download Data

time_utc	channel_set_name	percent
10/24/2016 0:00	A	100
10/24/2016 0:01	A	100
10/24/2016 0:02	A	91
10/24/2016 0:03	A	100
10/24/2016 0:04	A	100
10/24/2016 0:05	A	100
10/24/2016 0:06	A	91
10/24/2016 0:07	A	100
10/24/2016 0:08	A	100
10/24/2016 0:09	A	100
10/24/2016 0:10	A	91
10/24/2016 0:11	A	100
10/24/2016 0:12	A	100
10/24/2016 0:13	A	100
10/24/2016 0:14	A	83
10/24/2016 0:15	A	100

Fig. 3 Encodability Data

### Example Analysis of Multi-Channel Encoding Monitor Detectability Data

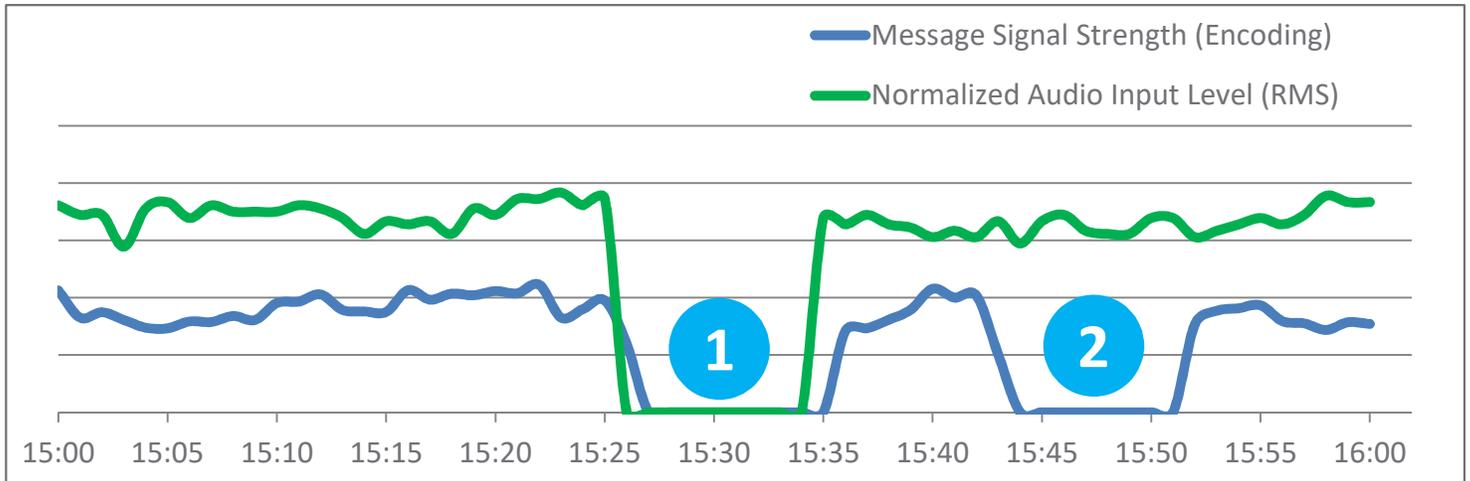


Fig. 4 Example Plot of MSS and RMS Fields from Detectability Data Download

Taking the additional data available in comma separated variable form (.csv) from the detectability download and plotting it on a graph can provide additional insights. The example above in Fig. 4 shows two encoding outages, the first centered on 15:30 and the next between 15:45 and 15:50. The causes for these outages, as we can tell visually by looking at the graph above, are different.

- 1 During the 15:30 outage, we see the Message Signal Strength drop to zero, as does the Audio Input Level (RMS). Because the RMS drops to zero, we know that the cause of the outage is a loss of audio input (silence) on the station.
- 2 During the second outage, the Message Signal Strength drops to zero while the Audio Input Level does not. This suggests that the cause for this outage is either an encoder failure or an unencoded feed sent to air.