

# PERIODIC TABLE OF QC CRITERIA

<b>TEST TONES</b> <ul style="list-style-type: none"><li>standard test tones</li><li>EBU Tech 3304 BLITS, GLITS, ...</li><li>duration, search area, frequency</li><li>tone type, channel number</li></ul>	<b>CHANNEL ASSIGNMENT</b> <ul style="list-style-type: none"><li>audio channel assignment</li></ul>	<b>PEAKS</b> <ul style="list-style-type: none"><li>TP or Q(PPM)</li><li>EBU R 126, Tech 3241 - 4, ITU-R BS 1770-3</li><li>user-defined peak threshold</li><li>peak level(s)</li></ul>	<b>HUM / BUZZ</b> <ul style="list-style-type: none"><li>analogue audio disturbances</li><li>relevant for archive ingest</li></ul>	<b>PHASE REVERSAL</b> <ul style="list-style-type: none"><li>2-channel phase relationship</li><li>applies to L - R, SL - SR</li><li>duration threshold</li><li>out of phase channel pair(s)</li></ul>	<b>VIDEO SEQUENCE HEADER</b> <ul style="list-style-type: none"><li>sequence header location</li><li>ISO 13818-2</li><li>expected sequence header location</li><li>sequence header location</li></ul>	<b>VITC LINE ALLOCATION</b> <ul style="list-style-type: none"><li>VITC line allocation</li></ul>	<b>VIDEO UPSCALING</b> <ul style="list-style-type: none"><li>effective image resolution</li><li>focus on best focussed areas</li><li>resolution threshold</li><li>severity, resolution over time</li></ul>	<b>DIGITAL TAPE DROPOUTS</b> <ul style="list-style-type: none"><li>artefacts due to tape errors</li><li>strongly tape type dependent</li><li>impaired area, # of blocks, duration</li><li>type, area, # of blocks, severity</li></ul>									
<b>AUDIO NOISE</b> <ul style="list-style-type: none"><li>background noise</li><li>to detect silence</li><li>user-defined peak threshold</li><li>peak level(s)</li></ul>	<b>Dolby™ ALIGNMENT</b> <ul style="list-style-type: none"><li>Dolby™/video alignment</li><li>Dolby™ rec. line position</li><li>Dolby recommended values</li><li>frame alignment (line number)</li></ul>	<b>AUDIO DURATION</b> <ul style="list-style-type: none"><li>audio duration</li><li>SMPTE ST 377</li><li>expected duration</li><li>audio duration, mismatch</li></ul>	<b>CHANNEL COUNT</b> <ul style="list-style-type: none"><li>number of audio channels</li><li>may be applied per track</li><li>expected number of channels</li><li>number of audio channels</li></ul>	<b>WRAPPER FORMAT STRUCTURE</b> <ul style="list-style-type: none"><li>wrapper file structure</li><li>SMPTE ST 377, ISO 13818-1, ...</li><li>conforms to specification(s)</li><li>failure reason(s)</li></ul>	<b>CONTENT TYPES</b> <ul style="list-style-type: none"><li>known ancillary data types</li><li>SMPTE ST 436, ...</li><li>expected ancillary data type(s)</li><li>detected ancillary data type(s)</li></ul>	<b>RUN-IN</b> <ul style="list-style-type: none"><li>MXF run-in sequence</li><li>SMPTE ST 377</li><li>expected presence/absence</li><li>run-in validity</li></ul>	<b>FIELD ORDER</b> <ul style="list-style-type: none"><li>field order</li><li>expected field order</li><li>field order, mismatch</li></ul>	<b>CHROMA SUB-SAMPLING</b> <ul style="list-style-type: none"><li>chroma-subsampling, colour siting</li><li>ITU-R BT 601</li><li>expected sampling structure</li><li>sampling structure, mismatch</li></ul>	<b>VIDEO SCANNING</b> <ul style="list-style-type: none"><li>video scanning type</li><li>SMPTE ST 377, ISO 13818-2, ...</li><li>expected scanning type</li><li>progressive, interlaced, PsF</li></ul>	<b>VIDEO CODING SYNTAX</b> <ul style="list-style-type: none"><li>coded video bitstream</li><li>ISO 13818-2, ...</li><li>conforms to specification</li><li>details of non-compliance</li></ul>	<b>VIDEO DURATION</b> <ul style="list-style-type: none"><li>video essence duration</li><li>SMPTE ST 377</li><li>expected video duration</li><li>video duration, mismatch</li></ul>	<b>BLANKING ERRORS</b> <ul style="list-style-type: none"><li>video blanking errors</li><li>EBU CC tests 0015B, 0080B</li></ul>	<b>VIDEO TEST PATTERN</b> <ul style="list-style-type: none"><li>video test patterns</li><li>EBU Tech 3225, SMPTE ECR 1, RP 218</li><li>matching tolerances</li><li>pattern type, confidence level</li></ul>	<b>MACROBLOCKING</b> <ul style="list-style-type: none"><li>visible macroblocks</li><li>may use edgeline detection</li><li>% visible, % touching, duration</li><li>% of picture obstructed</li></ul>			
<b>LOUDNESS</b> <ul style="list-style-type: none"><li>L, TP, max S, max M, LRA</li><li>EBU R 126, Tech 3241 - 4, ITU-R BS 1770-3</li><li>compliant L, TP, user levels</li><li>levels, correction gain</li></ul>	<b>SILENCE</b> <ul style="list-style-type: none"><li>audio level below threshold</li><li>to detect silence</li></ul>	<b>AUDIO CODING</b> <ul style="list-style-type: none"><li>audio codec format</li><li>EBU Tech 3285, Tech 3306, ...</li><li>expected format / container</li><li>coding / container format, mismatch</li></ul>	<b>AUDIO BITRATE</b> <ul style="list-style-type: none"><li>audio bitrate</li><li>expected bitrate</li><li>audio bitrate</li></ul>	<b>DIGITAL AUDIO INTERFACE</b> <ul style="list-style-type: none"><li>AES3 or AES3JD compliance</li><li>AES3, AES3JD, IEC 60958</li></ul>	<b>PARTITION STATUS</b> <ul style="list-style-type: none"><li>header, body, footer partitions</li><li>SMPTE ST 377</li><li>expected partition status</li><li>partition status</li></ul>	<b>ESSENCE MAPPING</b> <ul style="list-style-type: none"><li>MXF essence mapping</li><li>MXF RP 2008, ...</li><li>conforms to specification</li><li>failure reason(s)</li></ul>	<b>MXF PROFILE</b> <ul style="list-style-type: none"><li>compliance with sub standards</li><li>AS-10, AS-11, ...</li></ul>	<b>GENERIC CONTAINER</b> <ul style="list-style-type: none"><li>MXF generic container</li><li>SMPTE ST 379</li><li>conforms to specification</li><li>CP structure, mappings</li></ul>	<b>ORIGIN VALUES</b> <ul style="list-style-type: none"><li>precharge &amp; rollout parameters</li><li>SMPTE ST 377</li><li>precharge value = 0</li><li>precharge value</li></ul>	<b>PIXEL ASPECT RATIO</b> <ul style="list-style-type: none"><li>PAR = pixel width/pixel height</li><li>expected PAR</li><li>PAR, mismatch</li></ul>	<b>STORED FRAME SIZE</b> <ul style="list-style-type: none"><li>width, height of stored frame</li><li>before any cropping/interpolation</li><li>expected stored frame size</li><li>stored frame size, mismatch</li></ul>	<b>GOP STRUCTURE</b> <ul style="list-style-type: none"><li>GOP length, distance</li><li>ISO 13818-2, ...</li><li>expected GOP structure</li><li>GOP structure, mismatch(es)</li></ul>	<b>VIDEO PROFILE &amp; LEVEL</b> <ul style="list-style-type: none"><li>video codec profile &amp; level</li><li>ISO 13818-2, 14496-2, 14496-10</li><li>expected video profile &amp; level</li><li>profile, level, mismatch</li></ul>	<b>MATRIX COEFFICIENTS</b> <ul style="list-style-type: none"><li>declared matrix coefficients</li><li>H.264, H.265, ...</li><li>expected matrix coefficients</li><li>matrix coefficients, mismatch</li></ul>	<b>VIDEO CLIPPING</b> <ul style="list-style-type: none"><li>video clipping</li></ul>	<b>VIDEO SIGNAL LEVELS</b> <ul style="list-style-type: none"><li>luma, chroma, gamma violations</li><li>EBU R 103</li><li>luma, chroma thresholds</li><li>illegal luma, chroma values</li></ul>	<b>LIPSYNC</b> <ul style="list-style-type: none"><li>audio - video timing relationship</li></ul>
<b>AVG. MIN. AUDIO LEVEL</b> <ul style="list-style-type: none"><li>average level below threshold</li><li>to detect analogue channels (post element)</li><li>noise floor, expected # of channels</li><li>channel ID(s), average level</li></ul>	<b>AUDIO DROPOUTS</b> <ul style="list-style-type: none"><li>audio dropouts</li><li>not the same as silence!</li><li>level, ratio, duration thresholds</li><li>type of dropout</li></ul>	<b>Dolby™ QUANTISATION</b> <ul style="list-style-type: none"><li>quantisation used for Dolby™</li><li>16, 20 or 24 bits</li><li>expected quantisation level</li><li>quantisation level</li></ul>	<b>Dolby™ STREAM DURATION</b> <ul style="list-style-type: none"><li>Dolby™ encoded stream duration</li><li>expected stream duration</li><li>Dolby™ encoded stream duration</li></ul>	<b>AUDIO SAMPLE RATE</b> <ul style="list-style-type: none"><li>number of samples per second</li><li>ISO 13818-2, SMPTE ST 377, ST 382, ...</li><li>expected audio sample rate</li><li>audio sample rate, mismatch</li></ul>	<b>TIMECODE</b> <ul style="list-style-type: none"><li>TC presence, validity, continuity</li><li>EBU R 122, SMPTE ST 385, ...</li><li>expected TC value(s)</li><li>TC details, mismatch</li></ul>	<b>DESCRIPTIVE METADATA</b> <ul style="list-style-type: none"><li>descriptive metadata</li><li>SMPTE ST 377</li><li>metadata presence, framework</li></ul>	<b>OPERATIONAL PATTERN</b> <ul style="list-style-type: none"><li>MXF OP signalled in the file</li><li>SMPTE ST 378, ST 390, ...</li><li>conforms to specification</li><li>type of MXF OP</li></ul>	<b>LONG-GOP INDEXING</b> <ul style="list-style-type: none"><li>MXF index data</li><li>SMPTE ST 377</li><li>completely correct index data</li></ul>	<b>SP TRACKS</b> <ul style="list-style-type: none"><li>MXF source package tracks</li><li>SMPTE 377</li><li>amount and type of tracks</li></ul>	<b>SUBTITLES FILE FORMAT</b> <ul style="list-style-type: none"><li>structure of the subtitle file</li><li>EBU Tech 3264, Tech 3350</li><li>file syntax errors</li></ul>	<b>DISPLAY ASPECT RATIO</b> <ul style="list-style-type: none"><li>video display aspect ratio</li><li>expected display aspect ratio</li><li>display aspect ratio, mismatch</li></ul>	<b>GOP OPEN/CLOSED</b> <ul style="list-style-type: none"><li>GOP status</li><li>ISO 13818-2, ...</li><li>expected GOP type(s)</li><li>list of GOPs, mismatch</li></ul>	<b>SUBTITLES LANGUAGE(S)</b> <ul style="list-style-type: none"><li>available subtitle language(s)</li><li>EBU Tech 3264, Tech 3350</li><li>expected language(s)</li><li>subtitle language(s)</li></ul>	<b>TRANSFER CHARACTERISTICS</b> <ul style="list-style-type: none"><li>video transfer characteristics</li><li>H.264, H.265, ...</li><li>expected transfer characteristics</li><li>transfer characteristics, mismatch</li></ul>	<b>FLASHING VIDEO</b> <ul style="list-style-type: none"><li>video with flashes, patterning</li><li>UK OFCOM, ITU-R BT-1702</li><li>conforms to specification</li><li>type of failure</li></ul>	<b>BLURINESS</b> <ul style="list-style-type: none"><li>video perceived as blurry</li><li>subjective</li><li>implementation specific</li><li>implementation specific</li></ul>	<b>COLOURED FRAMES</b> <ul style="list-style-type: none"><li>full-sized single coloured frames</li><li>often caused by software errors</li><li># of frames, colour tolerance</li><li>colour detected</li></ul>
<b>SERVICE CORRELATION</b> <ul style="list-style-type: none"><li>stereo service = MCA service</li><li>service similarity is checked</li><li>correlation duration threshold</li><li>reference, uncorrelated service</li></ul>	<b>AUDIO-TIMING OF AD</b> <ul style="list-style-type: none"><li>AD overlapping dialog/chain audio</li><li>not the same as silence!</li><li>channel lay-out</li></ul>	<b>AUDIO CODING SYNTAX</b> <ul style="list-style-type: none"><li>codec specification compliance</li><li>audio (compression) specs</li><li>conforms to specs</li><li>details of non-compliance</li></ul>	<b>BWF METADATA</b> <ul style="list-style-type: none"><li>metadata in BWF chunks</li><li>EBU Tech 3285 &amp; supplements</li></ul>	<b>Dolby™ METADATA</b> <ul style="list-style-type: none"><li>Dolby™ metadata changes</li><li>example: 2+2 &gt; 5.1 + 2 channels</li><li>expected audio bit depth</li><li>audio bit depth</li></ul>	<b>VIDEO / AUDIO START MATCH</b> <ul style="list-style-type: none"><li>video start time = audio start time</li><li>EBU R 122, SMPTE ST 385, ...</li><li>timing tolerance</li></ul>	<b>CONTAINER FORMAT</b> <ul style="list-style-type: none"><li>container format, wrapper</li><li>SMPTE ST 377, ISO 14496-1, ...</li><li>recommended at wrapper level</li><li>expected wrapper format</li><li>detected wrapper format</li></ul>	<b>VIDEO / AUDIO DURATION MATCH</b> <ul style="list-style-type: none"><li>video duration = audio duration</li><li>SMPTE ST 2049</li><li>expected streamability</li><li>detected streamability</li></ul>	<b>STREAMABLE FILE</b> <ul style="list-style-type: none"><li>file is streamable</li><li>SMPTE ST 2049</li><li>expected streamability</li><li>detected streamability</li></ul>	<b>COMPANY NAME</b> <ul style="list-style-type: none"><li>MXF identification set</li><li>SMPTE ST 377</li><li>MXF product company name</li></ul>	<b>SUBTITLES TIMING</b> <ul style="list-style-type: none"><li>programme TC vs subtitles TC</li><li>EBU Tech 3264, Tech 3350</li><li>timecode mismatches</li></ul>	<b>VIDEO CODING</b> <ul style="list-style-type: none"><li>video codec format</li><li>ISO 13818-2, ...</li><li>unsupported codec, mismatch</li></ul>	<b>DISPLAY FRAME SIZE</b> <ul style="list-style-type: none"><li>video display frame size</li><li>SMPTE ST 377, ISO 14496-14</li><li>expected video display frame size</li><li>signalled video display frame size</li></ul>	<b>VIDEO BIT DEPTH</b> <ul style="list-style-type: none"><li>number of bits per sample</li><li>common values are 8, 10, 12</li><li>expected video bit depth</li><li>video bit depth, mismatch</li></ul>	<b>COLOUR PRIMARIES</b> <ul style="list-style-type: none"><li>declared video colour primaries</li><li>H.264, H.265, ...</li><li>expected colour primaries</li><li>colour primaries, mismatch</li></ul>	<b>VIDEO CADENCE</b> <ul style="list-style-type: none"><li>video cadence</li></ul>	<b>VIDEO NOISE</b> <ul style="list-style-type: none"><li>visual noise</li><li>EBU Tech 3235, ...</li><li>noise threshold</li><li>severity, noise level over time</li></ul>	<b>BLACK BARS</b> <ul style="list-style-type: none"><li>black bars in the video</li><li>top, left, bottom, right</li><li>black level, bar size, type (MV)</li><li>severity, duration</li><li>TC, severity, overall severity</li></ul>
<b>AUDIO CLICKS</b> <ul style="list-style-type: none"><li>audio clicks</li><li>often due to equipment problems</li><li>duration threshold, sensitivity</li><li>relevance/severity</li></ul>	<b>AUDIO DIGITAL CLIPPING</b> <ul style="list-style-type: none"><li>clipped audio waveforms</li><li>clipping duration threshold</li><li>audio channel, service</li></ul>	<b>AUDIO LANGUAGE ID</b> <ul style="list-style-type: none"><li>audio language ID</li><li>expected language ID</li><li>language ID</li></ul>	<b>AUDIO DATA JITTER</b> <ul style="list-style-type: none"><li>audio data jitter level</li><li>example: stream 1 jitter is 4 ns</li><li>expected audio bit depth</li><li>audio bit depth</li></ul>	<b>AUDIO BIT DEPTH</b> <ul style="list-style-type: none"><li>number of bits per sample</li><li>common values are 16, 24, 32</li><li>expected audio bit depth</li><li>audio bit depth</li></ul>	<b>PARTITION MULTIPLEX</b> <ul style="list-style-type: none"><li>essence containers, partitions</li><li>SMPTE ST 377</li></ul>	<b>MODIFICATION DATE</b> <ul style="list-style-type: none"><li>file modification date, time</li><li>SMPTE ST 377</li><li>file modification date, time</li></ul>	<b>INDEX TABLE LOCATION</b> <ul style="list-style-type: none"><li>index table(s) location/position</li><li>SMPTE ST 377, ...</li><li>index table details</li></ul>	<b>MP TRACKS</b> <ul style="list-style-type: none"><li>MXF material package tracks</li><li>SMPTE 377</li><li>amount and type of tracks</li></ul>	<b>TIMECODE - EBU R 122</b> <ul style="list-style-type: none"><li>MXF timecode use</li><li>EBU R 122</li><li>specification compliant</li><li>any EBU R 122 violations</li></ul>	<b>VIDEO BUFFER SIZE</b> <ul style="list-style-type: none"><li>VBV buffer size</li><li>ITU-T H.262 (ISO 13818-2)</li><li>VBV buffer size range</li><li>measured VBV buffer size</li></ul>	<b>MISSING FRAMES</b> <ul style="list-style-type: none"><li>jerky motion, timestamps</li><li>ISO 13818-2</li><li>duration threshold, sensitivity</li><li>missing frames, confidence mismatch</li></ul>	<b>FRAME RATE</b> <ul style="list-style-type: none"><li>video frame rate</li><li>SMPTE ST 377, ISO 13181-2, ...</li><li>expected frame rate</li><li>frame rate, mismatch</li></ul>	<b>ACTIVE FORMAT DESCRIPTION</b> <ul style="list-style-type: none"><li>AFD value(s)</li><li>(cross)checks aspect ratio(s)</li><li>expected AFD value</li><li>AFD absence, value, mismatch</li></ul>	<b>VIDEO FRAME COUNT</b> <ul style="list-style-type: none"><li># of frames in the video</li><li>SMPTE ST 377</li><li>expected video frame count</li><li>video frame count, mismatch</li></ul>	<b>VIDEO FREEZE</b> <ul style="list-style-type: none"><li>multiple adjacent 'frozen' frames</li><li>exclude black, require silence</li><li># of frames, similarity threshold</li><li>similarity measure</li></ul>	<b>PERCEPTUAL ARTEFACTS</b> <ul style="list-style-type: none"><li>picture breakup of various types</li><li>compared to surrounding frames</li><li>severity</li></ul>	<b>ANALOGUE SYNC</b> <ul style="list-style-type: none"><li>line/field/frame distortions</li><li>distorting H and V (rolling)</li><li>severity, duration</li><li>TC, severity, overall severity</li></ul>