

(19) (KR)  
(12) (A)

(51) . Int. Cl.7 (11) 10-2004-0058311  
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(21) 10-2004-7007804  
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(86) PCT/IB2002/004485 (87) wo 2003/044735  
(86) 2002 10 24 (87) 2003 05 30

(30) 01204502.7 2001 11 23 EP(EP)

(71) *... . . . .*

(72) , , . 5656. 6

(74)

(54)

, DVD (3) (3) (3) (33) (36)  
, (JND) (1)  
MPEG

1

(arrangement)

(remote location)

(local station)

(watermark embedders)

)

,

(strength) ,

(contents)

,

가

(details),

가

,

,

,

가

가

가

(embedder)

가

,

,

,

가

가

가

(' 1 ' )

, 가 1

가

(' 2 ' )

,

1

1

2a

2c

1

(1),

(2)

(3)

1

2a DVD 가 2A 201 MPEG (12)  
 8x8 8x8 DCT (DCT)  
 (average luminance) DC  
 AC AC (coarse details)  
 , (fine details)

DVD (3) Frank Hartung Bernd Girod 'Digital Watermarking of MPEG-2 Coded Video in the Bitstream Domain'(ICASSP Vol.4, 1997, pp.2621-2624) DCT MP

EG (remark) (32;partial decoding circuit)  
 DCT 가 MPEG DCT (u,v)  
 DCT 1 X(u,v) (33)  
 가 (321;spath)

(pseudo-random noise sequence)  
(basic watermark pattern) (tiled)  
W  
W  
MPEG  
2B 128×128 128×128 2B 202  
8×8 1  
128×128 128×128 128×128 (36)  
DCT 1  
u,v)

W DCT DCT DCT  
 2B (202) DCT 2A (201) DCT  
 가 (artifacts)  
 C. Podilchuk W. Zeng 'Perceptual Watermarking of Still Images'(IEEE Signal Processing Society  
 1997 Workshop on Multimedia Signal Processing, Princeton, New Jersey, USA, June23-25, 1997, pp.363-36  
 8)  
 (visual models)

, (Watson) (' ') . An  
 differences) (Watson) (' ') . An  
 drew B. Watson 'DCT Quantization Matrices Visually Optimized for Individual Images'(SPIE Vol. 1913, 199  
 2, pp.202-216)

(3) (33) . Podilchuk Zeng 가 , DVD  
DCT .

$$X'(u, v) = \begin{cases} X(u, v) + JND(u, v) \cdot W(u, v) & \text{if } X(u, v) > JND(u, v) \\ X(u, v) & \text{그렇지 않으면} \end{cases}$$

, JND(u,v) DCT

(57)

1.

1

3.

1

(fragile watermark)

4.

가

가

5.

6.

가

7.

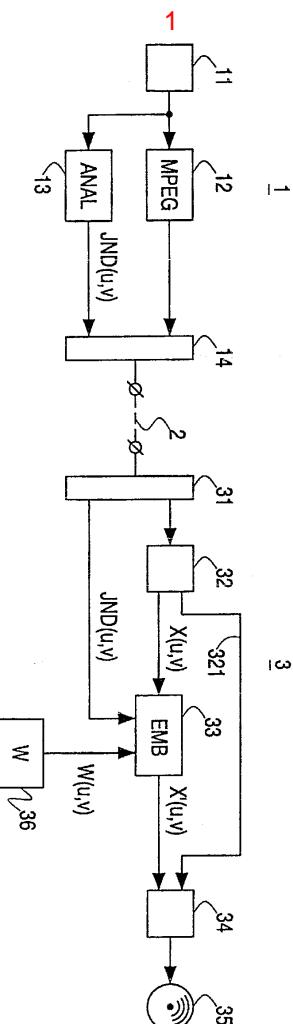
가

8.

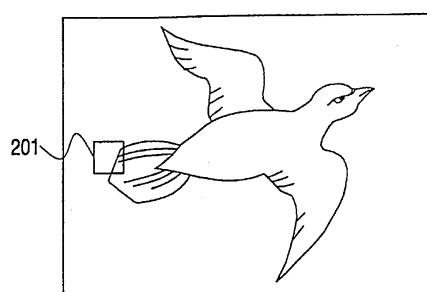
가

가

9.



2a



2b

