



(11)

EP 1 814 191 A3

(12)

EUROPEAN PATENT APPLICATION

(88) Date of publication A3:
29.08.2007 Bulletin 2007/35

(51) Int Cl.:
H01Q 1/22 (2006.01) H01Q 7/00 (2006.01)
G06K 19/077 (2006.01)

(43) Date of publication A2:
01.08.2007 Bulletin 2007/31

(21) Application number: 07101353.6

(22) Date of filing: 29.01.2007

(84) Designated Contracting States:
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR
HU IE IS IT LI LT LU LV MC NL PL PT RO SE SI
SK TR

Designated Extension States:

AL BA HR MK YU

(30) Priority: 30.01.2006 JP 2006020283
08.02.2006 JP 2006030810
02.06.2006 JP 2006154279

(71) Applicant: MATSUSHITA ELECTRIC INDUSTRIAL CO., LTD.
Osaka 571-8501 (JP)

(72) Inventors:

- Nakamura, Kouichi
c/o Matsushita Electric Industrial Co., Ltd.
Osaka 540-6319 (JP)
- Nishino, Tokuji
c/o Matsushita Electric Industrial Co., Ltd.
Osaka 540-6319 (JP)

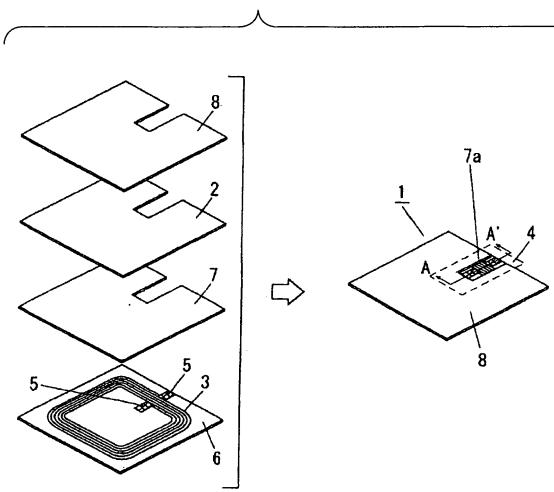
- Fukada, Kikuo
c/o Matsushita Electric Industrial Co., Ltd.
Osaka 540-6319 (JP)
- Kiyosue, Kuniaki
c/o Matsushita Electric Industrial Co., Ltd.
Osaka 540-6319 (JP)
- Yano, Hatsuhiko
c/o Matsushita Electric Industrial Co., Ltd.
Osaka 540-6319 (JP)
- Fujimura, Munenori
c/o Matsushita Electric Industrial Co., Ltd.
Osaka 540-6319 (JP)
- Fukushima Fumio
c/o Matsushita Electric Industrial Co., Ltd.
Osaka 540-6319 (JP)
- Onaka, Yoshio
c/o Matsushita Electric Industrial Co., Ltd.
Osaka 540-6319 (JP)

(74) Representative: Eisenführ, Speiser & Partner
Patentanwälte Rechtsanwälte
Postfach 10 60 78
28060 Bremen (DE)

(54) Antenna apparatus

(57) An antenna apparatus includes a magnetic sheet and an antenna that is provided in the magnetic sheet and has a looped conductor and terminal electrode parts arranged at both ends of the conductor, and a matching circuit that is provided in the magnetic sheet, includes a first capacitor and a second capacitor each of which has a pair of electrodes, and sets a resonant frequency by the antenna and the first and second capacitors. One electrode of the pair of electrodes of the first capacitor is connected to one of the terminal electrode parts, and the other electrode of the pair of electrodes of the first capacitor is connected to the looped conductor. One electrode of the pair of electrodes of the second capacitor is connected to the other one of the terminal electrode parts, and the other electrode of the pair of electrodes of the second capacitor is connected to the looped conductor.

FIG. 1





DOCUMENTS CONSIDERED TO BE RELEVANT					
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)		
X	WO 98/40846 A (KABA SCHLIESSSYSTEME AG [CH]; LOCHER JOHANN [CH]; RUEDISUEHLI ANDRES [) 17 September 1998 (1998-09-17) * page 11, lines 10-21 * * figure 4 * -----	1,5,6	INV. H01Q1/22 H01Q7/00 G06K19/077		
Y	----- GB 2 321 551 A (HALPERN JOHN WOLFGANG [GB]) 29 July 1998 (1998-07-29) * page 4 * * figure 3 * -----	3,4,8,12	1		
Y	EP 1 439 487 A (HITACHI LTD [JP]) 21 July 2004 (2004-07-21) * paragraphs [0029] - [0032] * * figure 3 * -----	3,4,8,12			
			TECHNICAL FIELDS SEARCHED (IPC)		
			H01Q G06K		
The present search report has been drawn up for all claims					
Place of search	Date of completion of the search	Examiner			
Munich	7 May 2007	Kruck, Peter			
CATEGORY OF CITED DOCUMENTS					
X : particularly relevant if taken alone	T : theory or principle underlying the invention				
Y : particularly relevant if combined with another document of the same category	E : earlier patent document, but published on, or after the filing date				
A : technological background	D : document cited in the application				
O : non-written disclosure	L : document cited for other reasons				
P : intermediate document	& : member of the same patent family, corresponding document				

**CLAIMS INCURRING FEES**

The present European patent application comprised at the time of filing more than ten claims.

Only part of the claims have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims and for those claims for which claims fees have been paid, namely claim(s):

No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims.

LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

see sheet B

All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.

As all searchable claims could be searched without effort justifying an additional fee, the Search Division did not invite payment of any additional fee.

Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respect of which search fees have been paid, namely claims:

None of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims, namely claims:

1-13



The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

1. claims: 1-13

relating to an antenna apparatus having a looped conductor and a matching circuit with capacitors connected to said loop conductor

2. claim: 14

relating to a magnetic sheet comprising a sheet base holding a magnetic layer

3. claim: 15

relating to an antenna apparatus comprising a loop antenna provided in proximity to a magnetic sheet

ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.

EP 07 10 1353

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on. The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

07-05-2007

Patent document cited in search report		Publication date		Patent family member(s)		Publication date
WO 9840846	A	17-09-1998	AU	741616 B2		06-12-2001
			AU	5979498 A		29-09-1998
			BR	9805934 A		31-08-1999
			CA	2252411 A1		17-09-1998
			CN	1226984 A		25-08-1999
			EP	0898763 A1		03-03-1999
			JP	2000509869 T		02-08-2000
			KR	200000010848 A		25-02-2000
			ZA	9801382 A		24-08-1998

GB 2321551	A	29-07-1998		NONE		

EP 1439487	A	21-07-2004	JP	2004227046 A		12-08-2004
			US	2004140896 A1		22-07-2004
