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AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

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Declarations under Rule 4.17:

- as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))
- as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))

Published:

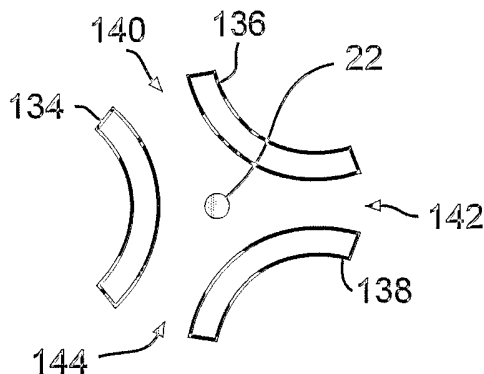
- with international search report
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

(88) Date of publication of the international search report:

27 April 2006

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: METHOD AND APPARATUS FOR CREATING SHAPED ANTENNA RADIATION PATTERNS



(57) Abstract: Methods and apparatus for antennas, wireless cells and networks are described. Antennas use a shield to provide a shape of coverage, area of coverage, and channel assignment pattern configured for high throughput wireless cells and networks. Diplexers are used to form wireless cells configured for high throughput wireless cells and networks.

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## INTERNATIONAL SEARCH REPORT

International application No

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## A. CLASSIFICATION OF SUBJECT MATTER

H01Q25/00 H01Q1/24 H01Q19/10 H01Q1/52 H01Q21/20  
H01Q13/12

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

H01Q

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ, INSPEC

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2003/201937 A1 (LEE CHOON SAE) 30 October 2003 (2003-10-30)	1-8, 10, 11, 20
Y	the whole document	9, 12-19, 21
X	WO 03/003511 A (E.M.W. ANTENNA CO., LTD; RYOU, BYUNG-HOON; SUNG, WEON-MO) 9 January 2003 (2003-01-09)	1, 2, 6-8, 10, 11
Y	US 4 825 222 A (BUTCHER ET AL) 25 April 1989 (1989-04-25)	9
	column 3, line 27 - line 35; figure 1	
A	US 3 317 912 A (KELLEHER KENNETH S) 2 May 1967 (1967-05-02)	1-11
	the whole document	
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☒ Further documents are listed in the continuation of Box C.☒ See patent family annex.

## \* Special categories of cited documents:

\*A\* document defining the general state of the art which is not considered to be of particular relevance

\*E\* earlier document but published on or after the international filing date

\*L\* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

\*O\* document referring to an oral disclosure, use, exhibition or other means

\*P\* document published prior to the international filing date but later than the priority date claimed

\*T\* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

\*X\* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

\*Y\* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

\*&amp;\* document member of the same patent family

Date of the actual completion of the international search

30 January 2006

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Name and mailing address of the ISA/

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## INTERNATIONAL SEARCH REPORT

International application No

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C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	KAGOSHIMA K: "Pattern control antennas for wireless access systems" ANTENNAS AND PROPAGATION SOCIETY INTERNATIONAL SYMPOSIUM, 2000. IEEE JULY 16-21, 2000, PISCATAWAY, NJ, USA, IEEE, vol. 2, 16 July 2000 (2000-07-16), pages 574-577, XP010514607 ISBN: 0-7803-6369-8 the whole document	12-19,21
A	EP 0 734 194 A (SIEMENS AKTIENGESELLSCHAFT) 25 September 1996 (1996-09-25) the whole document	12-21
A	US 5 969 689 A (MARTEK ET AL) 19 October 1999 (1999-10-19) the whole document	12-21
X	US 5 818 385 A (BARTHOLOMEW ET AL) 6 October 1998 (1998-10-06) the whole document	22-38
A	US 6 070 090 A (FEUERSTEIN ET AL) 30 May 2000 (2000-05-30) the whole document	30-38

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US2005/025159

## Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:  
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
3. ☐ Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

## Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☒ As all required additional search fees were timely paid by the applicant, this international search report covers allsearchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fees, this Authority did not invite payment of additional fees.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search reportcovers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

### Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- ☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- ☐ No protest accompanied the payment of additional search fees.

**FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210**

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-11

Opening at least partially covered by RF absorptive material  
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2. claims: 12-21

selecting, stacking and rotating shields  
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3. claims: 22-38

diplexer, attenuator  
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# INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2005/025159

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 2003201937	A1	30-10-2003	NONE	
WO 03003511	A	09-01-2003	CN 1520628 A EP 1399988 A1 JP 2004533785 T US 2004189536 A1	11-08-2004 24-03-2004 04-11-2004 30-09-2004
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