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61/059,571 6 June 2008 (06.06.2008) US(71) Applicant (for CA only): **SCHLUMBERGER CANADA LIMITED** [CA/CA]; 525 3rd Avenue Sw, Calgary Alberta, T2P0G4 (CA).(71) Applicant (for AL, AU, AZ, BG, CO, CZ, DE, DK, GR, HU, ID, IE, IL, IT, KZ, LT, MX, MY, NO, NZ, OM, PL, RO, RU, SI, SK, TM, TN, TR, TT, UA, UZ, ZA only): **SCHLUMBERGER TECHNOLOGY B.V.** [NL/NL]; Parkstraat 83-89, NL-2514 JG The Hague (NL).(71) Applicant (for all designated States except AL, AU, AZ, BG, CA, CO, CZ, DE, DK, FR, GB, GR, HU, ID, IE, IL, IT, JP, KZ, LT, MX, MY, NL, NO, NZ, OM, PL, RO, RU, SI, SK, TM, TN, TR, TT, UA, US, UZ, ZA): **PRAD RESEARCH AND DEVELOPMENT LIMITED**; Po Box 71, Craigmuir Chambers, Road Town Tortola (VG).(71) Applicant (for FR only): **SERVICES PETROLIERS SCHLUMBERGER** [FR/FR]; 42, Rue Saint-dominique, F-75007 Paris (FR).(71) Applicant (for GB, JP, NL only): **SCHLUMBERGER HOLDINGS LIMITED**; Po Box 71, Craigmuir Chambers, Roadtown Tortola (VG).

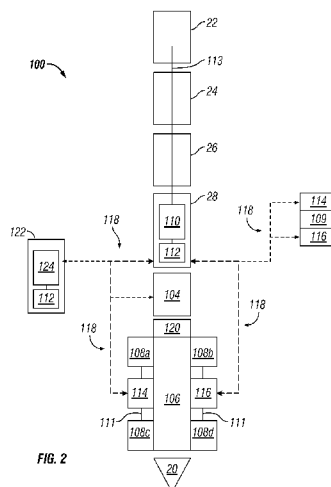
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(54) Title: SYSTEMS AND METHODS FOR PROVIDING WIRELESS POWER TRANSMISSIONS AND TUNING A TRANSMISSION FREQUENCY



(57) Abstract: A system transmits a wireless power transmission from a bottom hole assembly of a drill string. The system has a downhole component having a wireless power transmitter adapted to wirelessly transmit at least one wireless power transmission and a wireless power receiver adapted to receive the at least one wireless power transmission.



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A. CLASSIFICATION OF SUBJECT MATTER***E21B 47/12(2006.01)i, E21B 23/00(2006.01)i***

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B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

E21B 47/12; E21B 17/10; E21B 43/00; G01V 1/00

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

Korean utility models and applications for utility models since 1975.

Japanese utility models and applications for utility models since 1975.

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

eKOMPASS(KIPO internal) & Keywords: wireless, power, transmitter, receiver, frequency, sensor, and battery

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2005-0016770 A1 (MAYES; JAMES C.) 27 January 2005	1-8,10-14
Y	See abstract; paragraphs [0034]-[0061]; claims 1-36; and figures 2, 6, 7	9,15,16
Y	WO 2006-000438 A1 (SERVICES PETROLIERS SCHLUMBERGER et al.) 05 January 2006 See abstract; paragraphs [0033]-[0038], [0044]-[0051]; claims 1-35; and figures 2, 3A-3F, 4A	9,15,16
A	US 4992787 A1 (HELM; WALTER A.) 12 February 1991 See abstract; column 4 lines 20-68, column 5 lines 1-35; claim 1; and figure 4	1-25
A	US 2006-0254764 A1 (VAN ZUILEKOM; ANTHONY H.) 16 November 2006 See abstract; paragraphs [0010]-[0015]; claim 1; and figures 1-4	1-25



Further documents are listed in the continuation of Box C.



See patent family annex.

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"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

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"&" document member of the same patent family

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INTERNATIONAL SEARCH REPORT

Information on patent family members

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2005-0016770 A1	27.01.2005	CA 2472674 C	29.07.2008
		CA 2472674-A1	25.01.2005
		CA 2492962 C	01.04.2008
		CA 2492962-A1	28.11.2005
		CN 1576513 A	09.02.2005
		DE 102004035772 A1	25.05.2005
		FR 2858065 A1	28.01.2005
		GB 0414862 D0	04.08.2004
		GB 0501123 D0	23.02.2005
		GB 0618330 D0	25.10.2006
		GB 2404209 A	26.01.2005
		GB 2404209 A	26.01.2005
		GB 2404209 B	05.10.2005
		GB 2410513 A	03.08.2005
		GB 2410513 A8	11.07.2006
		GB 2410513 B	06.06.2007
		GB 2429477 A	28.02.2007
		GB 2429477 B	20.06.2007
		MXPA04006685A	27.01.2005
		RU2004122771A	20.01.2006
		US 2005-016770 A1	27.01.2005
		US 2005-016771 A1	27.01.2005
		US 7178607 B2	20.02.2007
		US 7178608 B2	20.02.2007
WO 2006-000438 A1	05.01.2006	AT 398228 T	15.07.2008
		CA 2571709-A1	05.01.2006
		DE 602004014351 D1	24.07.2008
		EP 1609947 A1	28.12.2005
		EP 1609947 B1	11.06.2008
		GB 0625459 D0	21.02.2007
		GB 2430223 A	21.03.2007
		GB 2430223 B	12.03.2008
		MX2007000062A	27.03.2007
		NO20070381A	31.01.2007
		RU2006145878A	27.06.2008
		US 2008-308271 A1	18.12.2008
US 4992787 A1	12.02.1991	None	
US 2006-0254764 A1	16.11.2006	None	