



Quality Insights

Patentcloud Quality Insights Annotation Report
***Bell Northern Research, LLC v. TCL Technology Group
Corporation et al***

CDCA-2-21-cv-07323

Focus on: U.S. Pat. No. 8,416,862

Filing date: Sep. 13, 2021

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Map claims to specification and file wrapper

Map claims to specification - '862

Which claim terms are or are not in the specification?

Find relevant specification content as intrinsic evidence for claim term interpretation

24 Terms Identified in This Claim [Click to Select Terms](#)

Select Text

Highlight text from within the claim with your cursor and click on the tooltip "Select Terms" to find references in the Specification.

Claim# 1

A method for **feeding back transmitter beamforming information** from a **receiving wireless communication device** to a **transmitting wireless communication device**,

the method comprising:

the **receiving wireless communication** device **receiving a preamble sequence** from the **transmitting wireless device**;

the **receiving wireless device** **estimating a channel response** based upon the **preamble sequence**;

the **receiving wireless device** **determining an estimated transmitter beamforming unitary matrix (V)** based upon the **channel response** and a **receiver beamforming unitary matrix (U)**;

the **receiving wireless device** **decomposing the estimated transmitter beamforming unitary matrix (V)** to produce the **transmitter beamforming information**;



Claim Analysis finds these terms in the spec: "receiving wireless communication", "estimated transmitter beamforming unitary matrix", "receiver beamforming unitary matrix", as well as other terms that are highlighted in red.

Map claims to specification - '862

Which claim terms are or not in the specification?

Select Text	Claim# 1
Highlight text from within the claim with your cursor and click on the tooltip "Select Terms" to find references in the Specification.	A method for feeding back transmitter beamforming information from a receiving wireless communication device to a transmitting wireless communication device ,
	the method comprising:
	the receiving wireless communication device receiving a preamble sequence from the transmitting wireless device ;
	the receiving wireless device estimating a channel response based upon the preamble sequence ;
	the receiving wireless device determining an estimated transmitter beamforming unitary matrix (V) based upon the channel response and a receiver beamforming unitary matrix (U) ;
	the receiving wireless device decomposing the estimated transmitter beamforming unitary matrix (V) to produce the transmitter beamforming information ;

Review the selected claim element and see how it is defined in the patent specification and related figures.

Selected elements of '862 Claim 1 Selected elements of Claim '862 in Spec

Figures of '862

Select Text

receiver, **beamforming**, **unitary**, **matrix**

The selected clause includes the following keywords:

- receiver** (12)
- beamforming** (25)
- unitary** (21)
- matrix** (28)

Content

[0051] The **beamforming** module 132 is operably coupled to multiply a **beamforming**, **unitary** **matrix** (V) with baseband signals provided by the plurality of constellation mapping modules 128, 130. The **beamforming**, **unitary**, **matrix** V from feedback information from the **receiver**, wherein the feedback information includes a calculated expression of the **beamforming**, **matrix** V having polar coordinates. The **beamforming** module 132 generates the **beamforming**, **unitary**, **matrix** V to satisfy the conditions of "VV^H=I", where "I" is an identity **matrix** of [1 0; 0 1] for 2x2 MIMO wireless communication, is [1 0 0; 0 1 0; 0 0 1] for 3x3 MIMO wireless communication, or is [1 0 0 0; 0 1 0 0; 0 0 1 0; 0 0 0 1] for 4x4 MIMO wireless communication. In

Map claims to specification and Complaint - '862

Does the allegedly infringing product element fall within or outside the patent's scope?

Select Text

receiver, beamforming, unitary, matrix

The selected clause includes the following keywords:

- receiver (12)
- beamforming (25)
- unitary (21)
- matrix (28)

Content

[0051] The **beamforming** module 132 is operably coupled to multiply a **beamforming** **unitary** **matrix** (V) with baseband signals provided by the plurality of constellation mapping modules 128, 130. The **beamforming** module 132 determines the **beamforming** **unitary** **matrix** V from feedback information from the **receiver**, wherein the feedback information includes a calculated expression of the **beamforming** **matrix** V having polar coordinates. The **beamforming** module 132 generates the **beamforming** **unitary** **matrix** V to satisfy the conditions of $V^*V=VV^*=I$, where "I" is an identity **matrix** of [1 0; 0 1] for 2x2 MIMO wireless communication, is [1 0 0; 0 1 0; 0 0 1] for 3x3 MIMO wireless communication, or is [1 0 0 0; 0 1 0 0; 0 0 1 0; 0 0 0 1]

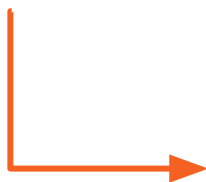
```

graph TD
    Start([Start]) --> 702[Receive preamble/estimate channel response at receiver]
    702 --> 704[Estimate transmitter beamforming unitary matrix (V) at receiver in Cartesian coordinates based upon channel response and receiver beamforming unitary matrix (U)]
    704 --> 706[Convert estimate of beamforming matrix (V) from Cartesian coordinates to polar coordinates]
    706 --> 708[Decompose the polar coordinate estimate of beamforming matrix (V) to reduce a number of feedback components (transmitter beamforming information)]
    708 --> 710[ ]
    
```

With the claim scope interpretation from **Claim Analysis**, verify your findings against the complaint.

Answer the question:

Does the alleged invention element fall within or outside the patent's scope?



143. The '862 Accused Instrumentalities include **determining an estimated transmitter beamforming unitary matrix (V) based upon the channel response and a receiver beamforming unitary matrix (U)**. For instance, the Blackberry KEY2 is an 802.11ac compliant wireless device, and therefore calculates a beamforming unitary matrix V based on a singular value decomposition of the channel response $H=UDV^*$, where D is a diagonal matrix and U is a receiver unitary matrix. (See, e.g., 802.11-2016 at 19.3.12.3.6; https://www.gsmarena.com/blackberry_key2-9187.php; <https://www.devicespecifications.com/en/model/31964a43>.)

Map claims to the file wrapper - '862

Which claim terms are in the file wrapper(i.e. examiner's opinion) ?

Disclosure Rate by Prior Art

Claims	Disclosure by Single Reference		Disclosure by Multiple References	
	Prosecution History	Post-Grant	Prosecution History	Post-Grant
<input checked="" type="checkbox"/> #1	100%	58%	100%	75%
<input checked="" type="checkbox"/> #9	75%	75%	75%	75%
<input type="checkbox"/> #17	100%	58%	100%	75%

Claim# 1
A method for feeding back transmitter beamforming information from a receiving wireless communication device to a transmitting wireless communication device, the method comprising: the receiving wireless communication device receiving a preamble sequence from the transmitting wireless device; the receiving wireless device estimating a channel response based upon the preamble sequence; the receiving wireless device determining an estimated transmitter beamforming unitary matrix (V) based upon the channel response and a receiver beamforming unitary matrix (U); the receiving wireless device decomposing the estimated transmitter beamforming unitary matrix (V) to produce the

Review how the asserted claims were disclosed by the prior art found by the examiner during prosecution and post-grant proceedings.

A higher percentage means more claim elements were disclosed by the prior art.

Claim Insights Summary Table > Claim Table (Claim# 1) | Select A Claim 1 9 **switch between claims**

How is each claim element disclosed by cited prior art? Click numbers to find detailed comparison.

The percentage "%" indicates how many keywords in an element being disclosed by a specific references. [Click](#) to find comprehensive explanation of calculation.

All **Prosecution history** Post-Grant Responded prior arts only

Claims	Prior Art Ref. (4)			
	US2002/0187753	US2004/0042558	US5541607	OTHER REFERENCE
#1.01 (100%)	100%	100%	0%	0%
#1.02 (N/A)	N/A	N/A	N/A	N/A
#1.03 (100%)	100%	100%	0%	0%
#1.04 (100%)	100%	100%	66%	0%

Disclosure Rate by Prior Art

Map claims terms to the file wrapper - '862

Why was this patent granted? Which claims were amended and how did the scope change?

Claims	Prior Art Ref. (4)			
	US2002/0187753	US2004/0042558	US5541607	OTHER REFERENCE
#1.01 (100%)	100%	100%	0%	0%
#1.02 (N/A)	N/A	N/A	N/A	N/A
#1.03 (100%)	100%	100%	0%	0%
#1.04 (100%)	100%	100%	55%	0%
#1.05 (100%)	100%	100%	100%	55%

All of the limitations of this asserted claim element in '862 were 100% known by Hwang (US2004/0042558) and Kim (US2002/0187753).

Answer the questions:
Why was this patent granted?

Claim Insights Summary Table > Claim Table (Claim# 1) > Claim Element Page (Claim# 1.05) > US2002/0187753 | Select A Claim 1 9

Side-by-side comparison; Claim terms not found may imply the reasons for patentability.

1.01 1.02 1.03 1.04 1.05 1.06 1.07

Find 6 Result(s) [Find More Result\(s\)](#) Filter Clear All

Claim Element

#1.05 the **receiving wireless** device determining an estimated **transmitter beamforming unitary matrix** (V) based upon the **channel response** and a **received beamforming unitary matrix** (U);

Prior Art Ref. Hwang [US2004/0042558] Kim [US2002/0187753] Ma [otherreference]

Rejection 4. [20080805-CTIN](#) [Prosecution History](#) [35 U.S.C. § 103](#)

claims 5, 6, 13, 14, 19 and 20 are rejected under 35 u.s.c. 103(a) as being unpatentable over kim and hwang as applied to claims 1, 13 and 19; and further in view of ma et al. (herein after ma) (us publication 'a unified algebraic transformation approach for parallel recursive and adaptive filtering and svd algorithms', ieee 2001).

re claims 5 and 13: the combined disclosures of kim and hwang disclose the method of claims 1 and 9; but fail however to explicitly disclose wherein the **receiving wireless** device decomposing the estimated **transmitter beamforming unitary matrix** (v) to produce the **transmitted** beamforming information comprises the **receiving wireless** device decomposing the estimated **transmitter beamforming unitary matrix** (v) using a qr decomposition technique.

this decomposition technique is however disclosed by ha.

Remarks [20081105-REM](#)

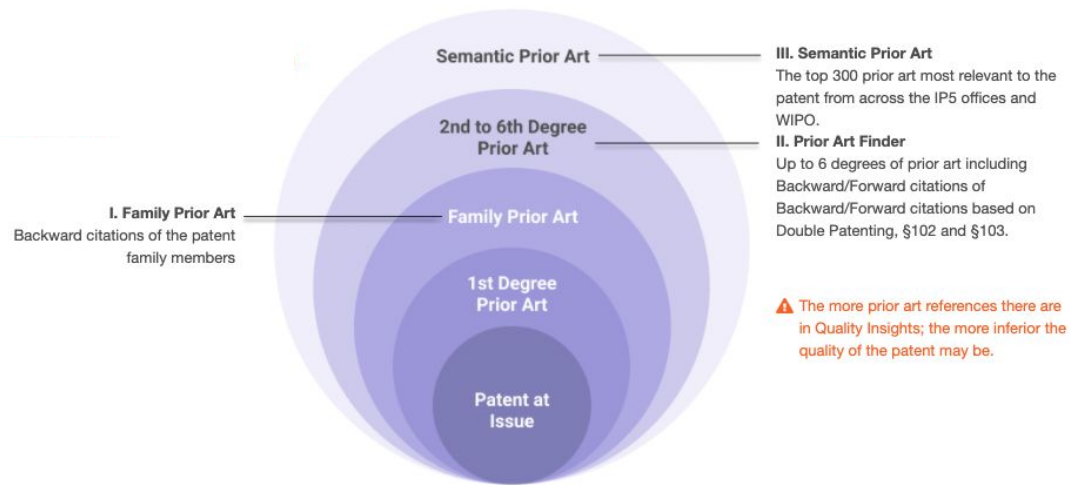
in addition, claims 2, 10, 15 and 6 were rejected under 35 u.s.c. § 103(a) as being unpatentable over kim et al. and hwang et al. in view of the aforementioned claims 2, 5, 6, 10, 13-16, 19 and 20 are dependent upon claims that applicant believes are now allowable. therefore, for at least the same reasons given above with respect to the rejections of claims i, 9 and i7, applicant respectfully submits that claims 2, 5, 6, 10, 13-16, 19 and 20 are not obvious over the prior art of record. accordingly, applicant respectfully requests that the examiner withdraw the § 103 rejection of claims 2, 5, 6, 10, 13-16, 19 and 20. as a result of the foregoing, the applicant asserts that the remaining claims in the application are in condition for allowance, and respectfully requests an early allowance of such claims. the commissioner is hereby authorized to charge any additional fees connected with this communication or credit any overpayment to garlick harrison & markison respectfully submitted, date november 5 2008 / holly i. rudnick/reg.no.43,065(2 14)387-8097/office

[Show Less](#)

Remark from Applicant

Rejection from Examiner

How does Quality Insights generate prior art?



Prior Art Finder

Prior Art Finder for '862

Review cited and citing patents of '862 from the first to the sixth degree

Filter by:

- Applicability
- Legal Basis (§102 or §103)
- Patent Office
- Legal Status

1st Degree Art
10

2nd Degree Art
106

N Degree Art
90

N Degree Art
Extend forward/backward citations from the Second Degree Art

[Discover prior art's similarity with claim chart format in seconds !](#)

KEEP Mode

Ranked By : Legal Basis (§102 first) |

US8416862B2

- ▼ 1st Degree (10)
- ▼ 2nd Degree (20)
- ▼ 3rd Degree (20)
- ▼ 4th Degree (20)
- ▼ 5th Degree (20)
- ▼ 6th Degree

6th Degree List

Rank	Patent No.	Status	Title	Legal Status	Pub. Date	App. Date	Applicant	Legal Basis
1	US7539461B2	Active	Radio apparatus, and method and program ...	Active	2003-03-11	2009-05-26	SANYO ELECTRIC CO LTD	(Pre-AIA) § 102(e)(2)
2	US7962103B2	Active	Radio apparatus, and method and program ...	Active	2009-05-11	2011-06-14	SANYO ELECTRIC CO LTD	(Pre-AIA) § 102(e)(2)
3	US8412115B2	Active	Radio apparatus, and method and program ...	Active	2011-05-02	2013-04-02	SANYO ELECTRIC CO LTD	(Pre-AIA) § 102(e)(2)
4	US20030157205A1	Abandoned Appl.	Inhibitory and preventative effects of proce...	Abandoned Appl.	2002-12-31	2003-08-21	JENSEN CLAUDE JARAKAE	(Pre-AIA) § 102(a) (Pre-AIA) § 102(b) (Pre-AIA) § 102(e)(1)
5	US6236356B1	Lapsed	Position measuring system, position meas...	Lapsed	1999-03-31	2001-05-22	SONY CORP	(Pre-AIA) § 102(a) (Pre-AIA) § 102(b)

Up to 6th Degree
Prior Art List

Family Prior Art

Family Prior Art of '862

Review prior art cited by and cited against the family counterparts when available

Simple Family

1

Backward Citation: Patent

13

Backward Citation: Non-Patent Literature

1

Backward Citation: Patent

Click on Cited Patents for Potential Prior Art

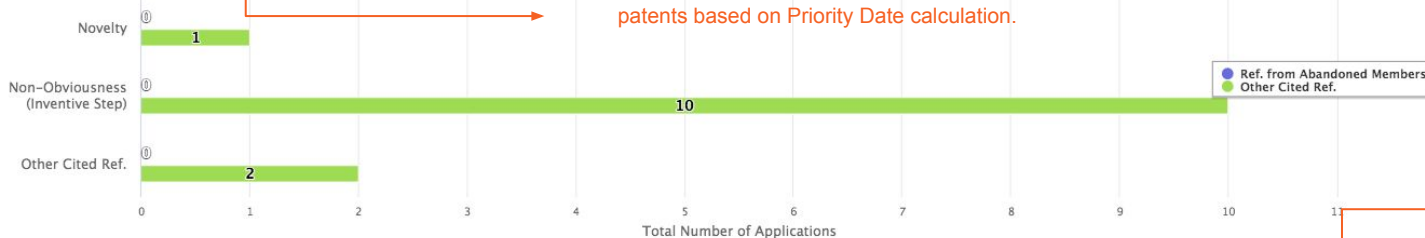
Categorized to indicate relevance; You can start from applicable references cited as novelty prior art

All References (13)

Applicable Only (12)



Choose Applicable Only to find Applicable patents based on Priority Date calculation.



Prior Art List

KEEP Mode

Ranked By : Appl. Date

	<input type="checkbox"/>	#	Patent No.	Title	Legal Status	Appl. Date	Pub./Issue Date	Assignee (Std)	Applicability
	<input type="checkbox"/>	1	US5541607A	Polar digital beamforming method and syst...	Expired	1994-12-05	1996-07-30	HUGHES ELECTRONICS CO...	(Pre-AIA) § 102(a) (Pre-AIA) § 102(b) (Pre-AIA) § 102(e)(2)
	<input type="checkbox"/>	2	US20030139196A1	Reallocation of excess power for full chann...	PGPub - Granted	2002-01-23	2003-07-24	MEDVEDEV IRINA	+2 (Pre-AIA) § 102(a) (Pre-AIA) § 102(b) (Pre-AIA) § 102(e)(1)
	<input type="checkbox"/>	3	US20020187753A1	Radio communication apparatus having mo...	PGPub - Granted	2002-05-07	2002-12-12	SAMSUNG ELECTRONICS C...	(Pre-AIA) § 102(a) (Pre-AIA) § 102(b) (Pre-AIA) § 102(e)(1)

Semantic Prior Art

Semantic Prior Art of '862

Review potential prior art ranked by concept similarity

Across IP5 and WIPO thanks to Patentcloud's proprietary algorithm

Semantic Prior Art

Most Relevant IP5 & WO 300 prior art references based on **Semantic Similarity** among the first claims and abstracts. [Change Scope](#) Select claim text or enter the desired text/keywords

Discover prior art's similarity with claim chart format in seconds! **Prior art references found (within the designated scope) that are deemed as having high semantic similarity will be starred with a ★**

KEEP Mode 1 are of high semantic similarity Ranked By : Relevance

<input type="checkbox"/>	<input type="checkbox"/>	Ranking	Patent No.	<input type="checkbox"/>	★ Title	Legal Status ?	Appl. Date	Pub./Issue Date	Assignee (Std)	Applicability
<input type="checkbox"/>		1	US8515359B2	<input checked="" type="checkbox"/>	★ Method and apparatus to provide low cost t...	Active	2005-03-09	2013-08-20	INTEL CORP	(Pre-AIA) § 102(e)(2)
<input type="checkbox"/>		2	US20060234645A1	<input checked="" type="checkbox"/>	Method and apparatus to provide low cost t...	PGPub - Granted	2005-03-09	2006-10-19	INTEL CORP	(Pre-AIA) § 102(e)(1)
<input type="checkbox"/>		3	US20110028108A1	<input checked="" type="checkbox"/>	Method and apparatus to provide low cost t...	Abandoned	2010-10-05	2011-02-03	LIN XINTIAN E	+1 (Pre-AIA) § 102(e)(1)
<input type="checkbox"/>		4	WO2002/021721A1	<input checked="" type="checkbox"/>	METHOD FOR TRANSMITTING BEAM FOR...	Abandoned	2001-08-02	2002-03-14	SIEMENS AG	(Pre-AIA) § 102(a) (Pre-AIA) § 102(b) (Pre-AIA) § 102(e)(1)
<input type="checkbox"/>		5	US20050254477A1	<input checked="" type="checkbox"/>	Beamforming method for an SDM/MIMO sy...	Abandoned	2005-05-17	2005-11-17	SAMSUNG ELECTRONICS C...	+1 (Pre-AIA) § 102(e)(1)
<input type="checkbox"/>		6	US9037099B2	<input checked="" type="checkbox"/>	Techniques to manage channel prediction	Active	2013-05-13	2015-05-19	INTEL CORP	(Pre-AIA) § 102(e)(2)
<input type="checkbox"/>		7	US20130251009A1	<input checked="" type="checkbox"/>	TECHNIQUES TO MANAGE CHANNEL PRE...	PGPub - Granted	2013-05-13	2013-09-26	QINGHUA LI	+1 (Pre-AIA) § 102(e)(1)
<input type="checkbox"/>		8	US20060056335A1	<input checked="" type="checkbox"/>	Closed loop feedback in MIMO systems	PGPub - Granted	2004-09-10	2006-03-16	LIN XINTIAN E	+2 (Pre-AIA) § 102(e)(1)
<input type="checkbox"/>		9	US20060098580A1	<input checked="" type="checkbox"/>	Apparatus and method capable of beam for...	Abandoned	2004-11-08	2006-05-11	LI QINGHUA	+1 (Pre-AIA) § 102(e)(1)

Semantic Prior Art of '862

Review potential prior art ranked by concept similarity

US8416862B2 [🔗](#)

Efficient feedback of channel information in a closed loop beamforming wireless communication system

Overview History Claim Analysis Claim Insights Family Prior Art Prior Art Finder **Semantic Prior Art** File Wrapper Search

[📘 About Semantic Prior Art](#)

Semantic Prior Art

Most Relevant IP5 & WO 300 prior art references based on [Semantic Similarity](#) within the scope below. [🔄 Reset to Default](#)

Enter text to start searching for semantic prior art (English only)

+ Add text from claims

Submit

[🔗 Discover prior art's similarity with claim chart format in s...](#)

Add text from claims

✕

Select A Claim

1

2

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Next 10

method comprising: the receiving wireless communication device receiving a preamble sequence from the transmitting wireless device; the receiving wireless device estimating a channel response based upon the preamble sequence; the receiving wireless device determining an estimated transmitter beamforming unitary matrix (V) based upon the channel response and a receiver beamforming unitary matrix (U); the receiving wireless device decomposing the estimated transmitter beamforming unitary matrix (V) to produce the transmitter beamforming information; and the receiving wireless device wirelessly sending the transmitter beamforming information to the

Add



adding text from claims to find more related Prior Art

Comparison tools

Prior Art Comparison (claim chart format)

What does this prior art say about the critical elements?

1.01
1.02
1.03
1.04
1.05
1.06
1.07

Find **18** Result(s) | Disclosure Rate 60%

Disclosure Rate of Prior Art

Claim Element

#1.05 the receiving wireless device determining an estimated transmitter beamforming unitary matrix (V) based upon the channel response and a receiver beamforming unitary matrix (U);

Keyword List ⓘ

- transmitter (30) FW PA
transmitters
Transmitters
- receiver (28) FW PA
receivers
- channel response (6) FW PA
channel responses
receiving wireless (0) FW
beamforming unitary mat... (0) FW

US9037099B2 Content

Claims

Claim# 13 The at least one non - transitory machine - readable storage medium of claim 12, the measured channel state information comprising channel responses for previously communicated frames of information .

Claim# 19 The method of claim 18 , comprising using the updated beamforming matrix to perform beamforming for a transmission at the second future point in time by a transceiver array having multiple transmitters and multiple antennas .

Claim# 25 The method of claim 20 , the measured channel state information comprising channel responses for previously communicated frames of information .

Claim# 8 The apparatus of claim 1 , the measured channel state information comprising channel responses for previously communicated frames of information .

Specification

[0014] In one embodiment , system 100 may include various fixed devices , such as base station 110 . Base station 110 may comprise a generalized equipment set providing connectivity , management , and control of another device , such as subscriber stations 120 , 150 . In one embodiment , for example , base station 110 may be implemented as a base station arranged to operate in accordance with the IEEE 802.16 series of protocols , such as the IEEE 802.16-REVd Draft Standard , the IEEE 802.16e Draft Standard , and so forth . For example , base station 110 may include a MIMO system having multiple transmitters / receivers (& # x201c;transceivers” ;) and multiple antennas . The embodiments are not limited in this context .

[0018] In general operation , the nodes of system 100 may operate in multiple operating modes . For example , subscriber station 120 , subscriber station 150 and base station 110 may operate in at least one of the following operating modes : a single - input - single - output (SISO) mode , a multiple - input - single - output (MISO) mode , a single - input - multiple - output (SIMO) mode , and/or in a MIMO mode . In a SISO operating mode , a single transmitter and a single receiver may be used to communicate

Answer the question:

What does this prior art say about the Claim elements: “channel response” ?

Discover prior art similarity with keywords (includes keyword stemming) mapped to the selected prior art reference Abstract, Claims, and Specification.

Prior Art Comparison (sample output)

Easily generate a table like below

Claim		Claim-Term Interpretation	Semantic Prior Art - '099	3rd Degree Citation Prior Art - B
1	A method for feeding back transmitter beamforming information from a receiving wireless communication device to a transmitting wireless communication device,	Refer to Claim Analysis results	40%	.....
	the method comprising:	.....	N/A	.....
	the receiving wireless communication device receiving a preamble sequence from the transmitting wireless device;	.....	0%	
	the receiving wireless device estimating a channel response based upon the preamble sequence;	.....	33%	.....
	the receiving wireless device determining an estimated transmitter beamforming unitary matrix (V) based upon the channel response and a receiver beamforming unitary matrix (U);		60%	
	the receiving wireless device decomposing the estimated transmitter beamforming unitary matrix (V) to produce the transmitter beamforming information;		20%	
	and the receiving wireless device wirelessly sending the transmitter beamforming information to the transmitting wireless device.	.....	20%	.....

System-identified keywords and key phrases
(highlighting of other keywords is available)

Results from claim to specification and file wrapper mapping

Results from prior art comparison by claim element

Prior Art downloads

Prior Art downloads

Select all

Export

US6928306B2 Active / Accessible Until 2020-0

Portable mobile unit

Overview Claim Analysis Claim Ins

#	Patent No.	Title
<input checked="" type="checkbox"/>	1 CN1247662A	Dual use spea
<input checked="" type="checkbox"/>	2 EP0998105B1	Mobile teleph
<input checked="" type="checkbox"/>	3 JPH09-036932A	EXTERNAL R
<input checked="" type="checkbox"/>	4 JPH11-055358A	MOBILE RAD
<input checked="" type="checkbox"/>	5 US5317622	Ringling circuit for use in a telephone set f... Abandoned 1994-05-31 1993-02-23 NEC CORP (Pre-AIA) § 102(a) (Pre-AIA) § 102(b) (Pre-AIA) § 102(e)(1) (Pre-AIA) § 102(e)(2)

Export

Export Type: Patent List (Excel) Patent List (CSV) Full Text (PDF) Front Page (PDF)

Export Items: Selected Patents

Export Fields: Customized All Fields Save as my default settings.

Patent Field:

<input checked="" type="checkbox"/> Patent Office	<input checked="" type="checkbox"/> Appl. No.	<input type="checkbox"/> Appl. No. (PTO)	<input checked="" type="checkbox"/> Appl. Date
<input type="checkbox"/> Earliest Appl.	<input checked="" type="checkbox"/> Title	<input type="checkbox"/> Title (English)	<input type="checkbox"/> Patent No.
<input type="checkbox"/> Patent No. (PTO)	<input type="checkbox"/> Pub./Issue Date	<input type="checkbox"/> Pub. No.	<input type="checkbox"/> Pub. Date

File Name: Patentlist-Patentcloud

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Download patent data in Excel or PDF format for Family Prior Art, Second Degree Prior Art, and/or Semantic Prior Art.

Prosecution and PTAB History

Key Events

Key Events - '862

1 Prosecution & 5 Post-Grant

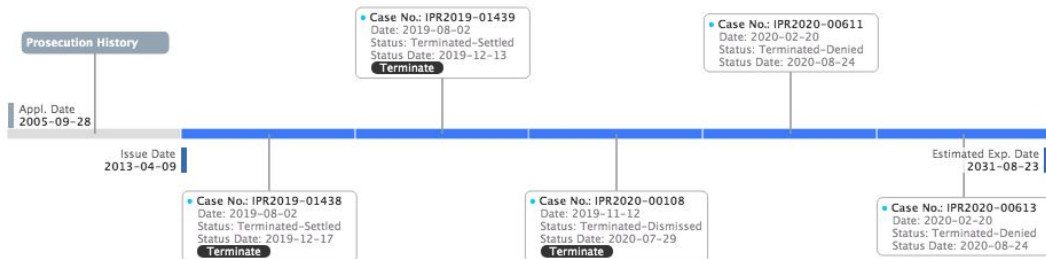
Event History 6	Family Status 1 Applications	Prior Art Status 392 Applications / 6 NPL References
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of Family Counterparts and Legal Status

of Highly Relevant Prior Art References

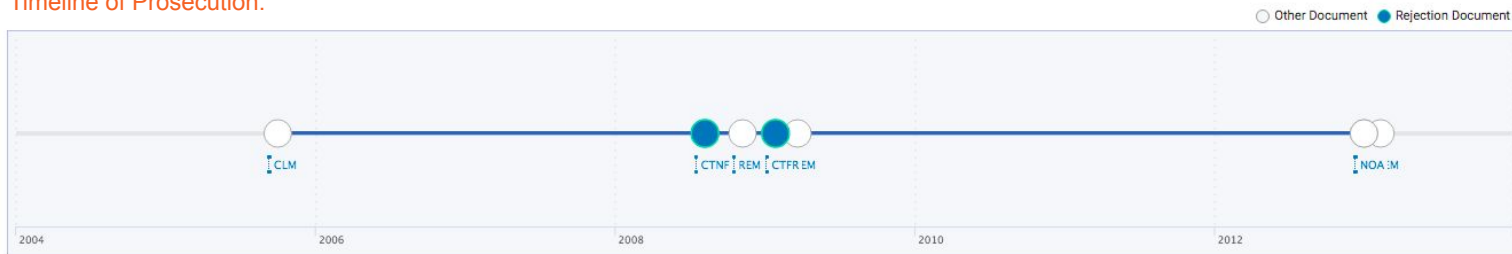
Event History | 1 Prosecution History / 5 Post-Grant

Validity challenges to a patent in its prosecution history and post-grant events



Legend	
Document Code	Document Description
CTFR	Final rejection
CTNF	Non-final rejection
CLM	Claims
REM	Remarks

Timeline of Prosecution:



Key Events - '862

Prosecution History

11/237341 Prior Art Ref. | 4 Ref.

Check prior art cited and the legal basis of these challenges

Double Patenting 0 Ref.

§ 102 0 Ref.

§ 103 4 Ref.

[US20020187753 \(1st\)](#) [other reference](#) [US20040042558](#) [US5541607](#)
 Kim Ma Hwang Reinhardt

Summary of 11/237341 History | 8 Event(s)

Clickable events for original OAs and their OCR version when available.

Direct links to Grounds,

Claims Highlighted and Prior Art Details

Data Last Updated on: 2021-09-23

Descriptions (Code)	Date	Prior Art Ref.
Applicant Arguments/Remarks Made in an Amendment (REM)	2013-02-07	
Notice of Allowance (NOA)	2012-12-28	
Notice of Allowance (NOA)	2012-12-28	
Applicant Arguments/Remarks Made in an Amendment (REM)	2009-03-18	
Final Rejection (CTFR)	2009-01-23	Grounds 3 ^
Legal Basis	Claims	Prior Art Ref.
35 U.S.C. § 103	claim 1,5,6,13,19	Kim US20020187753 (1st) Hwang US20040042558 Ma (other reference)
35 U.S.C. § 103	claim 1,2,9,10,15,16	Kim US20020187753 (1st) Hwang US20040042558 Reinhardt US5541607

Key Events - '862

Post-Grant History

Event History

6

Family Status

1 Applications

Prior Art Status

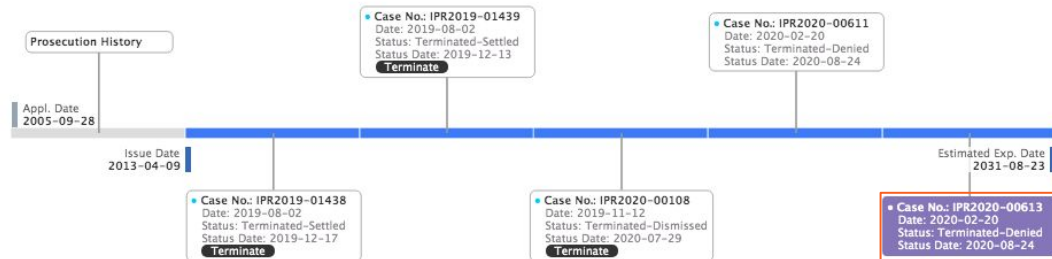
392 Applications / **6** NPL References

Event History | **1** Prosecution History / **5** Post-Grant

of Family Counterparts and Legal Status

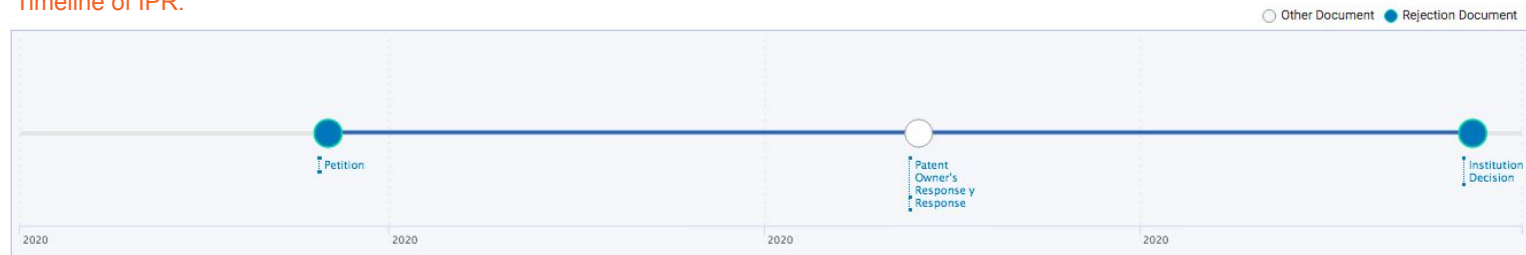
of Highly Relevant Prior Art References

Validity challenges to a patent in its prosecution history and post-grant events



Click to view each event in summary and details of IPR

Timeline of IPR:



Key Events - '862

Post Grant History

IPR2020-00613 Prior Art Ref. | 2 Ref.

Check prior art cited and the legal basis of these challenges

Double Patenting 0 Ref.

§ 102 0 Ref.

§ 103 4 Ref.

[US7570696 \(1st\)](#) [other reference](#) [other reference](#) [other reference](#)
 Maltsev Sadrabadi Haykin Yang

Order

ORDER Accordingly, it is ORDERED that the Petition is denied; and FURTHER ORDERED that no inter partes review is instituted.

Summary of IPR2020-00613 History | 4 Event(s)

Clickable events for original OAs and their OCR version when available.

Direct links to Grounds, Claims Highlighted and Prior Art Details

Data Last Updated on: 2021-09-23

Descriptions (Code)	Date	Prior Art Ref.
Institution Decision	2020-08-24	Grounds 4
Patent Owner's Preliminary Response	2020-05-26	
Patent Owner's Response	2020-05-26	
Petition	2020-02-20	Grounds 2
Legal Basis 35 U.S.C. § 103	Claims claim 9,11,12	Prior Art Ref. Maltsev US7570696 (1st) Sadrabadi (other reference) Haykin (other reference) Maltsev US7570696 (1st)

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<input type="checkbox"/> Descriptions (Code) ?	Party	Date ?
<input type="checkbox"/> Notice of Allowance (NOA)	USPTO	2015-09-24
<input type="checkbox"/> Applicant Arguments/Remarks Made in an Amendment (REM)	Applicant	2015-06-19
<input type="checkbox"/> Non-Final Rejection (CTNF)	USPTO	2015-03-19
<input type="checkbox"/> Request for Continued Examination (RCEX)	Applicant	2015-03-03
<input type="checkbox"/> Applicant Arguments/Remarks Made in an Amendment (REM)	Applicant	2015-03-03
<input type="checkbox"/> Final Rejection (CTFR)	USPTO	2014-11-03
<input type="checkbox"/> Applicant Arguments/Remarks Made in an Amendment (REM)	Applicant	2014-10-15
<input type="checkbox"/> Non-Final Rejection (CTNF)	USPTO	2014-07-15
<input type="checkbox"/> Request for Continued Examination (RCEX)	Applicant	2014-06-26
<input type="checkbox"/> Applicant Arguments/Remarks Made in an Amendment (REM)	Applicant	2014-06-26
<input type="checkbox"/> Final Rejection (CTFR)	USPTO	2014-02-26
<input type="checkbox"/> Applicant Arguments/Remarks Made in an Amendment (REM)	Applicant	2014-02-07
<input type="checkbox"/> Non-Final Rejection (CTNF)	USPTO	2013-11-07

Data Last Updated on 2021-04-08

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Rejections, Remarks, and Notice of Allowance in Prosecution History | 13 Records ↓

<input type="checkbox"/> Descriptions (Code) ?	Party	Date ?
<input type="checkbox"/> Notice of Allowance (NOA)	USPTO	2015-09-24
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<input type="checkbox"/> Applicant Arguments/Remarks Made in an Amendment (REM)	Applicant	2014-10-15
<input type="checkbox"/> Non-Final Rejection (CTNF)	USPTO	2014-07-15
<input type="checkbox"/> Request for Continued Examination (RCEX)	Applicant	2014-06-26
<input type="checkbox"/> Applicant Arguments/Remarks Made in an Amendment (REM)	Applicant	2014-06-26
<input type="checkbox"/> Final Rejection (CTFR)	USPTO	2014-02-26
<input type="checkbox"/> Applicant Arguments/Remarks Made in an Amendment (REM)	Applicant	2014-02-07
<input type="checkbox"/> Non-Final Rejection (CTNF)	USPTO	2013-11-07

Data Last Updated on 2021-04-08

Prosecution and PTAB History Side-by-side PDF and OCR

Side by Side: PDF & OCR



Conduct a keyword search in a single document to identify the claim scope quickly and easily. You can even search additional claim terms within rejections.

The screenshot displays a software interface for keyword searching in a patent document. On the left, a 'Keywords (2)' panel is highlighted with an orange box. It contains a 'Select a Keyword Set' dropdown, a 'Clear All' button, and two keyword entries: 'sensor' (33) and 'flexible substrate (1)'. Below these is an '+ Add new keyword' button and a 'Save to Keyword Set' button at the bottom.

The main area shows a side-by-side comparison of a patent document (left) and its OCR text (right). The document is titled 'U9926311B2 - CTNF [2015-03-19]' and is page 5 of 18. The document text includes:

Application/Control Number: 13/284,674 Page 5
Art Unit: 2867

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the touch panel taught by Grant by adding drive or sense electrodes made of flexible conductive material as taught by Hotelling since the sensor traces provide level shifting from a low voltage level to a higher voltage level, thus providing a better signal-to-noise ratio for improved noise reduction purposes while the drive traces provide shielding for the sense traces.

Neither Grant nor Hotelling specifically teach wherein the flexible conductive material of the drive or sense electrodes comprises first and second conductive lines that electrically contact one another at an intersection.

However, Gray does teach wherein the flexible conductive material of the drive or sense electrodes comprises first and second conductive lines that electrically contact one another at an intersection (Fig. 2; [0063]: **A number of conductors forming rows and columns of a conductive pattern (e.g., indium tin oxide (ITO)) may be deposited on a substrate composed of polyester or other material on one or more layers of the touchscreen... the row and column oriented conductors may be disposed on the same layer...**; See also Miller US 5,089,672; Col. 2, lines 11-16; Col. 5, lines 1-20; Col. 5, lines 61-68).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the combination of Grant and Hotelling by including the conductive lines (rows and columns) taught by Gray for the purpose of "providing paths for signals traveling through the touchscreen" (See Gray; Abstract).

The OCR text on the right mirrors the document text but includes additional context from rejections, such as: '103(a) as being unpatentable over Grant et al. US 2008/0303792 A1 (previously cited and ... PAGE 5 ... Application/Control Number: 13/284,674 Page 4 Art Unit: 2867 hereinafter Grant) in View of Hotelling et al. US 2008/0158183 A1 (previously cited and hereinafter Hotelling), in further View of Gray et al. US 2010/00451614 (previously cited and hereinafter Gray) and in further View of Frey et al. US 2009/0219257 (Newly cited and hereinafter Frey). Regarding claim 1, Grant does teach an apparatus (Abstract) comprising: a substantially flexible substrate (Abstract: flexible touch sensitive surface); and a touch [0004], [0005], [0006], [0006], [0022], [0023], [0027], and [0071], e.g., flexible surface, flexible circuit, and capacitance touch [0004] which must be conductive to receive user input) disposed on the substantially flexible substrate (see at least Figs. 1A-1C; [0009-0011]), configured to bend with the substantially flexible substrate (Figs. 1A-1C, 3 and the corresponding descriptions; [0003]). Grant does not specifically teach the touch [0004] comprising drive or sense electrodes made of flexible conductive material. However, Hotelling does teach a touch [0004] (Fig. 2a, 5 and the corresponding descriptions, and the Summary of the Invention, i.e., a touch [0004] comprises of row and column traces made of copper) comprising drive or sense electrodes (see at least Figs. 1 and 2a; [0008; 0030-0033]; claim 9; sense traces formed on a first side of a dielectric substrate; and drive traces formed on a second side of the substrate) made of flexible conductive material ([0008]; traces made of copper or other highly conductive metals running along the edge of the substrate). ... PAGE 6 ... Application/Control Number: 13/284,674 Page 5 Art Unit: 2867 It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the touch panel taught by Grant by adding drive or sense electrodes made of flexible conductive material as taught by Hotelling since the [0004] traces provide level shifting from a low voltage level to a higher voltage level, thus providing a better signal-to-noise ratio for improved noise reduction purposes while the drive traces provide shielding for the sense traces. Neither Grant nor Hotelling specifically teach wherein the flexible conductive material of the drive or sense electrodes comprises first and second conductive lines that electrically contact one another at an intersection.



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