EXHIBIT A

P.R. 4-5(d) Joint Claim Construction Chart

Note: Terms being construed are in **bold**. For brevity, (1) only asserted claims are listed in the chart, and (2) proposed constructions for claim terms are only listed once per patent, where they first appear. The presence of the term in subsequent claims (asserted and non-asserted) within the same patent or other asserted patents, if applicable, is indicated in a parenthetical accompanying each disputed claim term.

U.S. Patent No. 6,088,326

'326 Patent Claim Element	Disputed Term	Plaintiff's Proposed Construction	Defendants' Proposed Construction	Court's Construction
Claim 1				
1. A transmission controller for processing data items to be transmitted over a **wireless link** connecting a central terminal and a **subscriber terminal** of a wireless telecommunications system, a single frequency channel being employed for transmitting data items pertaining to a plurality of **wireless links**, the transmission controller comprising:	wireless link (Appears in '326 Patent cls. 1, 2, 5, 9, 11–13; '211 Patent cls. 1, 2, 5–7; '819 Patent cls. 1, 7, 8, 11, 12, 18, 21–25, 29; '327 Patent 1, 11–22.)	[AGREED]	[AGREED]	"a radio connection between a central terminal and a particular subscriber terminal for communicating data items therebetween"
	subscriber terminal (Appears in '326 Patent cls. 1, 6, 8–12, 14; '211 Patent cls. 1, 5, 6, 8, 9; '819 Patent cls. 1, 8–12, 19, 21–25, 27, 29, 31; '327 Patent cls. 1, 11, 13–22.)	"user equipment"	"a fixed-location device"	
an **orthogonal code** generator for providing an **orthogonal code** from a set of `m` **orthogonal codes** used	orthogonal codes (Appears in '326 Patent cls. 1, 3–5, 11, 12; '211 Patent cls. 1, 3–6; '819	[AGREED]	[AGREED]	"codes that cross-correlate to zero with respect to each other"

’326 Patent Claim Element	Disputed Term	Plaintiff’s Proposed Construction	Defendants’ Proposed Construction	Court’s Construction
to create `m` **orthogonal channels** within the single frequency channel;	Patent cls. 1, 3, 5, 7, 12, 14, 16, 18, 21–25, 29; ’327 Patent cls. 10, 12–16.)			
	orthogonal channels (Appears in ’326 Patent cls. 1, 2, 5–15; ’211 Patent cls. 1, 2, 5–10; ’819 Patent cls. 1, 7–12, 18–25, 27–29, 31, 32; ’327 Patent cls. 10, 13–16.)	[AGREED]	[AGREED]	“a set of channels created using the orthogonal codes”
a first encoder for combining a data item to be transmitted on the single frequency channel with said **orthogonal code** from the **orthogonal code** generator, the **orthogonal code** determining the **orthogonal channel** over which the data item is transmitted, whereby data items pertaining to different **wireless links** may be transmitted simultaneously within different **orthogonal**				

’326 Patent Claim Element	Disputed Term	Plaintiff’s Proposed Construction	Defendants’ Proposed Construction	Court’s Construction
channels of said single frequency channel; and				
a **TDM encoder** arranged to apply **time division multiplexing (TDM) techniques** to the data item in order to insert the data item within a **time slot** of the **orthogonal channel**, whereby a plurality of data items relating to different **wireless links** may be transmitted within the same **orthogonal channel** during a predetermined frame period.	TDM encoder (Appears in ’326 Patent cls. 1, 2, 5, 8–11; ’819 Patent cl. 11; ’327 Patent cl. 15.)	“hardware and/or software for applying TDM techniques”	“a device that applies time division multiplexing (TDM) techniques to share a communication channel among multiple wireless links”	
	time division multiplexing (TDM) techniques (Appears in ’326 Patent cls. 1, 5–8, 11, 12, 14, 15; ’211 Patent cls. 8–10; ’819 Patent cl. 11; ’327 Patent cl. 15.)	“techniques for allocating an interval of time within a predetermined frame period to a data item, based on one or more characteristics associated with the data item”	“methods in which a communication channel is shared among multiple wireless links by allowing each to use the channel for a given period of time in a defined, repeated sequence”	
	time slot (Appears in ’326 Patent cls. 1, 5, 7, 11, 12, 15; ’211 Patent cls. 1, 5, 6, 10; ’327 Patent cls. 15, 16.)	“an interval of time”	“a period of time during which a single wireless link is permitted to use a shared communication channel”	
Claim 2				
2. A transmission controller as claimed in claim 1, further comprising:				
an **overlay code**	overlay code	“orthogonal codes used	“a second code applied	

’326 Patent Claim Element	Disputed Term	Plaintiff’s Proposed Construction	Defendants’ Proposed Construction	Court’s Construction
generator for providing an **overlay code** from a first set of ‘n’ **overlay codes** which are orthogonal to each other; and	(Appears in ’326 Patent cls. 2, 5, 9–11, 13; ’211 Patent cls. 2, 5, 7, 8; ’819 Patent cls. 1, 2, 4, 6–10, 12, 13, 15, 17–32; ’327 Patent cls. 13, 14.)	to increase the number of orthogonal channels that would otherwise be available”	in series with the orthogonal code”	
a second encoder, selectively operable instead of the **TDM encoder**, to apply the **overlay code** from the **overlay code** generator to said data item, whereby ‘n’ data items pertaining to different **wireless links** may be transmitted simultaneously within the same **orthogonal channel**.				
Claim 3				
3. A transmission controller as claimed in claim 1, wherein the **orthogonal code** generator is a storage arranged to store the set of **orthogonal codes**.				
Claim 4				

’326 Patent Claim Element	Disputed Term	Plaintiff’s Proposed Construction	Defendants’ Proposed Construction	Court’s Construction
4. A transmission controller as claimed in claim 1, wherein the set of **orthogonal codes** comprise a set of Rademacher-Walsh (RW) codes.				
Claim 5				
5. A central terminal of a wireless telecommunications system, comprising a transmission controller having:				
an **orthogonal code** generator for providing an **orthogonal code** from a set of ‘m’ **orthogonal codes** used to create ‘m’ **orthogonal channels** within the single frequency channel;				
a first encoder for combining a data item to be transmitted on the single frequency channel with said **orthogonal code** from the **orthogonal code**				

’326 Patent Claim Element	Disputed Term	Plaintiff’s Proposed Construction	Defendants’ Proposed Construction	Court’s Construction
generator, the **orthogonal code** determining the **orthogonal channel** over which the data item is transmitted, whereby data items pertaining to different **wireless links** may be transmitted simultaneously within different **orthogonal channels** of said single frequency channel;				
a **TDM encoder** arranged to apply **time division multiplexing (TDM) techniques** to the data item in order to insert the data item within a **time slot** of the **orthogonal channel**, whereby a plurality of data items relating to different **wireless links** may be transmitted within the same **orthogonal channel** during a predetermined frame period;				
an **overlay code**				

'326 Patent Claim Element	Disputed Term	Plaintiff's Proposed Construction	Defendants' Proposed Construction	Court's Construction
generator for providing an **overlay code** from a first set of 'n' **overlay codes** which are orthogonal to each other;				
a second encoder, selectively operable instead of the **TDM encoder**, to apply the **overlay code** from the **overlay code** generator to said data item, whereby 'n' data items pertaining to different **wireless links** may be transmitted simultaneously within the same **orthogonal channel**, wherein the **orthogonal code** generator is a storage arranged to store the set of **orthogonal codes** and wherein the set of **orthogonal codes** comprise a set of Rademacher-Walsh (RW) codes.				
Claim 6				
6. A central terminal as	channelisation means for	Function: determining	Indefinite under 35 USC	

'326 Patent Claim Element	Disputed Term	Plaintiff's Proposed Construction	Defendants' Proposed Construction	Court's Construction
claimed in claim 5, further comprising **channelisation means for determining which of the orthogonal channels will be subject to TDM techniques, and for transmitting that information to a plurality of subscriber terminals within the wireless telecommunications system**.	determining which of the orthogonal channels will be subject to TDM techniques, and for transmitting that information to a plurality of subscriber terminals within the wireless telecommunications system	which of the orthogonal channels will be subject to TDM techniques, and transmitting that information to a plurality of subscriber terminals within the wireless telecommunications system Corresponding Structure: modem shelf including a demand assignment engine connected to a network and one or more modems, the demand assignment engine determining which of the orthogonal channels will be subject to TDM techniques based on information regarding the capability of subscriber terminals to support TDM techniques and/or the type of data items to be transmitted, and equivalents thereof	§ 112	

’326 Patent Claim Element	Disputed Term	Plaintiff’s Proposed Construction	Defendants’ Proposed Construction	Court’s Construction
		Corresponding Structure (alternate construction): modem shelf including a demand assignment engine connected to a network and one or more modems, the demand assignment engine determining which of the orthogonal channels will be subject to TDM techniques using the algorithm: (1) consider whether the subscriber terminal to which data will be transmitted incorporates the features necessary to support TDM techniques; (2) consider the type of data that is to be transmitted in an orthogonal channel; and (3) if the subscriber terminal supports TDM techniques and the data type is one for which TDM techniques should be applied, then apply TDM techniques (otherwise do not), and		

'326 Patent Claim Element	Disputed Term	Plaintiff's Proposed Construction	Defendants' Proposed Construction	Court's Construction
		equivalents thereof		
Claim 7				
7. A central terminal as claimed in claim 6, wherein the **channelisation means also determines, for those orthogonal channels subject to TDM techniques, how many time slots will be provided within each orthogonal channel**.	channelisation means also determines, for those orthogonal channels subject to TDM techniques, how many time slots will be provided within each orthogonal channel	Function: determining, for those orthogonal channels subject to TDM techniques, how many time slots will be provided within each orthogonal channel Corresponding Structure: demand assignment engine connected to a network and one or more modems, the demand assignment engine determining how many time slots will be provided within each orthogonal channel based on information regarding the type of data items to be transmitted, and equivalents thereof Corresponding Structure (alternate construction): demand assignment engine connected to a	Indefinite under 35 USC § 112	

’326 Patent Claim Element	Disputed Term	Plaintiff’s Proposed Construction	Defendants’ Proposed Construction	Court’s Construction
		network and one or more modems, the demand assignment engine determining how many time slots will be provided within each orthogonal channel using the algorithm: (1) consider the type of data that is to be transmitted in an orthogonal channel, and (2) choose a suitable number of time slots to provide within the orthogonal channel to achieve an acceptable data rate, and equivalents thereof		
Claim 8				
8. A central terminal as claimed in claim 7, wherein a number of said **orthogonal channels** are designated as traffic channels for the transmission of data items relating to communication content, and the **TDM encoder** is employed to apply **time division multiplexing**				

’326 Patent Claim Element	Disputed Term	Plaintiff’s Proposed Construction	Defendants’ Proposed Construction	Court’s Construction
(TDM) techniques to data items to be sent over a traffic channel from said central terminal to said **subscriber terminal**.				
Claim 9				
9. A central terminal as claimed in claim 5, wherein a first of the **orthogonal channels** is reserved for the transmission of signals relating to the acquisition of **wireless links**, and the second encoder is used instead of the **TDM encoder** to enable **overlay codes** to be applied to data items to be sent within said first **orthogonal channel** from the central terminal to one of said **subscriber terminals**.				
Claim 10				
10. A central terminal as claimed in claim 5, wherein a second of the **orthogonal channels** is				

’326 Patent Claim Element	Disputed Term	Plaintiff’s Proposed Construction	Defendants’ Proposed Construction	Court’s Construction
reserved for the transmission of signals relating to the control of calls, and the second encoder is used instead of the **TDM encoder** to enable **overlay codes** to be applied to data items to be sent within said second **orthogonal channel** from the central terminal to one of said **subscriber terminals**.				

U.S. Patent No. 6,381,211

’211 Patent Claim Element	Disputed Term	Plaintiff’s Proposed Construction	Defendants’ Proposed Construction	Court’s Construction
Claim 1				
1. A reception controller for processing data items received over a **wireless link** connecting a central terminal and a **subscriber terminal** of a wireless telecommunications system, a single frequency channel being employed for	wireless link (Appears in ’326 Patent cls. 1, 2, 5, 9, 11–13; ’211 Patent cls. 1, 2, 5–7; ’819 Patent cls. 1, 7, 8, 11, 12, 18, 21–25, 29; ’327 Patent 1, 11–22.)	[AGREED]	[AGREED]	“a radio connection between a central terminal and a particular subscriber terminal for communicating data items therebetween”
	subscriber terminal (Appears in ’326 Patent	“user equipment”	“a fixed-location device”	

’211 Patent Claim Element	Disputed Term	Plaintiff’s Proposed Construction	Defendants’ Proposed Construction	Court’s Construction
transmitting data items pertaining to a plurality of **wireless links**, and ‘m’ **orthogonal channels** being provided within the single frequency channel, the receiver controller comprising:	cls. 1, 6, 8–12, 14; ’211 Patent cls. 1, 5, 6, 8, 9; ’819 Patent cls. 1, 8–12, 19, 21–25, 27, 29, 31; ’327 Patent cls. 1, 11, 13–22.)			
	orthogonal channels (Appears in ’326 Patent cls. 1, 2, 5–15; ’211 Patent cls. 1, 2, 5–10; ’819 Patent cls. 1, 7–12, 18–25, 27–29, 31, 32; ’327 Patent cls. 10, 13–16.)	[AGREED]	[AGREED]	“a set of channels created using the orthogonal codes”
an **orthogonal code** generator for providing an **orthogonal code** from a set of ‘m’ **orthogonal codes** used to create said ‘m’ **orthogonal channels** within the single frequency channel;	orthogonal codes (Appears in ’326 Patent cls. 1, 3–5, 11, 12; ’211 Patent cls. 1, 3–6; ’819 Patent cls. 1, 3, 5, 7, 12, 14, 16, 18, 21–25, 29; ’327 Patent cls. 10, 12–16.)	[AGREED]	[AGREED]	“codes that cross-correlate to zero with respect to each other”
a first decoder for applying, to signals received on the single frequency channel, the **orthogonal code** provided by the **orthogonal code**				

'211 Patent Claim Element	Disputed Term	Plaintiff's Proposed Construction	Defendants' Proposed Construction	Court's Construction
generator, in order to isolate data items transmitted within the corresponding **orthogonal channel**; and				
a **TDM decoder** arranged to extract a data item from a predetermined **time slot** within said **orthogonal channel**, a plurality of data items relating to different **wireless links** being transmitted within the same **orthogonal channel** during a predetermined frame period.	TDM decoder (Appears in '211 Patent cls. 1, 2, 5, 7; '327 Patent cl. 16.)	"hardware and/or software for extracting a data item from a predetermined time slot within the orthogonal channel"	"a device used to extract information from a communication channel that is shared among multiple wireless links by allocating a given period of time to each such link in a defined, repeated sequence"	
	time slot (Appears in '326 Patent cls. 1, 5, 7, 11, 12, 15; '211 Patent cls. 1, 5, 6, 10; '327 Patent cls. 15, 16.)	"an interval of time"	"a period of time during which a single wireless link is permitted to use a shared communication channel"	
Claim 2				
2. A reception controller as claimed in claim 1, further comprising:				
an **overlay code** generator for providing an **overlay code** from a first set of 'n' **overlay**	overlay code (Appears in '326 Patent cls. 2, 5, 9–11, 13; '211	"orthogonal codes used to increase the number of orthogonal channels that would otherwise be	"a second code applied in series with the orthogonal code"	

’211 Patent Claim Element	Disputed Term	Plaintiff’s Proposed Construction	Defendants’ Proposed Construction	Court’s Construction
codes which are orthogonal to each other, the set of ‘n’ **overlay codes** enabling ‘n’ data items pertaining to different **wireless links** to be transmitted simultaneously within the same **orthogonal channel**; and	Patent cls. 2, 5, 7, 8; ’819 Patent cls. 1, 2, 4, 6–10, 12, 13, 15, 17–32; ’327 Patent cls. 13, 14.)	available”		
a second decoder, selectively operable instead of the **TDM decoder**, to apply to the data items of the **orthogonal channel**, the **overlay code** from the **overlay code** generator so as to isolate a particular data item transmitted using that **overlay code**.				
Claim 3				
3. A reception controller as claimed in claim 1, wherein the **orthogonal code** generator is a storage arranged to store the set of **orthogonal codes**.				

’211 Patent Claim Element	Disputed Term	Plaintiff’s Proposed Construction	Defendants’ Proposed Construction	Court’s Construction
Claim 4				
4. A reception controller as claimed in claim 1, wherein the set of **orthogonal codes** comprise a set of Rademacher-Walsh (RW) codes.				
Claim 5				
5. A **subscriber terminal** of a wireless telecommunications system, comprising a reception controller having:				
an **orthogonal code** generator for providing an **orthogonal code** from a set of ‘m’ **orthogonal codes** used to create said ‘m’ **orthogonal channels** within the single frequency channel;				
a first decoder for applying, to signals received on the single frequency channel, the **orthogonal code** provided by the				

’211 Patent Claim Element	Disputed Term	Plaintiff’s Proposed Construction	Defendants’ Proposed Construction	Court’s Construction
orthogonal code generator, in order to isolate data items transmitted within the corresponding **orthogonal channel**;				
a **TDM decoder** arranged to extract a data item from a predetermined **time slot** within said **orthogonal channel**, a plurality of data items relating to different **wireless links** being transmitted within the same **orthogonal channel** during a predetermined frame period;				
an **overlay code** generator for providing an **overlay code** from a first set of ‘n’ **overlay codes** which are orthogonal to each other, the set of ‘n’ **overlay codes** enabling ‘n’ data items pertaining to different **wireless links** to be transmitted				

'211 Patent Claim Element	Disputed Term	Plaintiff's Proposed Construction	Defendants' Proposed Construction	Court's Construction
simultaneously within the same **orthogonal channel**;				
a second decoder, selectively operable instead of the **TDM decoder**, to apply to the data items of the **orthogonal channel**, the **overlay code** from the **overlay code** generator so as to isolate a particular data item transmitted using that **overlay code**, wherein the set of **orthogonal codes** comprise a set of Rademacher-Walsh (RW) codes and wherein the set of **orthogonal codes** comprise a set of Rademacher-Walsh (RW) codes.				

U.S. Patent No. 6,222,819

'819 Patent Claim Element	Disputed Term	Plaintiff's Proposed Construction	Defendants' Proposed Construction	Court's Construction
Claim 1				
1. A transmission	wireless link	[AGREED]	[AGREED]	"a radio connection

’819 Patent Claim Element	Disputed Term	Plaintiff’s Proposed Construction	Defendants’ Proposed Construction	Court’s Construction
controller for processing data items to be transmitted over a **wireless link** connecting a central terminal and a **subscriber terminal** of a wireless telecommunications system, a single frequency channel being employed for transmitting data items pertaining to a plurality of **wireless links**, the transmission controller comprising:	(Appears in ’326 Patent cls. 1, 2, 5, 9, 11–13; ’211 Patent cls. 1, 2, 5–7; ’819 Patent cls. 1, 7, 8, 11, 12, 18, 21–25, 29; ’327 Patent 1, 11–22.)			between a central terminal and a particular subscriber terminal for communicating data items therebetween”
	subscriber terminal (Appears in ’326 Patent cls. 1, 6, 8–12, 14; ’211 Patent cls. 1, 5, 6, 8, 9; ’819 Patent cls. 1, 8–12, 19, 21–25, 27, 29, 31; ’327 Patent cls. 1, 11, 13–22.)	“user equipment”	“a fixed-location device”	
an **orthogonal code** generator for providing an **orthogonal code** from a set of ‘m’ **orthogonal codes** used to create ‘m’ **orthogonal channels** within the single frequency channel, wherein ‘m’ is a positive integer;	orthogonal codes (Appears in ’326 Patent cls. 1, 3–5, 11, 12; ’211 Patent cls. 1, 3–6; ’819 Patent cls. 1, 3, 5, 7, 12, 14, 16, 18, 21–25, 29; ’327 Patent cls. 10, 12–16.)	[AGREED]	[AGREED]	“codes that cross-correlate to zero with respect to each other”
	orthogonal channels (Appears in ’326 Patent cls. 1, 2, 5–15; ’211 Patent cls. 1, 2, 5–10; ’819 Patent cls. 1, 7–12,	[AGREED]	[AGREED]	“a set of channels created using the orthogonal codes”

’819 Patent Claim Element	Disputed Term	Plaintiff’s Proposed Construction	Defendants’ Proposed Construction	Court’s Construction
	18–25, 27–29, 31, 32; ’327 Patent cls. 10, 13–16.)			
a first encoder for combining a data item to be transmitted on the single frequency channel with said **orthogonal code** from the **orthogonal code** generator, the **orthogonal code** determining the **orthogonal channel** over which the data item is transmitted, whereby data items pertaining to different **wireless links** may be transmitted simultaneously within different **orthogonal channels** of said single frequency channel;				
an **overlay code** generator for providing an **overlay code** from a first set of ‘n’ **overlay codes** which are orthogonal to each other, wherein ‘n’ is a positive	overlay code (Appears in ’326 Patent cls. 2, 5, 9–11, 13; ’211 Patent cls. 2, 5, 7, 8; ’819 Patent cls. 1, 2, 4, 6–10, 12, 13, 15, 17–32; ’327 Patent cls. 13, 14.)	“orthogonal codes used to increase the number of orthogonal channels that would otherwise be available”	“a second code applied in series with the orthogonal code”	

’819 Patent Claim Element	Disputed Term	Plaintiff’s Proposed Construction	Defendants’ Proposed Construction	Court’s Construction
integer; and				
a second encoder arranged to apply the **overlay code** from the **overlay code** generator to said data item, whereby ‘n’ data items pertaining to different **wireless links** may be transmitted simultaneously within the same **orthogonal channel**.				
Claim 2				
2. A transmission controller as claimed in claim 1, wherein the **overlay code** generator is arranged to provide **overlay codes** from one or more further sets of **overlay codes** having different numbers of **overlay codes** to said first set **of overlay codes**.				
Claim 3				
3. A transmission controller as claimed in claim 1, wherein the				

’819 Patent Claim Element	Disputed Term	Plaintiff’s Proposed Construction	Defendants’ Proposed Construction	Court’s Construction
orthogonal code generator is a storage arranged to store the set of **orthogonal codes**.				
Claim 4				
4. A transmission controller as claimed in claim 1, wherein the **overlay code** generator is a storage arranged to store the set of **overlay codes**.				
Claim 5				
5. A transmission controller as claimed in claim 1, wherein the set of **orthogonal codes** comprise a set of Rademacher-Walsh (RW) codes.				
Claim 6				
6. A transmission controller as claimed in claim 5, wherein the set of **overlay codes** are derived from RW codes, each set of ‘n’ **overlay codes** comprising an n×n matrix of RW				

’819 Patent Claim Element	Disputed Term	Plaintiff’s Proposed Construction	Defendants’ Proposed Construction	Court’s Construction
codes.				
Claim 7				
7. A central terminal of a wireless telecommunications system, comprising:				
a transmission controller having:				
an **orthogonal code** generator for providing an **orthogonal code** from a set of ‘m’ **orthogonal codes** used to create ‘m’ **orthogonal channels** within the single frequency channel, wherein ‘m’ is a positive integer;				
a first encoder for combining a data item to be transmitted on the single frequency channel with said **orthogonal code** from the **orthogonal code** generator, the **orthogonal code** determining the **orthogonal channel**				

’819 Patent Claim Element	Disputed Term	Plaintiff’s Proposed Construction	Defendants’ Proposed Construction	Court’s Construction
over which the data item is transmitted, whereby data items pertaining to different **wireless links** may be transmitted simultaneously within different **orthogonal channels** of said single frequency channel;				
an **overlay code** generator for providing an **overlay code** from a first set of ‘n’ **overlay codes** which are orthogonal to each other, wherein ‘n’ is a positive integer;				
a second encoder arranged to apply the **overlay code** from the **overlay code** generator to said data item, whereby ‘n’ data items pertaining to different **wireless links** may be transmitted simultaneously within the same **orthogonal channel**, wherein the **overlay code** generator				

’819 Patent Claim Element	Disputed Term	Plaintiff’s Proposed Construction	Defendants’ Proposed Construction	Court’s Construction
is arranged to provide **overlay codes** from one or more further sets of **overlay codes** having different numbers of **overlay codes** to said first set of **overlay codes**, wherein the **orthogonal code** generator is a storage arranged to store the set of **orthogonal codes**, wherein the **overlay code** generator is a storage arranged to store the set of **overlay codes**, wherein the set of **orthogonal codes** comprise a set of Rademacher-Walsh (RW) codes, and wherein the set of **overlay codes** are derived from RW codes, each set of ‘n’ **overlay codes** comprising an n×n matrix of RW codes.				
Claim 8				
8. A central terminal as claimed in claim 7,				

’819 Patent Claim Element	Disputed Term	Plaintiff’s Proposed Construction	Defendants’ Proposed Construction	Court’s Construction
wherein a first of the **orthogonal channels** is reserved for the transmission of signals relating to the acquisition of **wireless links**, and the transmission controller is provided in the central terminal to enable **overlay codes** to be applied to data items to be sent within said first **orthogonal channel** from the central terminal to one of said **subscriber terminals**.				
Claim 9				
9. A central terminal as claimed in claim 8, wherein a second of the **orthogonal channels** is reserved for the transmission of signals relating to the control of calls, and the transmission controller is provided in the central terminal to enable **overlay codes** to be applied to data items to				

'819 Patent Claim Element	Disputed Term	Plaintiff's Proposed Construction	Defendants' Proposed Construction	Court's Construction
be sent within said second **orthogonal channel** from the central terminal to one of said **subscriber terminals**.				
Claim 10				
10. A central terminal as claimed in claim 7, further comprising **channelisation means for determining which of the orthogonal channels will be subject to overlay codes, and for transmitting that information to a plurality of subscriber terminals within the wireless telecommunications system**.	channelisation means for determining which of the orthogonal channels will be subject to overlay codes, and for transmitting that information to a plurality of subscriber terminals within the wireless telecommunications system	Function: determining which of the orthogonal channels will be subject to overlay codes, and transmitting that information to a plurality of subscriber terminals within the wireless telecommunications system Corresponding Structure: modem shelf including a demand assignment engine connected to a network and one or more modems, the demand assignment engine determining which of the orthogonal channels will be subject to overlay codes based on information regarding	Indefinite under 35 U.S.C. § 112	

’819 Patent Claim Element	Disputed Term	Plaintiff’s Proposed Construction	Defendants’ Proposed Construction	Court’s Construction
		the capability of subscriber terminals to support overlay codes and/or the type of data items to be transmitted, and equivalents thereof <u>Corresponding Structure (alternate construction)</u>: modem shelf including a demand assignment engine connected to a network and one or more modems, the demand assignment engine determining which of the orthogonal channels will be subject to overlay codes using the algorithm: (1) consider whether the subscriber terminal to which data will be transmitted incorporates the features necessary to support overlay codes; (2) consider the type of data that is to be transmitted in an orthogonal channel; and (3) if the subscriber terminal		

’819 Patent Claim Element	Disputed Term	Plaintiff’s Proposed Construction	Defendants’ Proposed Construction	Court’s Construction
		supports overlay codes and the data type is one for which overlay codes should be applied, then apply overlay codes (otherwise do not), and equivalents thereof		
Claim 11				
11. A central terminal as claimed in claim 7, wherein a number of said **orthogonal channels** are designated as traffic channels for the transmission of data items relating to communication content, said central terminal further comprising:				
a **TDM encoder** arranged to apply **time division multiplexing (TDM) techniques** to data items to be sent over a traffic channel from said central terminal to said **subscriber terminal**, so as to enable a plurality of data items pertaining to different **wireless**	TDM encoder (Appears in ’326 Patent cls. 1, 2, 5, 8–11; ’819 Patent cl. 11; ’327 Patent cl. 15.)	“hardware and/or software for applying TDM techniques”	“a device that applies time division multiplexing (TDM) techniques to share a communication channel among multiple wireless links”	
	time division multiplexing (TDM) techniques (Appears in ’326 Patent	“techniques for allocating an interval of time within a predetermined frame period to a data item,	“methods in which a communication channel is shared among multiple wireless links by allowing each to use	

’819 Patent Claim Element	Disputed Term	Plaintiff’s Proposed Construction	Defendants’ Proposed Construction	Court’s Construction
links to be sent within one orthogonal traffic channel during a predetermined frame period.	cls. 1, 5–8, 11, 12, 14, 15; ’211 Patent cls. 8–10; ’819 Patent cl. 11; ’327 Patent cl. 15.)	based on one or more characteristics associated with the data item”	the channel for a given period of time in a defined, repeated sequence”	
Claim 12				
12. A reception controller for processing data items received over a **wireless link** connecting a central terminal and a **subscriber terminal** of a wireless telecommunications system, a single frequency channel being employed for transmitting data items pertaining to a plurality of **wireless links**, the receiver controller comprising:				
an **orthogonal code** generator for providing an **orthogonal code** from a set of ‘m’ **orthogonal codes** used to create ‘m’ **orthogonal channels** within the				

’819 Patent Claim Element	Disputed Term	Plaintiff’s Proposed Construction	Defendants’ Proposed Construction	Court’s Construction
single frequency channel, wherein ‘m’ is a positive integer;				
a first encoder for applying, to signals received on the single frequency channel, the **orthogonal code** provided by the **orthogonal code** generator, in order to isolate data items transmitted within the corresponding **orthogonal code**;				
an **overlay code** generator for providing an **overlay code** from a first set of ‘n’ **overlay codes** which are orthogonal to each other, the set of ‘n’ **overlay codes** enabling ‘n’ data items pertaining to different **wireless links** to be transmitted simultaneously within the same **orthogonal channel**, wherein ‘n’ is a positive integer; and				

’819 Patent Claim Element	Disputed Term	Plaintiff’s Proposed Construction	Defendants’ Proposed Construction	Court’s Construction
a second encoder for applying, to the data items of the **orthogonal channel**, the **overlay code** from the **overlay code** generator so as to isolate a particular data item transmitted using that **overlay code**.				
Claim 13				
13. A reception controller as claimed in claim 12, wherein the **overlay code** generator is arranged to provide **overlay codes** from one or more further sets of **overlay codes** having different numbers of **overlay codes** to said first set of **overlay codes**.				
Claim 14				
14. A reception controller as claimed in claim 12, wherein the **orthogonal code** generator is a storage arranged to store the set of **orthogonal codes**.				

’819 Patent Claim Element	Disputed Term	Plaintiff’s Proposed Construction	Defendants’ Proposed Construction	Court’s Construction
Claim 15				
15. A reception controller as claimed in claim 12, wherein the **overlay code** generator is a storage arranged to store the set of **overlay codes**.				
Claim 16				
16. A reception controller as claimed in claim 12, wherein the set of **orthogonal codes** comprise a set of Rademacher-Walsh (RW) codes.				
Claim 17				
17. A controller as claimed in claim 12, wherein the set of **overlay codes** are derived from RW codes, each set of ‘n’ **overlay codes** comprising an n×n matrix of RW codes.				
Claim 21				
21. A **subscriber terminal** of a wireless telecommunications				

’819 Patent Claim Element	Disputed Term	Plaintiff’s Proposed Construction	Defendants’ Proposed Construction	Court’s Construction
system, comprising:				
a transmission controller having:				
an **orthogonal code** generator for providing an **orthogonal code** from a set of ‘m’ **orthogonal codes** used to create ‘m’ **orthogonal channels** within the single frequency channel, wherein ‘m’ is a positive integer;				
a first encoder for combining a data item to be transmitted on the single frequency channel with said **orthogonal code** from the **orthogonal code** generator, the **orthogonal code** determining the **orthogonal channel** over which the data item is transmitted, whereby data items pertaining to different **wireless links** may be transmitted simultaneously within				

’819 Patent Claim Element	Disputed Term	Plaintiff’s Proposed Construction	Defendants’ Proposed Construction	Court’s Construction
different **orthogonal channels** of said single frequency channel;				
an **overlay code** generator for providing an **overlay code** from a first set of ‘n’ **overlay codes** which are orthogonal to each other, wherein ‘m’ is a positive integer;				
a second encoder arranged to apply the **overlay code** from the **overlay code** generator to said data item, whereby ‘n’ data items pertaining to different **wireless links** may be transmitted simultaneously within the same **orthogonal channel**, wherein the **overlay code** generator is arranged to provide **overlay codes** from one or more further sets of **overlay codes** having different numbers of **overlay codes** to said				

’819 Patent Claim Element	Disputed Term	Plaintiff’s Proposed Construction	Defendants’ Proposed Construction	Court’s Construction
first set of **overlay codes**, wherein the **orthogonal code** generator is a storage arranged to store the set of **orthogonal codes**, wherein the set of **orthogonal codes** comprise a set of Rademacher-Walsh (RW) codes, and wherein the set of **overlay codes** are derived from RW codes, each set of ‘n’ **overlay codes** comprising an n×n matrix of RW codes; the transmission controller operable to enable **overlay codes** to be applied to data items sent from the **subscriber terminals** to the central terminal.				
Claim 22				
22. A **subscriber terminal** of a wireless telecommunications system, comprising:				
a reception controller				

’819 Patent Claim Element	Disputed Term	Plaintiff’s Proposed Construction	Defendants’ Proposed Construction	Court’s Construction
having:				
an **orthogonal code** generator for providing an **orthogonal code** from a set of ‘m’ **orthogonal codes** used to create ‘m’ **orthogonal channels** within the single frequency channel, wherein ‘m’ is a positive integer;				
a first decoder for applying, to signals received on the single frequency channel, the **orthogonal code** provided by the **orthogonal code** generator, in order to isolate data items transmitted within the corresponding **orthogonal channel**;				
an **overlay code** generator for providing an **overlay code** from a first set of ‘n’ **overlay codes** which are orthogonal to each other, the set of ‘n’ **overlay**				

’819 Patent Claim Element	Disputed Term	Plaintiff’s Proposed Construction	Defendants’ Proposed Construction	Court’s Construction
codes enabling ‘n’ data items pertaining to different **wireless links** to be transmitted simultaneously within the same **orthogonal channel**, wherein ‘n’ is a positive integer;				
a second decoder for applying, to the data items of the **orthogonal channel**, the **overlay code** from the **overlay code** generator so as to isolate a particular data item transmitted using that **overlay code**, wherein the **overlay code** generator is arranged to provide **overlay codes** from one or more further sets of **overlay codes** having different numbers of **overlay codes** to said first set of **overlay codes**, wherein the **orthogonal code** generator is a storage arranged to store the set of **orthogonal codes**,				

’819 Patent Claim Element	Disputed Term	Plaintiff’s Proposed Construction	Defendants’ Proposed Construction	Court’s Construction
wherein the **overlay code** generator is a storage arranged to store the set of **overlay codes**, wherein the set of **orthogonal codes** comprise a set of Rademacher-Walsh (RW) codes, and wherein the set of **overlay codes** are derived from RW codes, each set of ‘n’ **overlay codes** comprising an n×n matrix of RW codes.				

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’327 Patent Claim Element	Disputed Term	Plaintiff’s Proposed Construction	Defendants’ Proposed Construction	Court’s Construction
Claim 1				
1. An interference controller for limiting in one cell the effect of interference generated by other cells of a wireless telecommunications system, each cell of the	wireless link (Appears in ’326 Patent cls. 1, 2, 5, 9, 11–13; ’211 Patent cls. 1, 2, 5–7; ’819 Patent cls. 1, 7, 8, 11, 12, 18, 21–25, 29; ’327 Patent 1, 11–22.)	[AGREED]	[AGREED]	“a radio connection between a central terminal and a particular subscriber terminal for communicating data items therebetween”

’327 Patent Claim Element	Disputed Term	Plaintiff’s Proposed Construction	Defendants’ Proposed Construction	Court’s Construction
wireless telecommunications system having a central terminal and a plurality of **subscriber terminals**, communication between a central terminal and a **subscriber terminal** being arranged to occur over a **wireless link**, a plurality of code division multiplexed channels being provided within a single frequency channel to enable data items pertaining to a plurality of **wireless links** to be transmitted simultaneously within different code division multiplexed channels of said single frequency channel, the interference controller comprising:	subscriber terminal (Appears in ’326 Patent cls. 1, 6, 8–12, 14; ’211 Patent cls. 1, 5, 6, 8, 9; ’819 Patent cls. 1, 8–12, 19, 21–25, 27, 29, 31; ’327 Patent cls. 1, 11, 13–22.)	“user equipment”	“a fixed-location device”	
a channel controller arranged to allocate a number of said plurality of code division multiplexed channels as	channel pool (Appears in ’327 Patent cls. 1–7, 11, 21–27.)	Plain and ordinary meaning	“the set of orthogonal channels available to a central terminal to use to establish wireless links”	

’327 Patent Claim Element	Disputed Term	Plaintiff’s Proposed Construction	Defendants’ Proposed Construction	Court’s Construction
a **channel pool** of code division multiplexed channels available for the establishment of said **wireless links**;				
an analyzer for receiving **parameters pertaining to a wireless link within the cell indicative of whether that wireless link is subject to interference from signals generated by said other cells**, the analyzer being arranged to compare those parameters with predetermined criteria and to generate an output signal dependent on the comparison;	parameters pertaining to a wireless link within the cell indicative of whether that wireless link is subject to interference from signals generated by said other cells (Appears in ’327 Patent cls. 1, 11, 21, 22. Appears in short form in ’327 Patent cls. 5, 27.)	Plain and ordinary meaning	“two or more indicators that an individual wireless link is experiencing interference from other cells”	
a channel controller being responsive to the output signal from the analyser, to selectively reduce the number of code division multiplexed channels in the **channel pool** in order to reduce the effect				

’327 Patent Claim Element	Disputed Term	Plaintiff’s Proposed Construction	Defendants’ Proposed Construction	Court’s Construction
of the interference from said other cells.				
Claim 2				
2. An interference controller as claimed in claim 1, wherein a parameter provided to the analyser is the bit error rate (BER) for signals transmitted within said code division multiplexed channels, and the predetermined criteria with which the analyser compares said BER is a threshold BER value identifying a predetermined maximum acceptable BER, the channel controller being responsive to the analyser indicating that the BER exceeds the predetermined maximum acceptable BER to remove a code division multiplexed channel from the **channel pool**.				

’327 Patent Claim Element	Disputed Term	Plaintiff’s Proposed Construction	Defendants’ Proposed Construction	Court’s Construction
Claim 5				
5. An interference controller as claimed in claim 1, wherein a plurality of the code division multiplexed channels are designated as traffic channels, the analyser is arranged to monitor the **parameters relating to interference** on those traffic channels, and the channel controller is arranged to **selectively designate one or more of said traffic channels as locked channels** which should not be included in the **channel pool** so as to reduce the effect of the interference from said other cells.	selectively designate one or more of said traffic channels as locked channels (Appears in ’327 Patent cls. 5, 21.)	[AGREED]	[AGREED]	“make one or more data channels unavailable for transmission”
Claim 6				
6. An interference controller as claimed in claim 5, wherein if the analyser determines that a BER signal is below a predetermined minimum BER value, the channel				

’327 Patent Claim Element	Disputed Term	Plaintiff’s Proposed Construction	Defendants’ Proposed Construction	Court’s Construction
controller is arranged to designate one of said locked channels as a free traffic channel and to include that traffic channel in the **channel pool** so that it can subsequently be used for data traffic.				
Claim 8				
8. An interference controller as claimed in claim 5, wherein the channel controller is provided with a value indicating a maximum number of code division multiplexed channels that can be designated as traffic channels, the channel controller only adding code division multiplexed channels upon request from the analyser if doing so would not exceed the maximum number of code division multiplexed channels.				
Claim 10				

’327 Patent Claim Element	Disputed Term	Plaintiff’s Proposed Construction	Defendants’ Proposed Construction	Court’s Construction
10. An interference controller as claimed in claim 1, wherein said code division multiplexed channels are **orthogonal channels**, a set of **orthogonal codes** being used to create said **orthogonal channels**.	orthogonal channels (Appears in ’326 Patent cls. 1, 2, 5–15; ’211 Patent cls. 1, 2, 5–10; ’819 Patent cls. 1, 7–12, 18–25, 27–29, 31, 32; ’327 Patent cls. 10, 13–16)	[AGREED]	[AGREED]	“a set of channels created using the orthogonal codes”
	orthogonal codes (Appears in ’326 Patent cls. 1, 3–5, 11, 12; ’211 Patent cls. 1, 3–6; ’819 Patent cls. 1, 3, 5, 7, 12, 14, 16, 18, 21–25, 29; ’327 Patent cls. 10, 12–16)	[AGREED]	[AGREED]	“codes that cross-correlate to zero with respect to each other”
Claim 11				
11. A central terminal for a cell of a wireless telecommunications system, the telecommunications system having a plurality of cells, and each cell having a central terminal and a plurality of **subscriber terminals**, communication between				

’327 Patent Claim Element	Disputed Term	Plaintiff’s Proposed Construction	Defendants’ Proposed Construction	Court’s Construction
the central terminal and a **subscriber terminal** in said cell being arranged to occur over a **wireless link**, a plurality of code division multiplexed channels being provided within a single frequency channel to enable data items pertaining to a plurality of **wireless links** to be transmitted simultaneously within different code division multiplexed channels of said single frequency channel, the central terminal comprising an interference controller for limiting the effect of interference generated by other cells of said wireless telecommunications system, the interference controller having;				
a channel controller arranged to allocate a number of said plurality of code division				

’327 Patent Claim Element	Disputed Term	Plaintiff’s Proposed Construction	Defendants’ Proposed Construction	Court’s Construction
multiplexed channels as a **channel pool** of code division multiplexed channels available for the establishment of said **wireless links**;				
an analyzer for receiving **parameters pertaining to a wireless link within the cell indicative of whether that wireless link is subject to interference from signals generated by said other cells**, the analyzer being arranged to compare those parameters with predetermined criteria and to generate an output signal dependent on the comparison,				
a channel controller being responsive to the output signal from the analyser, to selectively reduce the number of code division multiplexed channels in the **channel pool** in				

’327 Patent Claim Element	Disputed Term	Plaintiff’s Proposed Construction	Defendants’ Proposed Construction	Court’s Construction
order to reduce the effect of the interference from said other cells.				
Claim 12				
12. A central terminal as claimed in claim 11, further comprising:				
an **orthogonal code** generator for providing an **orthogonal code** from a set of **orthogonal codes** used to create said code division multiplexed channels within the single frequency channel;				
a first encoder for combining a data item to be transmitted on the single frequency channel with said **orthogonal code** from the **orthogonal code** generator, the **orthogonal code** determining the code division multiplexed channel over which the data item is transmitted, thereby enabling data				

’327 Patent Claim Element	Disputed Term	Plaintiff’s Proposed Construction	Defendants’ Proposed Construction	Court’s Construction
items pertaining to different **wireless links** to be transmitted simultaneously within different code division multiplexed channels of said single frequency channel.				
Claim 13				
13. An interference controller as claimed in claim 1, further comprising a transmission controller for processing data items to be transmitted over a **wireless link** connecting a central terminal and a **subscriber terminal** of a wireless telecommunications system, a single frequency channel being employed for transmitting data items pertaining to a plurality of **wireless links**, the transmission controller comprising:				
an **orthogonal code**				

’327 Patent Claim Element	Disputed Term	Plaintiff’s Proposed Construction	Defendants’ Proposed Construction	Court’s Construction
generator for providing an **orthogonal code** from a set of ‘m’ **orthogonal codes** used to create ‘m’ **orthogonal channels** within the single frequency channel;				
a first encoder for combining a data item to be transmitted on the single frequency channel with said **orthogonal code** from the **orthogonal code** generator, the **orthogonal code** determining the **orthogonal channel** over which the data item is transmitted, whereby data items pertaining to different **wireless links** may be transmitted simultaneously within different **orthogonal channels** of said single frequency channel;				
an **overlay code** generator for providing	overlay code	“orthogonal codes used to increase the number	“a second code applied in series with the	

’327 Patent Claim Element	Disputed Term	Plaintiff’s Proposed Construction	Defendants’ Proposed Construction	Court’s Construction
an **overlay code** from a first set of ‘n’ **overlay codes** which are orthogonal to each other; and	(Appears in ’326 Patent cls. 2, 5, 9–11, 13; ’211 Patent cls. 2, 5, 7, 8; ’819 Patent cls. 1, 2, 4, 6–10, 12, 13, 15, 17–32; ’327 Patent cls. 13, 14)	of orthogonal channels that would otherwise be available”	orthogonal code”	
a second encoder arranged to apply the **overlay code** from the **overlay code** generator to said data item, whereby ‘n’ data items pertaining to different **wireless links** may be transmitted simultaneously within the same **orthogonal channel**.				
Claim 15				
15. An interference controller as claimed in claim 1, further comprising a transmission controller for processing data items to be transmitted over a **wireless link** connecting a central terminal and a **subscriber terminal** of a wireless telecommunications				

’327 Patent Claim Element	Disputed Term	Plaintiff’s Proposed Construction	Defendants’ Proposed Construction	Court’s Construction
system, a single frequency channel being employed for transmitting data items pertaining to a plurality of **wireless links**, the transmission controller comprising:				
an **orthogonal code** generator for providing an **orthogonal code** from a set of ‘m’ **orthogonal codes** used to create ‘m’ **orthogonal channels** within the single frequency channel;				
a first encoder for combining a data item to be transmitted on the single frequency channel with said **orthogonal code** from the **orthogonal code** generator, the **orthogonal code** determining the **orthogonal channel** over which the data item is transmitted, whereby data items pertaining to				

’327 Patent Claim Element	Disputed Term	Plaintiff’s Proposed Construction	Defendants’ Proposed Construction	Court’s Construction
different **wireless links** may be transmitted simultaneously within different **orthogonal channels** of said single frequency channel; and				
a **TDM encoder** arranged to apply **time division multiplexing (TDM) techniques** to the data item in order to insert the data item within a **time slot** of the **orthogonal channel**, whereby a plurality of data items relating to different **wireless links** may be transmitted within the same **orthogonal channel** during a predetermined frame period.	TDM encoder (Appears in ’326 Patent cls. 1, 2, 5, 8–11; ’819 Patent cl. 11; ’327 Patent cl. 15)	“hardware and/or software for applying TDM techniques”	“a device that applies time division multiplexing (TDM) techniques to share a communication channel among multiple wireless links”	
	time division multiplexing (TDM) techniques (Appears in ’326 Patent cls. 1, 5–8, 11, 12, 14, 15; ’211 Patent cls. 8–10; ’819 Patent cl. 11; ’327 Patent cl. 15)	“techniques for allocating an interval of time within a predetermined frame period to a data item, based on one or more characteristics associated with the data item”	“methods in which a communication channel is shared among multiple wireless links by allowing each to use the channel for a given period of time in a defined, repeated sequence”	
	time slot (Appears in ’326 Patent cls. 1, 5, 7, 11, 12, 15; ’211 Patent cls. 1, 5, 6, 10; ’327 Patent cls. 15, 16)	“an interval of time”	“a period of time during which a single wireless link is permitted to use a shared communication channel”	
Claim 17				
17. An interference				

’327 Patent Claim Element	Disputed Term	Plaintiff’s Proposed Construction	Defendants’ Proposed Construction	Court’s Construction
controller as claimed in claim 13, further comprising a channel selection controller for establishing a **wireless link** connecting a central terminal and a **subscriber terminal** of a wireless telecommunications system, at least two frequency channels being provided over which said **wireless link** could be established, the channel controller comprising:				
a storage for storing data identifying the at least two frequency channels;				
a selector for selecting a frequency channel from those listed in said storage;				
link acquisition logic for establishing a **wireless link** on the frequency channel selected by the selector;				
the selector being responsive to the link				

’327 Patent Claim Element	Disputed Term	Plaintiff’s Proposed Construction	Defendants’ Proposed Construction	Court’s Construction
acquisition logic being unable to establish said **wireless link**, to select an alternative frequency channel from those listed in said storage.				
Claim 19				
19. An interference controller as claimed in claim 15, further comprising a channel selection controller for establishing a **wireless link** connecting a central terminal and a **subscriber terminal** of a wireless telecommunications system, at least two frequency channels being provided over which said **wireless link** could be established, the channel controller comprising:				
a storage for storing data identifying the at least two frequency channels;				
a selector for selecting a frequency channel from those listed in said				

’327 Patent Claim Element	Disputed Term	Plaintiff’s Proposed Construction	Defendants’ Proposed Construction	Court’s Construction
storage;				
link acquisition logic for establishing a **wireless link** on the frequency channel selected by the selector;				
the selector being responsive to the link acquisition logic being unable to establish said **wireless link**, to select an alternative frequency channel from those listed in said storage.				