

EXHIBIT A – P.R 4-5(d) CLAIM CONSTRUCTION CHART

#	Claim Term, Phrase, or Clause	Smart RF’s Proposed Construction	Defendants’ Proposed Construction	Court’s Construction
A.1	<p>Term for Construction: “digital receiver” (’345 patent, claims 1, 3, 5, and 7-11)</p> <p>Disputed Claim Language:</p> <p><u>’345 patent</u></p> <p>1. An adaptive method for predistorting an RF modulated signal, to be transmitted, supplied by a signal source to an input of a power amplifier having an output for delivering an amplified output signal, said method comprising the steps of:</p> <p>predistorting the RF modulated signal to be transmitted using an I/Q modulator interposed between the signal source and the input of the power amplifier, and controlled by means of amplitude and phase look-up tables stored in a distorting generator;</p> <p>producing, via a first digital receiver, a first feedback signal in response to the RF predistorted signal;</p> <p>producing, via a second digital receiver, a second feedback signal in response to the RF</p>	<p>Plain and ordinary meaning, “a component that receives a digital signal”</p>	<p>“device that digitally translates a signal from RF to complex baseband”</p> <p><i>alternatively</i></p> <p>“device that digitally translates a signal to complex baseband”</p>	

#	Claim Term, Phrase, or Clause	Smart RF's Proposed Construction	Defendants' Proposed Construction	Court's Construction
	<p>amplified output signal from the power amplifier;</p> <p>modeling the power amplifier in response to the first and second feedback signals; and</p> <p>updating the predistortion amplitude and phase look-up tables in response to said modeling of the power amplifier,</p> <p>wherein said second feedback signal includes the complex envelope of the RF amplified output signal, and</p> <p>wherein said modeling step includes the discrimination of the complex envelope of the first feedback signal referenced to the complex envelope of the second feedback signal to yield a predistortion function correlated to a behaviour of the power amplifier including nonlinearities and memory effects.</p> <p>3. An adaptive method for predistorting an RF modulated signal, to be transmitted, supplied by a signal source to an input of a power amplifier having an output for delivering an amplified output signal, said method comprising the steps of:</p> <p>predistorting the RF modulated signal to be transmitted using an I/Q modulator interposed</p>			

#	Claim Term, Phrase, or Clause	Smart RF's Proposed Construction	Defendants' Proposed Construction	Court's Construction
	<p>between the signal source and the input of the power amplifier, and controlled by means of amplitude and phase look-up tables stored in a distorting generator;</p> <p>producing, via a first digital receiver, a first feedback signal in response to the RF predistorted signal;</p> <p>producing, via a second digital receiver, a second feedback signal in response to the RF amplified output signal from the power amplifier;</p> <p>modeling the power amplifier in response to the first and second feedback signals; and</p> <p>updating the predistortion amplitude and phase look-up tables in response to said modeling of the power amplifier,</p> <p>wherein said updating step is done when a linearity metric adjacent channel power ratio (ACPR) measurement sub-step indicates that the predistorting step is not adequate to meet predetermined ACPR standards.</p> <p>5. An adaptive device for predistorting an RF modulated signal to be transmitted, supplied by a signal source to an input of a power amplifier having an output for delivering an</p>			

#	Claim Term, Phrase, or Clause	Smart RF's Proposed Construction	Defendants' Proposed Construction	Court's Construction
	<p>amplified output signal, said adaptive device comprising:</p> <p>an I/Q modulator interposed between the signal source and the input of the power amplifier;</p> <p>a distorting generator including predistortion amplitude and phase look-up tables; said distorting generator controlling said I/Q modulator to predistort the RF modulated signal to be transmitted in amplitude and in phase;</p> <p>a first digital receiver producing a first feedback signal in response to the RF predistorted signal from said I/Q modulator;</p> <p>a second digital receiver producing a second feedback signal in response to the RF amplified output signal from the power amplifier;</p> <p>a control module receiving said first and second feedback signals from said first and second digital receivers; said control module being so configured as to model the power amplifier in response to the first and second feedback signals and to update said amplitude and phase look-up tables of said distorting</p>			

#	Claim Term, Phrase, or Clause	Smart RF's Proposed Construction	Defendants' Proposed Construction	Court's Construction
	<p>generator in response to a dynamic modeling of the power amplifier,</p> <p>wherein said look-up tables of said distorting generator are indexed by an envelope detector that detects the envelope of the signal to be transmitted before predistortion.</p> <p>7. An adaptive device for predistorting an RF modulated signal to be transmitted, supplied by a signal source to an input of a power amplifier having an output for delivering an amplified output signal, said adaptive device comprising:</p> <p>an I/Q modulator interposed between the signal source and the input of the power amplifier;</p> <p>a distorting generator including predistortion amplitude and phase look-up tables; said distorting generator controlling said I/Q modulator to predistort the RF modulated signal to be transmitted in amplitude and in phase;</p> <p>a first digital receiver producing a first feedback signal in response to the RF predistorted signal from said I/Q modulator;</p>			

#	Claim Term, Phrase, or Clause	Smart RF's Proposed Construction	Defendants' Proposed Construction	Court's Construction
	<p>a second digital receiver producing a second feedback signal in response to the RF amplified output signal from the power amplifier;</p> <p>a control module receiving said first and second feedback signals from said first and second digital receivers; said control module being so configured as to model the power amplifier in response to the first and second feedback signals and to update said amplitude and phase look-up tables of said distorting generator in response to a dynamic modeling of the power amplifier,</p> <p>wherein said look-up tables of said distorting generator are indexed by data from a third digital receiver that down-converts the signal to be transmitted to baseband.</p> <p>8. An adaptive device as recited in claim 7, wherein the data from said third digital receiver is supplied to said control module that indexes said distorting generator accordingly.</p> <p>9. An adaptive device for predistorting an RF modulated signal to be transmitted, supplied by a signal source to an input of a power amplifier having an output for delivering an</p>			

#	Claim Term, Phrase, or Clause	Smart RF's Proposed Construction	Defendants' Proposed Construction	Court's Construction
	<p>amplified output signal, said adaptive device comprising:</p> <p>an I/Q modulator interposed between the signal source and the input of the power amplifier;</p> <p>a distorting generator including predistortion amplitude and phase look-up tables; said distorting generator controlling said I/Q modulator to predistort the RF modulated signal to be transmitted in amplitude and in phase;</p> <p>a first digital receiver producing a first feedback signal in response to the RF predistorted signal from said I/Q modulator;</p> <p>a second digital receiver producing a second feedback signal in response to the RF amplified output signal from the power amplifier;</p> <p>a control module receiving said first and second feedback signals from said first and second digital receivers; said control module being so configured as to model the power amplifier in response to the first and second feedback signals and to update said amplitude and phase look-up tables of said distorting</p>			

#	Claim Term, Phrase, or Clause	Smart RF's Proposed Construction	Defendants' Proposed Construction	Court's Construction
	<p>generator in response to a dynamic modeling of the power amplifier,</p> <p>wherein said control module is so configured as to update said amplitude and phase look-up tables when an adjacent channel power ratio (ACPR) measurement indicates that the predistortion made by said predistorting generator is not adequate to meet predetermined ACPR standards.</p> <p>10. An adaptive device as recited in claim 9, wherein said ACPR measurement is done via said second digital receiver that includes a first channel tuned to a mean frequency and a second channel that is tuned to a predetermined offset frequency, said ACPR measurement including comparing an average power at the means frequency and at the predetermined offset frequency.</p> <p>11. An adaptive device for predistorting an RF modulated signal to be transmitted, supplied by a signal source to an input of a power amplifier having an output for delivering an amplified output signal, said adaptive device comprising:</p> <p>an I/Q modulator interposed between the signal source and the input of the power amplifier;</p>			

#	Claim Term, Phrase, or Clause	Smart RF's Proposed Construction	Defendants' Proposed Construction	Court's Construction
	<p>a distorting generator including predistortion amplitude and phase look-up tables; said distorting generator controlling said I/Q modulator to predistort the RF modulated signal to be transmitted in amplitude and in phase;</p> <p>a first digital receiver producing a first feedback signal in response to the RF predistorted signal from said I/Q modulator;</p> <p>a second digital receiver producing a second feedback signal in response to the RF amplified output signal from the power amplifier;</p> <p>a control module receiving said first and second feedback signals from said first and second digital receivers; said control module being so configured as to model the power amplifier in response to the first and second feedback signals and to update said amplitude and phase look-up tables of said distorting generator in response to a dynamic modeling of the power amplifier,</p> <p>wherein said control module is further configured as to insert an adequate delay between the first feedback signal and the second feedback signal.</p>			

#	Claim Term, Phrase, or Clause	Smart RF's Proposed Construction	Defendants' Proposed Construction	Court's Construction
B.1	<p>Term for Construction: “nonlinear crosstalk between distinct ones of [a/the] plurality of input signals”</p> <p>(’857 patent, claims 1, 8, and 15)</p> <p>Disputed Claim Language:</p> <p><u>’857 patent</u></p> <p>1. A method for multiple-input multiple-output impairment pre-compensation comprising:</p> <p>receiving a plurality of input signals forming a multiple-input signal in a multiple-input multiple-output system;</p> <p>generating a pre-distorted multiple-input signal from the received multiple-input signal;</p> <p>generating a multiple-output signal by feeding the pre-distorted multiple-input signal into a multiple-input and multiple-output transmitter;</p> <p>estimating impairments generated by the multiple-input and multiple-output transmitter, the impairments comprising nonlinear crosstalk between distinct ones of the plurality of input signals; and</p>	<p>No construction necessary, plain and ordinary meaning.</p>	<p>“nonlinear interference between distinct ones of the plurality of input signals that is produced before passing through nonlinear components”</p> <p><i>alternatively</i></p> <p>“nonlinear interference between distinct ones of the plurality of input signals that affects the input signals before passing through nonlinear components”</p>	

#	Claim Term, Phrase, or Clause	Smart RF's Proposed Construction	Defendants' Proposed Construction	Court's Construction
	<p>adjusting the pre-distorted multiple-input signal to compensate for the estimated impairments, wherein generating the pre-distorted multiple-input signal comprises feeding the received multiple-input signal to a matrix of pre-processing cells, comprising, in each of the pre-processing cells of the matrix:</p> <p>nonlinear processing blocks compensating for multiple-input multiple-output nonlinear distortions and an effect of interferences between signal paths of the multiple-input signal and signal paths of the multiple-output signal; and</p> <p>linear processing blocks compensating for the multiple-input multiple-output linear distortions and the effect of interferences between the signal paths of the multiple-input signal and the signal paths of the multiple-output signal.</p> <p>8. A pre-compensator for use with a multiple-input and multiple output transmitter, comprising:</p> <p>a multiple-input for receiving a plurality of input signals forming a multiple-input signal;</p>			

#	Claim Term, Phrase, or Clause	Smart RF's Proposed Construction	Defendants' Proposed Construction	Court's Construction
	<p>a matrix of pre-processing cells for generating a pre-distorted multiple-input signal from the received multiple-input signal; and</p> <p>a multiple-output for feeding the pre-distorted multiple-input signal to the multiple input and multiple-output transmitter;</p> <p>wherein the pre-processing cells are configured so as to estimate impairments generated by the multiple-input and multiple-output transmitter and adjust the predistorted multiple-input signal to compensate for the estimated impairments, the impairments comprising nonlinear crosstalk between distinct ones of the plurality of input signals, wherein each of the pre-processing cells of the matrix includes:</p> <p>nonlinear processing blocks compensating for multiple-input multiple-nonlinear distortions and an effect of interferences between signal paths of the multiple input signal and signal paths of the multiple-output signal; and</p> <p>linear processing compensating for multiple-input multiple-output linear distortions and the effect of interferences between the signal paths</p>			

#	Claim Term, Phrase, or Clause	Smart RF's Proposed Construction	Defendants' Proposed Construction	Court's Construction
	<p>of the multiple-input signal and the signal paths of the multiple-output signal.</p> <p>15. A post-compensator for use with a multiple-input and multiple output transmitter, comprising:</p> <p>a multiple-input for receiving a multiple-output signal from the multiple-input and multiple-output transmitter;</p> <p>a matrix of post-processing cells for generating a distorted multiple-output signal from the received multiple-output signal; and</p> <p>a multiple-output for outputting the distorted multiple-output signal;</p> <p>wherein the post-processing cells are configured so as to estimate impairments generated by the multiple-input and multiple-output transmitter and adjust the distorted multiple-output signal to compensate for the estimated impairments, the impairments comprising nonlinear crosstalk between distinct ones of a plurality of signals input to the multiple-input and multiple-output transmitter, wherein each of the post-processing cells of the matrix includes:</p>			

#	Claim Term, Phrase, or Clause	Smart RF’s Proposed Construction	Defendants’ Proposed Construction	Court’s Construction
	<p>nonlinear processing blocks compensating for multiple-input multiple-output nonlinear distortions and an effect of interferences between signal paths of the multiple input signal and signal paths of the multiple-output signal; and</p> <p>linear processing blocks compensating for multiple-input multiple-output linear distortions and the effect of interferences between the signal paths of the multiple-input signal and the signal paths of the multiple-output signal.</p>			
C.1	<p>Term for Construction: “configured to effect concurrent sampling of the amplified concurrent multi-band signals”</p> <p>(’204 patent, claim 1)</p> <p>Disputed Claim Language:</p> <p><u>’204 patent</u></p> <p>1. A transmitter comprising:</p> <p>a power amplifier configured to amplify modulated concurrent multi-band signals to</p>	<p>No construction necessary, plain and ordinary meaning.</p>	<p>“configured to concurrently sample the amplified concurrent multi-band signals”</p>	

#	Claim Term, Phrase, or Clause	Smart RF's Proposed Construction	Defendants' Proposed Construction	Court's Construction
	<p>provide amplified concurrent multi-band signals;</p> <p>a concurrent digital multi-band predistortion block configured to effect predistortion of the modulated concurrent multi-band signals to compensate for a non-linearity of the power amplifier; and</p> <p>a signal observation feedback loop configured to effect concurrent sampling of the amplified concurrent multi-band signals at a subsampling frequency lower than twice a highest signal frequency in the amplified concurrent multi-band signals.</p>			
D.1	<p>Term for Construction: “effecting predistortion of concurrent input signals to output concurrent predistorted signals”</p> <p>(’296 patent, claims 1 and 10)</p> <p>Disputed Claim Language:</p> <p><u>’296 patent</u></p> <p>1. A linearized transmitter comprising:</p> <p>a digital signal predistorter block including digital baseband signal predistorters effecting</p>	No construction necessary, plain and ordinary meaning.	“effecting predistortion of two or more concurrent input signals to output from the digital signal predistorter block two or more concurrent predistorted signals”	

#	Claim Term, Phrase, or Clause	Smart RF's Proposed Construction	Defendants' Proposed Construction	Court's Construction
	<p>predistortion of concurrent input signals to output concurrent predistorted signals;</p> <p>a power amplifier block connected to amplify the predistorted signals; and</p> <p>an analyzing and modelling stage receiving first feedback signals taken from an output of the power amplifier, and second feedback signals taken concurrently from the concurrent predistorted signals and using the first feedback and the second feedback signals in the analyzing and modelling stage to model a nonlinearity in the power amplifier, wherein the digital baseband signal predistorters are updated by the analyzing and modelling stage.</p> <p>10. A method for linearizing a transmitter, said method comprising:</p> <p>effecting predistortion of concurrent input signals to output concurrent predistorted signals using a digital signal predistorter block including digital baseband signal predistorters;</p> <p>amplifying the predistorted signals using a power amplifier block;</p> <p>receiving in an analyzing and modelling stage first feedback signals taken from an output of the power amplifier, and second feedback</p>			

#	Claim Term, Phrase, or Clause	Smart RF’s Proposed Construction	Defendants’ Proposed Construction	Court’s Construction
	<p>signals taken concurrently from the concurrent predistorted signals; and</p> <p>using the first feedback and the second feedback signals in the analyzing and modeling stage to model a nonlinearity in the power amplifier, wherein the digital baseband signal predistorters are updated by the analyzing and modelling stage.</p>			
D.2	<p>Term for Construction: “second feedback signals taken concurrently from the concurrent predistorted signals”</p> <p>(’296 patent, claims 1 and 10)</p> <p>Disputed Claim Language:</p> <p><u>’296 patent</u></p> <p>1. A linearized transmitter comprising:</p> <p>a digital signal predistorter block including digital baseband signal predistorters effecting predistortion of concurrent input signals to output concurrent predistorted signals;</p> <p>a power amplifier block connected to amplify the predistorted signals; and</p>	No construction necessary, plain and ordinary meaning.	“second feedback signals taken concurrently from each of the two or more concurrent predistorted signals”	

#	Claim Term, Phrase, or Clause	Smart RF's Proposed Construction	Defendants' Proposed Construction	Court's Construction
	<p>an analyzing and modelling stage receiving first feedback signals taken from an output of the power amplifier, and second feedback signals taken concurrently from the concurrent predistorted signals and using the first feedback and the second feedback signals in the analyzing and modelling stage to model a nonlinearity in the power amplifier, wherein the digital baseband signal predistorters are updated by the analyzing and modelling stage.</p> <p>10. A method for linearizing a transmitter, said method comprising:</p> <p>effecting predistortion of concurrent input signals to output concurrent predistorted signals using a digital signal predistorter block including digital baseband signal predistorters;</p> <p>amplifying the predistorted signals using a power amplifier block;</p> <p>receiving in an analyzing and modelling stage first feedback signals taken from an output of the power amplifier, and second feedback signals taken concurrently from the concurrent predistorted signals; and</p> <p>using the first feedback and the second feedback signals in the analyzing and</p>			

#	Claim Term, Phrase, or Clause	Smart RF's Proposed Construction	Defendants' Proposed Construction	Court's Construction
	modeling stage to model a nonlinearity in the power amplifier, wherein the digital baseband signal predistorters are updated by the analyzing and modelling stage.			
D.3	<p>Term for Construction: “said concurrent digital multi-band predistortion block”</p> <p>(’296 patent, claim 2)</p> <p>Disputed Claim Language:</p> <p><u>’296 patent</u></p> <p>2. The linearized transmitter of claim 1, wherein said concurrent digital multi-band predistortion block further comprises:</p> <p>a plurality of the digital baseband signal predistorters each corresponding to a respective channel; and a signal observation feedback loop for generating said first feedback signals.</p>	<p>No construction necessary, plain and ordinary meaning.</p> <p>Not indefinite.</p>	<p>Indefinite for lack of antecedent basis.</p>	