### **EXHIBIT 15**

## Section 2.1047 Measurements Required: Modulation Characteristics

The TDMA modulation utilized by the PCS-TDMA Dual Radio Module (PDRM), 44WR53, is the standard  $\pi/4$  differentially encoded quadrature phase shift keying ( $\pi/4$  DQPSK). The modulation accuracy measurements were performed with all 3 TDMA time slots modulated with a pseudo-random bit stream. Measurements were made at the PDRM output terminal on the backplane, with PDRM tuned to 1) the lowest settable PCS channel: A-Block Ch 2 1930.08 MHz, 2) mid PCS Band: B-Block Ch 917 1957.53 MHz, and 3) the highest settable PCS channel: C-Block Ch 1998 1989.96 MHz. The required modulation accuracy is specified in TIA/EIA/IS-138-A, July 1996, Section 3.3.2 Digital and in ANSI J-STD-010-1996, Section 3.3 Modulation Requirements. The "minimum standard", or limitation, is stated that the RMS error vector magnitude shall be less than 12.5%.

Measurements were made with a Rohde & Schwarz Spectrum Analyzer 20 Hz to 26.5 GHz FSEM, Model 1079.8500.30, calibrated as required for ISO-9001 compliance. The measurement results and test set-up block diagram are included.

## **RESULTS:**

The measurement data below demonstrates that the PCS-TDMA Dual Radio Module (PDRM), 44WR53, is in full compliance with the modulation accuracy requirements specified in TIA/EIA/IS-138-A and in ANSI J-STD-010-1996. The error vector magnitude is less than 12.5% across the PCS Frequency Band 1930.08 – 1989.96 MHz.

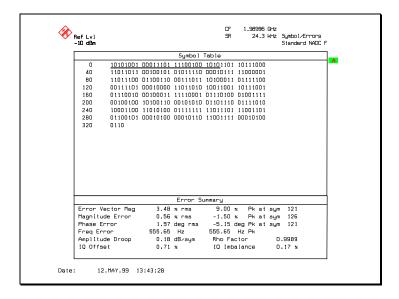
y	Ref Lvi -10 dBm				SR.	24	.3 kHz	Symbol∕Errors Standard NADC	=
				Symbo l	Table				A
	0				101011101				] <del>-</del> A
	40				10011101				
	80				01000011				
	120				11011000				
	160				11110100				
	200				10001001				
	240 280				11010001				
	320	11000000 0110	11001100	11001111	01101110	000101	UU		1
				Error St					4
		/ector Mag ude Error		% rms	8.84 1.30		at syn at syn		
	Phase F			% rms dea rms		deg Pk			1
	Frea Er		539.02		539.02		at ago	11 30	
		ude Droop			Rho Fa		ſ	1.9987	
	IQ Offs		0.50		IQ Imb			0.15 ×	

Modulation Accuracy: PCS-TDMA Dual Radio Module (PDRM), 44WR53, output tuned to A-Block Channel 2, 1930.08 MHz Error Vector Magnitude = 3.37% rms

#### **EXHIBIT 15**

<b>3</b> /	RefLv1 -10 dBm			DF SR		kHz	Symbol∕Errors Standard NAOC F
			Symbo l	Table			
	0 101010	01 00011101	11100100	10101001	01100101		
		01 00101011					
	80 100111	00 10100001	00101010	10000100	00011101		
	120 101001	00 10001100	01011101	10001100	00001000		
	160 111011	00 00100011	11110001	01110000	11000111		
	200 010011	11 00101110	00001111	01110011	01001000		
	240 101110	00 00011011	00011001	11110100	10100101		
	280 001101	01 11011001	11001111	01111101	00010100		
	320 0110						
			Error S				
	Error Vector Ma		% rms		k Pkat		
	Magnitude Error Phase Error		% rms deg rms		k Pkat deg Pkat		
	Freq Error		aeg rms Hz			sym	121
	Amplitude Droop		HZ dB∕sym			0	.9989
	IO Offset		ub/sylli %		alance		.05 ×
	I w orraet	0.70	^	I W I III DE	Tauce	0.	.03 %

Modulation Accuracy: PCS-TDMA Dual Radio Module (PDRM), 44WR53, output tuned to B-Block Channel 917, 1957.53 MHz Error Vector Magnitude = 3.46% rms



Modulation Accuracy: PCS-TDMA Dual Radio Module (PDRM), 44WR53, output tuned to C-Block Channel 2, 1989.96 MHz Error Vector Magnitude = 3.48% rms

**EXHIBIT 15** 

Test set-up for measuring the modulation accuracy of the PCS-TDMA Dual Radio Module transceiver.

# FLEXENT™ PCS-TDMA Microcell J41698A-1

