

MEASUREMENT/TECHNICAL REPORT



Intermec Technologies Corporation
EasyLAN® Wireless CF Radio
2.4 GHz Spread Spectrum Transmitter

REPORT NO: 040804-1

DATE: Aug. 8, 2004

Appendix F

TRANSMITTER CONDUCTED PLOTS

Page 2 Band edge compliance margins calculations

Page 3 2483.5 MHz band edge emissions, panel antenna

Page 4 2483.5 MHz band edge emissions, dipole antenna

The band edge emissions testing presented ad based on FCC Public Notice (DA 00-705, March 30, 2000) "Marker Delta Method".

Marker-Delta Method

In making radiated band-edge measurements, there can be a problem obtaining meaningful data since a measurement instrument that is tuned to a band-edge frequency may also capture some in-band signals when using the resolution bandwidth (RBW) required by measurement procedure ANSI C63.4-1992 (hereafter C63.4). In an effort to compensate for this problem, we have developed the following technique for determining band-edge compliance.


STEP 1) Perform an in-band field strength measurement of the fundamental emission using the RBW and detector function required by C63.4 and our Rules for the frequency being measured. For example, for a device operating in the 902-928 MHz band under Section 15.249, use a 120 kHz RBW with a CISPR QP detector (a peak detector with 100 kHz RBW may alternatively be used). For transmitters operating above 1 GHz, use a 1 MHz RBW, a 1 MHz VBW, and a peak detector (as required by Section 15.35). Repeat the measurement with an average detector (i.e., 1 MHz RBW with 10 Hz VBW). Note: For pulsed emissions, other factors must be included. Please contact the FCC Lab for details if the emission under investigation is pulsed. Also, please note that radiated measurements of the fundamental emission of a transmitter operating under 15.247 are not normally required, but they are necessary in connection with this procedure.

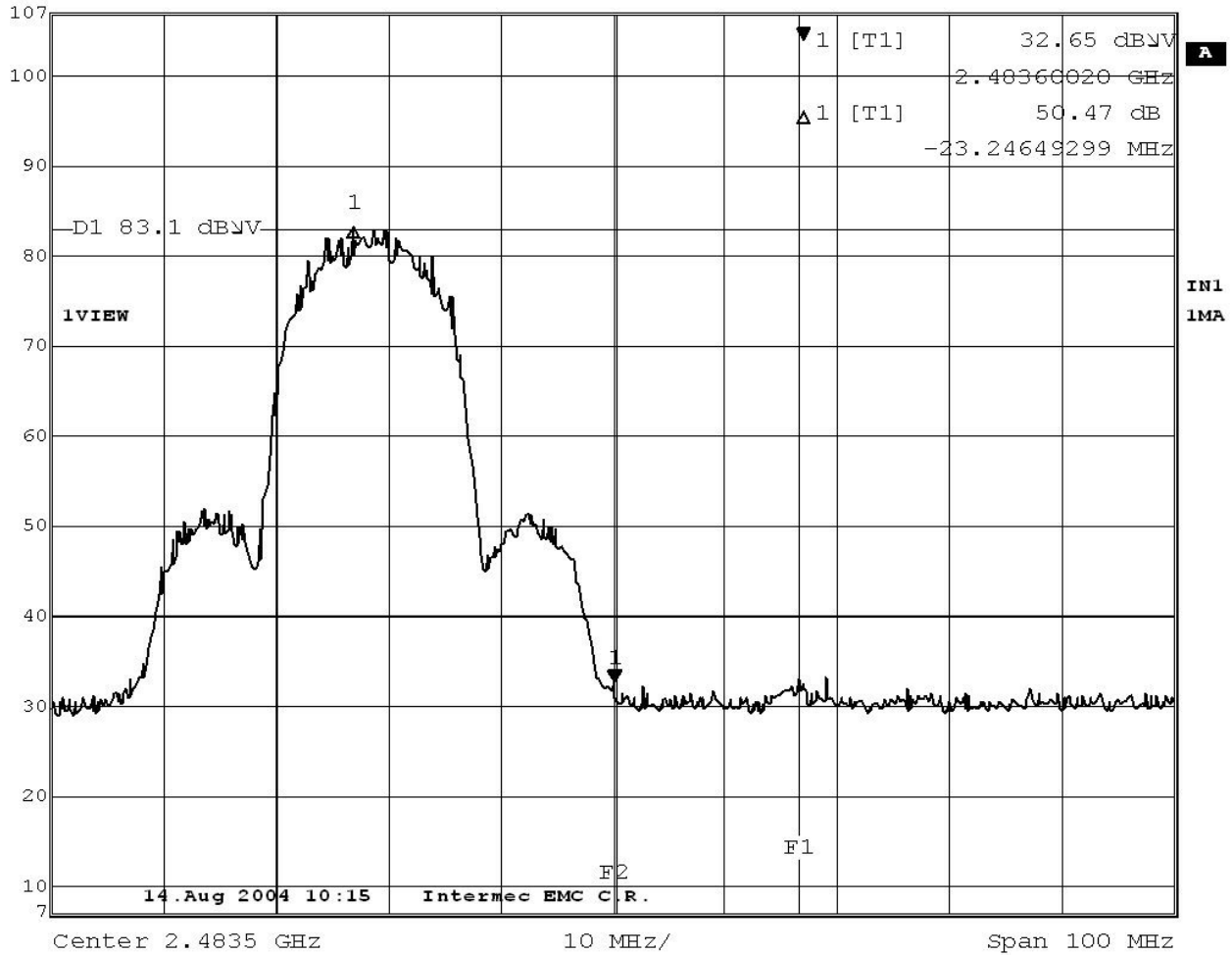
STEP 2) Choose a spectrum analyzer span that encompasses both the peak of the fundamental emission and the band-edge emission under investigation. Set the analyzer RBW to 1% of the total span (but never less than 30 kHz) with a video bandwidth equal to or greater than the RBW. Record the peak levels of the fundamental emission and the relevant band-edge emission (i.e., run several sweeps in peak hold mode). Observe the stored trace and measure the amplitude delta between the peak of the fundamental and the peak of the band-edge emission. This is not a field strength measurement, it is only a relative measurement to determine the amount by which the emission drops at the band-edge relative to the highest fundamental emission level.

STEP 3) Subtract the delta measured in step (2) from the field strengths measured in step (1). The resultant field strengths (CISPR QP, average, or peak, as appropriate) are then used to determine band-edge compliance as required by Section 15.205.


STEP 4) The above "delta" measurement technique may be used for measuring emissions that are up to two "standard" bandwidths away from the band-edge, where a "standard" bandwidth is the bandwidth specified by C63.4 for the frequency being measured. For example, for band-edge measurements in the restricted band that begins at 2483.5 MHz, C63.4 specifies a measurement bandwidth of at least 1 MHz. Therefore you may use the "delta" technique for measuring emissions up to 2 MHz removed from the band-edge. Radiated emissions that are removed by more than two "standard" bandwidths must be measured in the conventional manner.

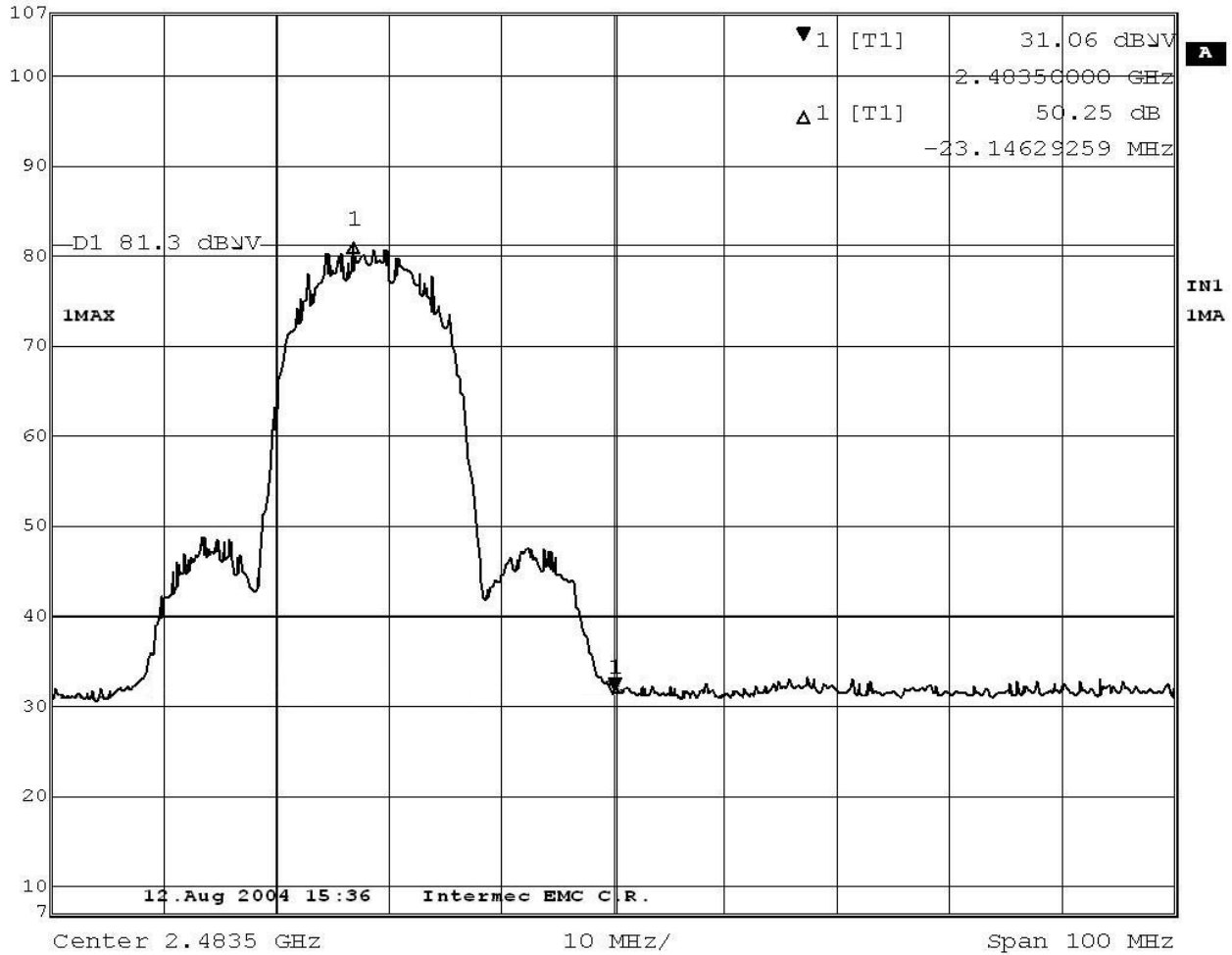
Config	Edge MHz	Pk / Av	In band FS dB(uV)@1m	Delta	Delta FS dB(uV)@1m (=d-e)	Limit dB(uV)@1m	Margin (=f-g)	pass/fail
Panel	2483.5	Av	113.78	50.47	63.31	64	-0.69	pass
Panel	2483.5	Pk	122.06	50.47	71.59	84	-12.41	pass
Dipole	2483.5	Av	112.63	50.25	62.38	64	-1.62	pass
Dipole	2483.5	Pk	122.06	50.25	71.81	84	-12.19	pass

	Marker 1 [T1]	RBW	100 kHz	RF Att	10 dB
	Ref Lvl	32.65 dBμV	VBW	100 kHz	
	107 dBμV	2.48360020 GHz	SWT	25 ms	Unit



Title: EZLAN WIRELESS XERTEX PANEL, HORN V
 Date: 14.AUG.2004 10:15:15

	Ref Lvl	Marker 1 [T1]	RBW	100 kHz	RF Att	10 dB
	107 dBμV	31.06 dBμV	VBW	100 kHz		
		2.48350000 GHz	SWT	25 ms	Unit	dBμV



Title: EZLAN WIRELESS DIPOLE ANTENNA, HORN V
 Date: 12.AUG.2004 15:36:07