

Figure 6-56 Spurious Emissions 2110.7MHz TX2_64QAM 1.4MHz Band Edge (ACP 15kHz -550kHz)

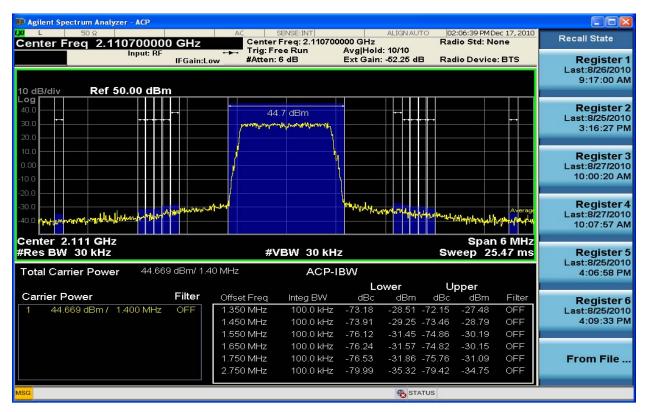


Figure 6-57 Spurious Emissions 2110.7MHz TX2_64QAM 1.4MHz Band Edge (ACP 650kHz - 2MHz)

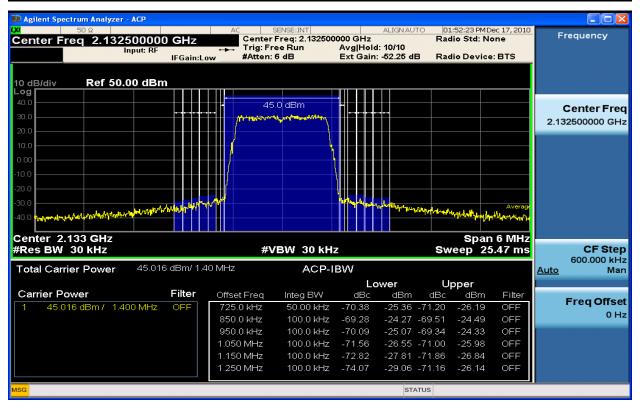


Figure 6-58 Spurious Emissions 2132.5MHz TX1_QPSK 1.4MHz Band Edge (ACP 15kHz – 550kHz)

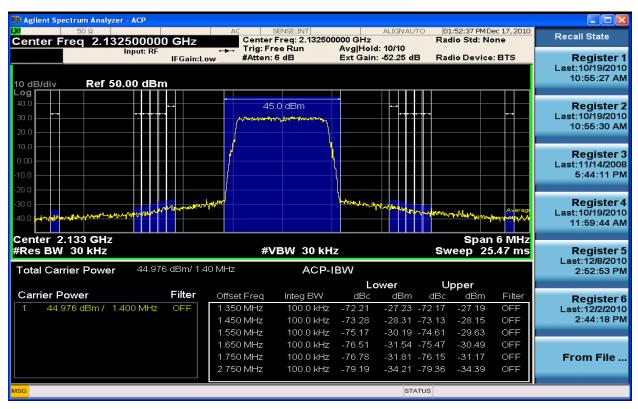


Figure 6-59 Spurious Emissions 2132.5MHz TX1_QPSK 1.4MHz Band Edge (ACP 650kHz – 2MHz)

Agilent Spectrum Analyzer - ACP				10					
Center Freq 2.13250000	0 GHz IFGain:Lov	Center Trig: Fr		Avg Hold	ALIGNAUTO 1: 10/10 : -52.25 dB	01:50:29 PMI Radio Std: N Radio Devic	one	F	requency
10 dB/div Ref 50.00 dBn	n								
40.0 30.0 20.0		-	.8 dBm	•					Center Freq 2500000 GHz
10.0 0.00 -10.0 -20.0									
		11. P							
-30.0 -40.0 Markaharana makawakarana ang				HI HIN YONGH			Average		
-40.0 when when when when when we want when when when when when when when when	rend and a grad of f	#V	/BW 30 kH2	r fillen for the second			1 6 MHz		
40.0 whole who are a second and	4 dBm/ 1.40		/BW 30 kH; ACP-I	BW		Spar Sweep 2	1 6 MHz	Auto	600.000 kHz
40.0 who) MHz	ACP-I	BW Lo	ower	Spar Sweep 2: Upper	6 MHz 5.47 ms		CF Step 600.000 kHz Man
.40.0 Implementation Center 2.133 GHz #Res BW 30 kHz Total Carrier Power 44.79	4 dBm/ 1.40			BW	ower	Spar Sweep 2: Upper IBc dBm	1 6 MHz		600.000 kHz Man Freq Offset
40.0 Implementation and the second secon	4 dBm/ 1.40) MHz Offset Freq	ACP-I	BW Lo dBc	wer dBm c	Spar Sweep 2: Upper IBc dBm .16 -25.37	n 6 MHz 5.47 ms		600.000 kHz Man Freq Offset
40.0 Implementation and the second secon	4 dBm/ 1.40	0 MHz Offset Freq 725.0 kHz	ACP-I Integ BW 50.00 kHz	BW La dBc -70.08	dBm c -25.28 -70	Spar Sweep 2: Upper IBc dBm .16 -25.37 .05 -23.26	6 MHz 5.47 ms Filter OFF		600.000 kHz Man Freq Offset
Center 2.133 GHz #Res BW 30 kHz Total Carrier Power 44.79 Carrier Power	4 dBm/ 1.40	0 MHz Offset Freq 725.0 kHz 850.0 kHz 950.0 kHz 1.050 MHz	ACP-I Integ BW 50.00 kHz 100.0 kHz 100.0 kHz 100.0 kHz	BW Lo dBc -70.08 -68.99	dBm c -25.28 -70 -24.20 -68	Spar Sweep 2: Upper IBc dBm .16 -25.37 .05 -23.26 .57 -24.77 .16 -25.36	Filter OFF OFF OFF OFF OFF		600.000 kHz Man Freq Offset
40.0 Implementation and the second secon	4 dBm/ 1.40	0 MHz Offset Freq 725.0 kHz 850.0 kHz 950.0 kHz 1.050 MHz 1.150 MHz	ACP-I Integ BW 50.00 kHz 100.0 kHz 100.0 kHz 100.0 kHz 100.0 kHz	BW Lc dBc -70.08 -68.99 -69.87 -70.73 -71.24	dBm c -25.28 -70 -24.20 -68 -25.07 -69 -25.94 -70 -26.44 -70	Spar Sweep 2: Upper IBc dBm .16 -25.37 .05 -23.26 .57 -24.77 .16 -25.36 .85 -26.05	Filter OFF OFF OFF OFF OFF OFF OFF		600.000 kHz Man Freq Offset
Center 2.133 GHz #Res BW 30 kHz Total Carrier Power 44.79 Carrier Power	4 dBm/ 1.40	0 MHz Offset Freq 725.0 kHz 850.0 kHz 950.0 kHz 1.050 MHz	ACP-I Integ BW 50.00 kHz 100.0 kHz 100.0 kHz 100.0 kHz	BW Lo dBc -70.08 -68.99 -69.87 -70.73	dBm c -25.28 -70 -24.20 -68 -25.07 -69 -25.94 -70	Spar Sweep 2: Upper IBc dBm .16 -25.37 .05 -23.26 .57 -24.77 .16 -25.36 .85 -26.05	Filter OFF OFF OFF OFF OFF		600.000 kHz

Figure 6-60 Spurious Emissions 2132.5MHz TX2_QPSK 1.4MHz Band Edge (ACP 15kHz – 550kHz)

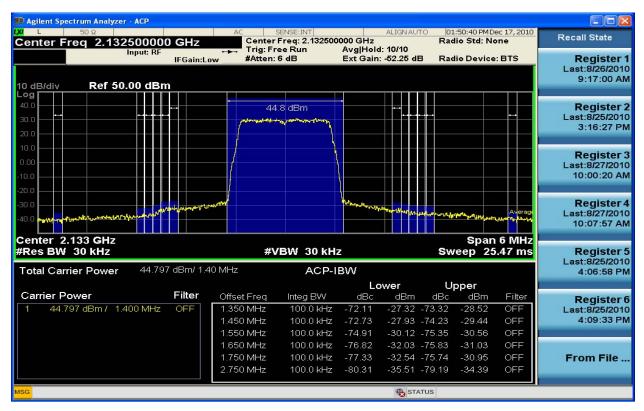


Figure 6-61 Spurious Emissions 2132.5MHz TX2_QPSK 1.4MHz Band Edge (ACP 650kHz – 2MHz)

Magilent Spectrum Analyzer - ACP								
50 Ω Center Freq 2.132500000 GHz Input: RF IFGain:L	Center			Ra 10/10	1:47:23 PMD dio Std: No dio Device	one	Fi	requency
10 dB/div Ref 50.00 dBm								
40.0 30.0 20.0		i.0 dBm Mayler and the second	•	•				Center Freq 2500000 GHz
10.0 0.00 -10.0 -20.0 -30.0			7000 00 00					
-30.0				and a second and and	whenly help here			
-40.0 http://www.angle.com/angle/ang	¥\ #\	/BW 30 kHz		Sv		6 MHz		CF Step
Center 2.133 GHz		/BW 30 kHz ACP-IE		Sv	Span veep 25	i.47 ms	Auto	CF Step 600.000 kHz Man
Center 2.133 GHz #Res BW 30 kHz Total Carrier Power 45.017 dBm/ 1.4	40 MHz	ACP-IE	3W Low	ver L	Span veep 25 Jpper	.47 ms	Auto	600.000 kHz
Center 2.133 GHz #Res BW 30 kHz			BW Low dBc -71.11	Sv	Span veep 25 Jpper dBm -25.53	i.47 ms		600.000 kHz
Center 2.133 GHz #Res BW 30 kHz Total Carrier Power 45.017 dBm/ 1.4 Carrier Power Filter	40 MHz Offset Freq 725.0 kHz 850.0 kHz 950.0 kHz 1.050 MHz	ACP-IE Integ BW 50.00 kHz 100.0 kHz 100.0 kHz 100.0 kHz	BW dBc -71.11 -70.36 -70.86 -71.84	Per L dBm dBc 26.09 -70.55 25.34 -69.48 -25.84 -70.48 -26.82 -71.21	Span veep 25 Jpper dBm -25.53 -24.46 -25.46 -25.46 -26.19	Filter OFF OFF OFF OFF		600.000 kHz Man Freq Offset
Center 2.133 GHz #Res BW 30 kHz Total Carrier Power 45.017 dBm/ 1.4 Carrier Power Filter	40 MHz Offset Freq 725.0 kHz 850.0 kHz 950.0 kHz	ACP-IE Integ BW 50.00 kHz 100.0 kHz 100.0 kHz 100.0 kHz	3W dBc -71.11 -70.36 -70.86 -71.84 -71.99	rer L dBm dBc 26.09 -70.55 -25.34 -69.48 -25.84 -70.48	Span veep 25 Jpper dBm -25.53 -24.46 -25.46	Filter OFF OFF OFF		600.000 kHz Man Freq Offset

Figure 6-62 Spurious Emissions 2132.5MHz TX1_16QAM 1.4MHz Band Edge (ACP 15kHz – 550kHz)

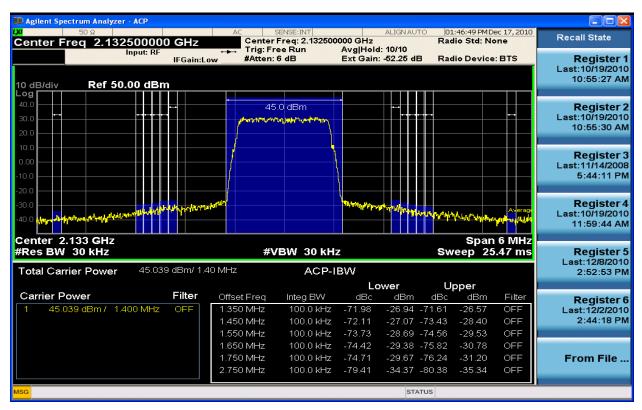


Figure 6-63 Spurious Emissions 2132.5MHz TX1_16QAM 1.4MHz Band Edge (ACP 650kHz – 2MHz)

💷 Agilent Spectrum Analyzer - ACP			48				
Center Freg 2.132500000 GH	AC Center	SENSE:INT Freq: 2.132500	000 GHz		01:45:20 PMD adio Std: No		Recall State
Input: RF IFGa		ree Run	Avg Hold Ext Gain:		adio Device	BTS	Register 1 Last:8/26/2010 9:17:00 AM
10 dB/div Ref 50.00 dBm							
40.0 30.0 20.0		4.8 dBm	-				Register 2 Last:8/25/2010 3:16:27 PM
10.0							Register 3 Last:8/27/2010 10:00:20 AM
-20.0 -30.0 -40.0			wond on a	H. A. Martin March and			Register 4 Last:8/27/2010 10:07:57 AM
Center 2.133 GHz #Res BW 30 kHz	#\	VBW 30 kH;	Z	s	Span weep 25	6 MHz 6.47 ms	Register 5 Last:8/25/2010
Total Carrier Power 44.768 dBm	' 1.40 MHz	ACP-I	BW				4:06:58 PM
-					Upper		
Carrier Power Filte	enserred	Integ BW 50.00 kHz	dBc -69.76	dBm dB		Filter	Register 6
1 44.768 dBm 7 1.400 MHZ OFF	850.0 kHz	50.00 kHz 100.0 kHz	-69.76 -68.51	-23.74 -68.50		OFF	Last:8/25/2010 4:09:33 PM
	950.0 kHz	100.0 kHz	-69.92	-25.14 -08.50		OFF	4.03.0011
	1.050 MHz	100.0 kHz	-69.33	-24.56 -69.9		OFF	
	1.150 MHz	100.0 kHz	-69.97	-25.20 -70.6		OFF	From File
	1.250 MHz	100.0 kHz	-70.47	-25.70 -71.0	7 -26.30	OFF	
MSG				STATUS			

Figure 6-64 Spurious Emissions 2132.5MHz TX2_16QAM 1.4MHz Band Edge (ACP 15kHz - 550kHz)

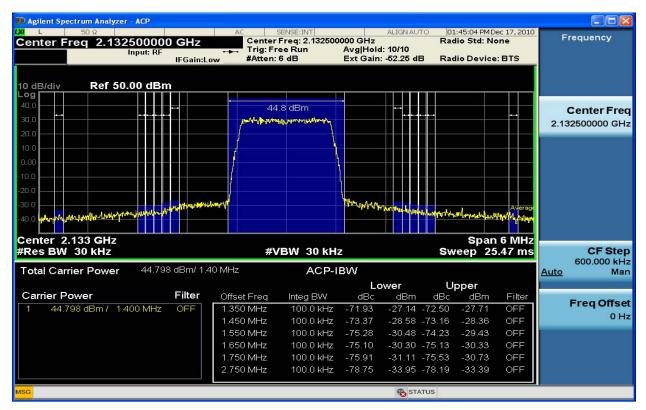


Figure 6-65 Spurious Emissions 2132.5MHz TX2_16QAM 1.4MHz Band Edge (ACP 650kHz - 2MHz)

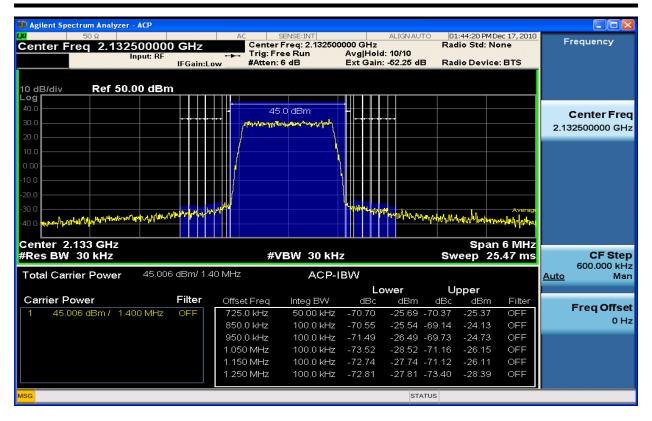


Figure 6-66 Spurious Emissions 2132.5MHz TX1_64QAM 1.4MHz Band Edge (ACP 15kHz – 550kHz)

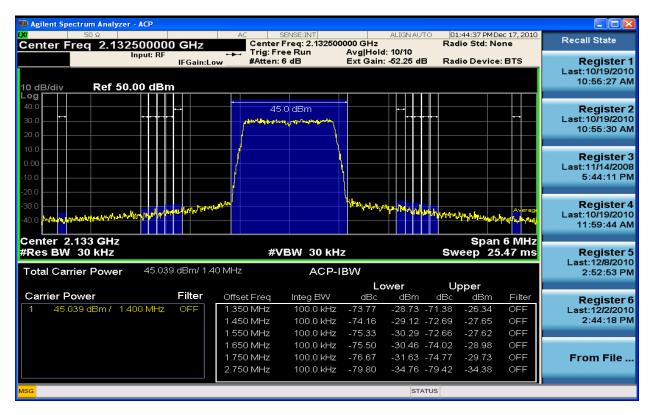


Figure 6-67 Spurious Emissions 2132.5MHz TX1_64QAM 1.4MHz Band Edge (ACP 650kHz - 2MHz)

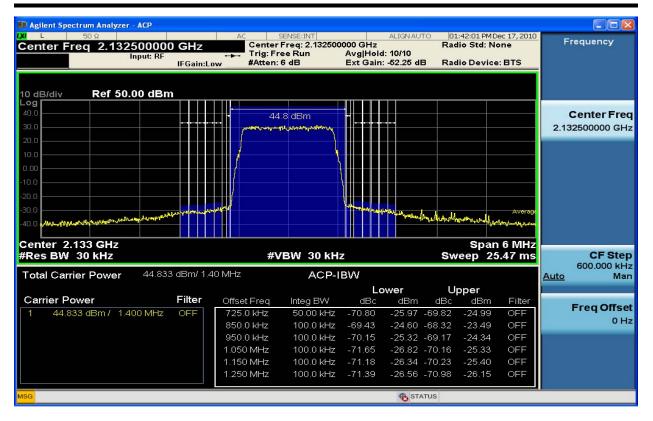


Figure 6-68 Spurious Emissions 2132.5MHz TX2_64QAM 1.4MHz Band Edge (ACP 15kHz – 550kHz)

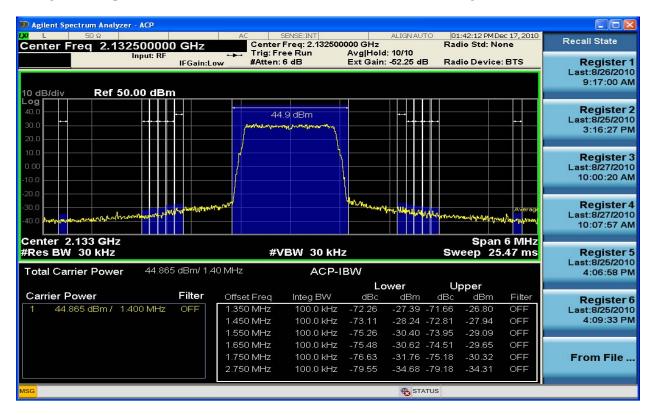


Figure 6-69 Spurious Emissions 2132.5MHz TX2_64QAM 1.4MHz Band Edge (ACP 650kHz - 2MHz)

💴 Agilent Spectrum Analyzer - ACP								
<mark>₩</mark> 50 Ω Center Freg 2.15430000	0 GHz		SENSE:INT Freg: 2.154300	000 GHz		02:35:20 PMD adio Std: No		Recall State
Input: RF	IFGain:Lo	Trig: Fr w #Atten:		Avg Hold Ext Gain:		adio Device	: BTS	Register 1 Last:10/19/2010 10:55:27 AM
10 dB/div Ref 50.00 dB	m							10:55:27 AM
40.0 30.0 20.0			.0 dBm Mynthethetheth		•••			Register 2 Last:10/19/2010 10:55:30 AM
10.0 0.00 -10.0 -20.0								Register 3 Last:11/14/2008 5:44:11 PM
-30.0	and the advertise			V-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1	hay on the second			Register 4 Last:10/19/2010 11:59:44 AM
Center 2.154 GHz #Res BW 30 kHz		#\	/BW 30 kH;	Z	s	Span weep 25	6 MHz 5.47 ms	Register 5 Last:12/8/2010
Total Carrier Power 45.04	18 dBm/ 1.4	0 MHz	ACP-I	BW				2:52:53 PM
	Filter					Upper		
Carrier Power 1 45.048 dBm / 1.400 MHz		Offset Freq 725.0 kHz	Integ BW 50.00 kHz	dBc -69.81	dBmdB 24.7771.92		Filter OFF	Register 6 Last:12/2/2010
1 43.048 dBitti 1.400 MiHz		850.0 kHz	100.0 kHz	-69.24	-24.19 -69.22		OFF	2:44:18 PM
		950.0 kHz	100.0 kHz	-71.11	-26.06 -69.94		OFF	
		1.050 MHz	100.0 kHz	-71.45	-26.41 -71.64		OFF	
		1.150 MHz	100.0 kHz	-73.42	-28.37 -72.15	5 -27.10	OFF	From File
		1.250 MHz	100.0 kHz	-73.44	-28.39 -72.47	7 -27.42	OFF	

Figure 6-70 Spurious Emissions 2154.3MHz TX1_QPSK 1.4MHz Band Edge (ACP 15kHz - 550KHz)

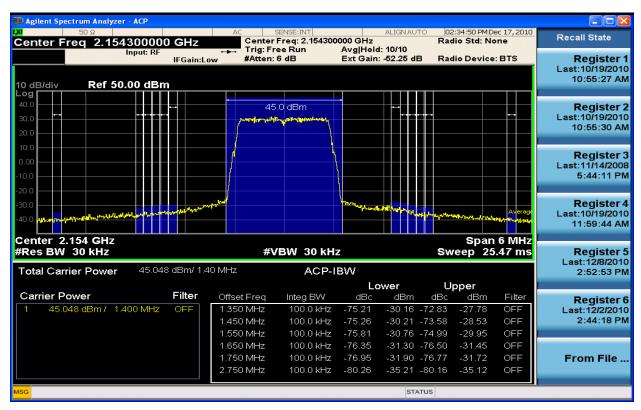


Figure 6-71 Spurious Emissions 2154.3MHz TX1_QPSK 1.4MHz Band Edge (ACP 650kHz – 2MHz)

💶 Agilent Spectrum Analyzer - ACP							
Center Freg 2.154300000 GHz	Center	SENSE:INT Freq: 2.154300		ALIGN AUTO	02:33:16 PMD Radio Std: No		Recall State
Input: RF IFGain: 10 dB/div Ref 50.00 dBm		ee Run 6 dB	Avg Hold Ext Gain	l: 10/10 : -52.25 dB	Radio Device	: BTS	Register 1 Last:8/26/2010 9:17:00 AM
40.0 30.0 20.0		.7 dBm	*				Register 2 Last:8/25/2010 3:16:27 PM
10.0							Register 3 Last:8/27/2010 10:00:20 AM
-20.0 -30.0 -40.0 Waltschutgelachunghtlandlachunghtlachunghtlachunghtlachunghtlachunghtlachunghtlachunghtlachunghtlachunghtlachunghtlachunghtlachunghtlachunght	yn freder de fan de		1-maniputa	and many and a	APP	Average Mul/Angerene	Register 4 Last:8/27/2010 10:07:57 AM
Center 2.154 GHz #Res BW 30 kHz	-#1)	/BW 30 kH	_		Span Sweep 25	6 MHz	Register 5
Total Carrier Power 44.729 dBm/ 1		ACP-I			Sweep 20	.47 1115	Last:8/25/2010 4:06:58 PM
				ower	Upper		
Carrier Power Filter	Offset Freq	Integ BW	dBc		Bc dBm	Filter	Register 6
1 44.729 dBm / 1.400 MHz OFF	725.0 kHz	50.00 kHz	-69.03	-24.30 -69		OFF	Last:8/25/2010 4:09:33 PM
	850.0 kHz 950.0 kHz	100.0 kHz 100.0 kHz	-67.80 -68.71	-23.07 -68 -23.98 -69		OFF	4.09:33 PN
	950.0 KHZ 1.050 MHz	100.0 kHz 100.0 kHz	-68.71 -69.78	-23.98 -69		OFF	
	1.150 MHz	100.0 kHz	-70.82	-26.09 -71		OFF	From File
	1.250 MHz	100.0 kHz	-71.20	-26.47 -72		OFF	
150				STATUS			

Figure 6-72 Spurious Emissions 2154.3MHz TX2_QPSK 1.4MHz Band Edge (ACP 15kHz – 550KHz)

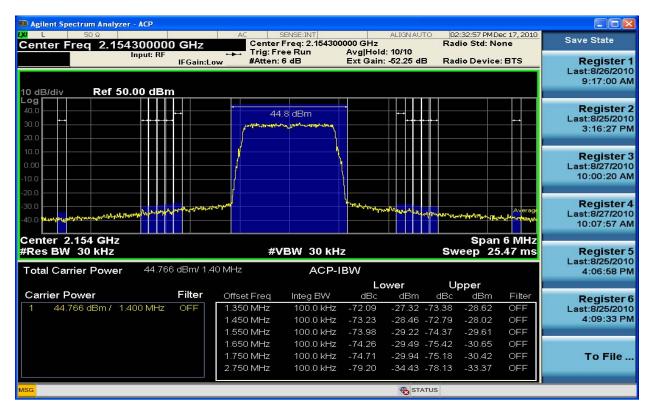


Figure 6-73 Spurious Emissions 2154.3MHz TX2_QPSK 1.4MHz Band Edge (ACP 650kHz - 2MHz)

Agilent Spectrum Analyzer - ACP						
50 Ω Center Freg 2.154300000 GHz	Center	SENSE:INT Freq: 2.154300000 G		O [02:32:41 PM Radio Std:	1Dec 17, 2010 None	Save State
Input: RF IFGain:	Trig: Fr		Hold: 10/10 Gain: -52.25 dB	Radio Devi	ce: BTS	Register 1 Last:10/19/2010
10 dB/div Ref 50.00 dBm						10:55:27 AN
20.0		5.0 dBm	• • • • • • • • • • • • • • • • • • •			Register 2 Last:10/19/2010 10:55:30 AM
10.0						Register 3 Last:11/14/2008 5:44:11 PM
30.0	an a		When you and the second second	human	Average	Register 4
40.0 with the way of the second of the secon					have been been	Last:10/19/2010 11:59:44 AM
40.0 million 40.0 million 40 mill	#\	/BW 30 kHz			4,4,4,4,4,4,4,4 an 6 MHz 25.47 ms	11:59:44 AN Register 5
Center 2.154 GHz		/BW 30 kHz ACP-IBW		Spa		11:59:44 AN
Center 2.154 GHz #Res BW 30 kHz Total Carrier Power 44.980 dBm/ 1	I.40 MHz	ACP-IBW	Lower	Sweep 2	25.47 ms	11:59:44 AN Register : Last:12/8/2010
Center 2.154 GHz #Res BW 30 kHz Total Carrier Power 44.980 dBm/ 1 Carrier Power Filter	0ffset Freq	ACP-IBW	Lower IBc dBm	Sweep 2 Sweep 2 Upper dBc dBm	2 5.47 ms	11:59:44 AM Register 5 Last:12/8/2010 2:52:53 PM Register 6
Center 2.154 GHz #Res BW 30 kHz Total Carrier Power 44.980 dBm/ 1	0.40 MHz Offset Freq 725.0 kHz	ACP-IBW Integ BW d 50.00 kHz -71.	Lower IBc dBm 23 -26.25 -	Sweep 2 Sweep 2 Upper dBc dBm 68.90 -23.92	2 5.47 ms n Filter 2 OFF	11:59:44 Al Register Last:12/8/201 2:52:53 Pl Register Last:12/2/201
Center 2.154 GHz Res BW 30 kHz Total Carrier Power 44.980 dBm/ 1 Carrier Power Filter	1.40 MHz Offset Freq 725.0 kHz 850.0 kHz	ACP-IBW Integ BW d 50.00 kHz -71. 100.0 kHz -70.	Lower IBc dBm 23 -26.25 - 05 -25.07 -	Spa Sweep 2 Upper dBc dBr 68.90 -23.92 68.36 -23.38	25.47 ms Filter OFF OFF	11:59:44 Al Register Last:12/8/201 2:52:53 Pl Register Last:12/2/201
Center 2.154 GHz #Res BW 30 kHz Total Carrier Power 44.980 dBm/ 1 Carrier Power Filter	0.40 MHz Offset Freq 725.0 kHz 850.0 kHz 950.0 kHz	ACP-IBW Integ BW d 50.00 kHz -71. 100.0 kHz -70. 100.0 kHz -70.	Lower Bc dBm 23 -26.25 - 05 -25.07 - 54 -25.56 -	Spa Sweep 2 dBc dBm 68.36 -23.38 69.98 -25.00	2 5.47 ms Filter OFF OFF OFF	11:59:44 Al Register Last:12/8/201 2:52:53 Pl Register Last:12/2/201
Center 2.154 GHz #Res BW 30 kHz Total Carrier Power 44.980 dBm/ 1 Carrier Power Filter	1.40 MHz Offset Freq 725.0 kHz 850.0 kHz	ACP-IBW Integ BW d 50.00 kHz -71. 100.0 kHz -70.	Lower Bc dBm 23 -26.25 - 05 -25.07 - 54 -25.56 - 92 -26.94 -	Upper dBc dBm 68.90 -23.92 68.36 -23.38 69.98 -25.00 71.41 -26.43	25.47 ms Filter OFF OFF OFF OFF OFF	11:59:44 AI Register Last:12/8/201 2:52:53 PI Register Last:12/2/201 2:44:18 PI
Center 2.154 GHz Res BW 30 kHz Total Carrier Power 44.980 dBm/ 1 Carrier Power Filter	1.40 MHz Offset Freq 725.0 kHz 850.0 kHz 950.0 kHz 1.050 MHz	ACP-IBW Integ BW d 50.00 kHz -71. 100.0 kHz -70. 100.0 kHz -70. 100.0 kHz -71.	Lower Bc dBm 23 -26.25 - 05 -25.07 - 54 -25.56 - 92 -26.94 - 02 -27.04 -	Upper dBc dBm 68.90 -23.92 68.36 -23.38 69.98 -25.00 .71.41 -26.43 .72.46 -27.48	25.47 ms Filter OFF OFF OFF OFF OFF OFF	11:59:44 Al Register Last:12/8/201 2:52:53 Pt

Figure 6-74 Spurious Emissions 2154.3MHz TX1_16QAM 1.4MHz Band Edge (ACP 15kHz - 550KHz)

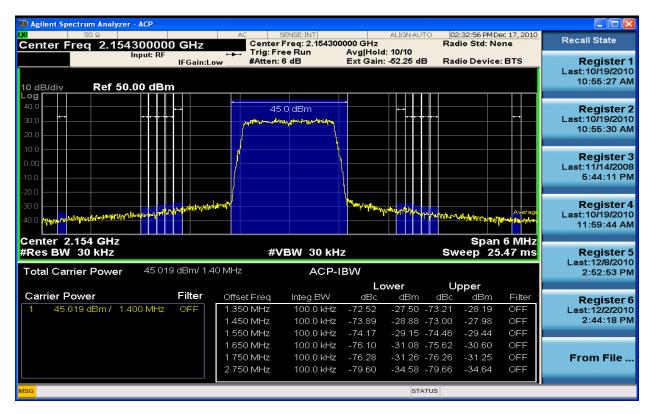


Figure 6-75 Spurious Emissions 2154.3MHz TX1_16QAM 1.4MHz Band Edge (ACP 650KHz - 2MHz)

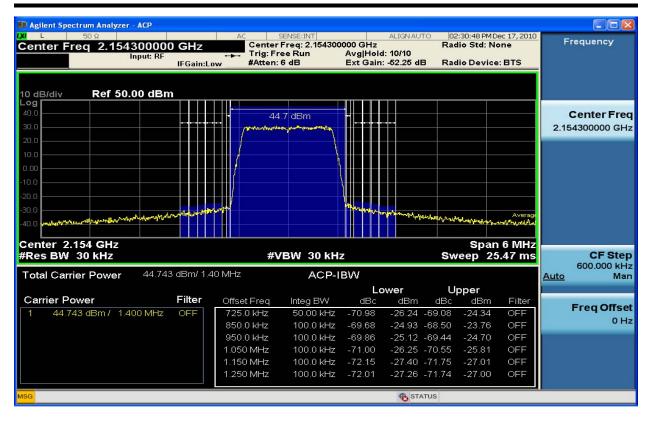


Figure 6-76 Spurious Emissions 2154.3MHz TX2_16QAM 1.4MHz Band Edge (ACP 15kHz - 550KHz)

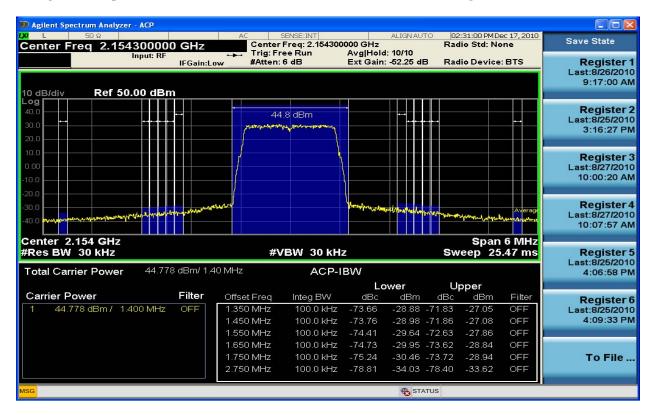


Figure 6-77 Spurious Emissions 2154.3MHz TX2_16QAM 1.4MHz Band Edge (ACP 650kHz - 2MHz)

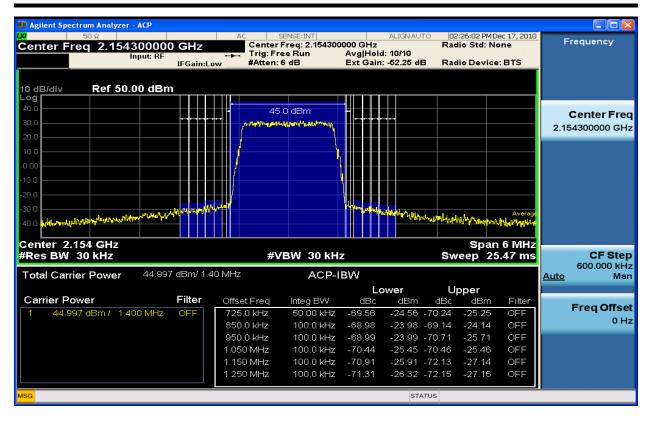


Figure 6-78 Spurious Emissions 2154.3MHz TX1_64QAM 1.4MHz Band Edge (ACP 15kHz – 550KHz)

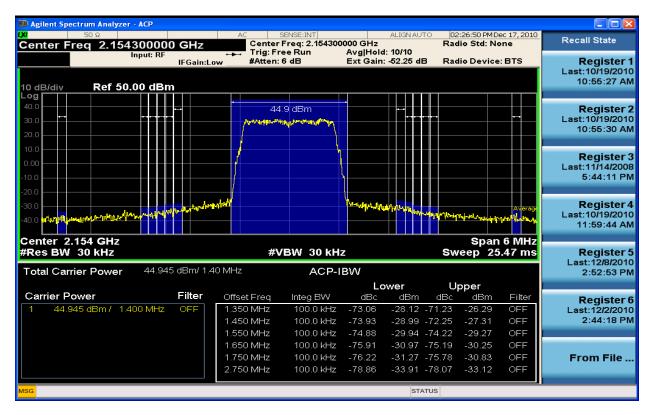


Figure 6-79 Spurious Emissions 2154.3MHz TX1_64QAM 1.4MHz Band Edge (ACP 650kHz - 2MHz)

Agilent Spectrum Analyzer - ACP Conter Freq 2.154300000 Input: RF	GHz IFGain:Lov	Center Trig: Fr		Avg Hold	Ra I: 10/10	2:23:19 PMD dio Std: No dio Device	one	F	requency
10 dB/div Ref 50.00 dBm Log 40.0		44	.7 dBm vymetuwning						Center Freq 54300000 GHz
20.0 20.0 10.0 -10.0 -20.0 -30.0 -40.0	ay, or her pairs of the second			1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			Average Muddadda 6 MHz	2.10	4500000 8112
#Res BW 30 kHz		#∖	/BW 30 kH:	z	S	veep 25			CF Step
Total Carrier Power 44.726	dBm/ 1.40	MHz	ACP-I	BW				Auto	600.000 kHz Man
	Filter					pper			
		Offset Freq 725.0 kHz	Integ BW 50.00 kHz	dBc -71.03	dBm dBc	dBm -25,96	Filter OFF		Freq Offset
44.720 GBITT 1.400 MINZ		725.0 kHz 850.0 kHz	50.00 kHz 100.0 kHz	-71.05	-25.76 -70.37	-25.96	OFF		0 Hz
		950.0 kHz	100.0 kHz	-71.55	-26.82 -71.43	-26.70	OFF		-
		1.050 MHz	100.0 kHz	-70.79	-26.06 -71.81	-27.08	OFF		
		1.050 MHZ	100.0 Ki 12						
		1.050 MHz 1.150 MHz	100.0 kHz	-73.12	-28.40 -71.96	-27.24	OFF		
							OFF OFF		

Figure 6-80 Spurious Emissions 2154.3MHz TX2_64QAM 1.4MHz Band Edge (ACP 15kHz – 550KHz)

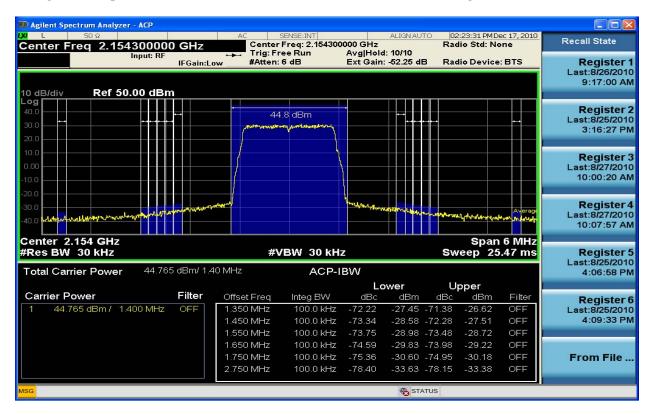


Figure 6-81 Spurious Emissions 2154.3MHz TX2_64QAM 1.4MHz Band Edge (ACP 650kHz – 2MHz)

Agilent Spectrum Analyzer - Swept So So Ω Marker 1 3.19012000000 Input: RF	AC SE OGHZ PN0: Fast ↔ Trig: Free	e Run	ALIGN AUTO J Type: Pwr(RMS)	02:09:50 PMDec 17, 2010 TRACE 123456 TYPE WWMMMM DET A N N N N	Peak Search
0 dB/div Ref 45.32 dBm	IFGain:Low #Atten: 6	dB Ext	Gain: -52.25 dB Mkr	3.190 12 GHz -23.10 dBm	Next Peak
og 35.3					Next Pk Righ
15.3					Next Pk Lef
4.68					Marker Delt
24.7		u al-tanotsioniten muttati	······································	1	Mkr→Cł
24.7 34.7 44.7	hereed by ffer have be for the second sec				Mkr→RefLv
Start 30 MHz Res BW 3.0 MHz	VBW 300 kHz*		Sweep (Stop 4.000 GHz 5.67 ms (1001 pts)	More 1 of 2

Figure 6-82 Spurious Emission TX1 64QAM 2110.7MHz - 1.4MHz (30MHz - 4GHz)

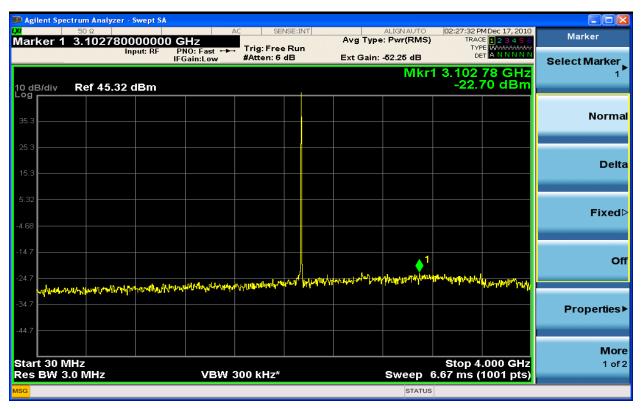


Figure 6-83 Spurious Emission TX1 64QAM 2154.3MHz – 1.4MHz (30MHz - 4GHz)

larker 1	^{50 Ω} 3.158360	000000	GHz A		NSE:INT	Avg Ty	ALIGN AUTO pe: Pwr(RMS)	02:07:05 PMDec 17, 2010 TRACE 1 2 3 4 5 6	Peak Search
		nput: RF	PNO: Fast ↔↔ FGain:Low	Trig: Free #Atten: 6		Ext Gaiı	n: -52.25 dB		
0 dB/div	Ref 45.32	dBm					Mkr1	3.158 36 GHz -22.54 dBm	Next Pea
35.3									Next Pk Righ
15.3									Next Pk Le
.68									Marker Del
4.7						all and the Merrik links	Prilipping, agentic the state of the state o	I	Mkr→C
4.7	ĸ <mark>ĮŪdinų</mark> ė su _d rintentininta. Subs	rulyd ^a ffwrwywy	hyrdisternyllyndfallyn ^a fr	uller an	dhad i Mix dat			^{nan} iharanti <mark>y</mark> anaku pinanak	Mkr→RefL
tart 30 N es BW 3			VBW 3	00 kHz*			Sweep 6	Stop 4.000 GHz 5.67 ms (1001 pts)	Mo 1 of

Figure 6-84 Spurious Emission TX2 64QAM 2110.7MHz - 1.4MHz (30MHz - 4GHz)

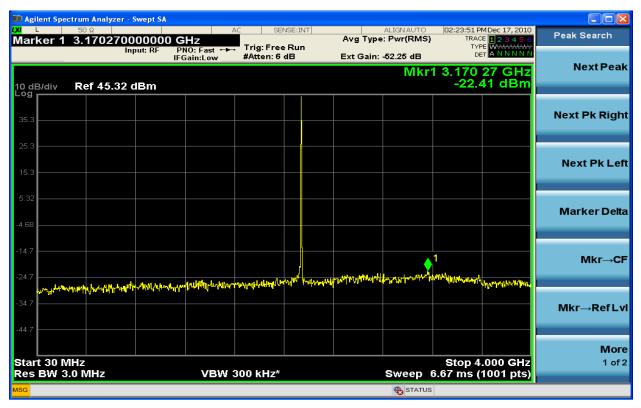


Figure 6-85 Spurious Emission TX2 64QAM 2154.3MHz – 1.4MHz (30MHz - 4GHz)

💴 Agilent Spec	trum Analyzer	- Swept SA								
w Marker 1	^{50 Ω} 5.898400	000000	GHz		NSE:INT		ALIGNAUTO Pwr(RMS)	TRAC	MDec 17, 2010 E 1 2 3 4 5 6	Peak Search
10 dB/div	Ref 48.25		PNO: Fast ↔ IFGain:Low	Trig: Free #Atten: 6		Ext Gain:		r1 5.898	3 4 GHz 12 dBm	Next Peak
38.3										Next Pk Right
28.3 ——— 18.3 ———										Next Pk Left
8.25 -1.75										Marker Delta
-11.8				1	իներություն	n-willowalder	- di sui			Mkr→CF
-31.8	erenti estatores fines.	And An and A	nervenneterretennetere	er fran yn Jina ys fran y d	a tel evel der util differ	ŊŗſŧĬĹŊ ĸſ ġĸŀġĸĊĬŴĸŢŊŊŧĸĬ	ŊĸĿŊĸĿĸĸĸĸĸĸĸĸĸĸĸĸĸĸĸĸĸĸĸĸĸĸĸĸĸĸĸĸĸĸĸĸ	~~ T ¥ULVYBPIU _B si _{VI}	laptronuluilly	Mkr→RefLvl
Center 6.1 Res BW 3.			VBW 3	300 kHz*				8.00 ms ('	.800 GHz 1001 pts)	More 1 of 2
MSG							STATUS			

Figure 6-86 Spurious Emission TX1 64QAM 2110.7MHz - 1.4MHz (3.5GHz - 8.4GHz)

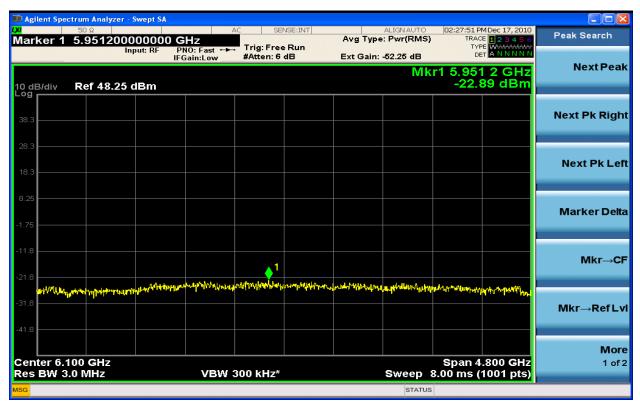


Figure 6-87 Spurious Emission TX1 64QAM 2154.3MHz – 1.4MHz (3.5GHz – 8.4GHz)

🗖 Agilent Spe	ctrum Analyzer -	Swept SA								
Marker 1	50 Ω 6.359200	000000 0	GHz		NSE:INT	Avg Typ	ALIGN AUTO e: Pwr(RMS)	02:07:24 PM Dec 1 TRACE 1 2	2456	Peak Search
	lı		PNO: Fast ↔ Gain:Low	Trig: Free #Atten: 6		Ext Gain	: -52.25 dB		NNNN	
I0 dB/div	Ref 48.25	dBm					Mkı	1 6.359 2 0 -23.10 c	GHz iBm	NextPea
- og 38.3										Next Pk Righ
28.3 18.3 										Next Pk Le
8.25										Marker Delt
21.8					↓ 1					Mkr→C
31.8	*tylorap~17thynape&	the production of the producti	~IP/~IP ^{erterl®®®} ¥I [®] +++	whener phase	ĸſĦŀſ ^{ĸĸIJ} ĬŶŀŶĹ <mark>Ŀŀ</mark> Ĺ	ered hered and a strang	poponted in resolution of the	un and a second s	*********	Mkr→RefL
center 6.1 Res BW 3			VBW 3	800 kHz*			Sweep 8	Span 4.800 .00 ms (1001	GHz pts)	Mor 1 of
SG							🗞 STATUS			

Figure 6-88 Spurious Emission TX2 64QAM 2110.7MHz - 1.4MHz (3.5GHz - 8.4GHz)



Figure 6-89 Spurious Emission TX2 64QAM 2154.3MHz – 1.4MHz (3.5GHz – 8.4GHz)

	ent Spec		zer - Swept S	٨							
<mark>.x/</mark> Mark	ker 1	^{50 ຊ}	0000000	00 GHz		NSE:INT	Avg Type	ALIGNAUTO Pwr(RMS)	TRAC	MDec 17, 2010 E 1 2 3 4 5 6 E WWWWWW	Peak Search
10 dE	3/div	Ref 48.	Input: RF	PNO: Fast ++ IFGain:Low	. Trig: Free #Atten: 6		Ext Gain:		cr1 15.6	88 GHz 01 dBm	Next Peak
Log 38.3											Next Pk Right
28.3 18.3											Next Pk Left
8.25											Marker Delta
-11.8										1	Mkr→CF
-31.8	Mar Mar and Andre	prvtilær, _{Vala} vhe	and the second	natur of the stand	ener-an-eneralad	alleyfre, TAUCEA Indevin	ana ang ang ang ang ang ang ang ang ang	and and and and and	er (Jung and a second		Mkr→RefLvl
-41.8 Stari Res	t 8.000 BW 3.	GHz 0 MHz		VBW	300 kHz*			Sweep 1	Stop 16 16.0 ms (.000 GHz 1001 pts)	More 1 of 2
MSG								STATUS			

Figure 6-90 Spurious Emission TX1 64QAM 2110.7MHz - 1.4MHz (8GHz- 16GHz)



Figure 6-91 Spurious Emission TX1 64QAM 2154.3MHz – 1.4MHz (8GHz- 16GHz)

💴 Agilent Spectrum A	nalyzer - Swept SA							
۵۵ <mark>س</mark> Marker 1 15.0	9600000000		SENSE:IN		ALIGNAUTO	02:10:53 PMD TRACE	23456	Peak Search
	Input: RF	PNO: Fast +++	Frig: Free Run (Atten: 6 dB		in: -52.25 dB	TYPE 6	N MMMMM NNNNN	
		IFGam.Low .		Entou		(r1 15.09	6 GHZ	Next Peak
10 dB/div Ref	48.25 dBm					-21.55	dBm	
38.3								Next Pk Right
30.3								_
28.3								
								Next Pk Left
18.3								
8.25								Marker Delta
-1.75								warker Della
1.10								
-11.8								
						<u>↓</u> 1		Mkr→CF
-21.8				Internationstan	theory of the same the party	Aberber Martington	No. March March March	
	whether a state of the second state	mind you lass of the shall be and	- The second s	week a second				
-31.8								Mkr→RefLvl
-41.8								
Start 8.000 GH	2					Stop 16.00		More 1 of 2
Res BW 3.0 MF		VBW 30	0 kHz*		Sweep 1	16.0 ms (10	01 pts)	1012
MSG					STATUS			

Figure 6-92 Spurious Emission TX2 64QAM 2110.7MHz - 1.4MHz (8GHz- 16GHz)



Figure 6-93 Spurious Emission TX2 64QAM 2154.3MHz – 1.4MHz (8GHz- 16GHz)

💴 Agilent Spect	trum Analyzer - Swept SA					
	^{50 Ω} 26.5000000000			ALIGNAUTO	02:11:21 PMDec 17, 2010 TRACE 1 2 3 4 5 6	Peak Search
	20.5000000000 Input: RF	PNO: Fast +++ Trig: Free IFGain:Low #Atten: 6	e Run	in: -52.25 dB		
10 dB/div	Ref 48.25 dBm			Mk	r1 26.500 GHz -16.27 dBm	Next Peak
38.3						Next Pk Right
28.3 18.3						Next Pk Left
8.25						Marker Delta
-11.8	entre castlessestrations		phanet and the second second	atte and and the second	Winerel Wager way of the Winer	Mkr→CF
-31.8						Mkr→RefLvl
Start 15.50 Res BW 3.0		VBW 300 kHz*		Sweep 2	Stop 26.500 GHz ?7.5 ms (1001 pts)	More 1 of 2
MSG				STATUS		

Figure 6-94 Spurious Emission TX1 64QAM 2110.7MHz - 1.4MHz (15.5GHz - 26.5GHz)



Figure 6-95 Spurious Emission TX1 64QAM 2154.3MHz – 1.4MHz (15.5GHz – 26.5GHz)

	ctrum Analyzer - S 50 ົດ 26.137000		GHz		NSE:INT	Avg Typ	ALIGN AUTO	02:11:39 PM D TRACE	23456	Peak Search
10 dB/div		out: RF PI	NO: Fast ↔↔ Gain:Low	Trig: Free #Atten: 6		Ext Gain	:-52.25 dB Mk	r1 26.13 -16.15	7 GHz dBm	Next Peal
38.3										Next Pk Righ
28.3 18.3 										Next Pk Le
8.25										Marker Delt
11.8	an and a start of the start of	Walayananalah	halld your total and		/ the work has the state of the	- Managering	Lite Vary Bootstorry	best garages and a second	1- *********	Mkr→C
31.8 										Mkr→RefL
Start 15.5 Res BW 3			VBW 3	300 kHz*			Sweep 2	Stop 26.5 27.5 ms (10	00 GHz 01 pts)	Mor 1 of
sg							STATUS			

Figure 6-96 Spurious Emission TX2 64QAM 2110.7MHz - 1.4MHz (15.5GHz – 26.5GHz)



Figure 6-97 Spurious Emission TX2 64QAM 2154.3MHz – 1.4MHz (15.5GHz – 26.5GHz)

6.4 Field Strength of Spurious Radiation

Clause 27.53(h)

(h) For operations in the 1710–1755 MHz and 2110–2155 MHz bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) by at least $43 + 10 \log 10$ (P) dB.

(1) Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 1 megahertz or greater. However, in the 1 megahertz bands immediately outside and adjacent to the licensee's frequency block, a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

(2) When measuring the emission limits, the nominal carrier frequency shall be adjusted as close to the licensee's frequency block edges, both upper and lower, as the design permits.

(3) The measurements of emission power can be expressed in peak or average values, provided they are expressed in the same parameters as the transmitter power.

(i) When an emission outside of the authorized bandwidth causes harmful interference, the Commission may, at its discretion, require greater attenuation than specified in this section.

Test Setup:

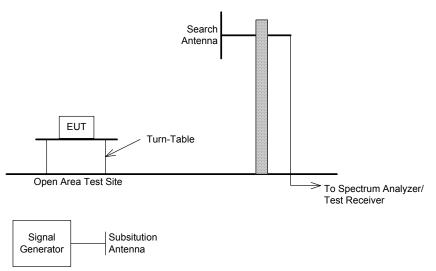


Figure 6-98 RRU Field Strength Set Up / Configuration

Test Procedure

- The EUT was placed on a turntable inside the AFC (configured as in normal operation). The system and its cables were separated from the ground plane by an insulating support 10 mm in height. The system was grounded in accordance with its installation specifications. No additional grounding connections were connected.
- For tests between **30 MHz and 1 GHz** the receive antenna (bi-log/horn) was placed at 10 m away from the EUT. An initial scan was done to find emissions (frequencies) requiring detailed measurement. The pre-scan was done by rotating the system 360 degrees while recording all emissions (frequency and amplitude). This procedure was repeated for antenna heights of 1 to 4 m, and for horizontal and vertical polarizations of the receiving antenna. The detector mode was quasi-peak (QP) with a 120 kHz bandwidth unless otherwise noted.
- For tests between **1 GHz and 10 GHz** the receive antenna (bi-log/horn) was placed at 10 m away from the EUT. An initial scan was done to find emissions (frequencies) requiring detailed measurement. The pre-scan was done by rotating the system 360 degrees while recording all emissions (frequency and amplitude). This procedure was repeated for antenna heights of 1 to 4 m, and for horizontal and vertical polarizations of the receiving antenna. The detector mode was average (AVG) with a 1 MHz bandwidth unless otherwise noted.
- For tests between **10 GHz to 18 GHz** the receive horn antenna was placed at a 3 m distance from the EUT. An initial scan was done to find emissions (frequencies) requiring detail measurement. The pre-scan was done by rotating the system 360 degrees while recording all emissions (frequency and amplitude). This procedure was repeated for antenna heights of 1 to 4 m, and for horizontal and vertical polarizations of the receiving antenna. These measurements were made with an average detector mode (AVG) with a 1 MHz bandwidth unless otherwise noted.
- For **all the above frequency ranges** optimization was done based on the pre-scan data. For each identified frequency, the EUT was rotated in azimuth over 360 degrees and the direction of maximum emission was noted. Antenna height was then varied from 1 to 4 m at this azimuth to obtain maximum emissions. The procedure was repeated for both horizontal and vertical polarizations (where applicable) of the search antenna. The maximum level measured was recorded. The spectrum analyzer was verified to make sure it was not saturating in the presence of the radio signal.
- The highest emissions were re-evaluated using the substitution method. This is accomplished by replacing the EUT by a calibrated antenna, cable and signal generator. This equipment is used to transmit a signal that will generate a RF meter reading level identical to the one were done with a bandwidth of 1 MHz.

Calculation of the Compliance Margin

The following example illustrates the manner in which the emissions levels are calculated in the "RE Test Results" Table 6-5 Spurious Emissions ERP.

The rows in these tables are defined as follows.

Meter Reading (dBuV) =	Voltage measured using the spectrum analyzer with quasi-peak adapter
Gain/Loss Factor (dB) =	Cumulative gain or loss of pre-amplifier and cables used in the measurement path (a negative value indicates gain)
Transducer Factor (dB) =	Antenna factor
Level (dBuV/m) =	Corrected value or field strength, that is, the parameter of interest that is compared to the limit
Margin (dB) =	Level with respect to the appropriate limit (a positive Margin indicates that the Level is below the limit and that the measurement is a PASS)

The values in the Level row are calculated as follows:

Level = Meter Reading + Gain/Loss Factor + Transducer Factor

The values in the Margin row are calculated as follows: Margin = Limit – Level

The following example shows the manner in which the compliance margin is calculated for ERP: ERP = Effective radiated power or equivalent radiated power

ERP = Signal generator level – Cable losses + Antenna gain – Half wave dipole gain Margin = Limit – ERP

Limit = EUT Rated Power – Attenuation Attenuation = (43 + 10 Log (Pwr)) Limit = 10 log (30Watt) – (43+ 10 Log(30W)) Limit = - 13 dBm

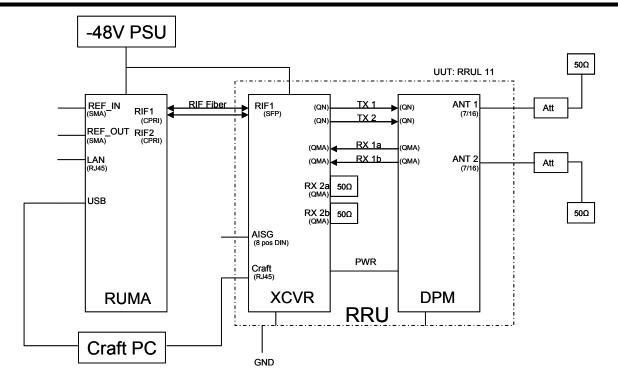


Figure 6-99 RRU EMC Set Up / Configuration

FCC 2.1053: Measurements required: Field strength of spurious radiation.

Measurements shall be made to detect spurious emissions that may be radiated directly from the cabinet, control circuits, power leads, or intermediate circuit elements under normal conditions of installation and operation. Curves or equivalent data shall be supplied showing the magnitude of each harmonic and other spurious emission. For this test, single sideband, independent sideband, and controlled carrier transmitters shall be modulated under the conditions specified in paragraph (c) of FCC 2.1049, as appropriate.

FCC 2.1057: Frequency spectrum to be investigated.

In all of the measurements set forth in 2.1051 and 2.1053, the spectrum shall be investigated from the lowest radio frequency signal generated in the equipment, without going below 9 kHz, up to at least the tenth harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower. Particular attention should be paid to harmonics and sub-harmonics of the carrier frequency as well as to those frequencies removed from the carrier by multiples of the oscillator frequency. Radiation at the frequencies of multiplier stages should also be checked. The amplitude of spurious emissions which are attenuated more than 20 dB below the permissible value need not be reported.

27.55 Power Strength Limits.

(a) *Field strength limits:* For the following bands, the predicted or measured median field strength at any location on the geographical border of a licensee's service area shall not exceed the value specified unless the adjacent affected service area licensee(s) agree(s) to a different field strength. This value applies to both the initially offered service areas and to partitioned service areas.

(1) 2110–2155, 2305–2320 and 2345–2360 MHz bands: 47 dBV/m.

EMC Reference Report: K0001795-TR-RAD-01-01, December 2010

Flextronics Design Validation Centre, 21 Richardson Side Road, Kanata On, K2K 2C1, Canada Accreditation: SCC ISO/IEC 17025

Table 6-5Spurious Emissions ERP

Frequency (MHz)	Field Strength (dBuV)	Signal Substitution (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	dBi to dBd Conversion	ERP (dBm)	Limit (dBm)	Margin (dB)	
4264.798	51.62	-44.20	7.89	10.67	2.15	-44.6	-13.0	30.6	
Remarks: All other spurious have more margin									

All emissions in the radiated emission scan were low compared to the FCC Part 15 limits. The worst case spurious emissions were verified using substitution method as tabulated above.



Figure 6-100 Radiated Emissions Set Up Photo

6.5 Submission Exhibits – Permissive Change

2.1033 Submission Exhibits

- FCC Form 731
- Test Report