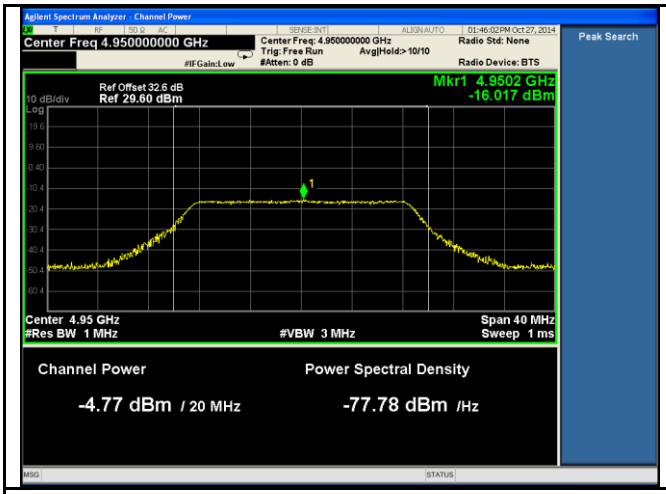
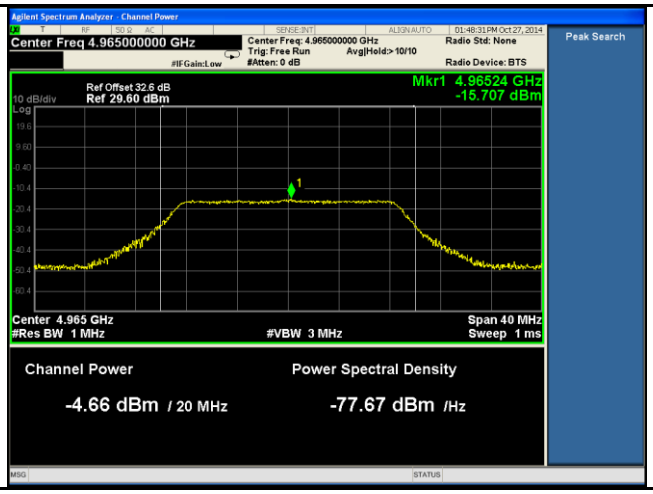
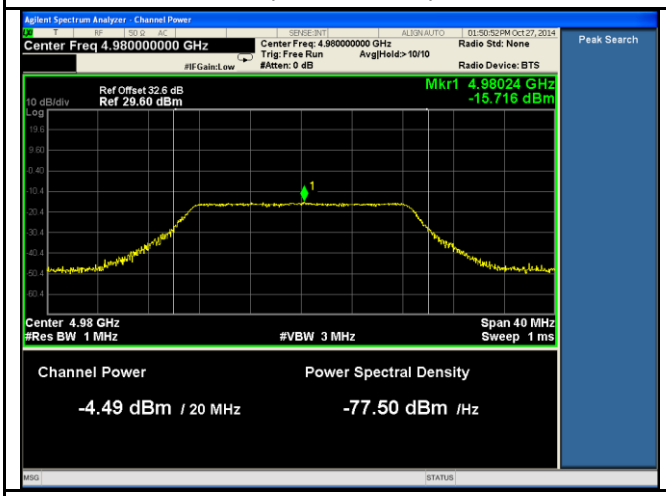
Power Spectral Density Test Plots



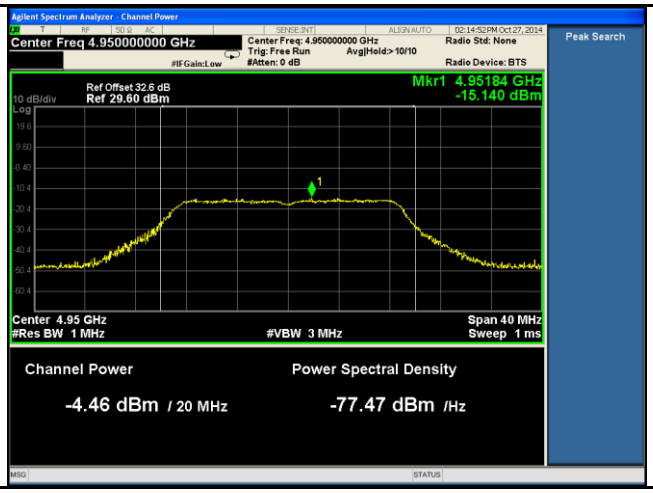
Chain 1 PSD (25dBi Antenna) - 4950MHz



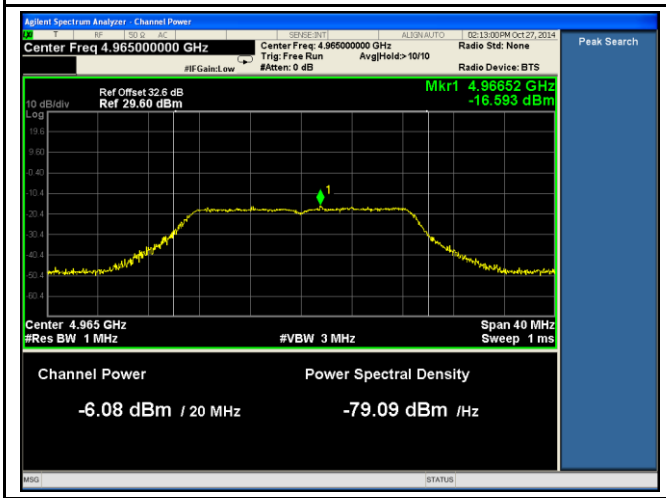
Chain 1 PSD (25dBi Antenna) - 4965MHz



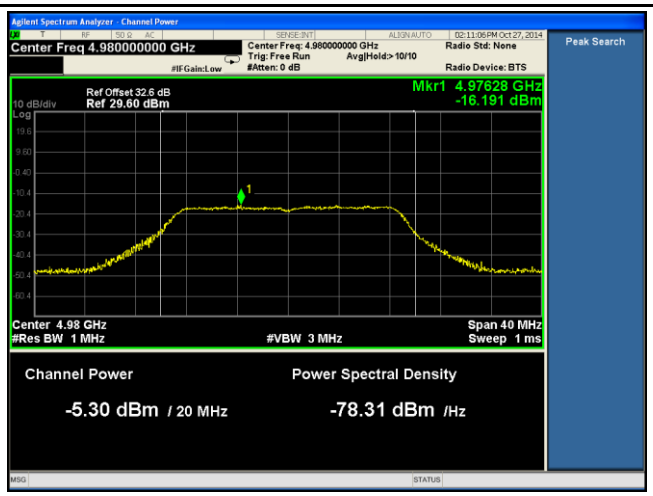
Chain 1 PSD (25dBi Antenna) - 4980MHz



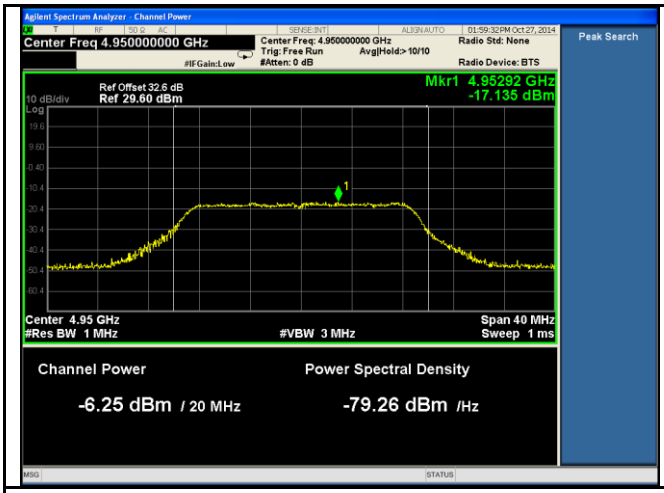
Chain 2 PSD (25dBi Antenna) - 4950MHz



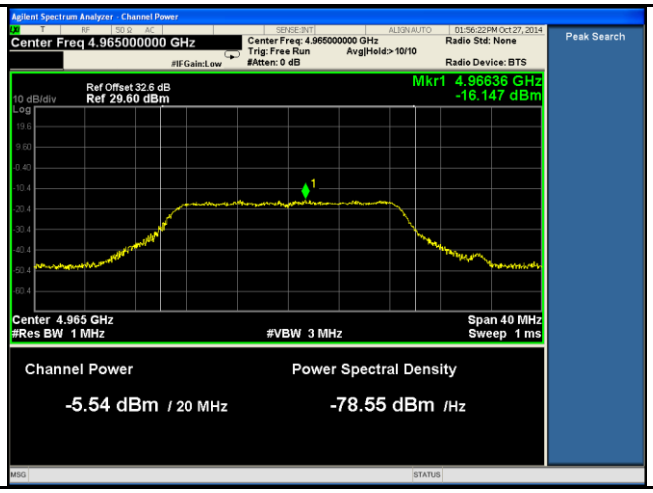
Chain 2 PSD (25dBi Antenna) - 4965MHz



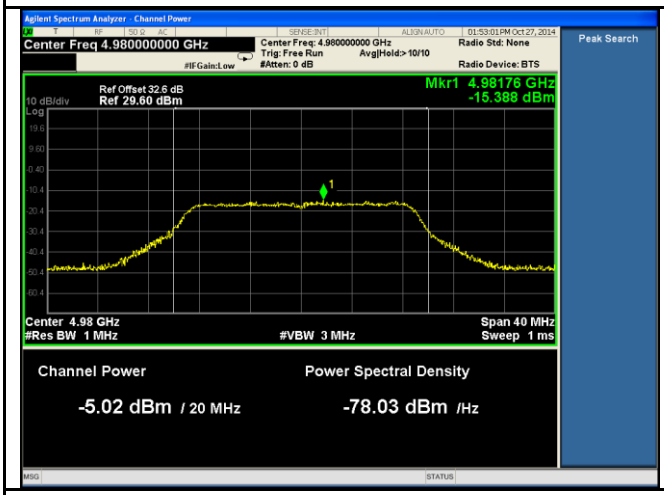
Chain 2 PSD (25dBi Antenna) - 4980MHz



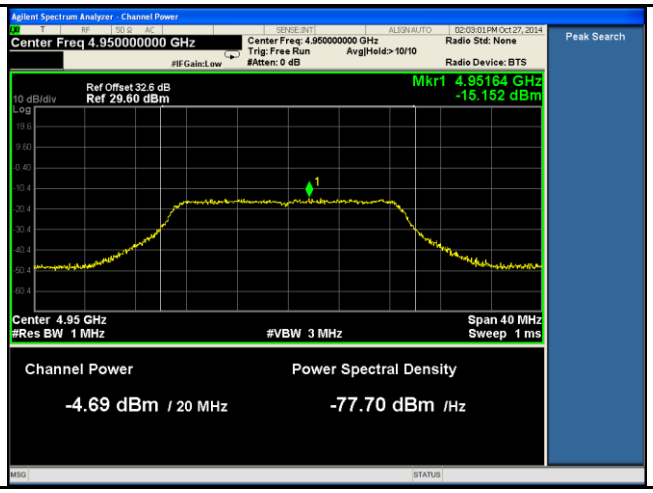
Chain 3 PSD (25dBi Antenna) - 4950MHz



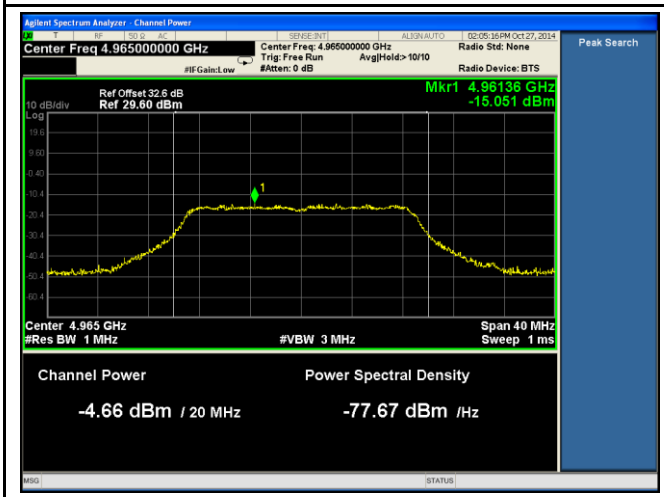
Chain 3 PSD (25dBi Antenna) - 4965MHz



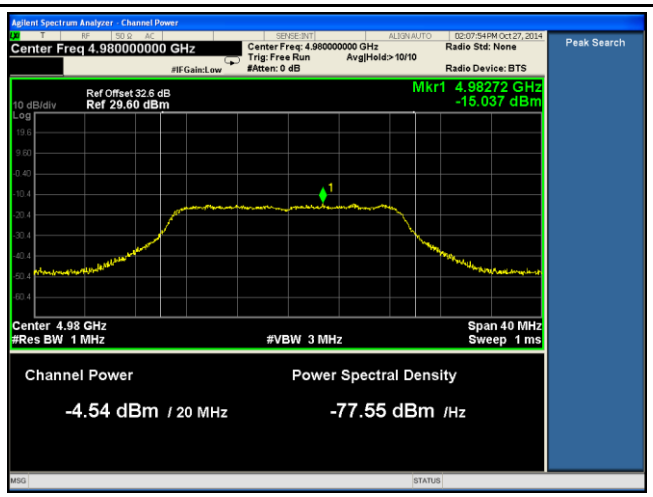
Chain 3 PSD (25dBi Antenna) - 4980MHz



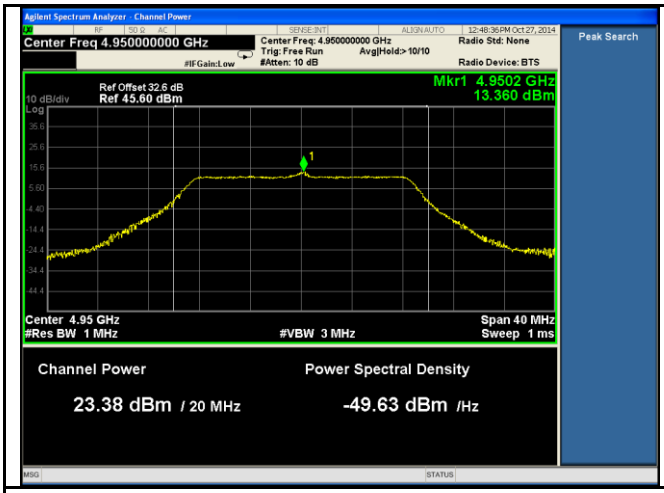
Chain 4 PSD (25dBi Antenna) - 4950MHz



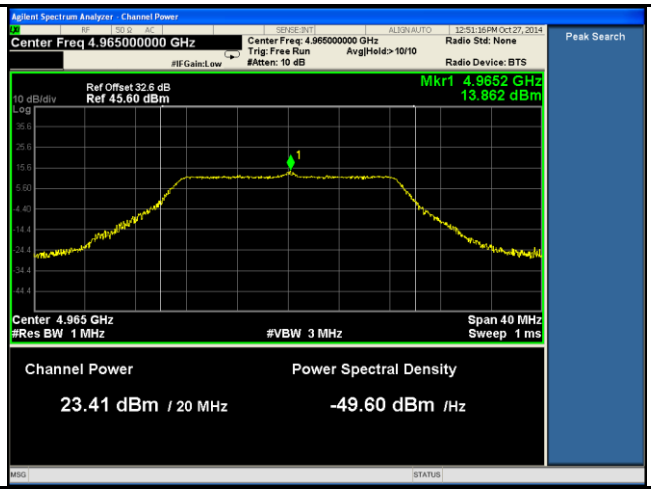
Chain 4 PSD (25dBi Antenna) - 4965MHz



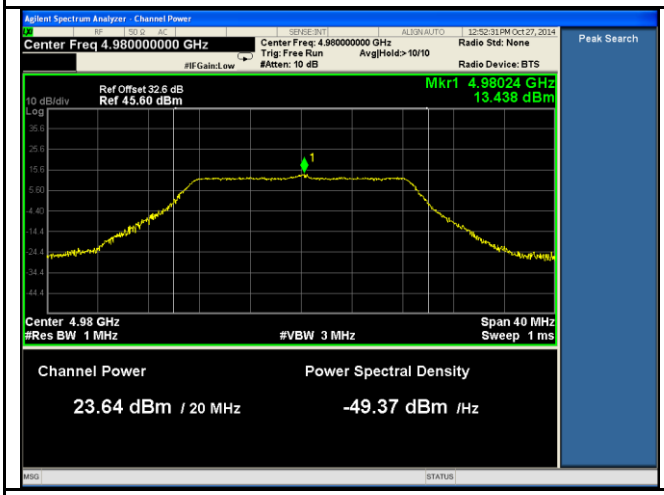
Chain 4 PSD (25dBi Antenna) - 4980MHz



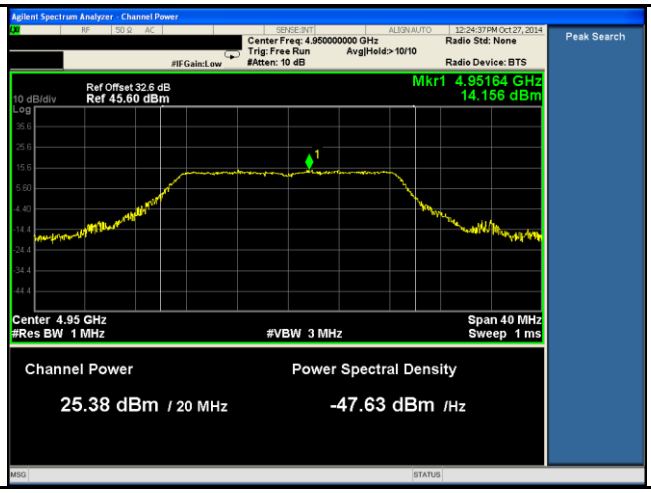
Chain 1 PSD (0dBi Antenna) - 4950MHz



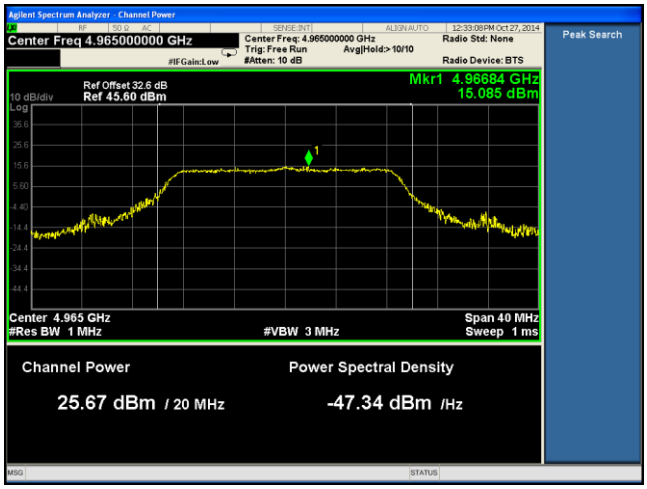
Chain 1 PSD (0dBi Antenna) - 4965MHz



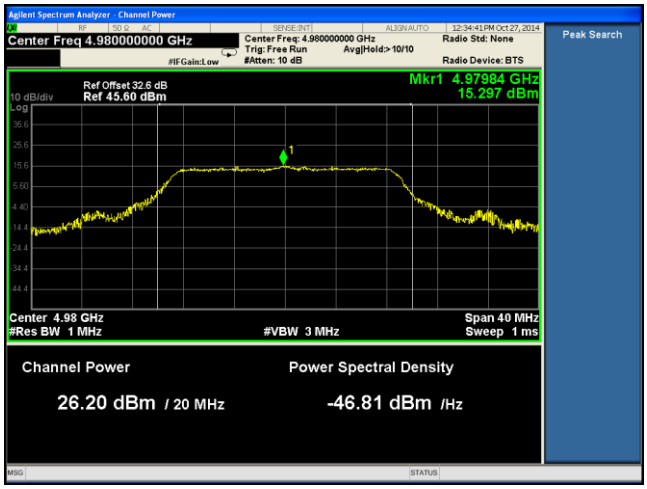
Chain 1 PSD (0dBi Antenna) - 4980MHz



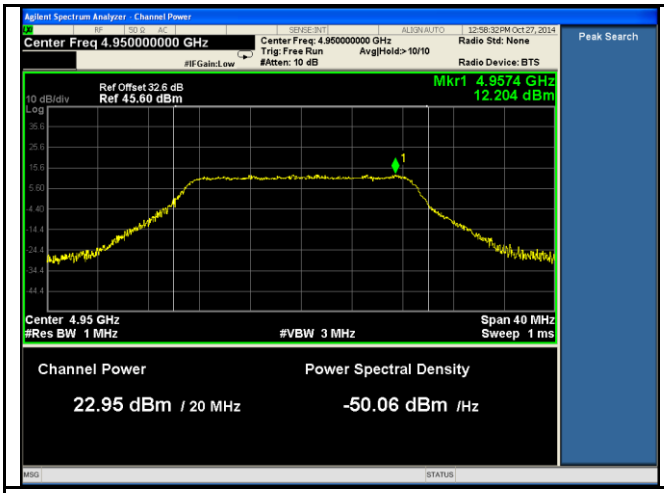
Chain 2 PSD (0dBi Antenna) - 4950MHz



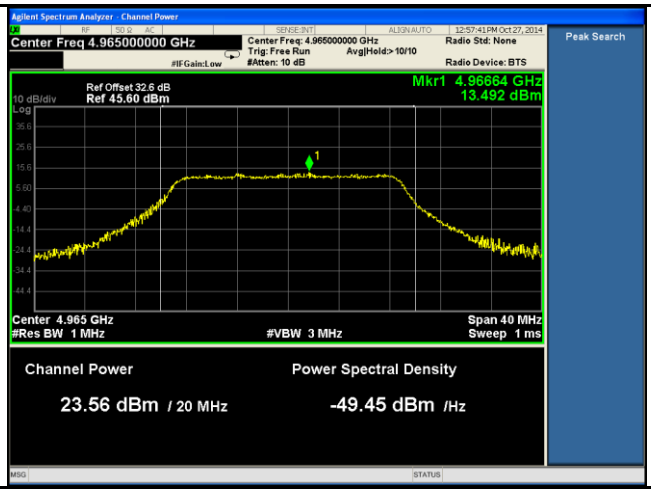
Chain 2 PSD (0dBi Antenna) - 4965MHz



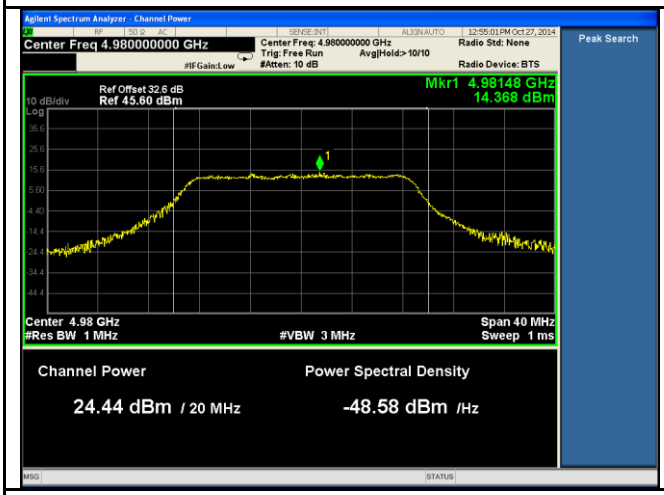
Chain 2 PSD (0dBi Antenna) - 4980MHz



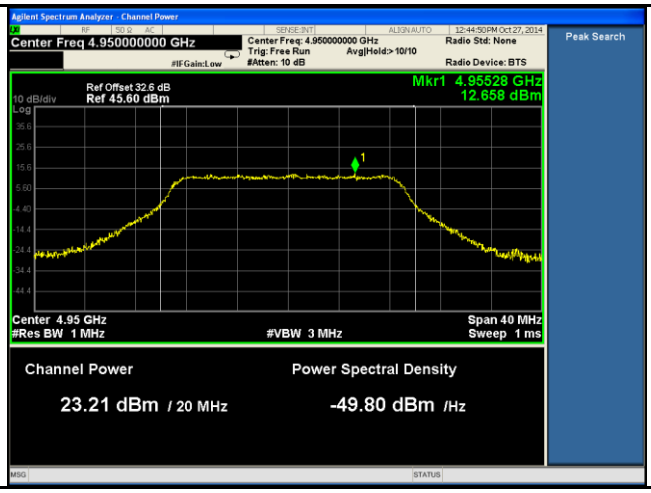
Chain 3 PSD (0dBi Antenna) - 4950MHz



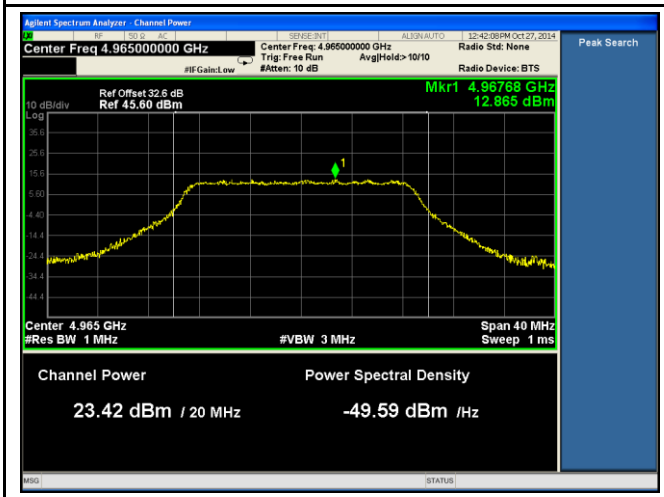
Chain 3 PSD (0dBi Antenna) - 4965MHz



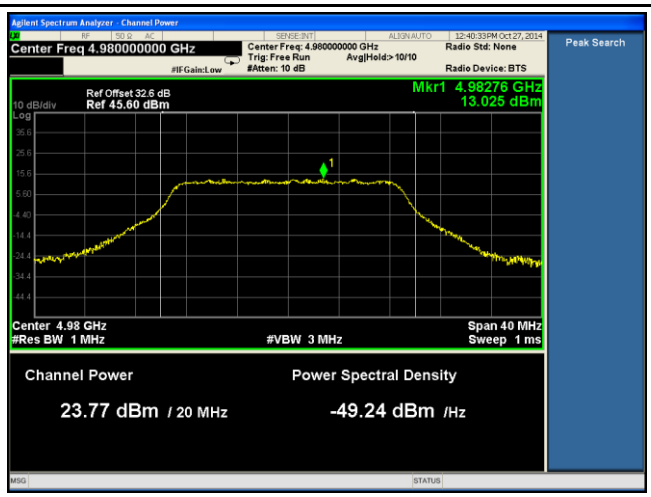
Chain 3 PSD (0dBi Antenna) - 4980MHz



Chain 4 PSD (0dBi Antenna) - 4950MHz



Chain 4 PSD (0dBi Antenna) - 4965MHz



Chain 4 PSD (0dBi Antenna) - 4980MHz

10.4 Peak Excursion

Requirement(s):

Spec	Requirement	Applicable
FCC §90.1215	The ratio of the peak excursion of the modulation envelope (measured using a peak hold function) to the maximum conducted output power shall not exceed 13 dB across any 1 MHz bandwidth or the emission bandwidth whichever is less.	☒
Test Setup		
Test Procedure	The EUT was set to transmit continuously; The following setting were set on the spectrum analyzer: Trace 1: - RBW = 1MHz - VBW = 3 x RBW - Span = 40MHz - Detector = Peak - Trace = Maxhold Trace 2: - RBW = 1MHz - VBW = 3 x RBW - Span = 40MHz - Detector = Average (RMS) - Trace = 100 Trace average	
Environmental conditions	Temperature (°C) Humidity (%) Atmospheric (mbar)	22 °C 42% 1019 mbar
Test Date	10/27/2014	
Remark	-	
Result	☒ Pass ☐ Fail	

Test Data ☒ Yes ☐ N/A

Test Plot ☒ Yes (See below) ☐ N/A

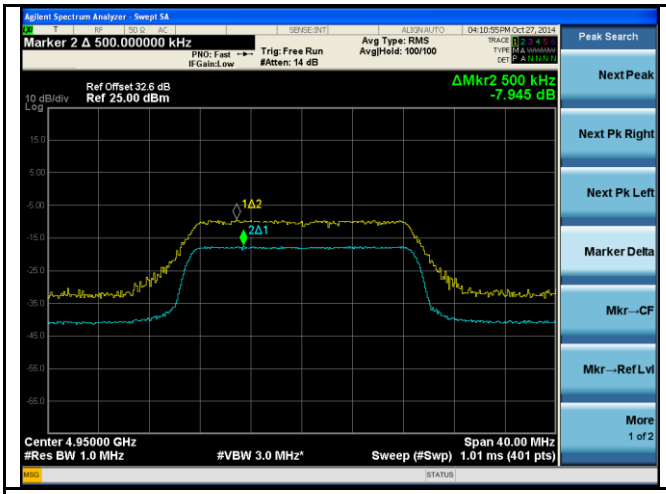
Peak Excursion Measurement Results (25dBi Antenna Gain)

Channel	Frequency (MHz)	Peak Excursion (dBm)	Limit (dBm)	Result
Low	4950	7.945	13.00	Pass
Mid	4965	8.155	13.00	Pass
High	4980	8.128	13.00	Pass

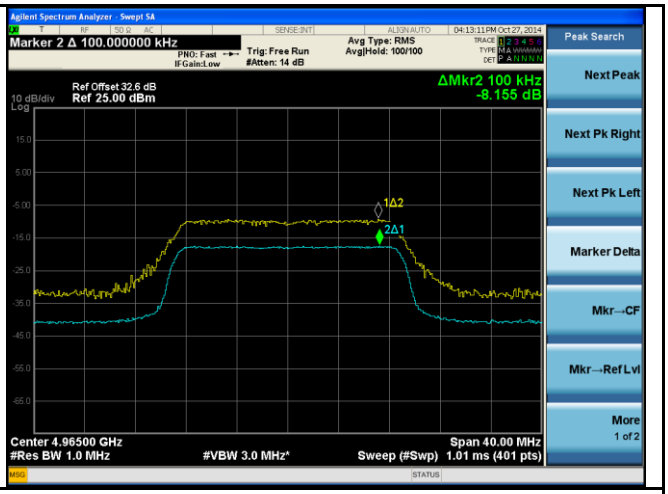
Peak Excursion Measurement Results (0dBi Antenna Gain)

Channel	Frequency (MHz)	Peak Excursion (dBm)	Limit (dBm)	Result
Low	4950	7.831	13.00	Pass
Mid	4965	7.752	13.00	Pass
High	4980	7.634	13.00	Pass

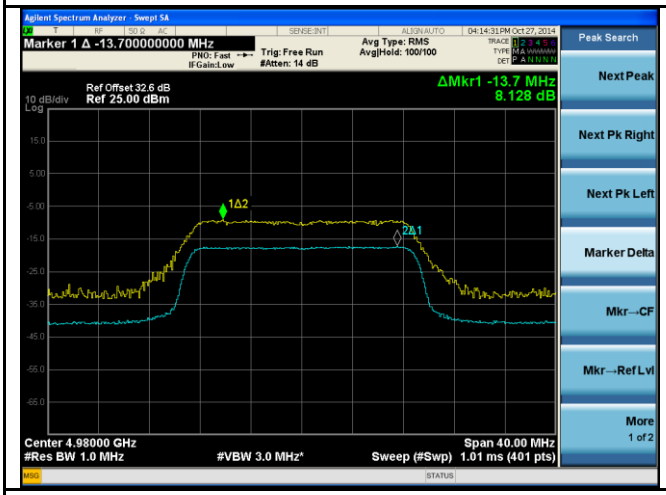
Peak Excursion Test Plots



Peak Excursion (25dBi Antenna) - 4950MHz

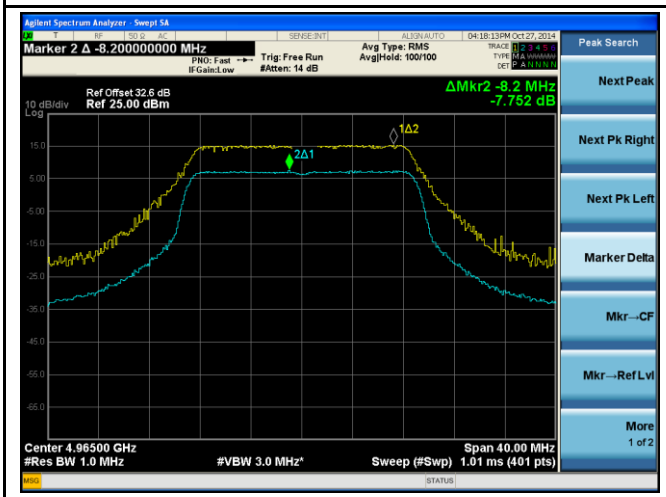


Peak Excursion (25dBi Antenna) - 4965MHz

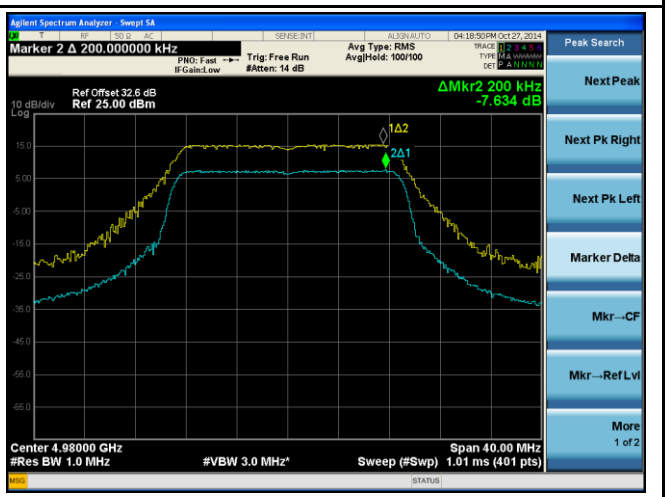


Peak Excursion (25dBi Antenna) - 4980MHz

Peak Excursion (0dBi Antenna) - 4950MHz



Peak Excursion (0dBi Antenna) - 4965MHz



Peak Excursion (0dBi Antenna) - 4980MHz

10.5 Transmitter Conducted Unwanted Emissions

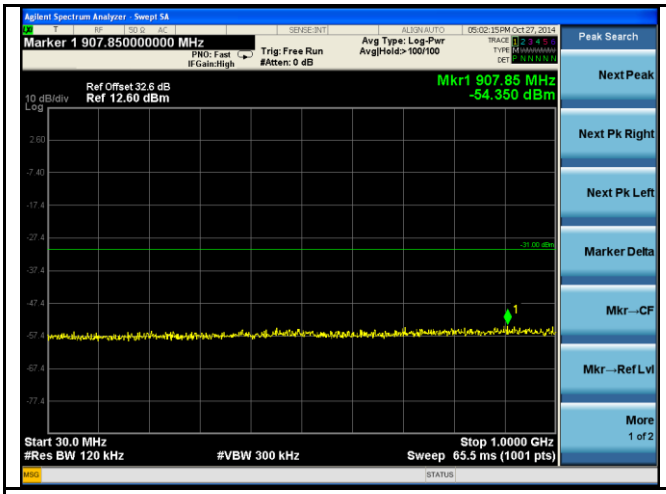
Requirement(s):

<table>
<tr><th>Spec</th><th>Requirement</th><th>Applicable</th></tr>
<tr><td>FCC §2.1051
FCC §90.210</td><td>For low power transmitters (20 dBm or less) and high power transmitters (greater than 20 dBm operating in the 4940-4990 MHz frequency band, the power spectral density of the emissions must be attenuated below the output power of the transmitter as follows:
<table>
<tr><th rowspan="2">Frequency Offset f_d</th><th colspan="2">Minimum Attenuation</th></tr>
<tr><th>Low Power Transmitter</th><th>High Power Transmitter</th></tr>
<tr><td>$0 < f_d \leq 45$</td><td>0</td><td>0</td></tr>
<tr><td>$45 < f_d \leq 50$</td><td>$219 \log(f_d/45)$</td><td>$568 \log(f_d/45)$</td></tr>
<tr><td>$50 < f_d \leq 55$</td><td>$10 + 242 \log(f_d/50)$</td><td>$26 + 145 \log(f_d/50)$</td></tr>
<tr><td>$55 < f_d \leq 100$</td><td>$20 + 31 \log(f_d/55)$</td><td>$32 + 31 \log(f_d/55)$</td></tr>
<tr><td>$100 < f_d \leq 150$</td><td>$28 + 68 \log(f_d/100)$</td><td>$40 + 57 \log(f_d/100)$</td></tr>
<tr><td>$f_d > 150$</td><td>40</td><td>50 dB or 55 + 10 log (P) dB, whichever is the lesser attenuation.</td></tr>
</table>
f_d is the percentage of the equipment's channel bandwidth..</td><td>☒</td></tr>
<tr><td>Test Setup</td><td colspan="2"> 
</td></tr>
<tr><td>Test Procedure</td><td colspan="2">- The EUT was set to transmit in a modulated transmit mode.
- The RF output of the EUT was connected to a spectrum analyzer using appropriate attenuations.
- Conducted spurious emissions were measured up to 40GHz.
- Sufficient scans were taken to shown any out of band emissions.</td></tr>
<tr><td>Environmental conditions</td><td>Temperature (°C)
Humidity (%)
Atmospheric (mbar)</td><td>21 °C
38%
1020 mbar</td></tr>
<tr><td>Test Date</td><td colspan="2">10/28/2014</td></tr>
<tr><td>Remark</td><td colspan="2">Per KDB 662911 D01 Multiple transmitter Output v02r01 the limit is calculated as follow:
Measure and add 10log (N_{ANT}) dB, where is N_{ANT} is the number of outputs; therefore,
Limit calculation for the 0dBi antenna gain: -25 – 10log(N_{ANT}) = -25 – 6 = -31dBm
Limit calculation for the 25dBi antenna gain: P(dBm) – 40 – 10log(N_{ANT}) = 3.84 – 40 – 6 ≈ -42dBm</td></tr>
<tr><td>Result</td><td colspan="2">☒ Pass ☐ Fail</td></tr>
</table>

Test Data ☐ Yes ☒ N/A

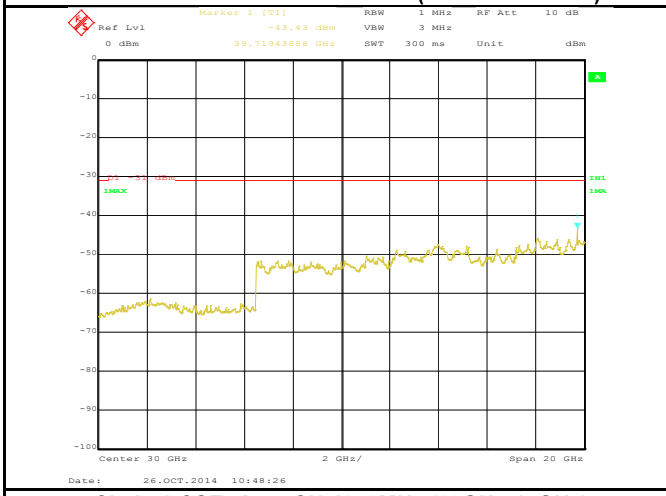
Test Plot ☒ Yes (See below) ☐ N/A

Conducted Spurious Emissions Test Plots (0dBi Antenna Gain)

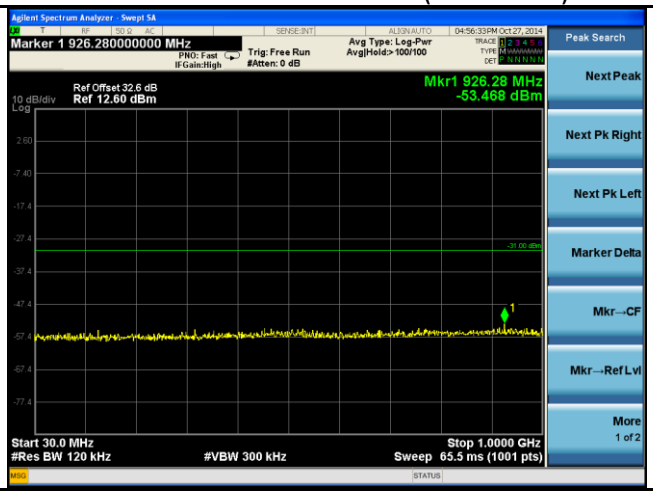


Chain 1 CSE - Low CH 4950MHz (30MHz-1000MHz)

Chain 1 CSE - Low CH 4950MHz (1GHz-20GHz)

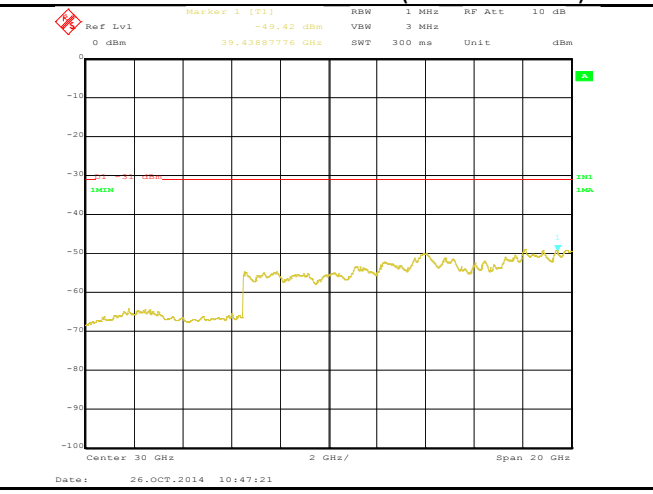


Chain 1 CSE - Low CH 4950MHz (20GHz-40GHz)

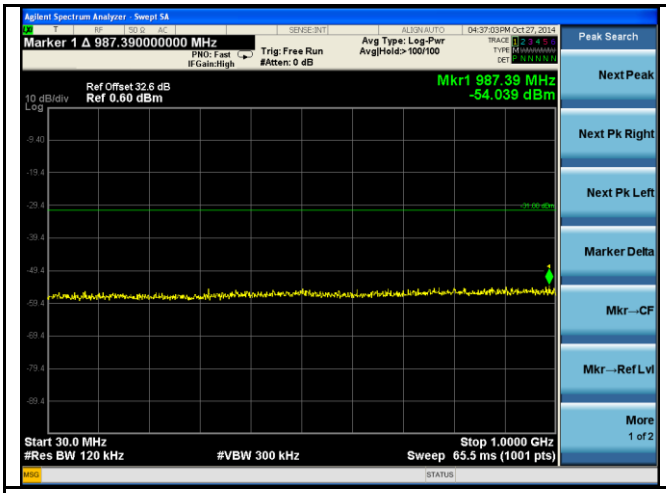


Chain 1 CSE - Mid CH 4965MHz (30MHz-1000MHz)

Chain 1 CSE – Mid CH 4965MHz (1GHz-20GHz)

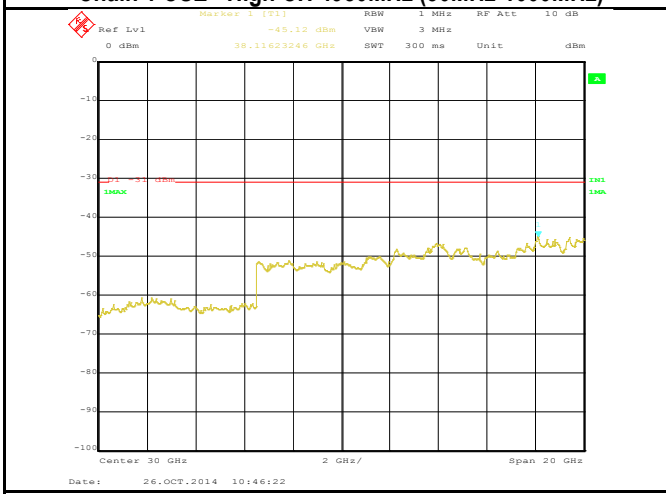


Chain 1 CSE - Mid CH 4965MHz (20GHz-40GHz)

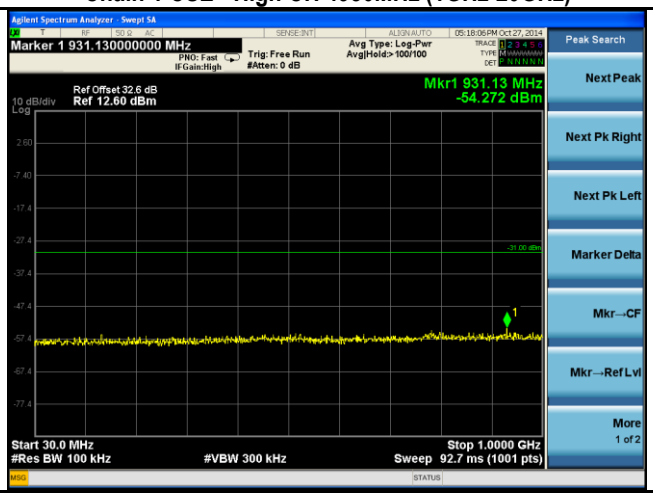


Chain 1 CSE - High CH 4980MHz (30MHz-1000MHz)

Chain 1 CSE - High CH 4980MHz (1GHz-20GHz)

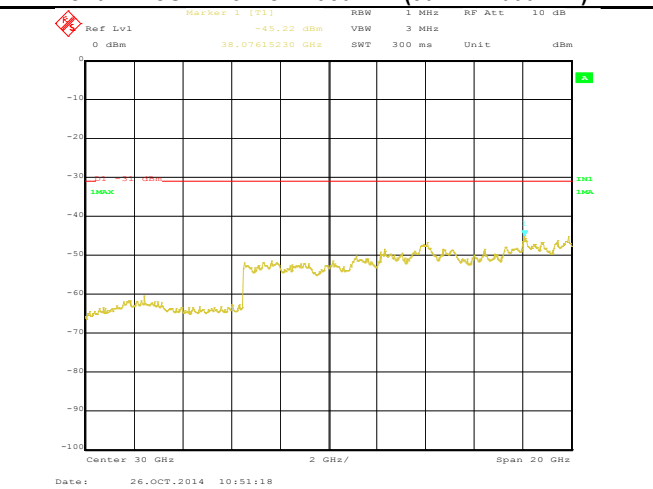


Chain 1 CSE - High CH 4980MHz (20GHz-40GHz)

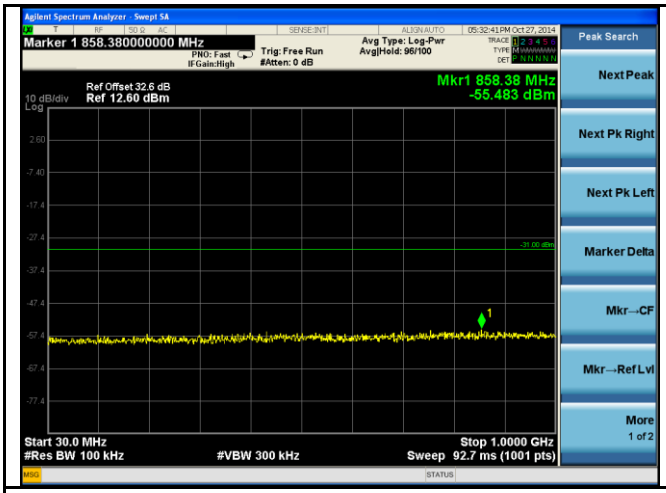


Chain 2 CSE - Low CH 4950MHz (30MHz-1000MHz)

Chain 2 CSE - Low CH 4950MHz (1GHz-20GHz)

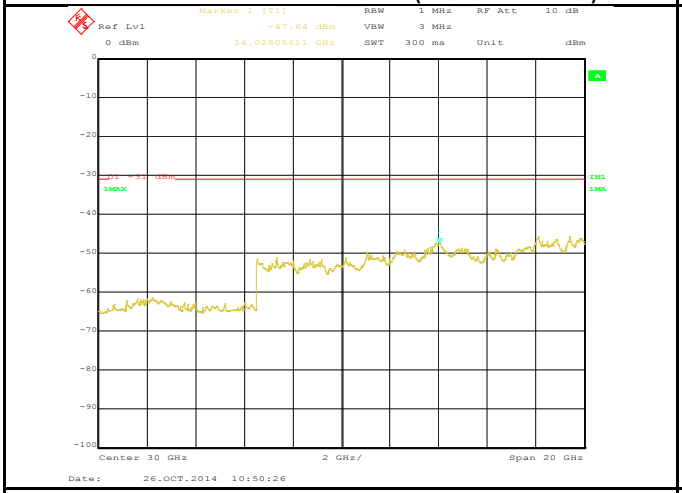


Chain 2 CSE - Low CH 4950MHz (20GHz-40GHz)

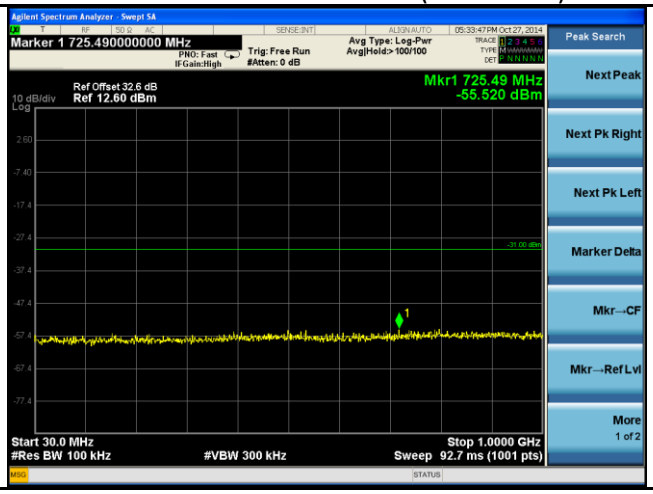


Chain 2 CSE - Mid CH 4965MHz (30MHz-1000MHz)

Chain 2 CSE - Mid CH 4965MHz (1GHz-20GHz)

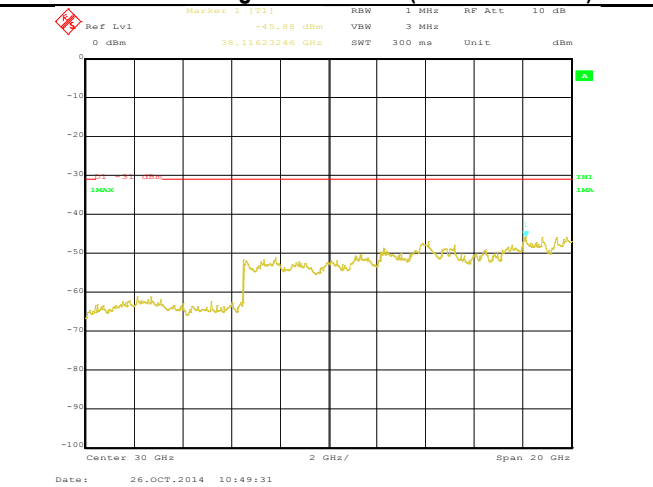


Chain 2 CSE - Mid CH 4965MHz (20GHz-40GHz)

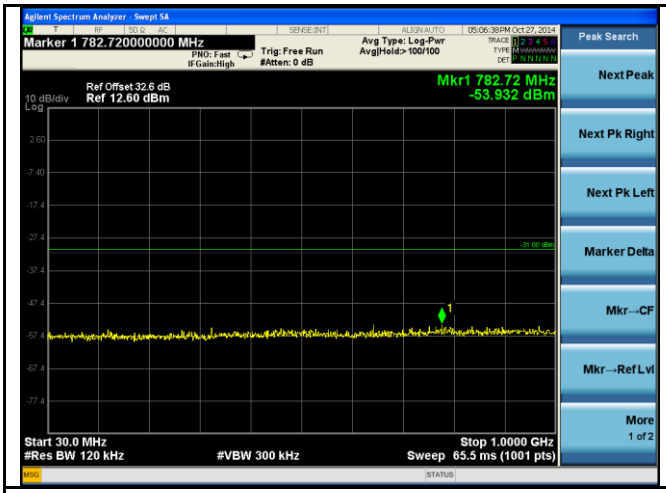


Chain 2 CSE – High CH 4980MHz (30MHz-1000MHz)

Chain 2 CSE - High CH 4980MHz (1GHz-20GHz)

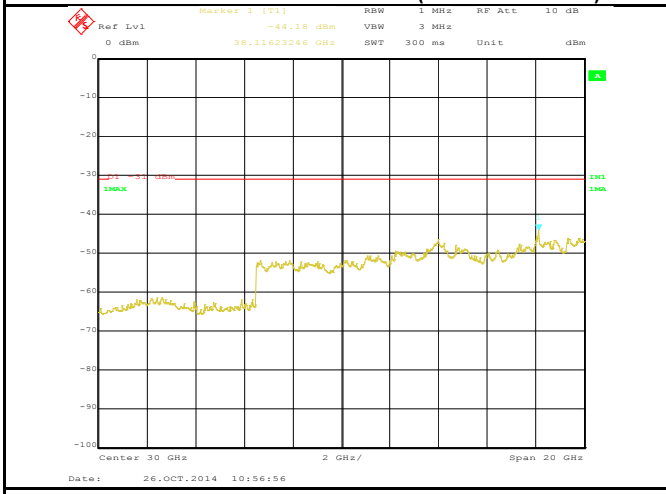


Chain 2 CSE – High CH 4980MHz (20GHz-40GHz)

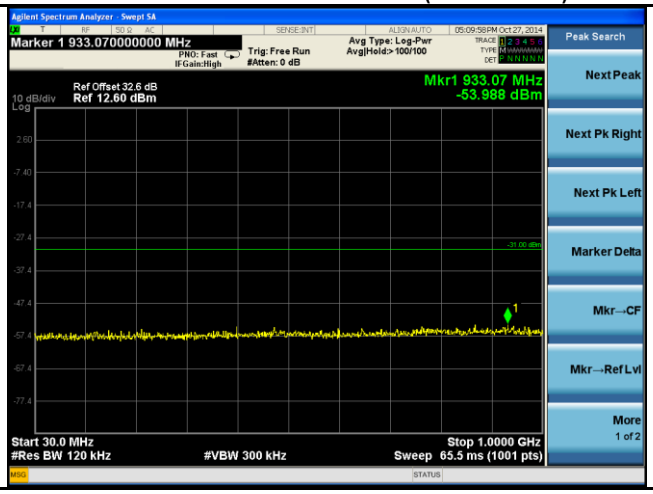


Chain 3 CSE - Low CH 4950MHz (30MHz-1000MHz)

Chain 3 CSE - Low CH 4950MHz (1GHz-20GHz)

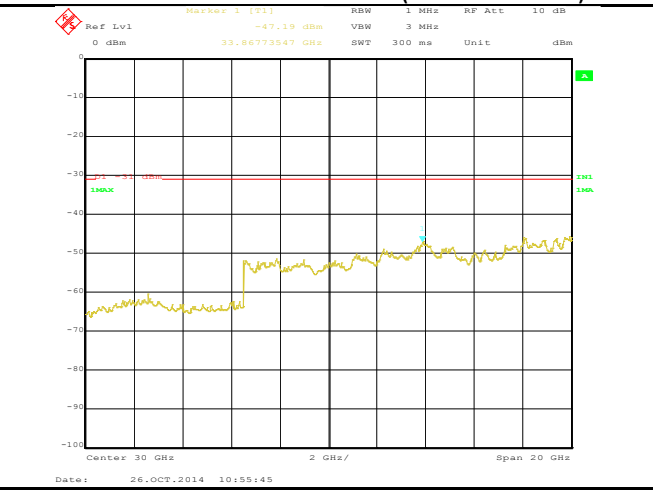


Chain 3 CSE - Low CH 4950MHz (20GHz-40GHz)

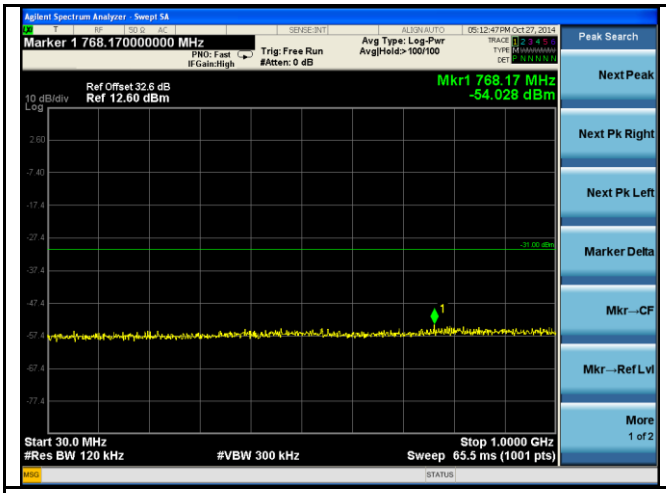


Chain 3 CSE - Mid CH 4965MHz (30MHz-1000MHz)

Chain 3 CSE – Mid CH 4965MHz (1GHz-20GHz)

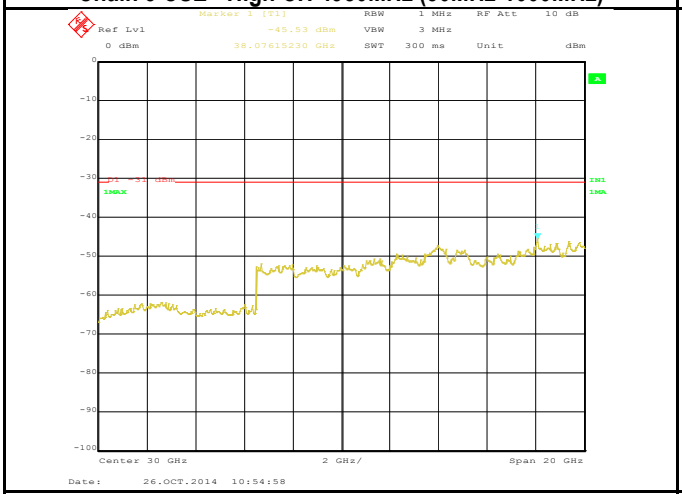


Chain 3 CSE - Mid CH 4965MHz (20GHz-40GHz)

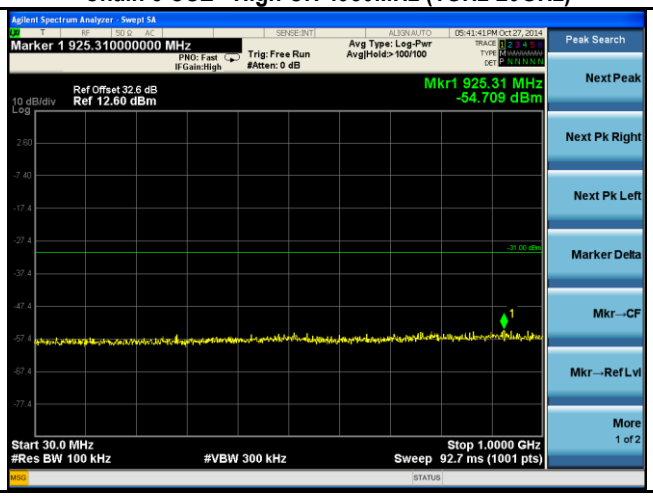


Chain 3 CSE - High CH 4980MHz (30MHz-1000MHz)

Chain 3 CSE - High CH 4980MHz (1GHz-20GHz)

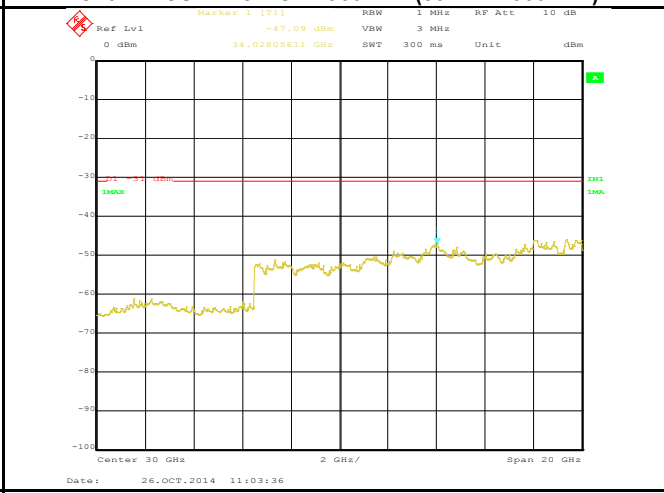


Chain 3 CSE - High CH 4980MHz (20GHz-40GHz)

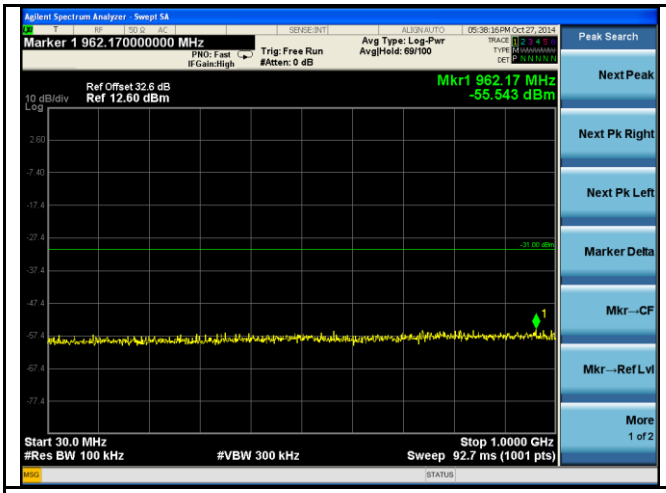


Chain 4 CSE - Low CH 4950MHz (30MHz-1000MHz)

Chain 4 CSE - Low CH 4950MHz (1GHz-20GHz)

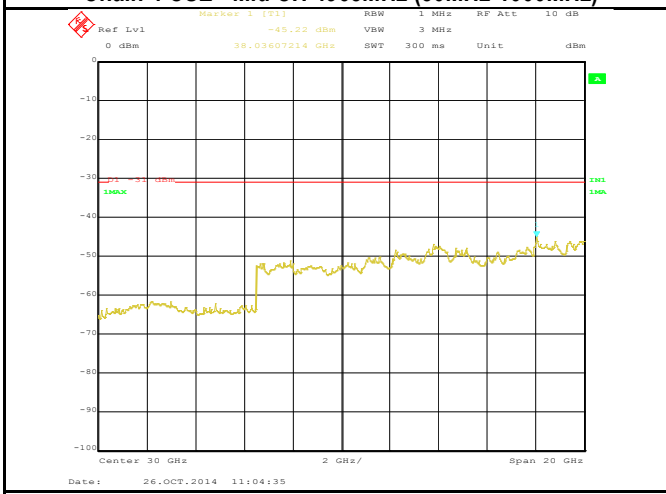


Chain 4 CSE - Low CH 4950MHz (20GHz-40GHz)

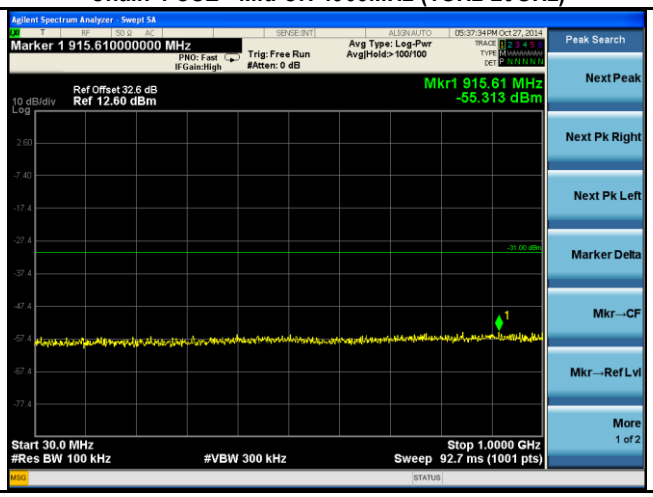


Chain 4 CSE - Mid CH 4965MHz (30MHz-1000MHz)

Chain 4 CSE - Mid CH 4965MHz (1GHz-20GHz)

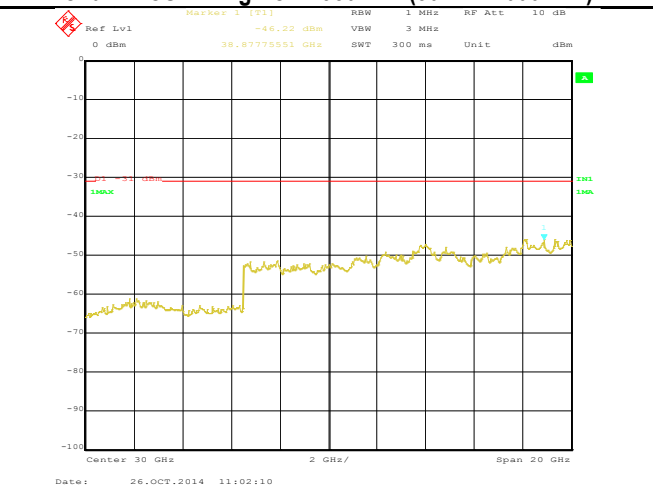


Chain 4 CSE - Mid CH 4965MHz (20GHz-40GHz)



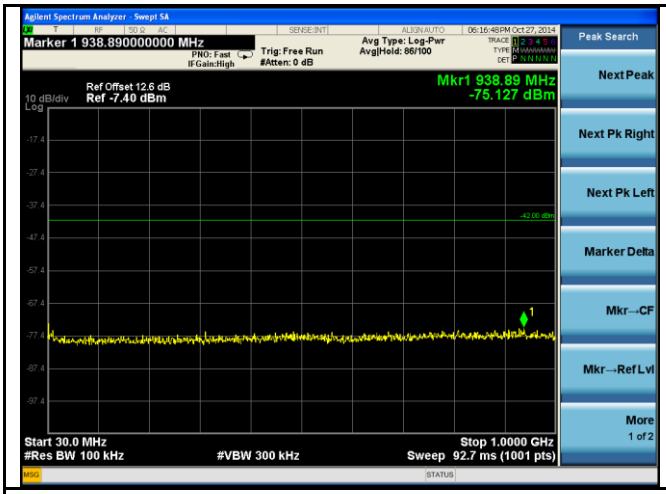
Chain 4 CSE – High CH 4980MHz (30MHz-1000MHz)

Chain 4 CSE - High CH 4980MHz (1GHz-20GHz)



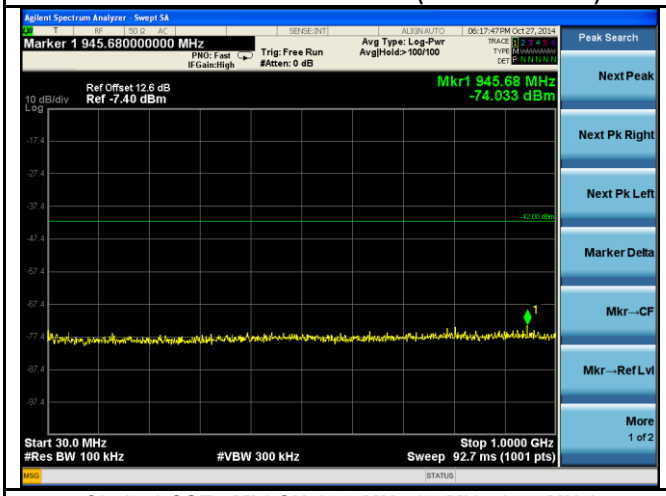
Chain 4 CSE – High CH 4980MHz (20GHz-40GHz)

Conducted Spurious Emissions Test Plots (25dBi Antenna Gain)



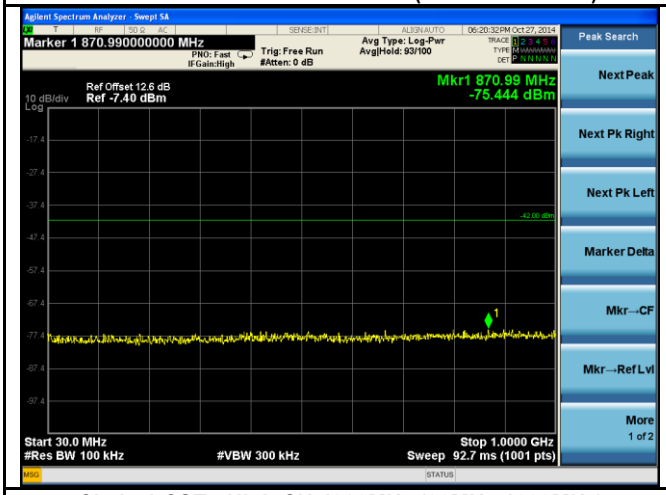
Chain 1 CSE - Low CH 4950MHz (30MHz-1000MHz)

Chain 1 CSE - Low CH 4950MHz (1GHz-20GHz)



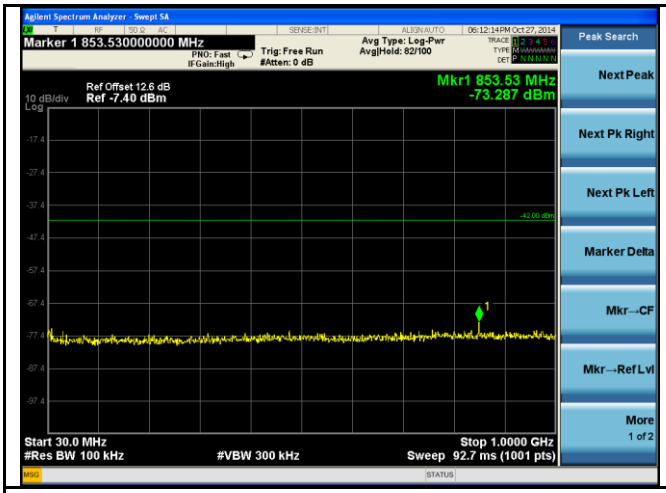
Chain 1 CSE - Mid CH 4965MHz (30MHz-1000MHz)

Chain 1 CSE – Mid CH 4965MHz (1GHz-20GHz)



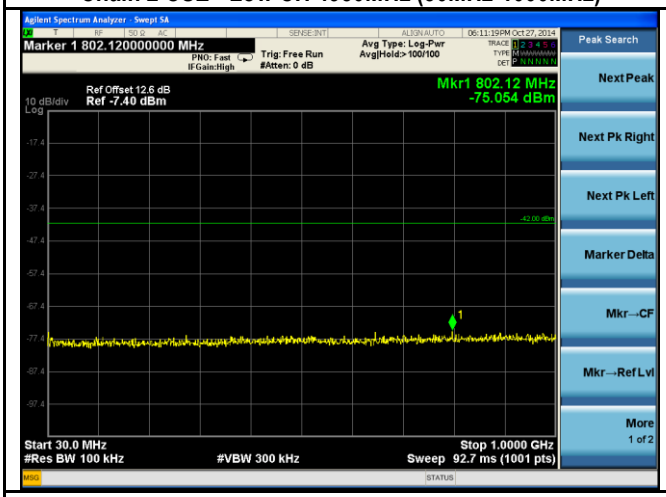
Chain 1 CSE - High CH 4980MHz (30MHz-1000MHz)

Chain 1 CSE - High CH 4980MHz (1GHz-20GHz)



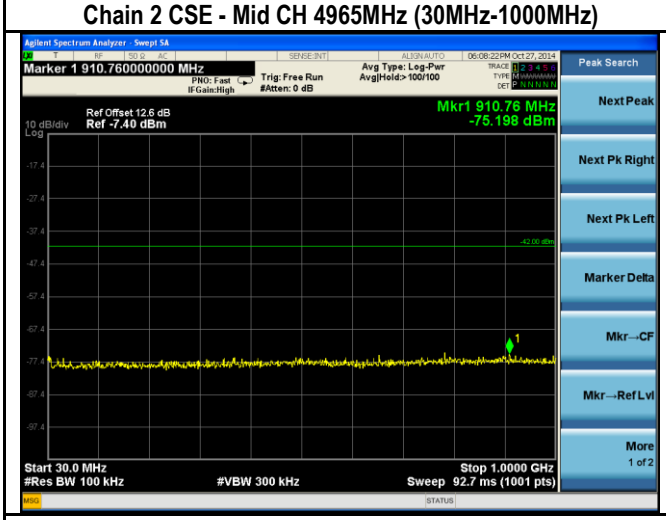
Chain 2 CSE - Low CH 4950MHz (30MHz-1000MHz)

Chain 2 CSE - Low CH 4950MHz (1GHz-20GHz)



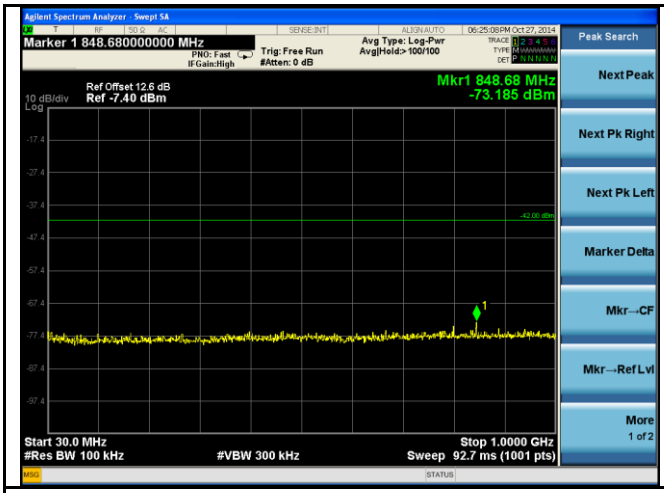
Chain 2 CSE - Mid CH 4965MHz (30MHz-1000MHz)

Chain 2 CSE – Mid CH 4965MHz (1GHz-20GHz)



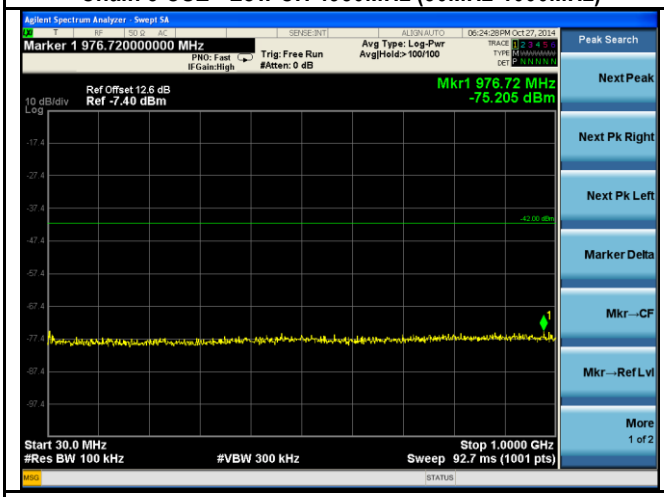
Chain 2 CSE - High CH 4980MHz (30MHz-1000MHz)

Chain 2 CSE - High CH 4980MHz (1GHz-20GHz)



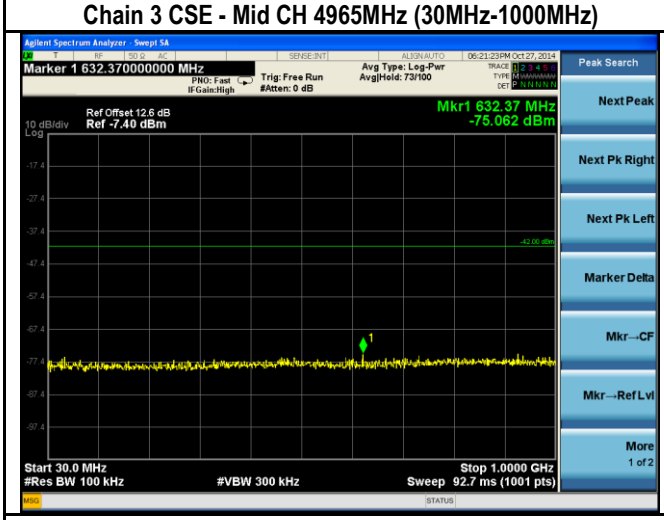
Chain 3 CSE - Low CH 4950MHz (30MHz-1000MHz)

Chain 3 CSE - Low CH 4950MHz (1GHz-20GHz)

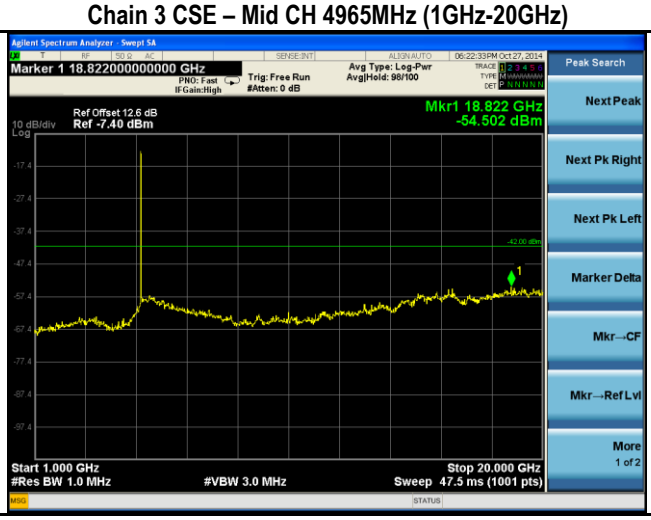


Chain 3 CSE - Mid CH 4965MHz (30MHz-1000MHz)

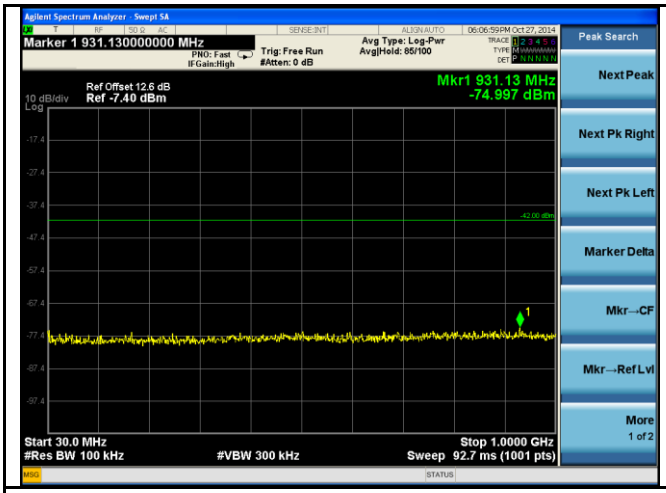
Chain 3 CSE – Mid CH 4965MHz (1GHz-20GHz)



Chain 3 CSE - High CH 4980MHz (30MHz-1000MHz)

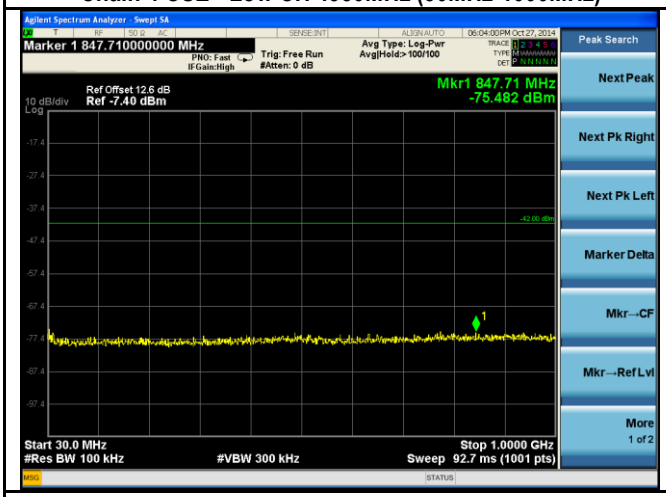


Chain 3 CSE - High CH 4980MHz (1GHz-20GHz)



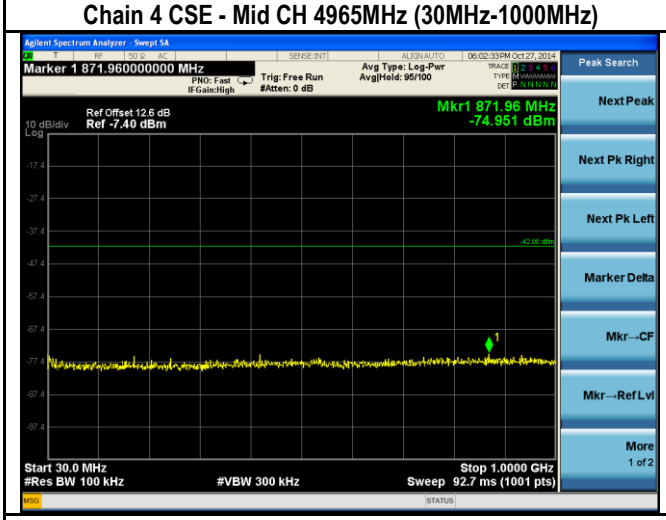
Chain 4 CSE - Low CH 4950MHz (30MHz-1000MHz)

Chain 4 CSE - Low CH 4950MHz (1GHz-20GHz)

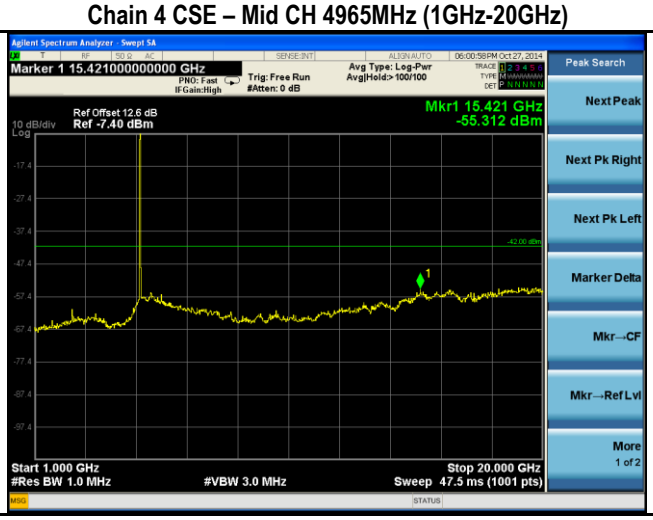


Chain 4 CSE - Mid CH 4965MHz (30MHz-1000MHz)

Chain 4 CSE – Mid CH 4965MHz (1GHz-20GHz)



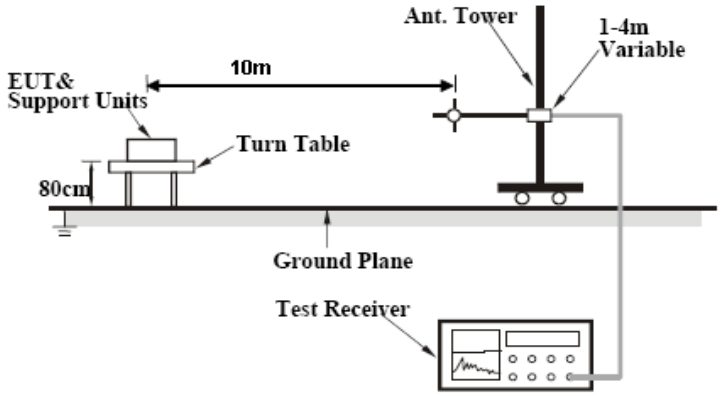
Chain 4 CSE - High CH 4980MHz (30MHz-1000MHz)



Chain 4 CSE - High CH 4980MHz (1GHz-20GHz)

10.6 Radiated Spurious Emissions

Requirement(s):

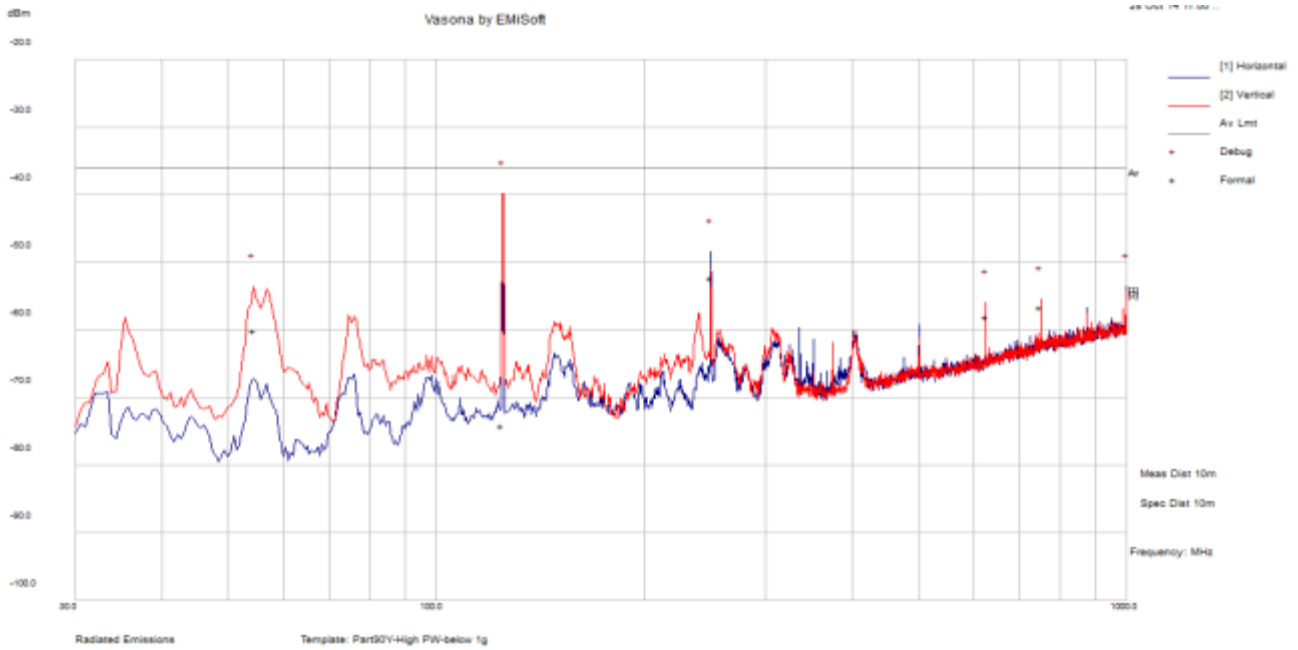
<table>
<tr><th>Spec</th><th>Requirement</th><th>Applicable</th></tr>
<tr><td>FCC §2.1053
FCC §90.210</td><td>For low power transmitters (20 dBm or less) and high power transmitters (greater than 20 dBm operating in the 4940-4990 MHz frequency band, the power spectral density of the emissions must be attenuated below the output power of the transmitter as follows:
<table>
<tr><th rowspan="2">Frequency Offset
f_d</th><th colspan="2">Minimum Attenuation</th></tr>
<tr><th>Low Power Transmitter</th><th>High Power Transmitter</th></tr>
<tr><td>$0 < f_d \leq 45$</td><td>0</td><td>0</td></tr>
<tr><td>$45 < f_d \leq 50$</td><td>$219 \log(f_d/45)$</td><td>$568 \log(f_d/45)$</td></tr>
<tr><td>$50 < f_d \leq 55$</td><td>$10 + 242 \log(f_d/50)$</td><td>$26 + 145 \log(f_d/50)$</td></tr>
<tr><td>$55 < f_d \leq 100$</td><td>$20 + 31 \log(f_d/55)$</td><td>$32 + 31 \log(f_d/55)$</td></tr>
<tr><td>$100 < f_d \leq 150$</td><td>$28 + 68 \log(f_d/100)$</td><td>$40 + 57 \log(f_d/100)$</td></tr>
<tr><td>$f_d > 150$</td><td>40</td><td>50 dB or 55 + 10 log (P) dB, whichever is the lesser attenuation.</td></tr>
</table>
f_d is the percentage of the equipment's channel bandwidth..</td><td>☒</td></tr>
<tr><td>Test Setup</td><td> 
</td><td></td></tr>
<tr><td>Test Procedure</td><td>1. The EUT was switched on and allowed to warm up to its normal operating condition.
2. Measurement was made at a distance of 10 m.
3. The measuring antenna was set to 1 meter away from the ground plain.
4. Maximization of the emissions was carried out by rotating the EUT, and adjusting the antenna azimuth.
5. The test was done in both horizontal and vertical antenna polarizations.
6. The measurement shall be made with the transmitter set to the lowest operating frequency and with the transmitter set to the highest operating frequency</td><td></td></tr>
<tr><td>Remark</td><td>Limit for the 0dBi antenna gain: -36 dBm
Limit for the 25dBi antenna gain: -25dBm
The EUT was tested with the chains transmitting at different bands (4.9GHz & 5GHz band) and channels at same time. All four chains will not operate in the 4.9GHz band simultaneously in actual use.</td><td></td></tr>
<tr><td>Result</td><td>☒ Pass ☐ Fail</td><td></td></tr>
</table>

Test Data ☒ Yes ☐ N/A

Test Plot ☒ Yes (See below) ☐ N/A

Radiated Emission Test Results (Below 1GHz)

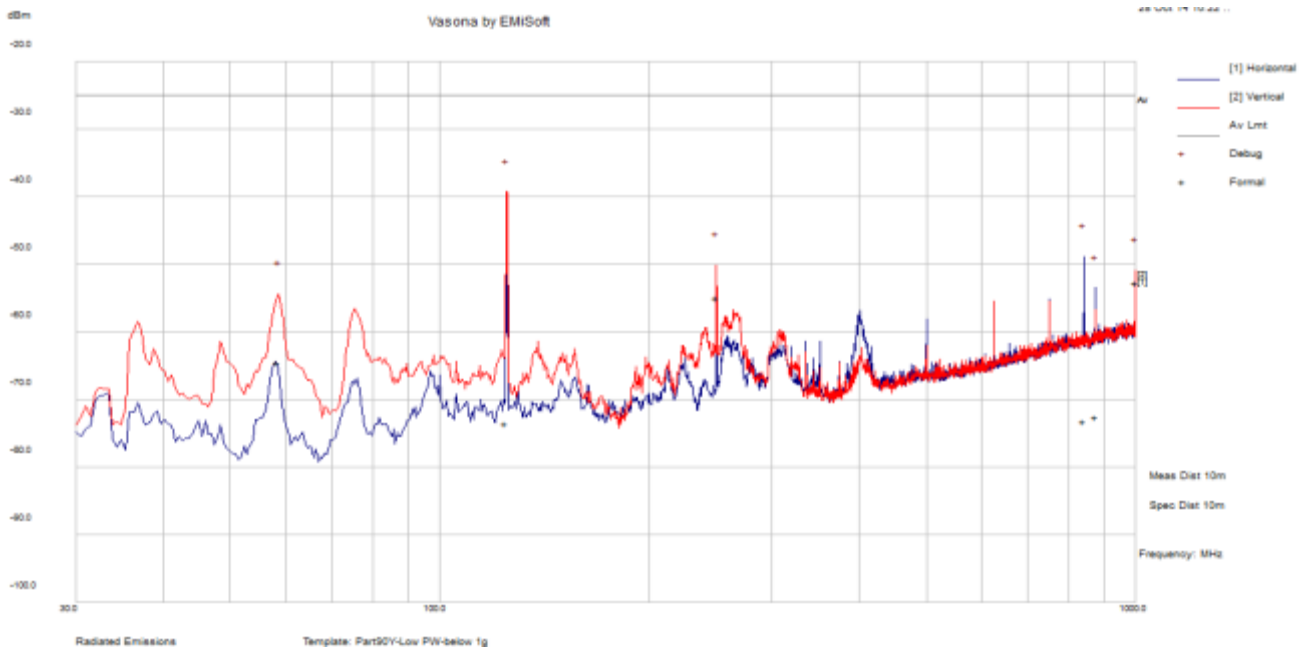
Test specification	Radiated Spurious Emissions			
Environmental Conditions:	Temp (°C):	22	Result	PASS
	Humidity (%)	41		
	Atmospheric (mbar):	1021		
Mains Power:	120VAC/60Hz			
Tested by:	Angel Escamilla			
Test Date:	10/28/2014			
Remarks:	All chains transmitting simultaneously, 0dBi antenna gain			



30MHz – 1000MHz at 10m distance

Frequency MHz	Raw dBm	Cable Loss	AF dB	Level dBm/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBm/m	Margin dB	Pass /Fail
249.95	-49.15	24.97	-28.14	-52.31	Average	H	365.00	157.00	-36.00	-16.31	Pass
750.00	-65.15	26.88	-18.44	-56.71	Average	V	400.00	106.00	-36.00	-20.71	Pass
625.00	-64.17	26.46	-20.36	-58.07	Average	V	279.00	357.00	-36.00	-22.07	Pass
54.49	-52.06	23.42	-31.40	-60.04	Average	V	214.00	331.00	-36.00	-24.04	Pass
1000.54	-49.51	27.37	-39.33	-61.47	Average	H	106.00	79.00	-36.00	-25.47	Pass
124.44	-72.48	24.24	-25.93	-74.16	Average	V	120.00	9.00	-36.00	-38.16	Pass

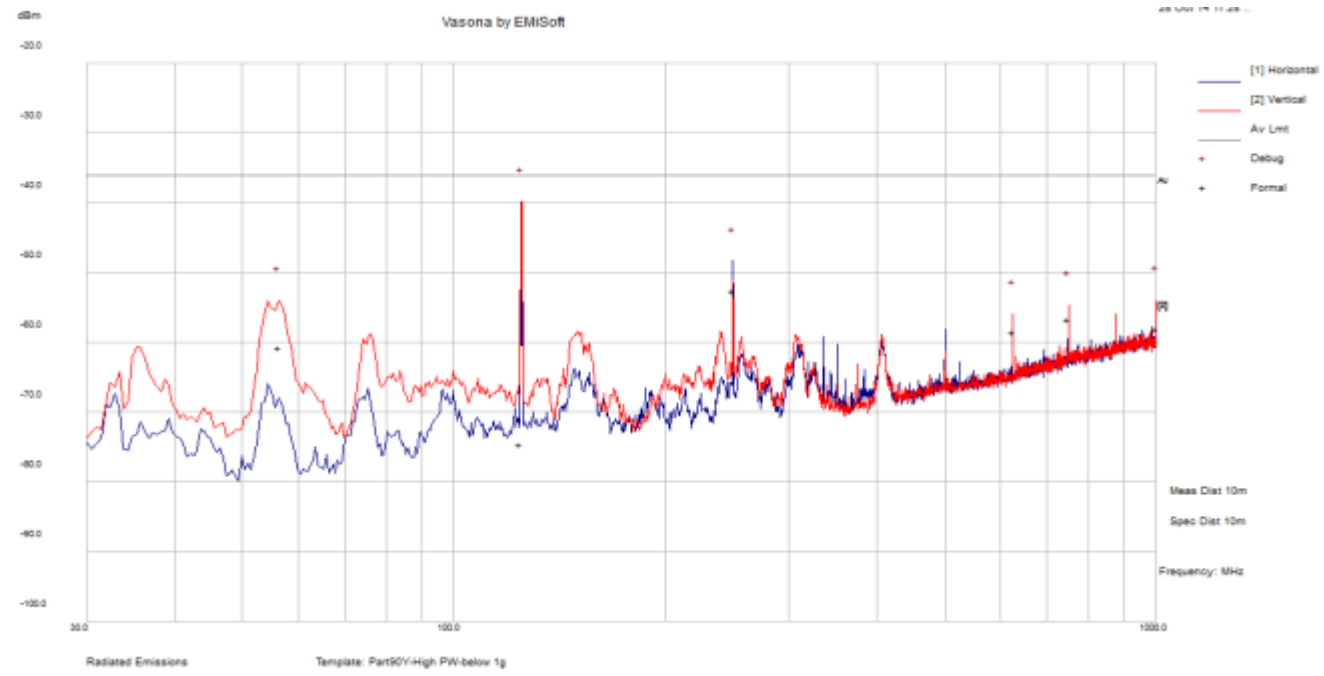
Test specification	Radiated Spurious Emissions			
Environmental Conditions:	Temp (°C):	23	Result	PASS
	Humidity (%)	43		
	Atmospheric (mPa):	1021		
Mains Power:	120VAC/60Hz			
Tested by:	Angel Escamilla			
Test Date:	10/28/2014			
Remarks:	All chains transmitting simultaneously, 25dBi antenna gain			



30MHz – 1000MHz at 10m distance

Frequency MHz	Raw dBm	Cable Loss	AF dB	Level dBm/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBm/m	Margin dB	Pass /Fail
999.98	-64.62	27.37	-15.53	-52.78	Average	V	195.00	305.00	-25.00	-27.78	Pass
249.95	-51.78	24.97	-28.14	-54.94	Average	V	100.00	124.00	-25.00	-29.94	Pass
58.51	-56.44	23.47	-31.55	-64.52	Average	V	122.00	112.00	-25.00	-39.52	Pass
875.21	-82.73	27.16	-17.04	-72.60	Average	H	161.00	229.00	-25.00	-47.60	Pass
842.88	-82.81	27.11	-17.49	-73.19	Average	H	193.00	142.00	-25.00	-48.19	Pass
124.49	-71.87	24.24	-25.92	-73.55	Average	V	334.00	56.00	-25.00	-48.55	Pass

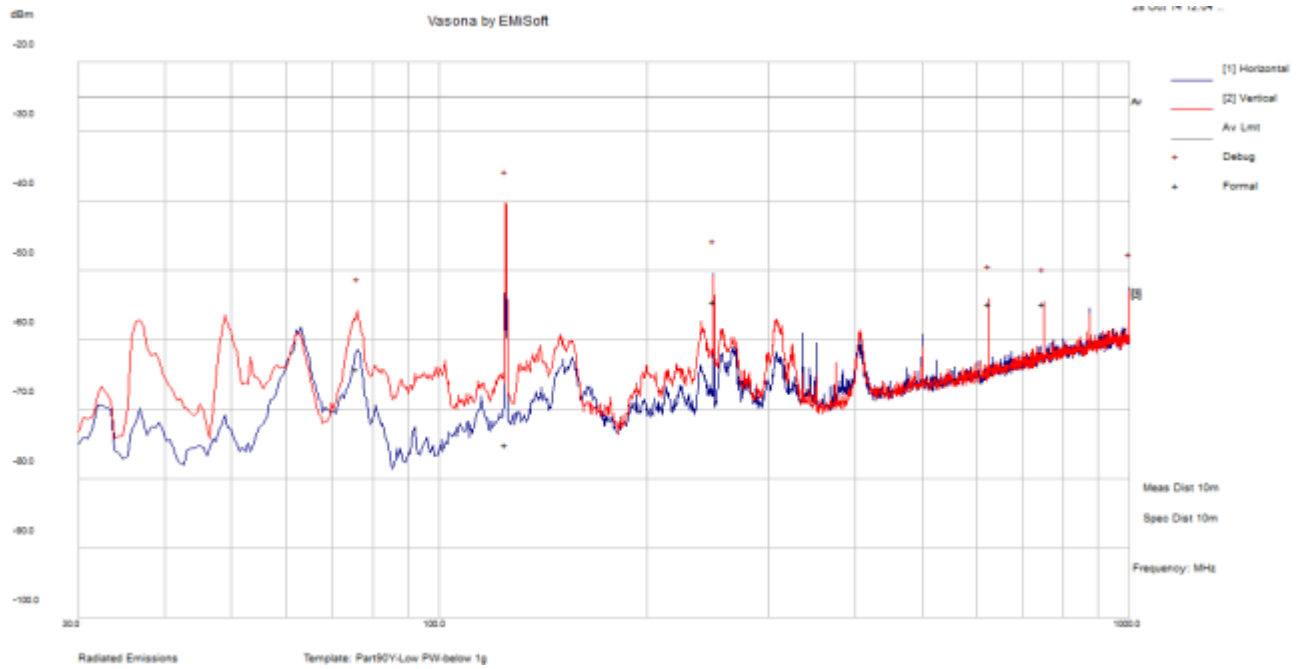
Test specification	Radiated Spurious Emissions			
Environmental Conditions:	Temp (°C):	22	Result	PASS
	Humidity (%)	41		
	Atmospheric (mbar):	1021		
Mains Power:	120VAC/60Hz			
Tested by:	Angel Escamilla			
Test Date:	10/28/2014			
Remarks:	Chains 1 and 2 transmitting simultaneously at 4950MHz with 0dBi antenna Chains 3 and 4 transmitting simultaneously at 5165MHz with 0dBi antenna			



30MHz – 1000MHz at 10m distance

Frequency MHz	Raw dBm	Cable Loss	AF dB	Level dBm/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBm/m	Margin dB	Pass /Fail
249.95	-49.43	24.97	-28.14	-52.60	Average	H	245.00	157.00	-36.00	-16.60	Pass
750.00	-65.12	26.88	-18.44	-56.69	Average	V	400.00	101.00	-36.00	-20.69	Pass
999.97	-69.83	27.37	-15.53	-57.99	Average	V	185.00	294.00	-36.00	-21.99	Pass
625.01	-64.55	26.46	-20.35	-58.44	Average	V	305.00	351.00	-36.00	-22.44	Pass
56.43	-52.63	23.45	-31.53	-60.71	Average	V	159.00	124.00	-36.00	-24.71	Pass
124.43	-73.00	24.24	-25.93	-74.68	Average	V	175.00	30.00	-36.00	-38.68	Pass

Test specification	Radiated Spurious Emissions			
Environmental Conditions:	Temp (°C):	23	Result	PASS
	Humidity (%)	43		
	Atmospheric (mPa):	1021		
Mains Power:	120VAC/60Hz			
Tested by:	Angel Escamilla			
Test Date:	10/28/2014			
Remarks:	Chains 1 and 2 transmitting simultaneously at 4950MHz with 25dBi antenna Chains 3 and 4 transmitting simultaneously at 5165MHz with 25dBi antenna			



30MHz – 1000MHz at 10m distance

Frequency MHz	Raw dBm	Cable Loss	AF dB	Level dBm/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBm/m	Margin dB	Pass /Fail
249.95	-51.25	24.97	-28.14	-54.42	Average	H	338.00	292.00	-25.00	-29.42	Pass
625.01	-60.81	26.46	-20.35	-54.71	Average	V	301.00	195.00	-25.00	-29.71	Pass
749.99	-63.25	26.88	-18.44	-54.81	Average	V	228.00	317.00	-25.00	-29.81	Pass
1000.00	-45.53	27.37	-39.33	-57.49	Average	H	229.00	215.00	-25.00	-32.49	Pass
75.87	-56.52	23.66	-31.29	-64.16	Average	V	248.00	344.00	-25.00	-39.16	Pass
124.71	-73.46	24.24	-25.92	-75.13	Average	V	247.00	335.00	-25.00	-50.13	Pass

Radiated Emission Test Results (1GHz-40GHz) – 0dBi Antenna

Chains 1 and 2 transmitting simultaneously at 4950MHz with 0dBi antenna, Chains 3 and 4 transmitting simultaneously at 4980MHz with 0dBi antenna

Frequency MHz	Raw dBm	Cable Loss	AF dB	Level dBm/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBm/m	Margin dB	Pass /Fail
7183.63	-68.97	4.59	3.06	-61.33	Average	V	100.00	45.00	-36.00	-25.33	Pass
9636.23	-72.10	4.50	6.60	-61.03	Average	H	100.00	41.00	-36.00	-25.00	Pass
14584.67	-73.64	6.32	10.60	-56.72	Average	V	200.00	54.00	-36.00	-20.72	Pass
Remark	Emissions were scanned up to 40GHz; no emissions were detected above the noise floor which was at least 20dB below the specification limit. Both horizontal and vertical polarizations were verified.										

Chains 1 and 2 transmitting simultaneously at 4965MHz with 0dBi antenna, Chains 3 and 4 transmitting simultaneously at 4980MHz with 0dBi antenna

Frequency MHz	Raw dBm	Cable Loss	AF dB	Level dBm/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBm/m	Margin dB	Pass /Fail
8775.61	-71.30	4.30	5.60	-61.45	Average	H	100.00	3.00	-36.00	-25.50	Pass
9499.98	-71.71	4.47	6.58	-60.66	Average	V	100.00	15.00	-36.00	-24.66	Pass
14167.34	-73.71	6.15	10.33	-57.23	Average	V	200.00	34.23	-36.00	-21.23	Pass
Remark	Emissions were scanned up to 40GHz; no emissions were detected above the noise floor which was at least 20dB below the specification limit. Both horizontal and vertical polarizations were verified.										

Chains 1 and 2 transmitting simultaneously at 4965MHz with 0dBi antenna, Chains 3 and 4 transmitting simultaneously at 5165MHz with 0dBi antenna

Frequency MHz	Raw dBm	Cable Loss	AF dB	Level dBm/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBm/m	Margin dB	Pass /Fail
8784.82	-71.04	4.25	5.56	-61.23	Average	V	100.00	21.00	-36.00	-25.23	Pass
14269.54	-73.81	6.19	10.53	-57.09	Average	V	200.00	32.00	-36.00	-21.09	Pass
17753.01	-76.68	6.59	13.63	-56.46	Average	H	100.00	353.00	-36.00	-20.46	Pass
Remark	Emissions were scanned up to 40GHz; no emissions were detected above the noise floor which was at least 20dB below the specification limit. Both horizontal and vertical polarizations were verified.										

Radiated Emission Test Results (1GHz-40GHz) – 25dBi Antenna

Chains 1 and 2 transmitting simultaneously at 4950MHz with 25dBi antenna, Chains 3 and 4 transmitting simultaneously at 4980MHz with 25dBi antenna

Frequency MHz	Raw dBm	Cable Loss	AF dB	Level dBm/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBm/m	Margin dB	Pass /Fail
6444.57	-67.94	4.25	2.10	-61.59	Average	V	100.00	13.00	-25.00	-36.59	Pass
9771.93	-72.44	4.57	6.61	-61.26	Average	V	100.00	4.00	-25.00	-36.26	Pass
14033.98	-74.59	6.10	10.07	-58.43	Average	V	100.00	21.00	-25.00	-33.43	Pass
Remark	Emissions were scanned up to 40GHz; no emissions were detected above the noise floor which was at least 20dB below the specification limit. Both horizontal and vertical polarizations were verified.										

Chains 1 and 2 transmitting simultaneously at 4965MHz with 25dBi antenna, Chains 3 and 4 transmitting simultaneously at 4980MHz with 25dBi antenna

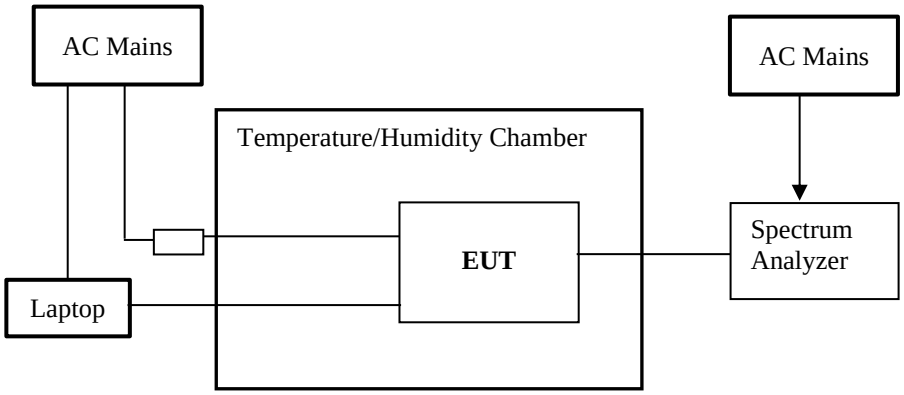
Frequency MHz	Raw dBm	Cable Loss	AF dB	Level dBm/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBm/m	Margin dB	Pass /Fail
6960.15	-68.64	4.65	2.67	-61.32	Average	H	100.00	23.00	-25.00	-36.32	Pass
9593.69	-72.41	4.51	6.59	-61.31	Average	V	100.00	53.00	-25.00	-36.31	Pass
14039.71	-73.70	6.10	10.08	-57.52	Average	V	100.00	3.00	-25.00	-32.52	Pass
Remark	Emissions were scanned up to 40GHz; no emissions were detected above the noise floor which was at least 20dB below the specification limit. Both horizontal and vertical polarizations were verified.										

Chains 1 and 2 transmitting simultaneously at 4965MHz with 25dBi antenna, Chains 3 and 4 transmitting simultaneously at 5165MHz with 25dBi antenna

Frequency MHz	Raw dBm	Cable Loss	AF dB	Level dBm/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBm/m	Margin dB	Pass /Fail
6979.79	-68.60	4.70	2.70	-61.26	Average	H	100.00	312.00	-25.00	-36.30	Pass
8764.98	-71.14	4.25	5.56	-61.33	Average	V	100.00	234.00	-25.00	-36.33	Pass
14005.59	-73.42	6.08	10.01	-57.33	Average	V	100.00	353.00	-25.00	-32.33	Pass
Remark	Emissions were scanned up to 40GHz; no emissions were detected above the noise floor which was at least 20dB below the specification limit. Both horizontal and vertical polarizations were verified.										

10.7 Frequency Stability

Requirement(s):

Spec	Requirement	Applicable
FCC §2.1055 FCC §90.213	The test shall be performed at normal and extreme test conditions. From -30°C to +50°C and vary the primary supply voltage from 85% to 115% of the nominal value.	☒
Test Setup		
Test Procedure	- The EUT was switched on and allowed to warm up to its normal operating condition. - The EUT output was connected to a spectrum analyser and the frequency stability was measured. - Measurements were taken after a thermal balance was obtained. - Normal and extreme test conditions were measured	
Test Data	10/29/2014	
Remark	-	
Result	☒ Pass ☐ Fail	

Test Data ☒ Yes ☐ N/A

Test Plot ☐ Yes (See below) ☒ N/A

Test Results

Temperature Vs Frequency Stability: Low Channel

Temperature (°C)	Center Frequency (MHz)	Measured Frequency (MHz)	Deviation (ppm)
50	4950.00	4949.9571	8.67
40	4950.00	4949.9548	9.14
30	4950.00	4949.9652	7.04
20	4950.00	4949.9678	6.51
10	4950.00	4949.9703	6.01
0	4950.00	4949.9689	6.29
-10	4950.00	4949.9600	8.09
-20	4950.00	4949.9615	7.77
-30	4950.00	4949.9586	8.35

Voltage Vs Frequency Stability: Low Channel

Voltage (AC)	Center Frequency (MHz)	Measured Frequency (MHz)	Deviation (ppm)
138	4950.00	4949.9634	7.40
120	4950.00	4949.9678	6.51
102	4950.00	4949.9856	2.92

Temperature Vs Frequency Stability: Middle Channel

Temperature (°C)	Center Frequency (MHz)	Measured Frequency (MHz)	Deviation (ppm)
50	4965.00	4964.9839	3.24
40	4965.00	4964.9766	4.70
30	4965.00	4964.9853	2.97
20	4965.00	4964.9975	0.50
10	4965.00	4965.0413	8.33
0	4965.00	4965.0154	3.09
-10	4965.00	4964.9548	9.11
-20	4965.00	4964.9581	8.44
-30	4965.00	4965.0401	8.08

Voltage Vs Frequency Stability: Middle Channel

Voltage (AC)	Center Frequency (MHz)	Measured Frequency (MHz)	Deviation (ppm)
138	4965.00	4965.0193	3.90
120	4965.00	4964.9975	0.50
102	4965.00	4965.0149	2.99

Temperature Vs Frequency Stability: High Channel

Temperature (°C)	Center Frequency (MHz)	Measured Frequency (MHz)	Deviation (ppm)
50	4980.00	4980.0165	-3.30
40	4980.00	4980.0269	-5.39
30	4980.00	4979.9646	7.10
20	4980.00	4979.9556	8.92
10	4980.00	4979.9716	5.70
0	4980.00	4979.9596	8.11
-10	4980.00	4979.9759	4.85
-20	4980.00	4979.9551	9.03
-30	4980.00	4979.9529	9.46

Voltage Vs Frequency Stability: High Channel

Voltage (AC)	Center Frequency (MHz)	Measured Frequency (MHz)	Deviation (ppm)
138	4980.00	4979.9834	3.34
120	4980.00	4979.9556	8.92
102	4980.00	4979.9657	6.90

Annex A. TEST INSTRUMENT

Instrument	Model	Serial #	Cal Date	Cal Cycle	Cal Due	In use
Radiated Unwanted Emissions						
R & S Receiver	ESL6	100178	03/01/2014	1 Year	03/01/2015	☑
R & S Receiver	ESIB 40	100179	05/24/2014	1 Year	05/24/2015	☑
ETS-Lingren Loop Antenna	6512	00049120	08/22/2014	1 Year	08/22/2015	☐
Bi-Log antenna (30MHz~2GHz)	JB1	A030702	08/12/2014	1 Year	08/12/2015	☑
Horn Antenna (1-26.5GHz)	3115	10SL0059	04/26/2014	1 Year	04/26/2015	☑
Horn Antenna (18-40 GHz)	AH-840	101013	04/23/2014	1 Year	04/23/2015	☑
Pre-Amplifier (1-26.5GHz)	8449B	3008A00715	05/30/2014	1 Year	05/30/2015	☑
Microwave Preamplifier (18-40 GHz)	PA-840	181251	05/30/2014	1 Year	05/30/2015	☑
3 Meters SAC	3M	N/A	10/13/2014	1 Year	10/13/2015	☐
10 Meters SAC	10M	N/A	06/05/2014	1 Year	06/05/2015	☑
Sekonic Hygro Hermograph	ST-50	HE01-000092	05/25/2014	1 Year	05/25/2015	☑
RF Conducted Measurements						
Spectrum Analyzer	N9010A	MY50210206	08/13/2014	1 Year	08/13/2015	☑
Spectrum Analyzer	E4407B	US88441016	05/31/2014	1 Year	05/31/2015	☐
R & S Receiver	ESIB 40	100179	05/24/2014	1 Year	05/24/2015	☑
RF Power Sensor	7002-006	13I00030SNO82	08/01/2014	1 Year	08/01/2015	☑
Frequency Stability Measurements						
Spectrum Analyzer	8564E	3738A00962	09/04/2014	1 Year	09/04/2015	☑
Test Equity Environment Chamber	1007H	61201	07/30/2014	1 Year	07/30/2015	☑

Annex B. SIEMIC Accreditation

Accreditations	Document	Scope / Remark
ISO 17025 (A2LA)		Please see the documents for the detailed scope
ISO Guide 65 (A2LA)		Please see the documents for the detailed scope
TCB Designation		A1, A2, A3, A4, B1, B2, B3, B4, C
FCC DoC Accreditation		FCC Declaration of Conformity Accreditation
FCC Site Registration		3 meter site
FCC Site Registration		10 meter site
IC Site Registration		3 meter site
IC Site Registration		10 meter site
EU NB		**Radio & Telecommunications Terminal Equipment:** EN45001 – EN ISO/IEC 17025
		Electromagnetic Compatibility: EN45001 – EN ISO/IEC 17025
Singapore iDA CB(Certification Body)		Phase I, Phase II
Vietnam MIC CAB Accreditation		Please see the document for the detailed scope
Hong Kong OFCA		**(Phase II)** OFCA Foreign Certification Body for Radio and Telecom
		(Phase I) Conformity Assessment Body for Radio and Telecom
Industry Canada CAB		**Radio:** Scope A – All Radio Standard Specification in Category I
		Telecom: CS-03 Part I, II, V, VI, VII, VIII

Japan Recognized Certification Body Designation		**Radio**: A1. Terminal equipment for purpose of calling **Telecom**: B1. Specified radio equipment specified in Article 38-2, Paragraph 1, Item 1 of the Radio Law
Korea CAB Accreditation		**EMI:** KCC Notice 2008-39, RRL Notice 2008-3: CA Procedures for EMI KN22: Test Method for EMI **EMS:** KCC Notice 2008-38, RRL Notice 2008-4: CA Procedures for EMS KN24, KN61000-4-2, -4-3, -4-4, -4-5, -4-6, -4-8, -4-11: Test Method for EMS
		Radio: RRL Notice 2008-26, RRL Notice 2008-2, RRL Notice 2008-10, RRL Notice 2007-49, RRL Notice 2007-20, RRL Notice 2007-21, RRL Notice 2007-80, RRL Notice 2004-68
		Telecom: President Notice 20664, RRL Notice 2007-30, RRL Notice 2008-7 with attachments 1, 3, 5, 6; President Notice 20664, RRL Notice 2008-7 with attachment 4
Taiwan NCC CAB Recognition		LP0002, PSTN01, ADSL01, ID0002, IS6100, CNS14336, PLMN07, PLMN01, PLMN08
Taiwan BSMI CAB Recognition		CNS 13438
Japan VCCI		R-3083: Radiation 3 meter site C-3421: Main Ports Conducted Interference Measurement T-1597: Telecommunication Ports Conducted Interference Measurement
Australia CAB Recognition		**EMC:** AS/NZS CISPR 11, AS/NZS CISPR 14.1, AS/NZS CISPR22, AS/NZS 61000.6.3, AS/NZS 61000.6.4
		Radio-communications: AS/NZS 4281, AS/NZS 4268, AS/NZS 4280.1, AS/NZS 4280.2, AS/NZS 4295, AS/NZS 4582, AS/NZS 4583, AS/NZS 4769.1, AS/NZS 4769.2, AS/NZS 4770, AS/NZS 4771
		Telecommunications: AS/ACIF S002:05, AS/ACIF S003:06, AS/ACIF S004:06 AS/ACIF S006:01, AS/ACIF S016:01, AS/ACIF S031:01, AS/ACIF S038:01, AS/ACIF S040:01, AS/ACIF S041:05, AS/ACIF S043.2:06, AS/ACIF S60950.1
Australia NATA Recognition		AS/ACIF S002, AS/ACIF S003, AS/ACIF S004, AS/ACIF S006, AS/ACIF S016,AS/ACIF S031, AS/ACIF S038, AS/ACIF S040, AS/ACIF S041, AS/ACIF S043.2