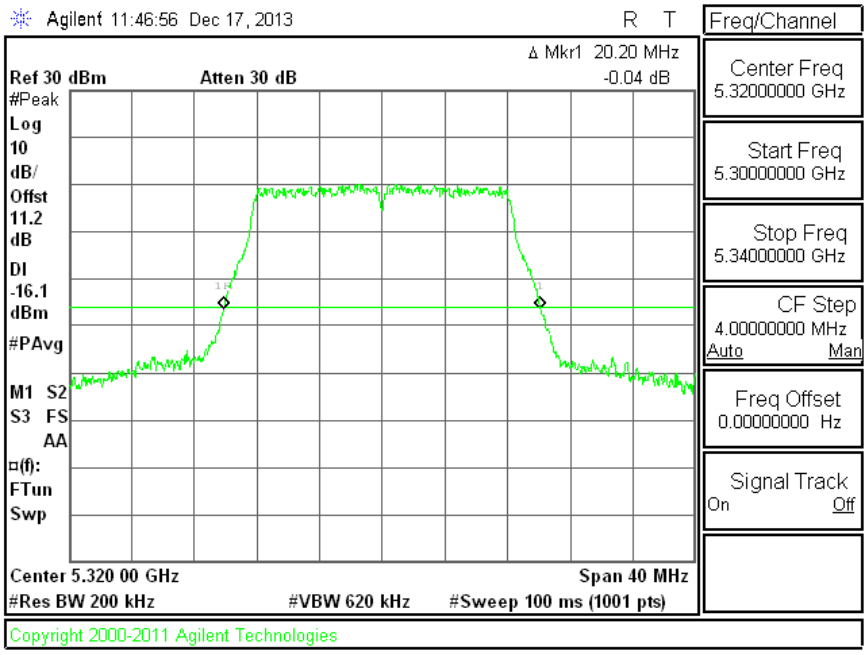
26 dB BANDWIDTH, Chain 0 CH 64



This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

8.11.2. 99% BANDWIDTH

LIMITS

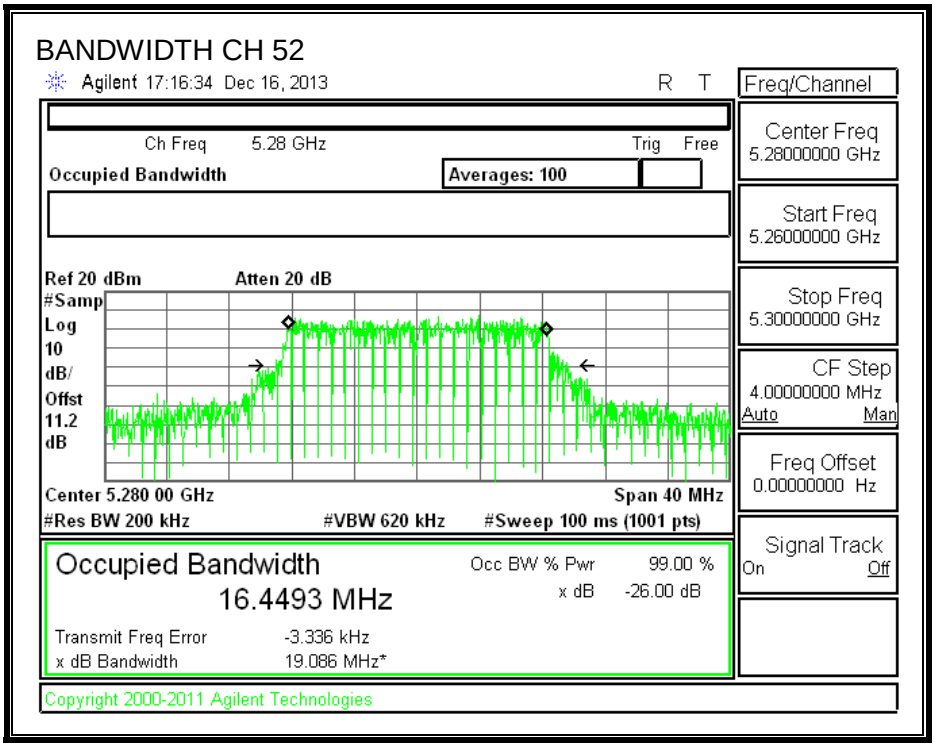
None; for reporting purposes only.

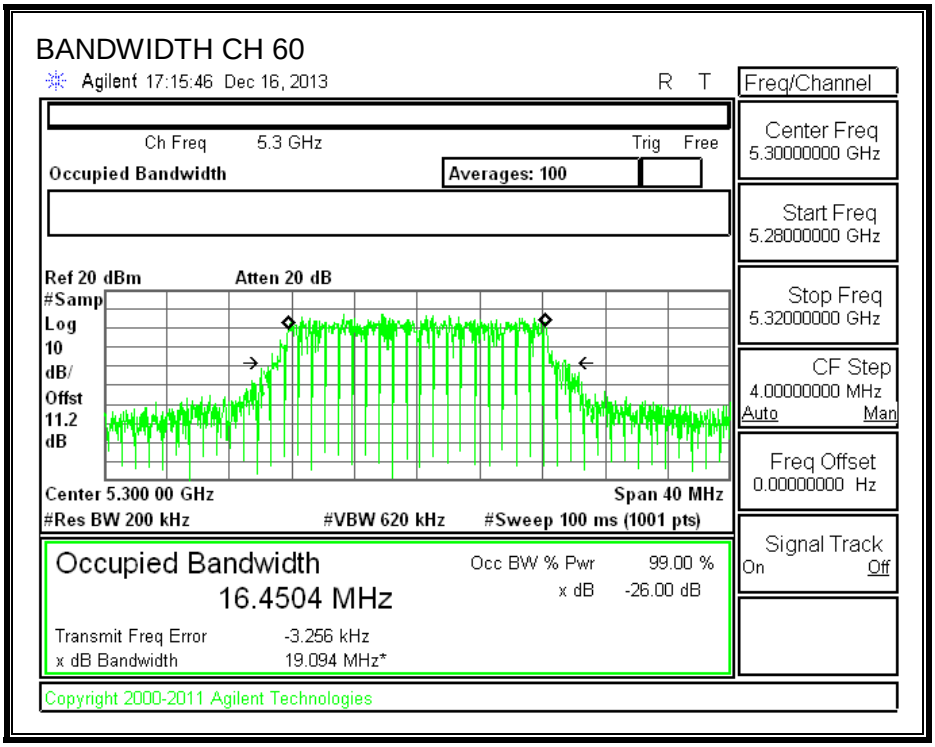
RESULTS

Channel	Frequency (MHz)	99% Bandwidth (MHz)
52	5260	16.4493
60	5300	16.4504
64	5320	16.4556

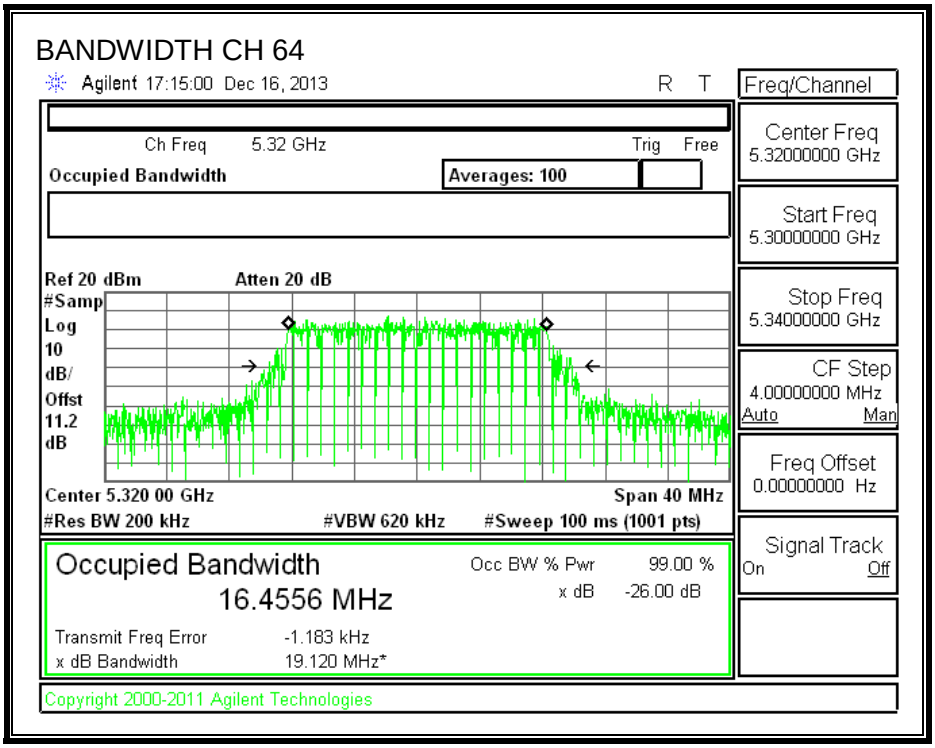
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

99% BANDWIDTH





This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .



This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

8.11.3. AVERAGE POWER

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

The transmitter output is connected to a power meter.

The cable assembly insertion loss of 11.19 dB (including 10 dB pad and 1.19 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

RESULTS

Channel	Frequency (MHz)	Power (dBm)
52	5260	20.52
60	5300	20.97
64	5320	19.77

This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

8.11.4. OUTPUT POWER AND PPSD

LIMITS

FCC §15.407 (a) (2)

For the band 5.25–5.35 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the peak power spectral density shall not exceed 11 dBm in any 1–MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

DIRECTIONAL ANTENNA GAIN

There is only one transmitter output therefore the directional gain is equal to the antenna gain.

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701J
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

RESULTS

Bandwidth and Antenna Gain

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Min 99% BW (MHz)	Directional Gain (dBi)
52	5260	20.0	16.4	2.40
60	5300	20.1	16.5	2.40
64	5320	20.2	16.5	2.40

Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Power Limit (dBm)	FCC PPSD Limit (dBm)	IC PSD Limit (dBm)	PPSD Limit (dBm)
52	5260	24.00	23.16	29.16	23.16	11.00	11.00	11.00
60	5300	24.00	23.16	29.16	23.16	11.00	11.00	11.00
64	5320	24.00	23.16	29.16	23.16	11.00	11.00	11.00

Duty Cycle CF (dB)	0.22	**Included in Calculations of Corr'd Power & PPSD**

Output Power Results

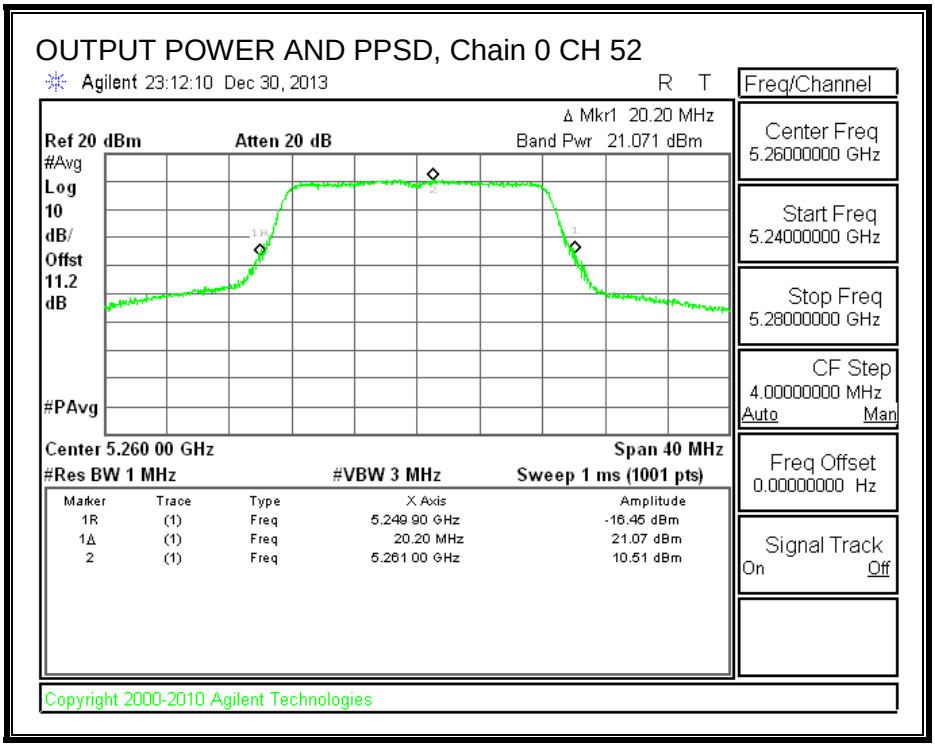
Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
52	5260	21.07	21.29	23.16	-1.87
60	5300	21.45	21.67	23.16	-1.49
64	5320	20.72	20.94	23.16	-2.22

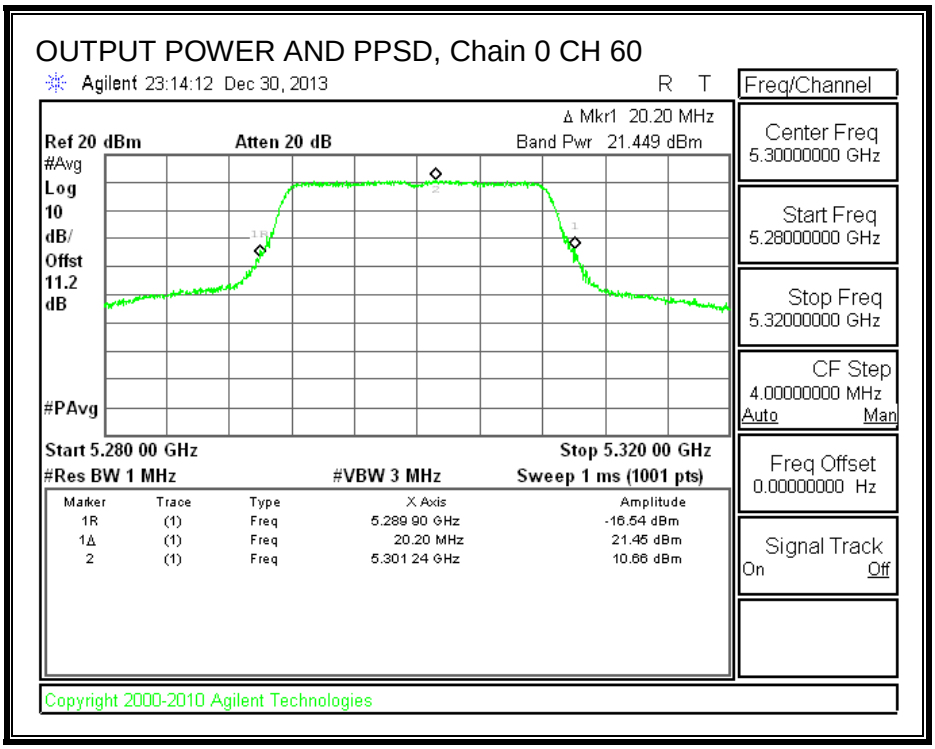
PPSD Results

Channel	Frequency (MHz)	Chain 0 Meas PPSD (dBm)	Total Corr'd PPSD (dBm)	PPSD Limit (dBm)	PPSD Margin (dB)
52	5260	10.51	10.73	11.00	-0.27
60	5300	10.66	10.88	11.00	-0.12
64	5320	9.41	9.63	11.00	-1.37

This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

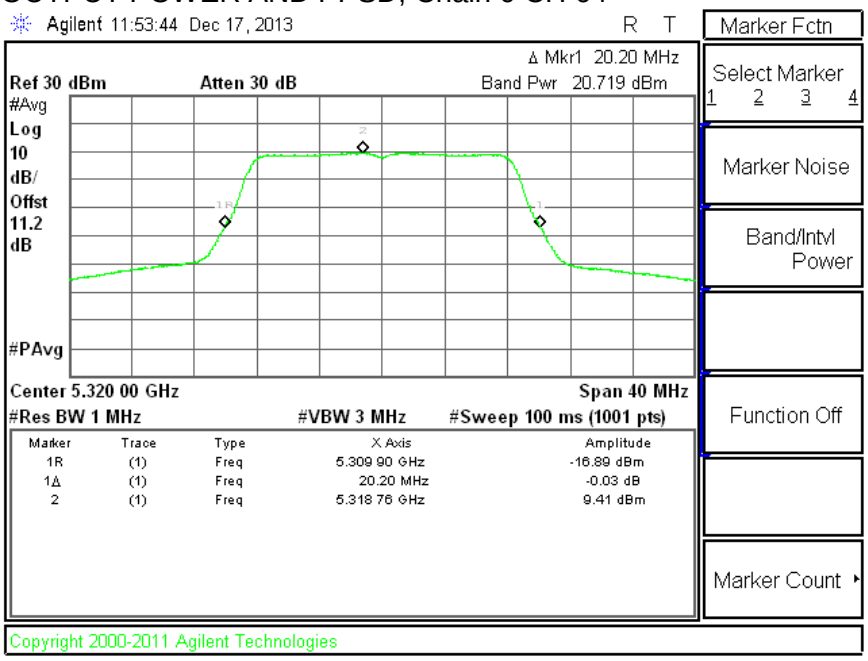
OUTPUT POWER AND PPSD, Chain 0





This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

OUTPUT POWER AND PPSD, Chain 0 CH 64



This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

8.12. 802.11n HT20 1TX SISO MODE IN THE 5.3 GHz BAND

8.12.1. 26 dB BANDWIDTH

LIMITS

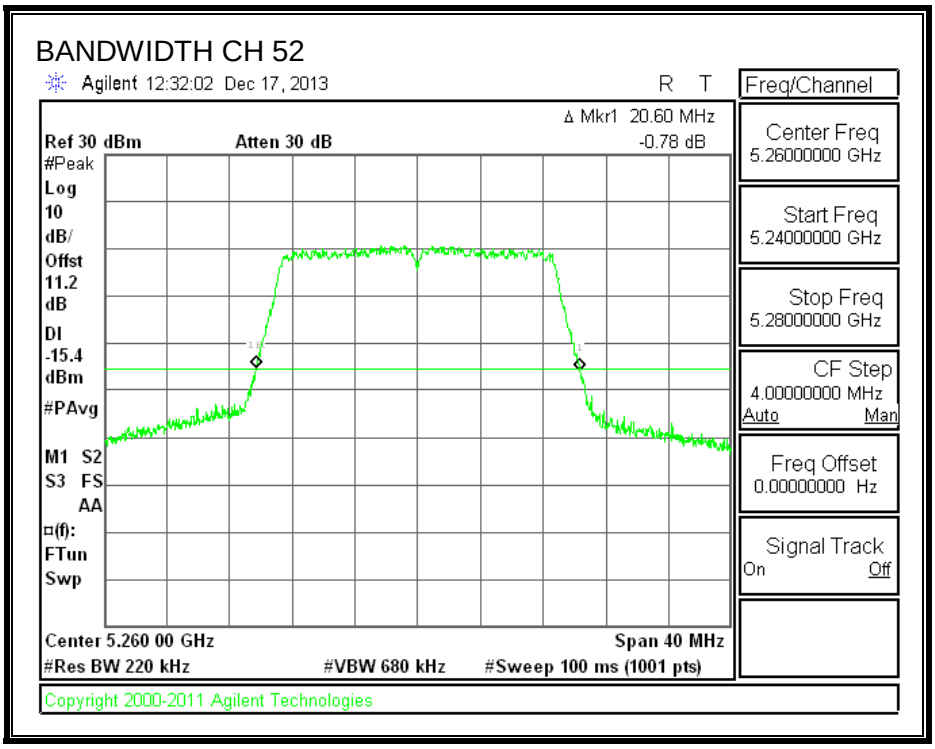
None; for reporting purposes only.

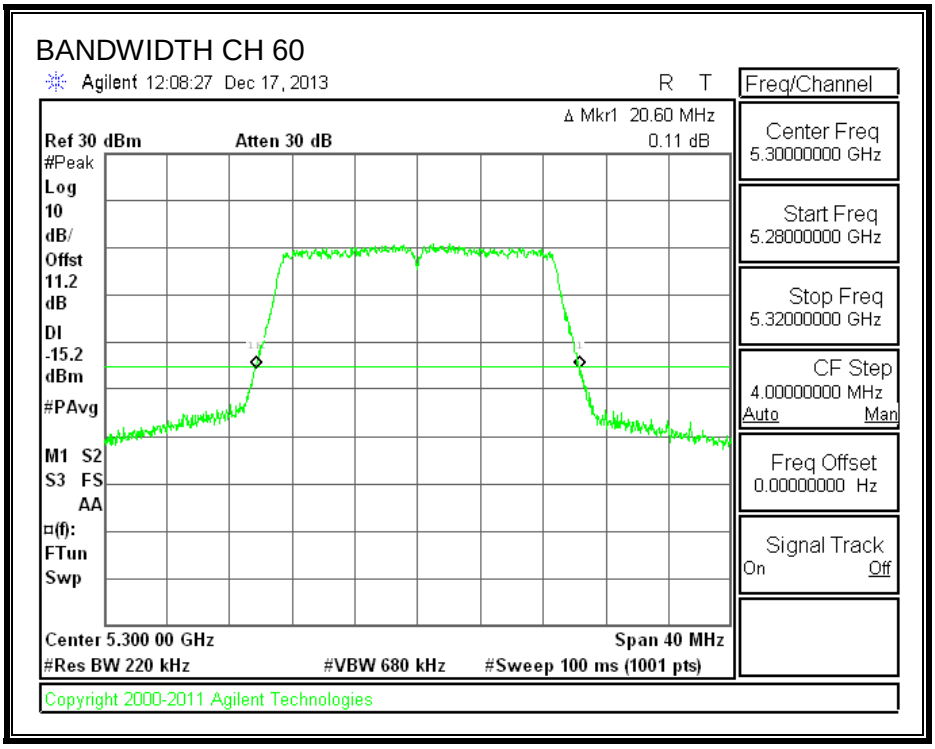
RESULTS

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
52	5260	20.60
60	5300	20.60
64	5320	20.56

This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

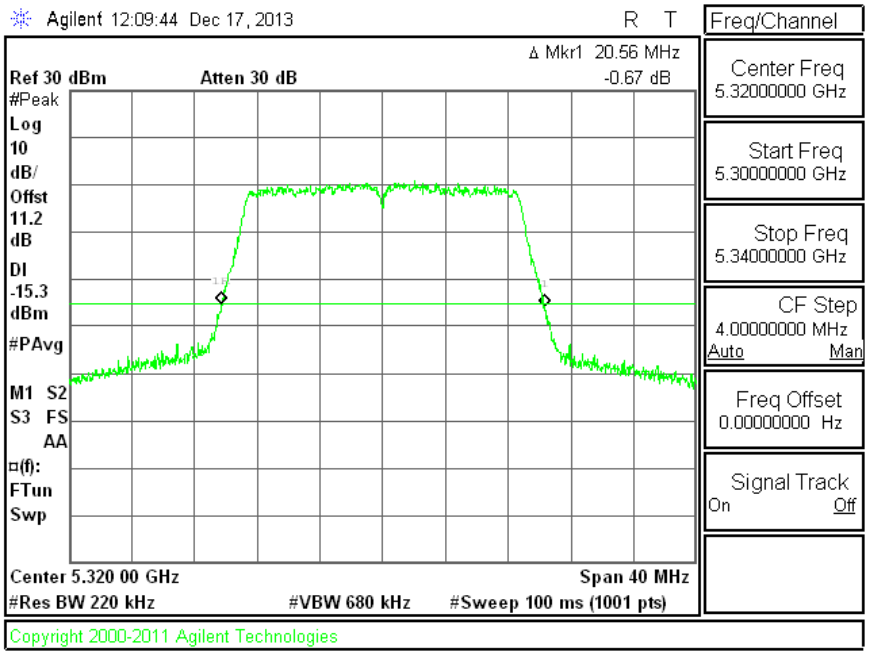
26 dB BANDWIDTH





This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

BANDWIDTH CH 64



This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

8.12.2. 99% BANDWIDTH

LIMITS

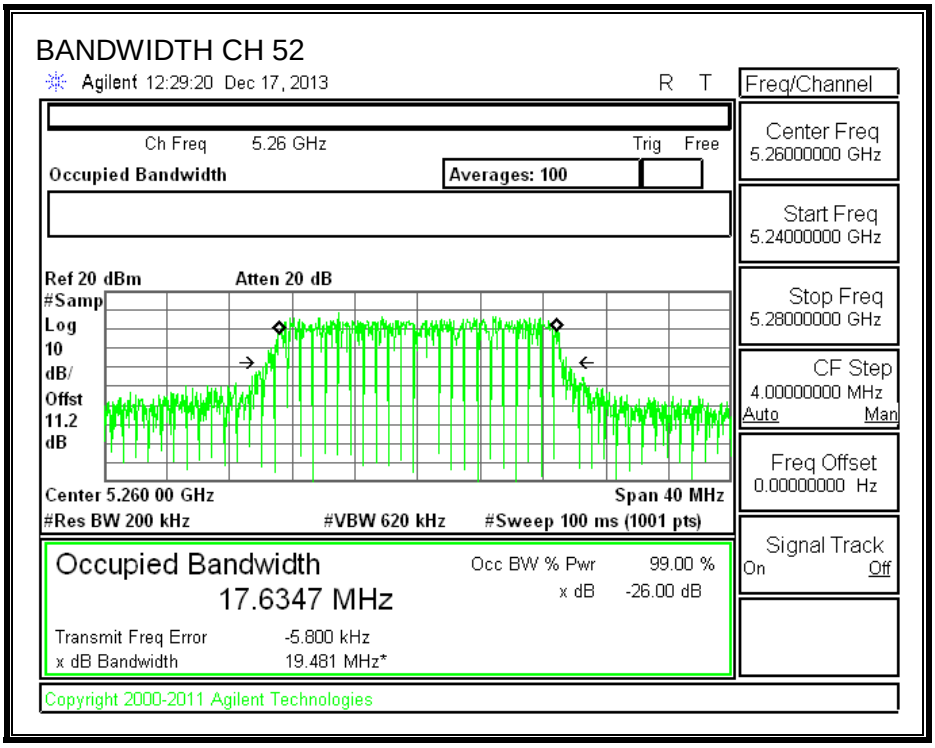
None; for reporting purposes only.

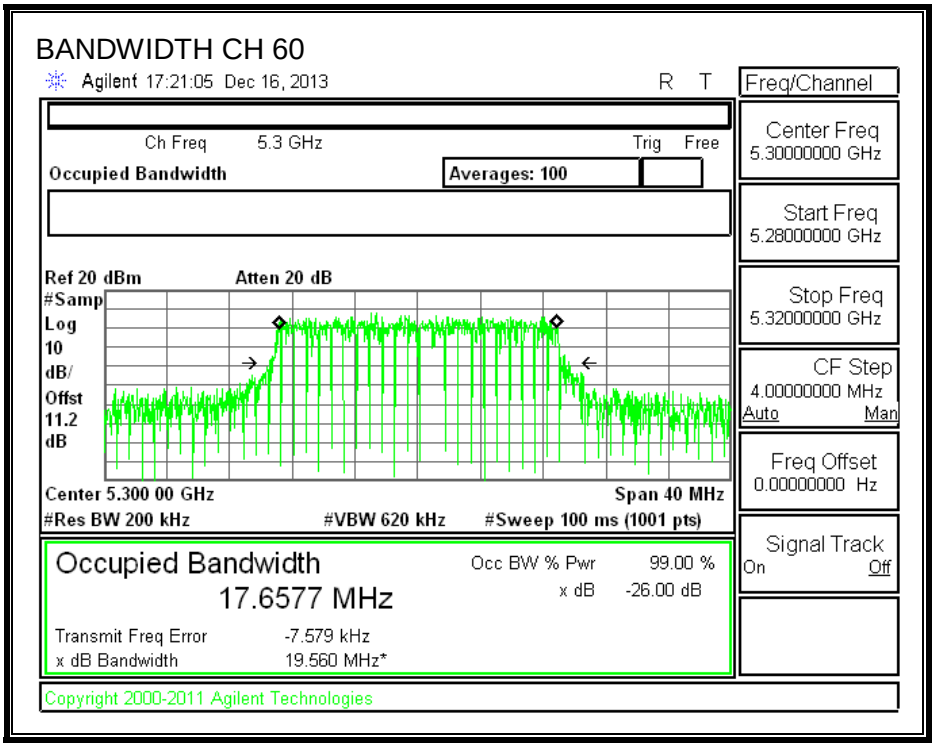
RESULTS

Channel	Frequency (MHz)	99% Bandwidth (MHz)
52	5260	17.6347
60	5300	17.6577
64	5320	17.6453

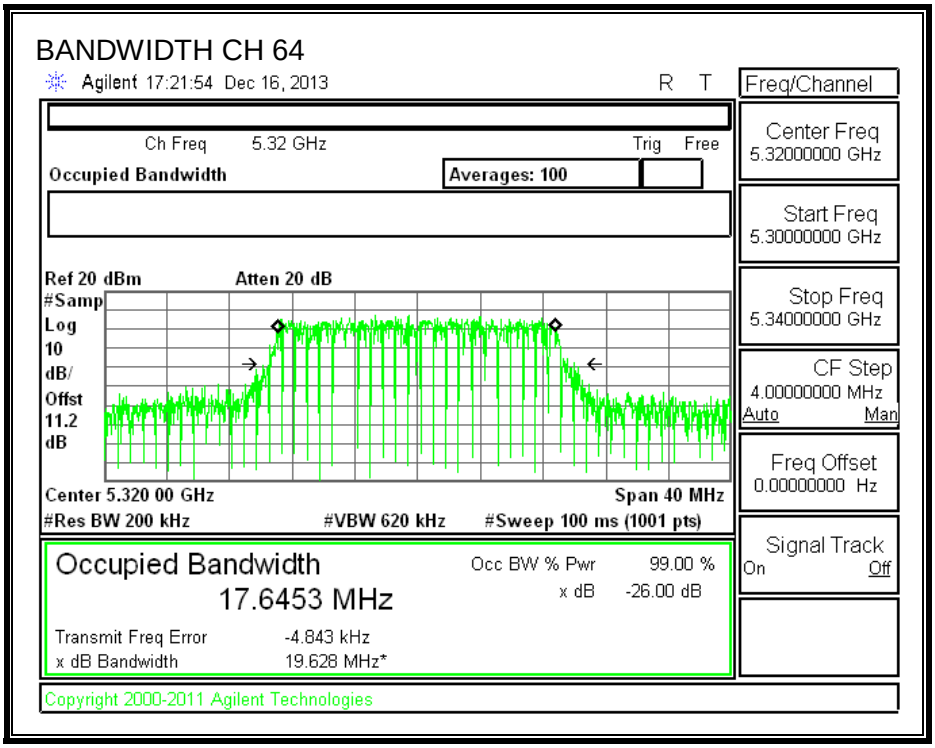
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

99% BANDWIDTH





This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .



This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

8.12.3. AVERAGE POWER

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

The transmitter output is connected to a power meter.

The cable assembly insertion loss of 11.19 dB (including 10 dB pad and 1.19 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

RESULTS

Channel	Frequency (MHz)	Power (dBm)
52	5260	20.05
60	5300	20.90
64	5320	19.96

This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

8.12.4. OUTPUT POWER AND PPSD

LIMITS

FCC §15.407 (a) (2)

For the band 5.25–5.35 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the peak power spectral density shall not exceed 11 dBm in any 1–MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

DIRECTIONAL ANTENNA GAIN

There is only one transmitter output therefore the directional gain is equal to the antenna gain.

Antenna Gain (dBi)
2.40

This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

RESULTS

Bandwidth and Antenna Gain

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Min 99% BW (MHz)	Directional Gain (dBi)
52	5260	20.6	17.6	2.40
60	5300	20.6	17.7	2.40
64	5320	20.6	17.6	2.40

Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Power Limit (dBm)	FCC PPSD Limit (dBm)	IC PSD Limit (dBm)	PPSD Limit (dBm)
52	5260	24.00	23.46	29.46	23.46	11.00	11.00	11.00
60	5300	24.00	23.47	29.47	23.47	11.00	11.00	11.00
64	5320	24.00	23.47	29.47	23.47	11.00	11.00	11.00

Duty Cycle CF (dB)	0.22	**Included in Calculations of Corr'd Power & PPSD**

Output Power Results

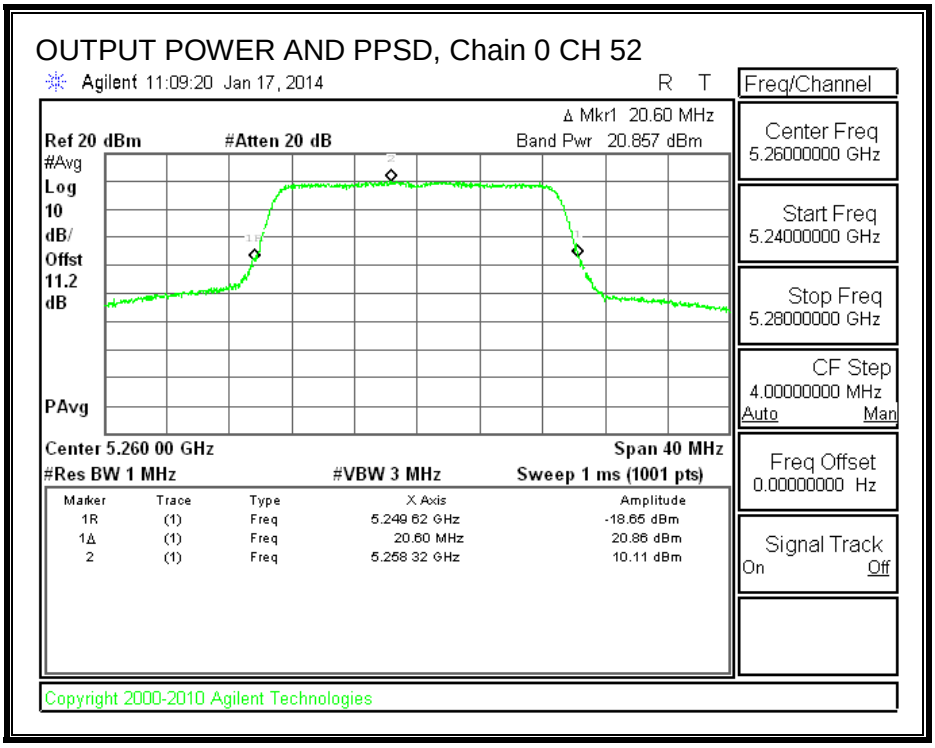
Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
52	5260	20.86	21.08	23.46	-2.39
60	5300	21.60	21.82	23.47	-1.65
64	5320	20.67	20.89	23.47	-2.57

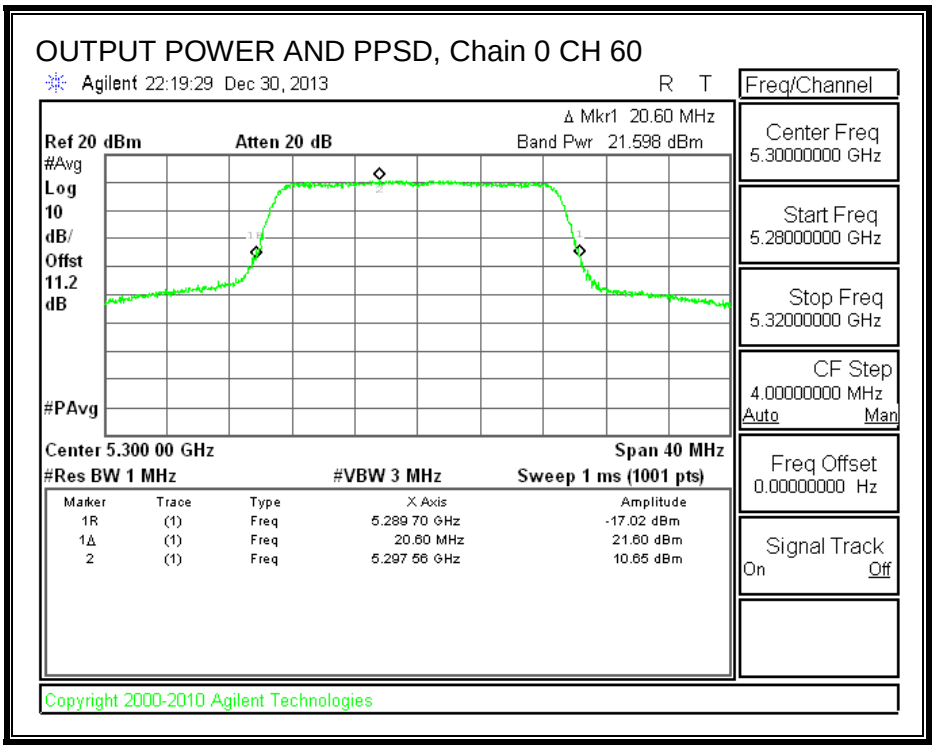
PPSD Results

Channel	Frequency (MHz)	Chain 0 Meas PPSD (dBm)	Total Corr'd PPSD (dBm)	PPSD Limit (dBm)	PPSD Margin (dB)
52	5260	10.11	10.33	11.00	-0.67
60	5300	10.65	10.87	11.00	-0.13
64	5320	9.18	9.40	11.00	-1.60

This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

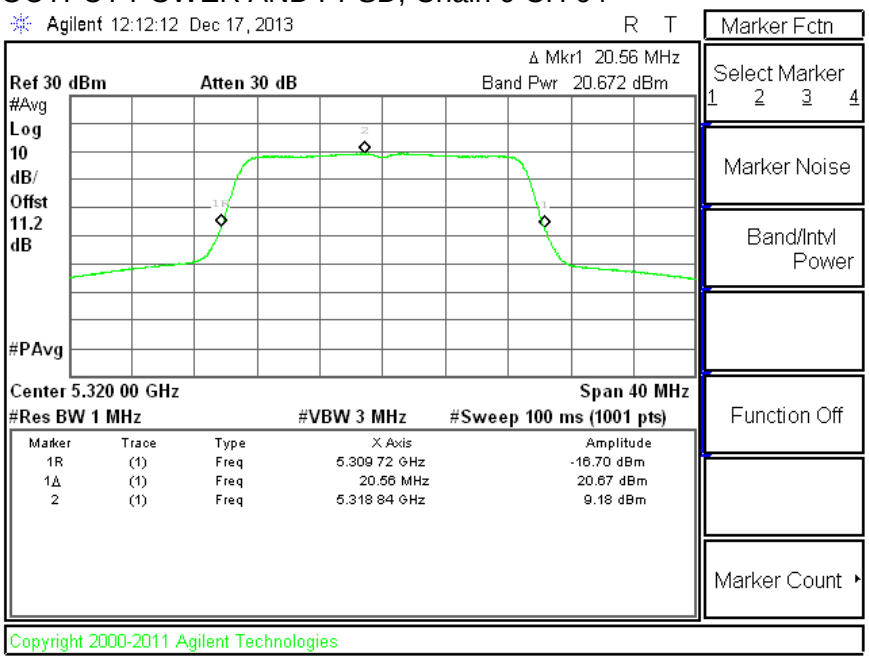
OUTPUT POWER AND PPSD, Chain 0





This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

OUTPUT POWER AND PPSD, Chain 0 CH 64



This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

8.13. 802.11n HT20 3TX CDD MODE IN THE 5.3 GHz BAND

8.13.1. 26 dB BANDWIDTH

LIMITS

None; for reporting purposes only.

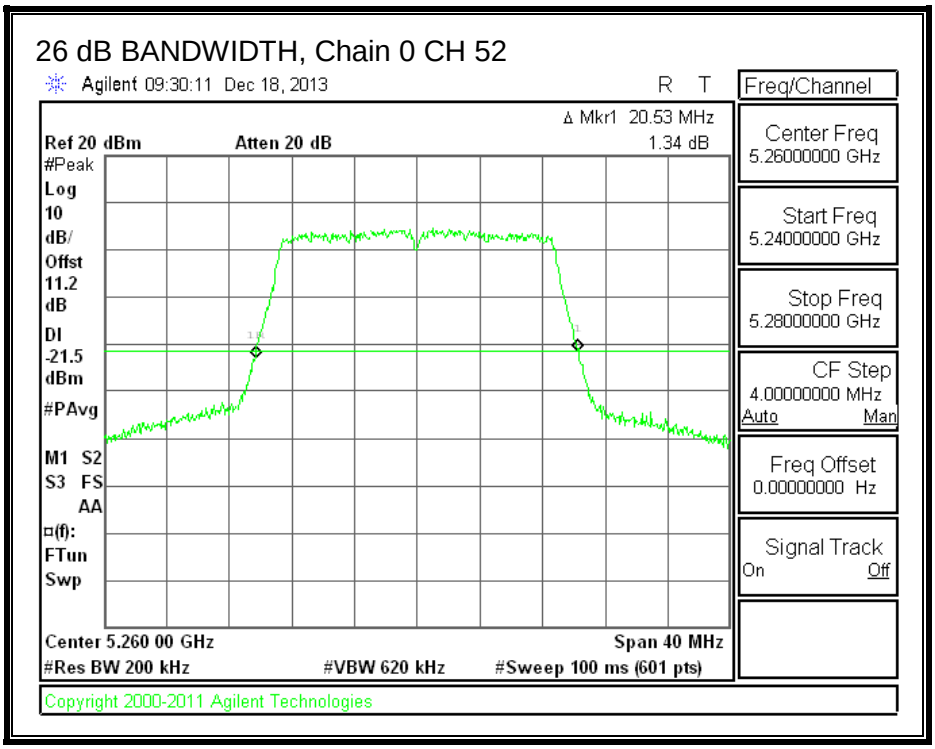
RESULTS

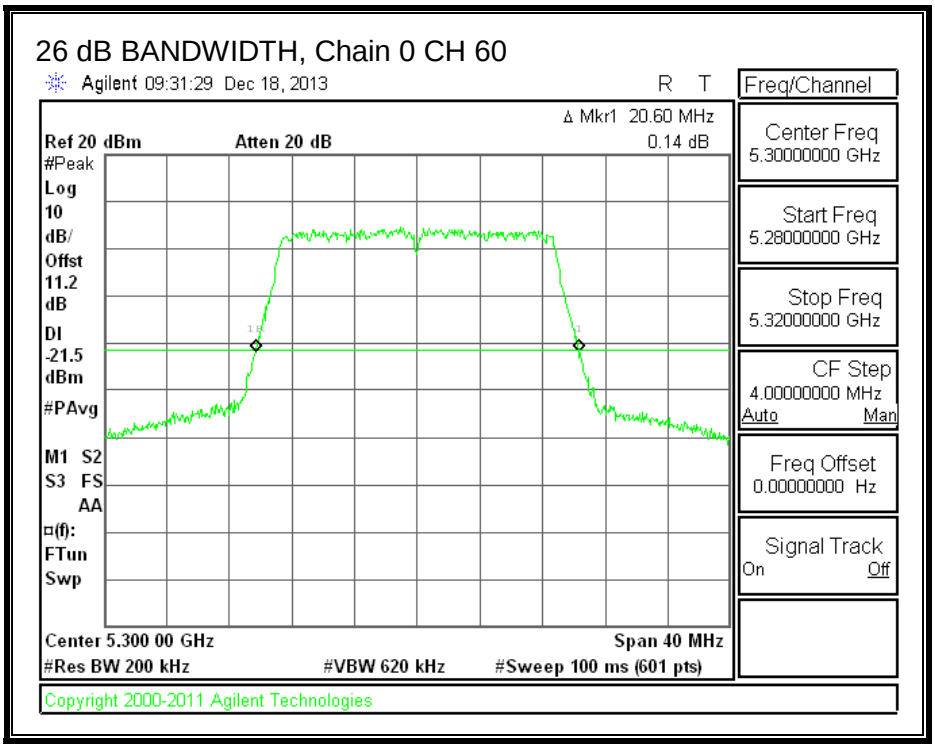
Channel	Frequency (MHz)	26 dB BW Chain 0 (MHz)	26 dB BW Chain 1 (MHz)	26 dB BW Chain 2 (MHz)
52	5260	20.53	20.40	20.53
60	5300	20.60	20.60	20.60
64	5320	20.53	20.53	20.60

This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

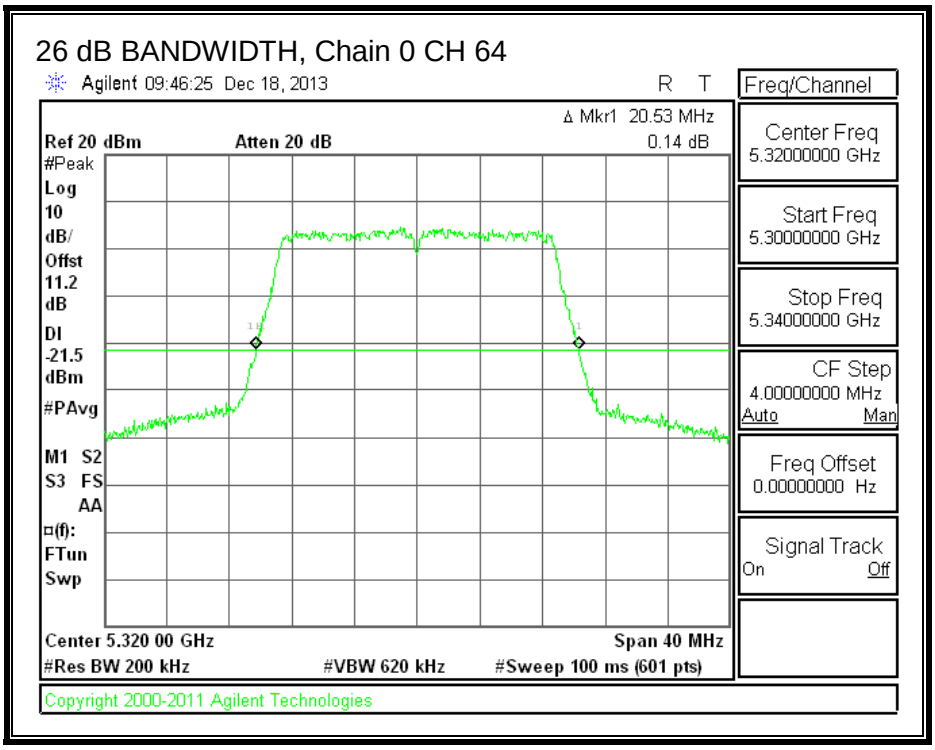
26 dB BANDWIDTH

26 dB BANDWIDTH, Chain 0

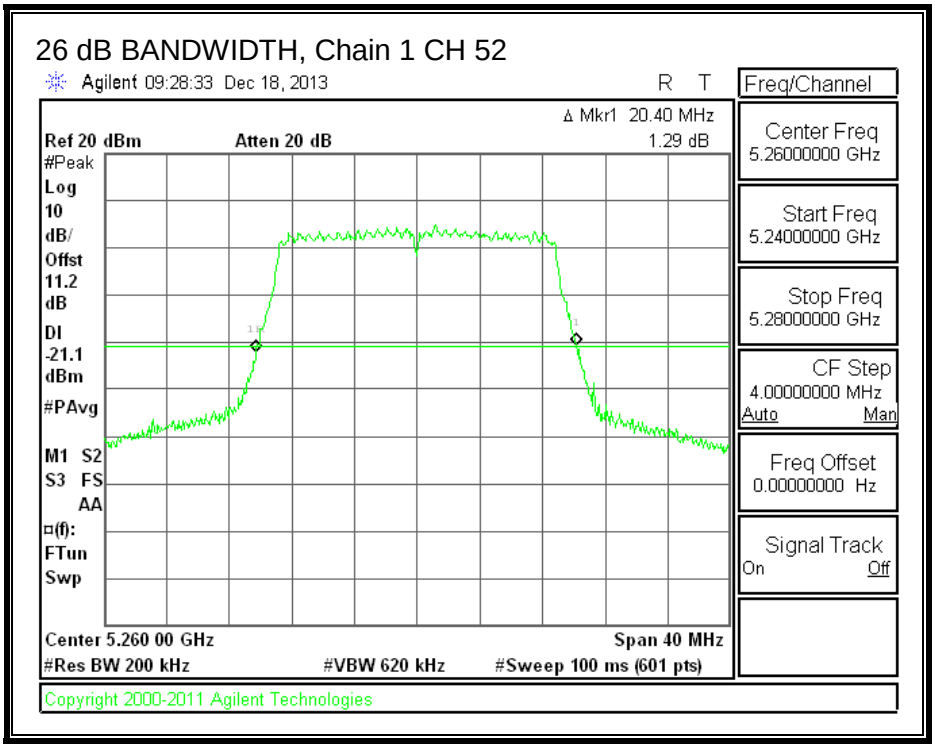




This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

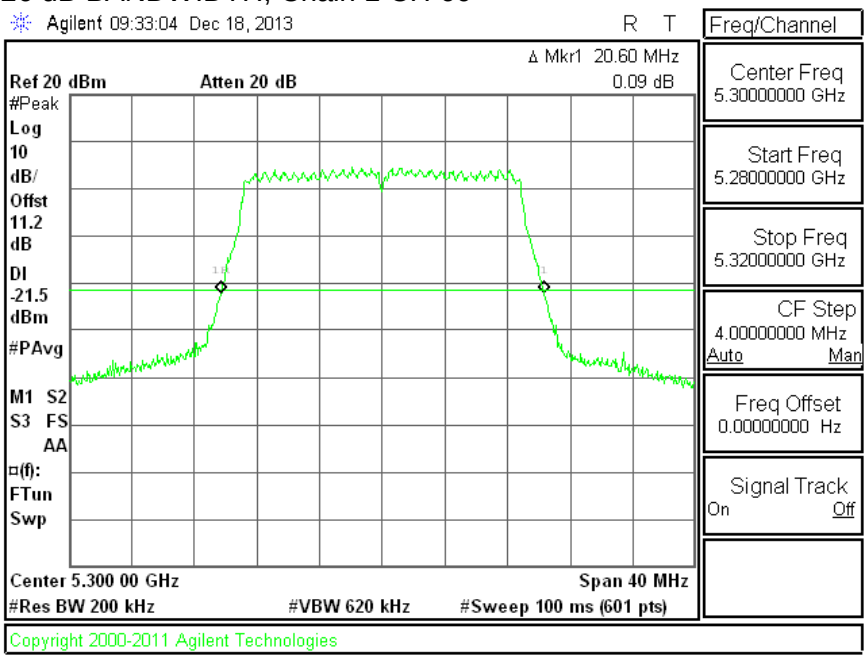


26 dB BANDWIDTH, Chain 1

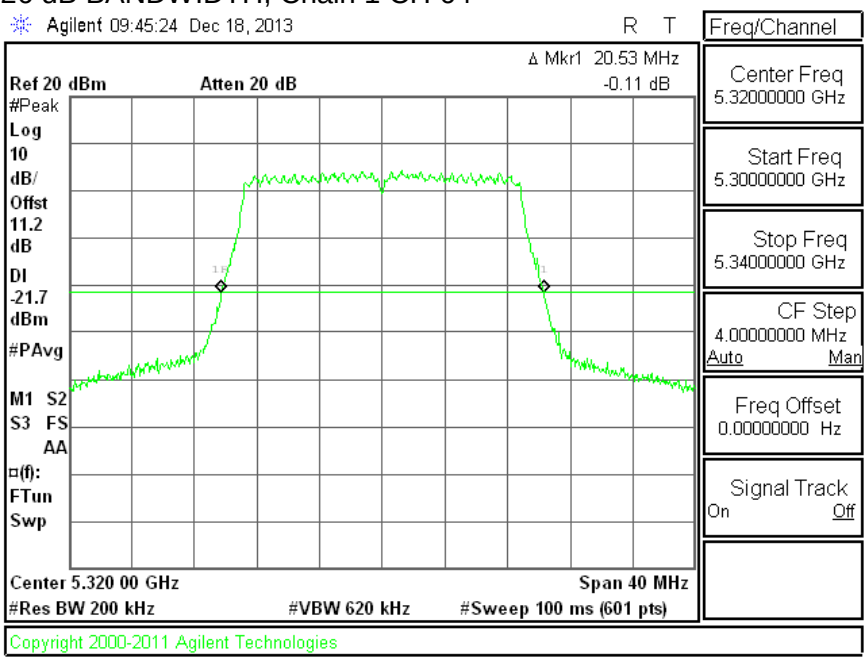


This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

26 dB BANDWIDTH, Chain 1 CH 60

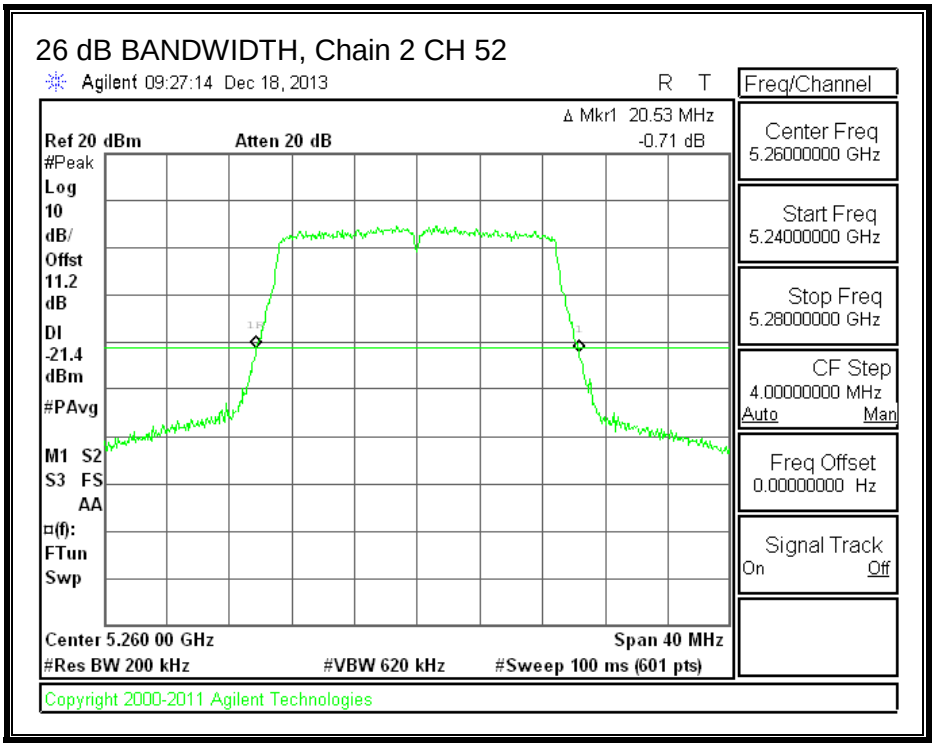


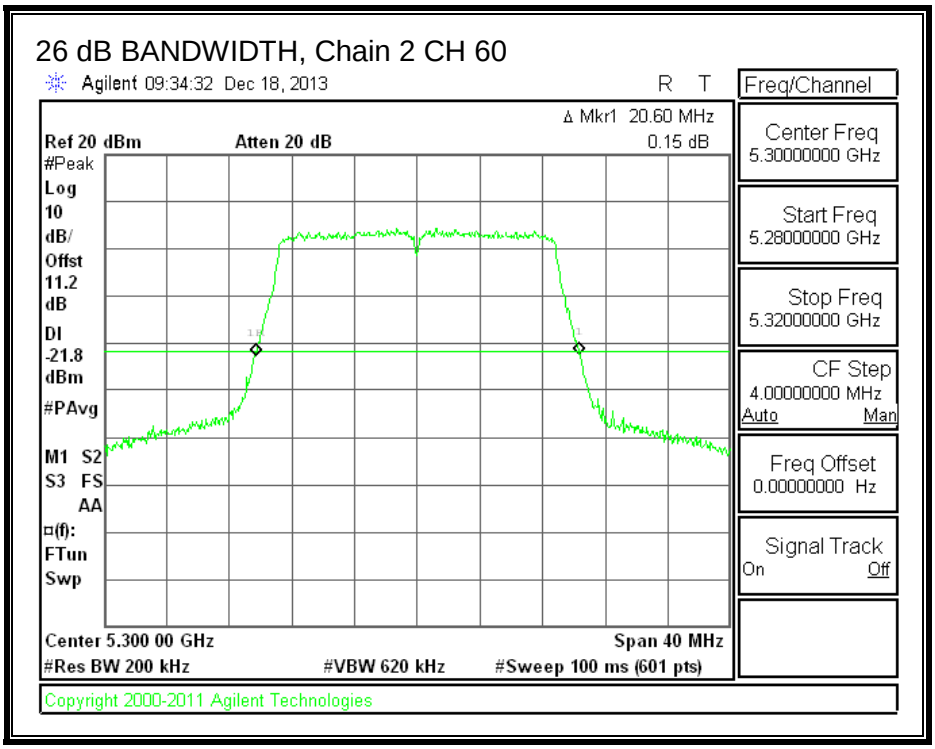
26 dB BANDWIDTH, Chain 1 CH 64



This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

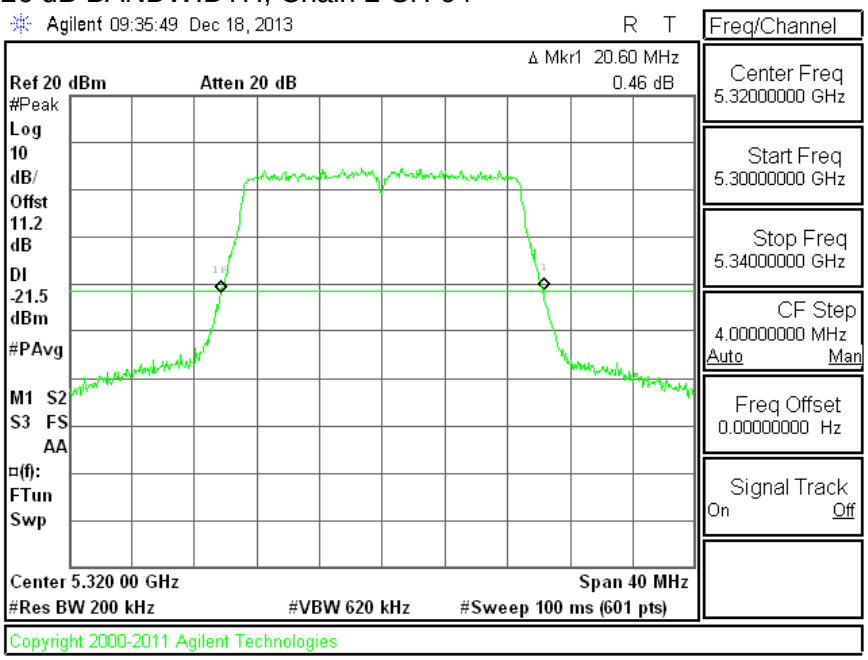
26 dB BANDWIDTH, Chain 2





This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

26 dB BANDWIDTH, Chain 2 CH 64



This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

8.13.2. 99% BANDWIDTH

LIMITS

None; for reporting purposes only.

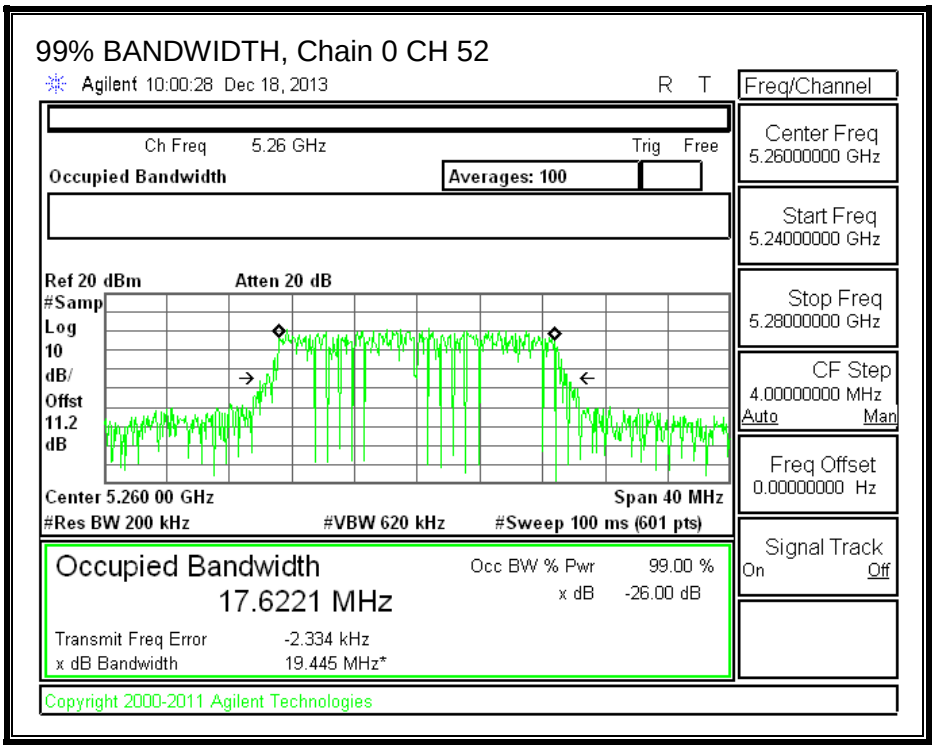
RESULTS

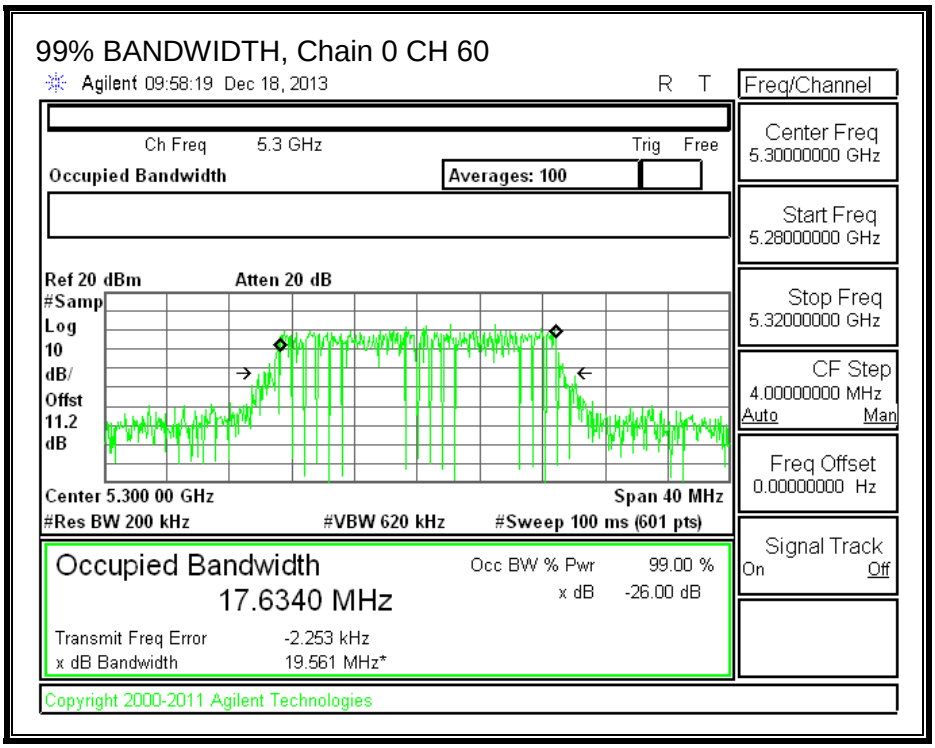
Channel	Frequency (MHz)	99% BW Chain 0 (MHz)	99% BW Chain 1 (MHz)	99% BW Chain 2 (MHz)
52	5260	17.6221	17.6195	17.6252
60	5300	17.6340	17.6435	17.6368
64	5320	17.6309	17.6391	17.6283

This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

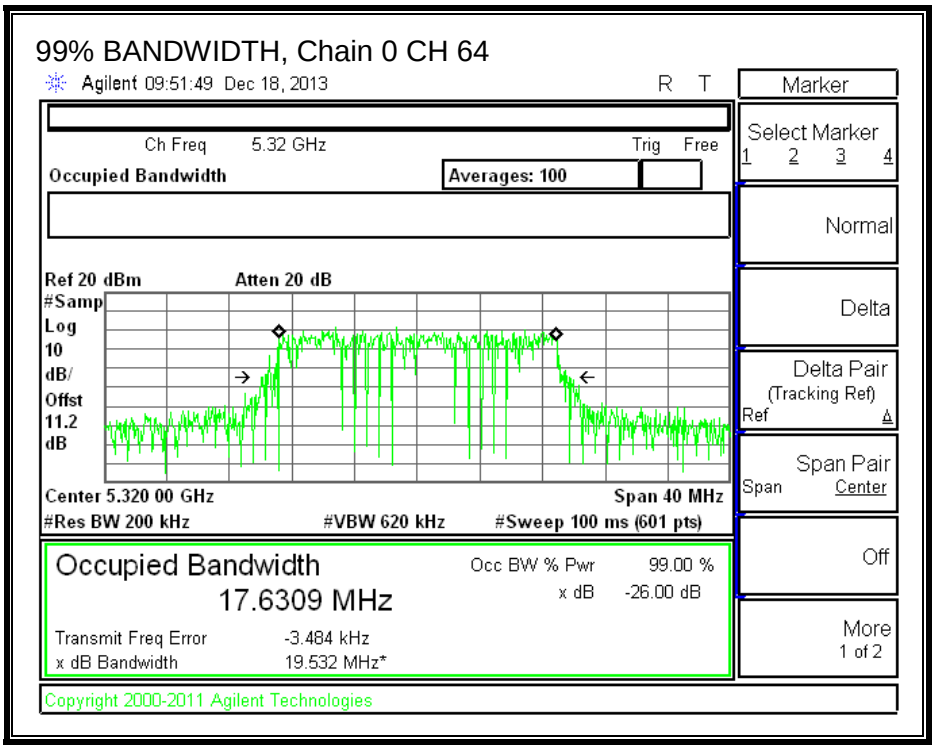
99% BANDWIDTH

99% BANDWIDTH, Chain 0

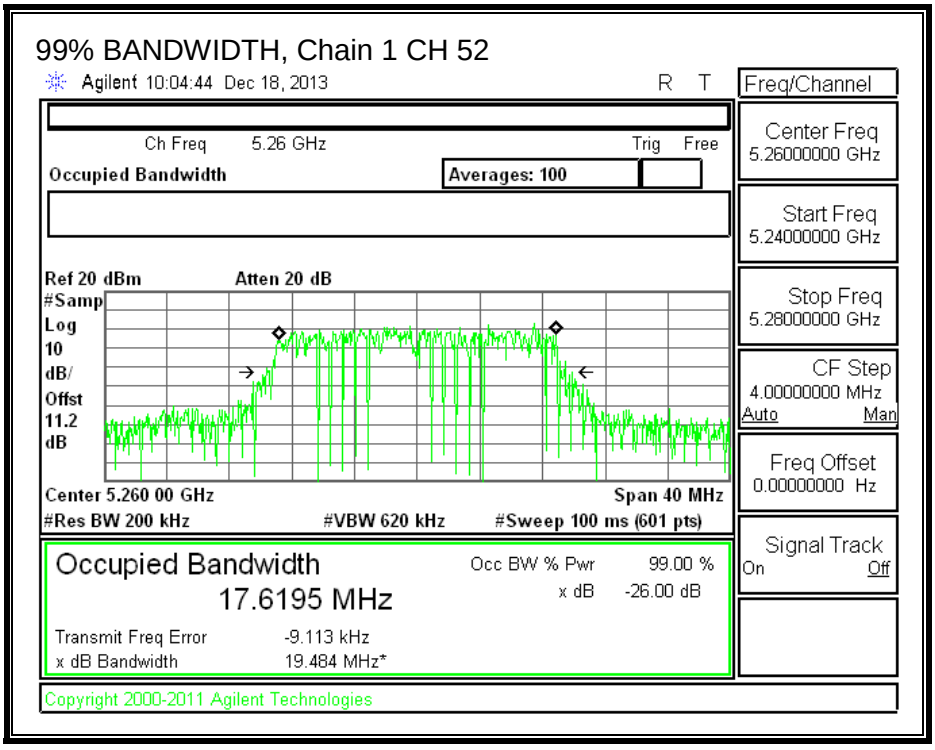




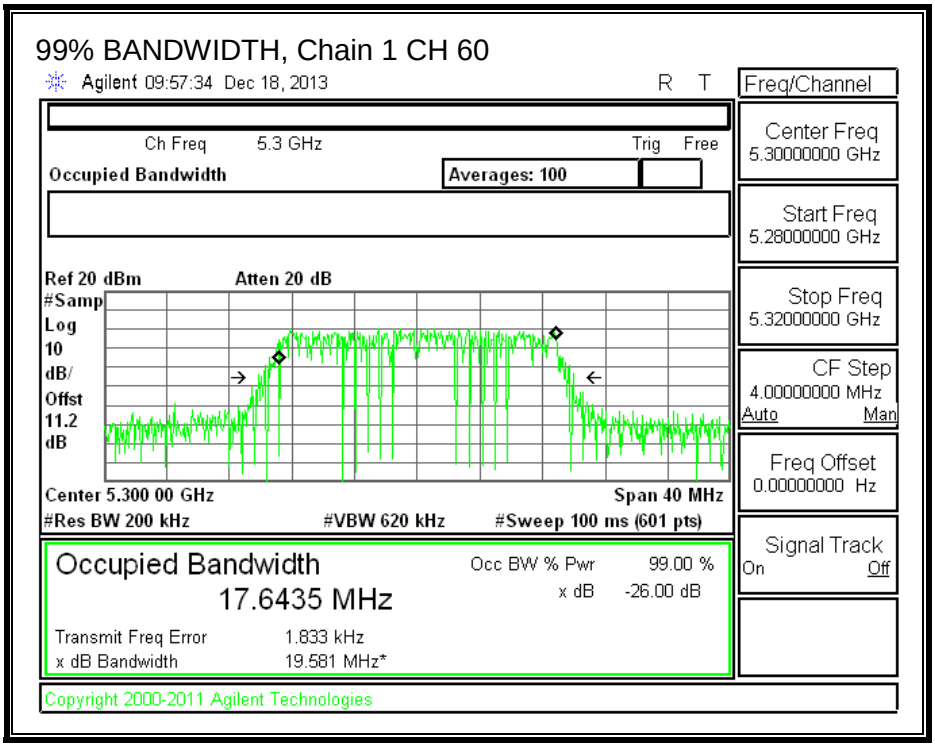
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

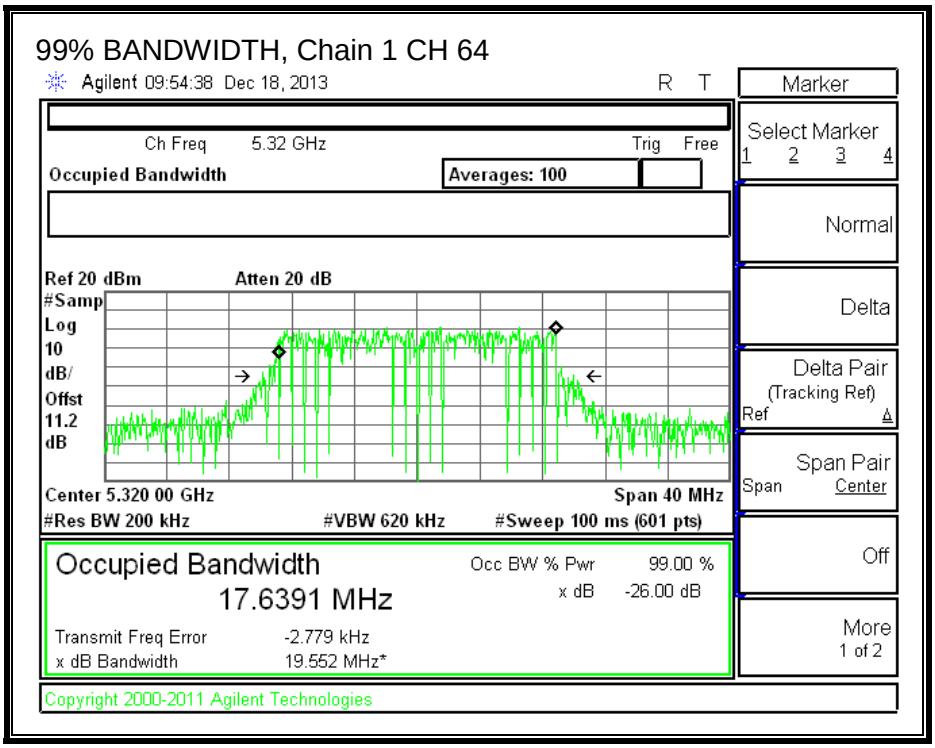


99% BANDWIDTH, Chain 1



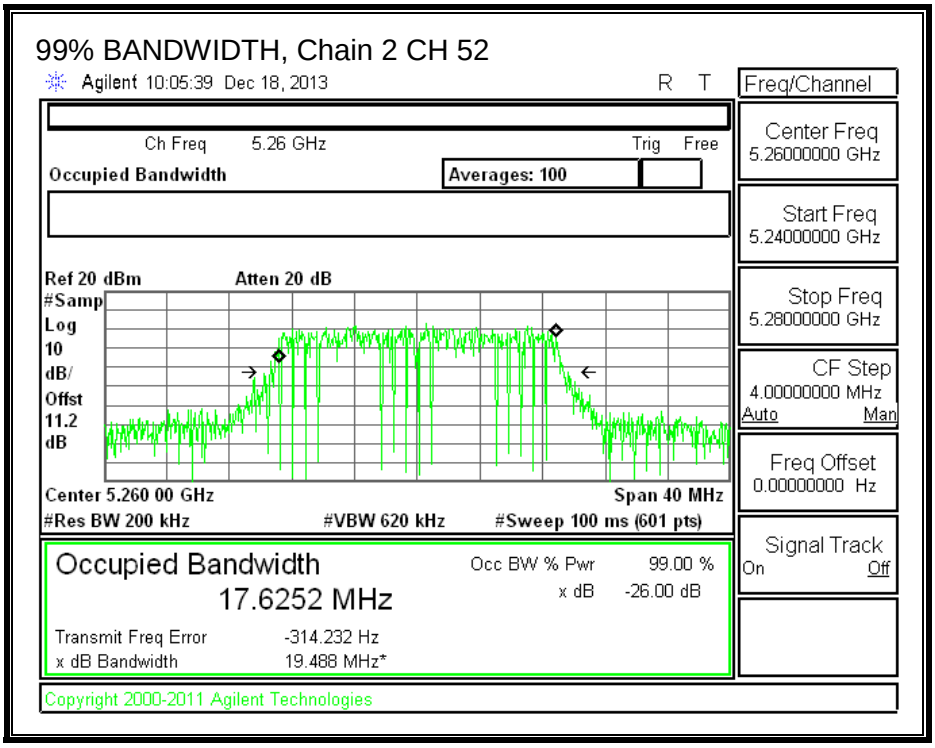
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

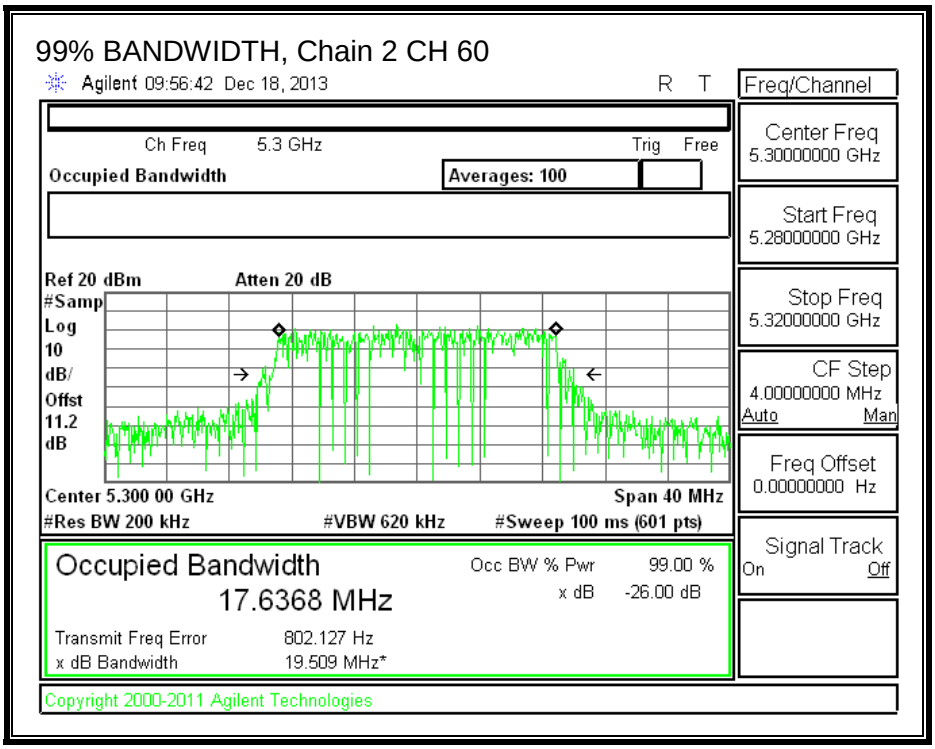




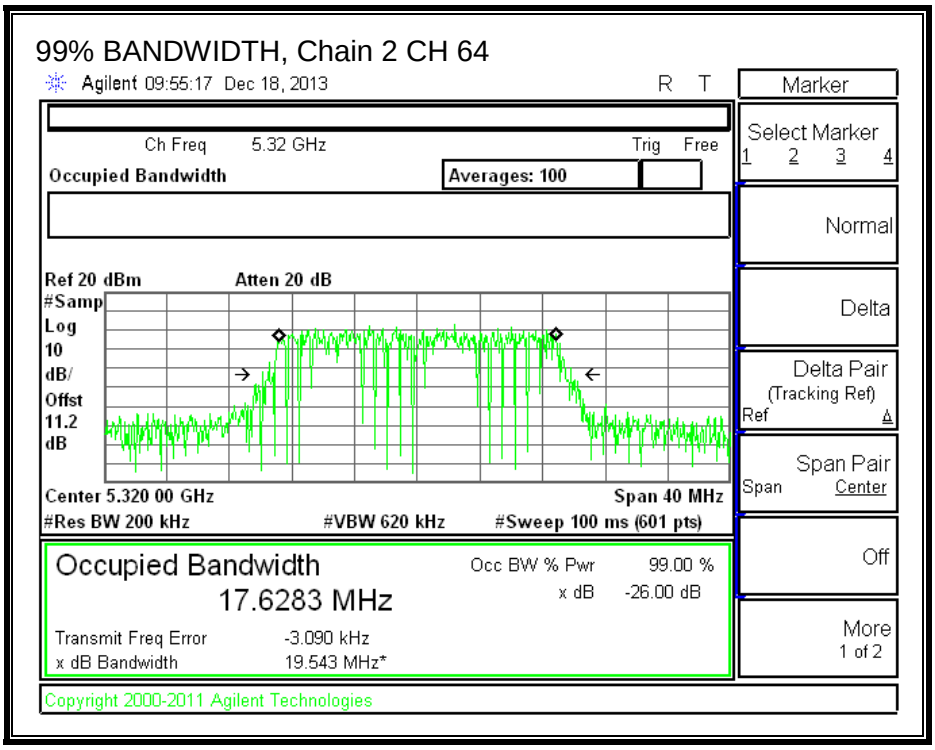
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

99% BANDWIDTH, Chain 2





This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .



This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

8.13.3. AVERAGE POWER

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

The transmitter output is connected to a power meter.

The cable assembly insertion loss of 11.19 dB (including 10 dB pad and 1.19 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

RESULTS

Average Power Results

Channel	Frequency (MHz)	Chain 0 Power (dBm)	Chain 1 Power (dBm)	Chain 2 Power (dBm)	Total Power (dBm)
52	5260	13.87	14.26	14.33	18.93
60	5300	14.83	15.05	15.36	19.86
64	5320	14.02	14.24	14.25	18.94

This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

8.13.4. OUTPUT POWER AND PPSD

LIMITS

FCC §15.407 (a) (2)

For the band 5.25–5.35 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the peak power spectral density shall not exceed 11 dBm in any 1–MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

DIRECTIONAL ANTENNA GAIN

The TX chains are correlated and the antenna gain is the same for each chain. The directional gain is:

Antenna Gain (dBi)	10 * Log (3 chains) (dB)	Correlated Chains Directional Gain (dBi)
2.40	4.77	7.17

This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

RESULTS

Bandwidth and Antenna Gain

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Min 99% BW (MHz)	Directional Gain for Power (dBi)	Directional Gain for PPSD (dBi)
52	5260	20.40	17.6195	2.40	7.17
60	5300	20.60	17.6340	2.40	7.17
64	5320	20.53	17.6283	2.40	7.17

Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Power Limit (dBm)	FCC PPSD Limit (dBm)	IC PSD Limit (dBm)	PPSD Limit (dBm)
52	5260	24.00	23.46	29.46	23.46	9.83	11.00	9.83
60	5300	24.00	23.46	29.46	23.46	9.83	11.00	9.83
64	5320	24.00	23.46	29.46	23.46	9.83	11.00	9.83

Duty Cycle CF (dB)	0.22	**Included in Calculations of Corr'd Power & PPSD**

Output Power Results

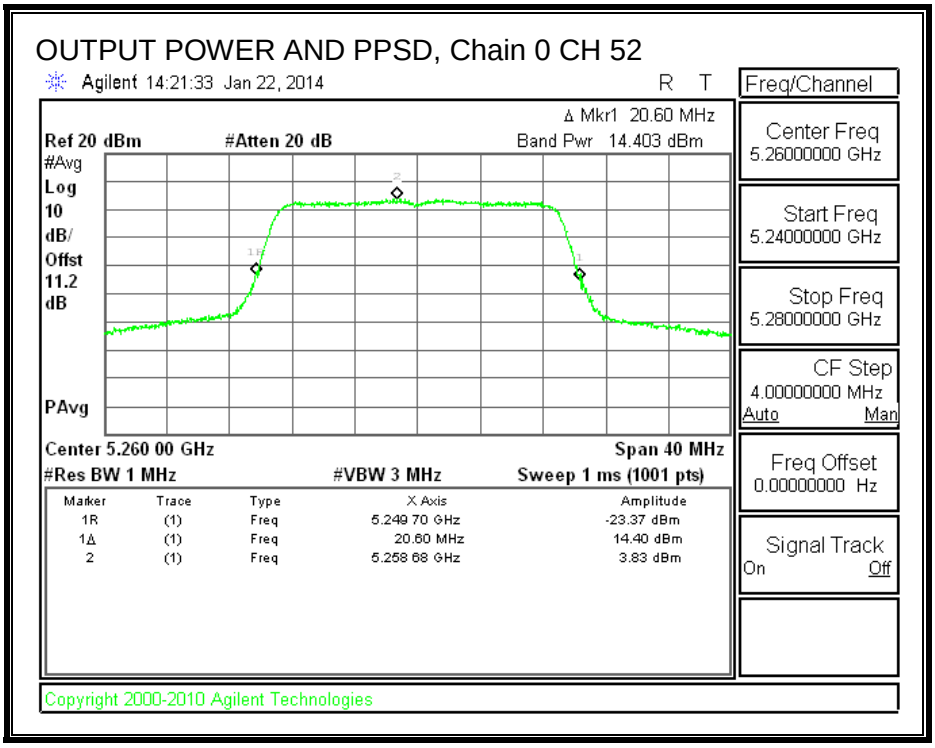
Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Chain 2 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
52	5260	14.40	14.55	14.75	19.56	23.46	-3.90
60	5300	15.51	15.58	16.01	20.70	23.46	-2.77
64	5320	14.67	15.04	15.14	19.95	23.46	-3.52

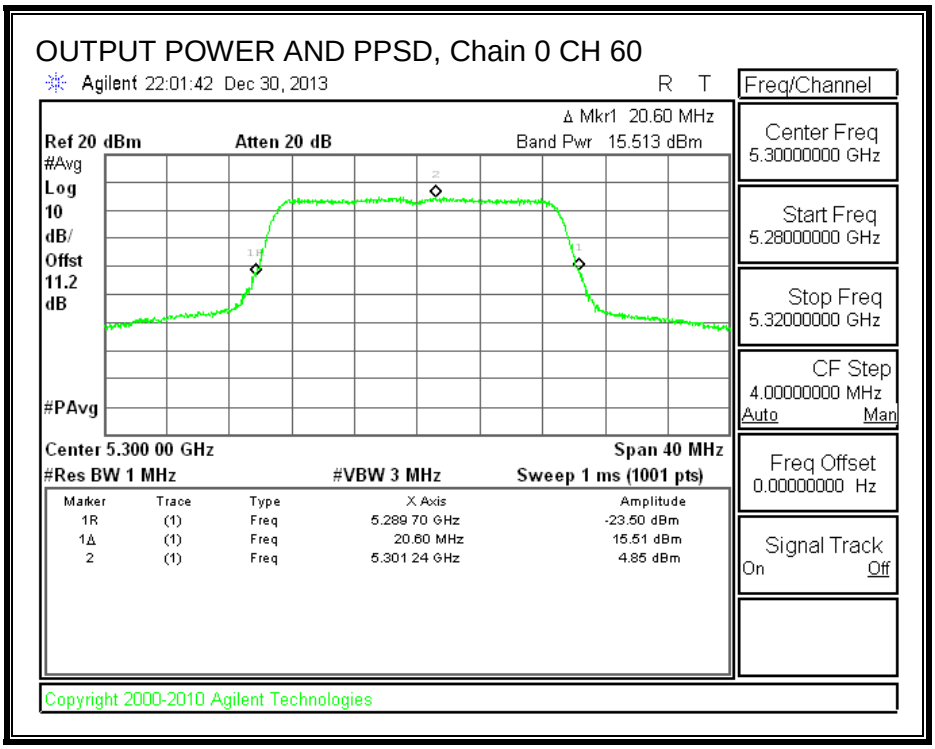
PPSD Results

Channel	Frequency (MHz)	Chain 0 Meas PPSD (dBm)	Chain 1 Meas PPSD (dBm)	Chain 2 Meas PPSD (dBm)	Total Corr'd PPSD (dBm)	PPSD Limit (dBm)	PPSD Margin (dB)
52	5260	3.83	4.03	4.27	9.04	9.83	-0.79
60	5300	4.85	4.76	4.74	9.78	9.83	-0.05
64	5320	3.01	3.46	3.59	8.35	9.83	-1.48

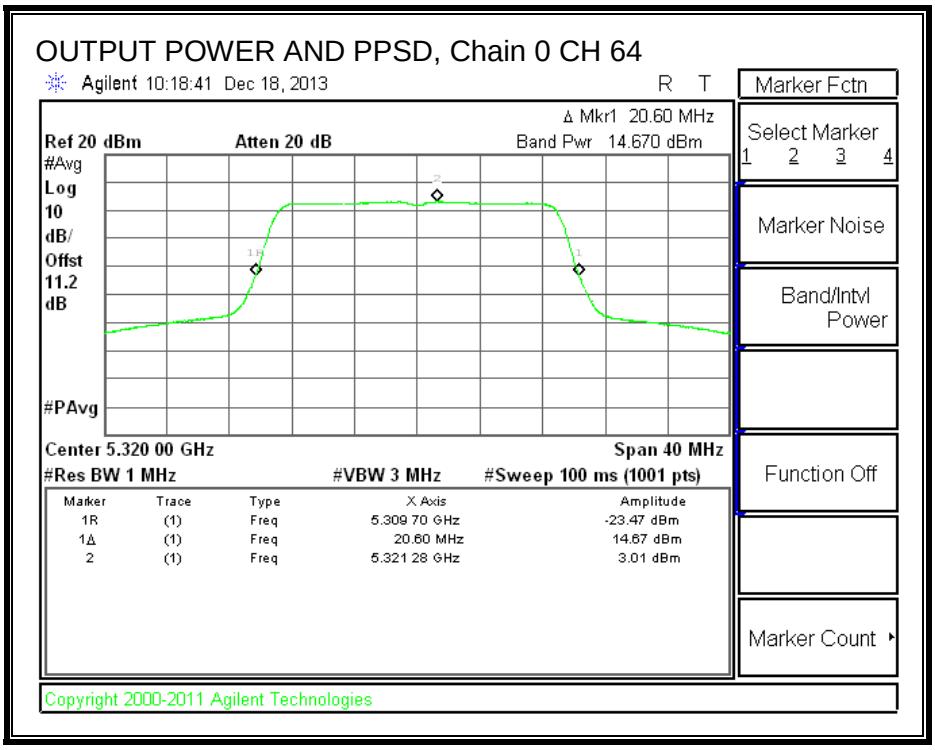
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

OUTPUT POWER AND PPSD, Chain 0

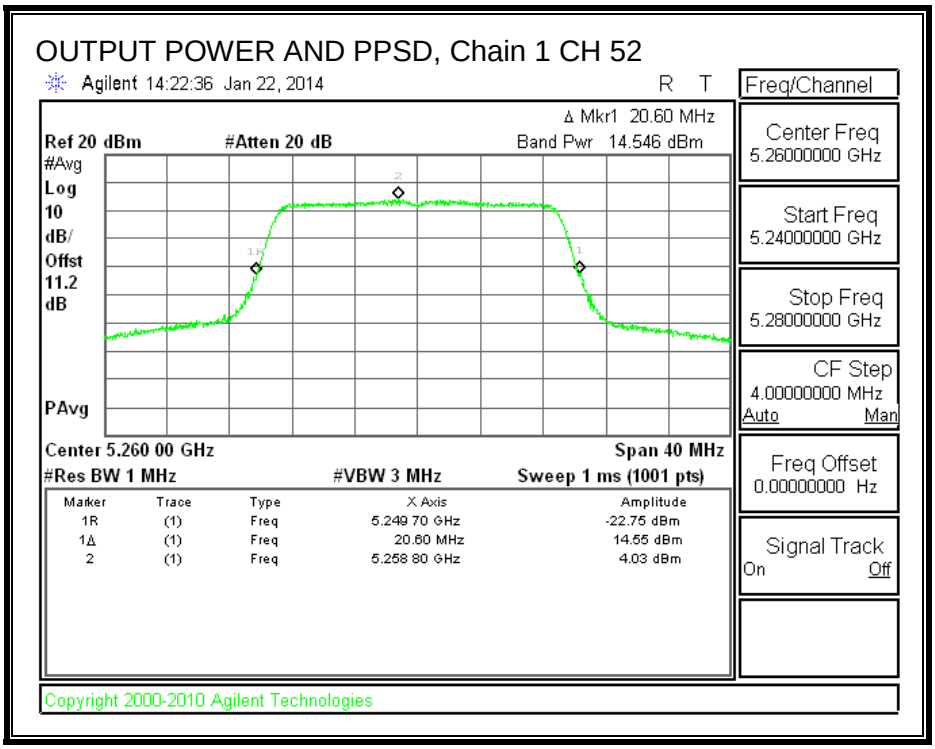




This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

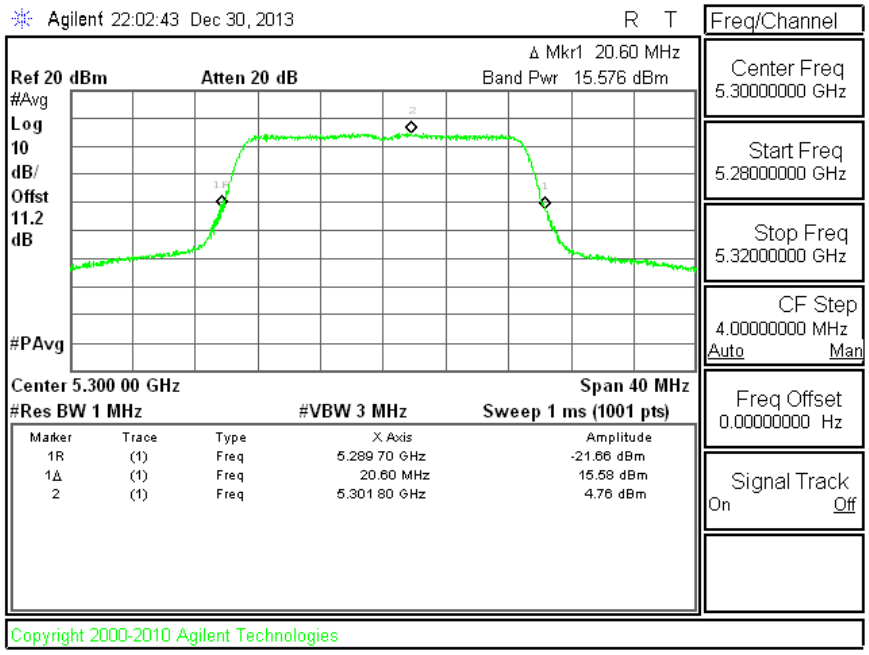


OUTPUT POWER AND PPSD, Chain 1

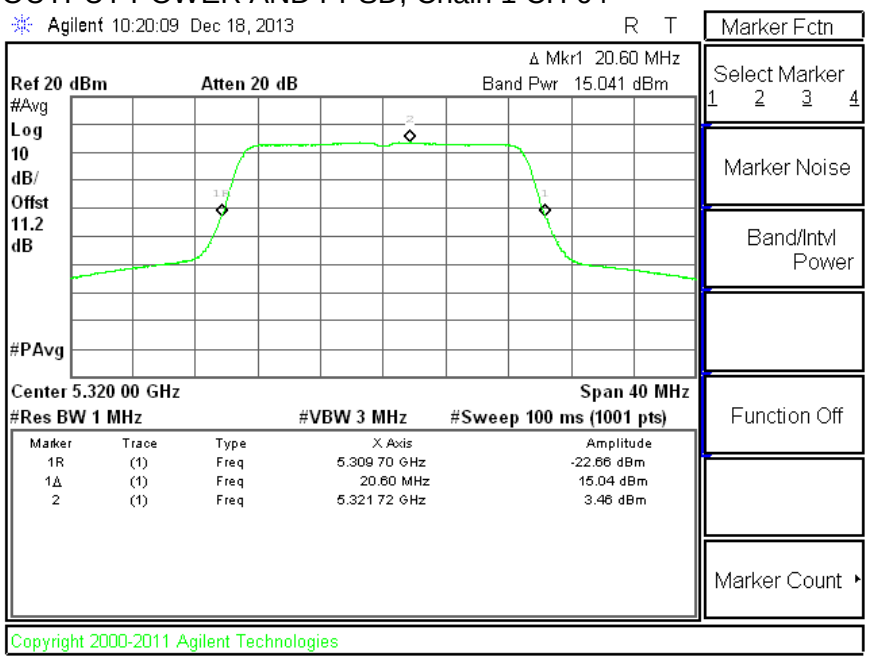


This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

OUTPUT POWER AND PPSD, Chain 1 CH 60

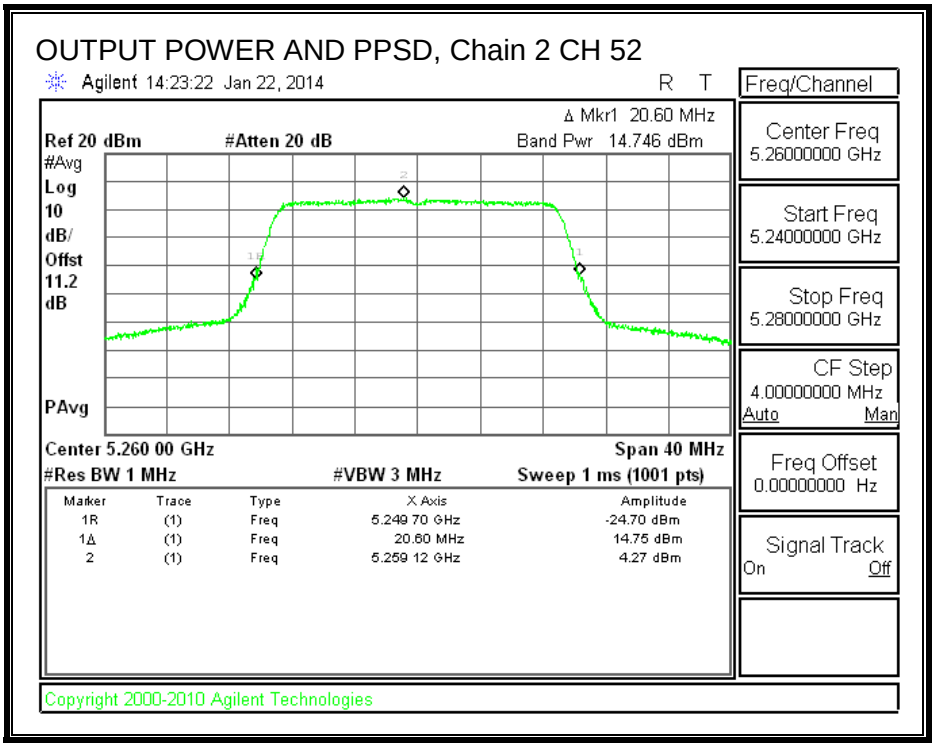


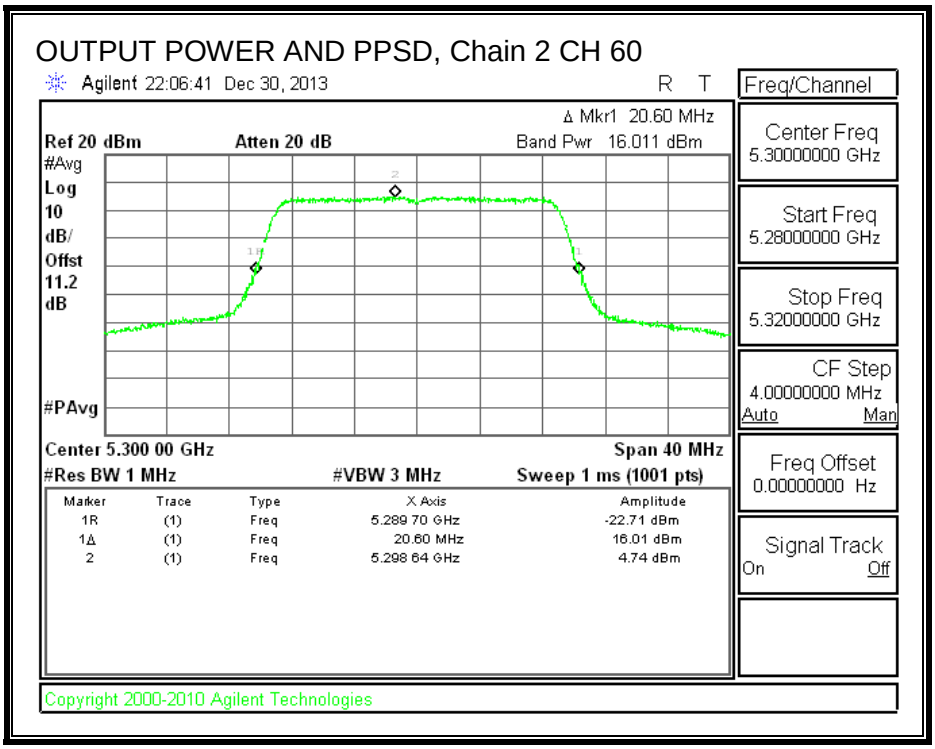
OUTPUT POWER AND PPSD, Chain 1 CH 64



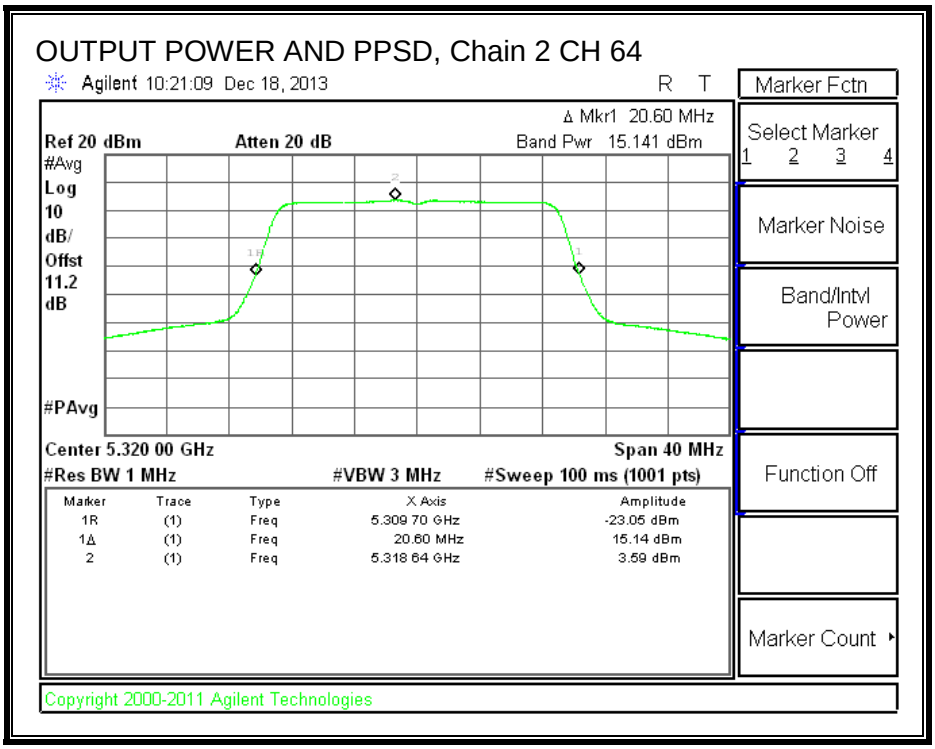
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

OUTPUT POWER AND PPSD, Chain 2





This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .



This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

8.14. 802.11n HT20 3TX SDM MODE IN THE 5.3 GHz BAND

8.14.1. 26 dB BANDWIDTH

LIMITS

None; for reporting purposes only.

RESULTS

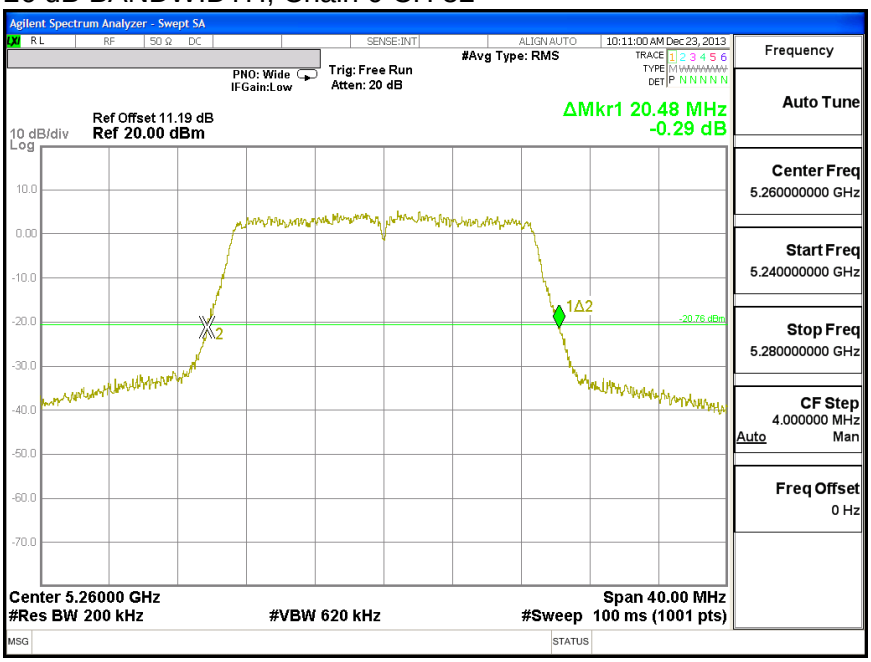
Channel	Frequency (MHz)	26 dB BW Chain 0 (MHz)	26 dB BW Chain 1 (MHz)	26 dB BW Chain 2 (MHz)
52	5260	20.48	20.44	20.36
60	5300	20.48	20.44	20.40
64	5320	20.56	20.44	20.40

This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

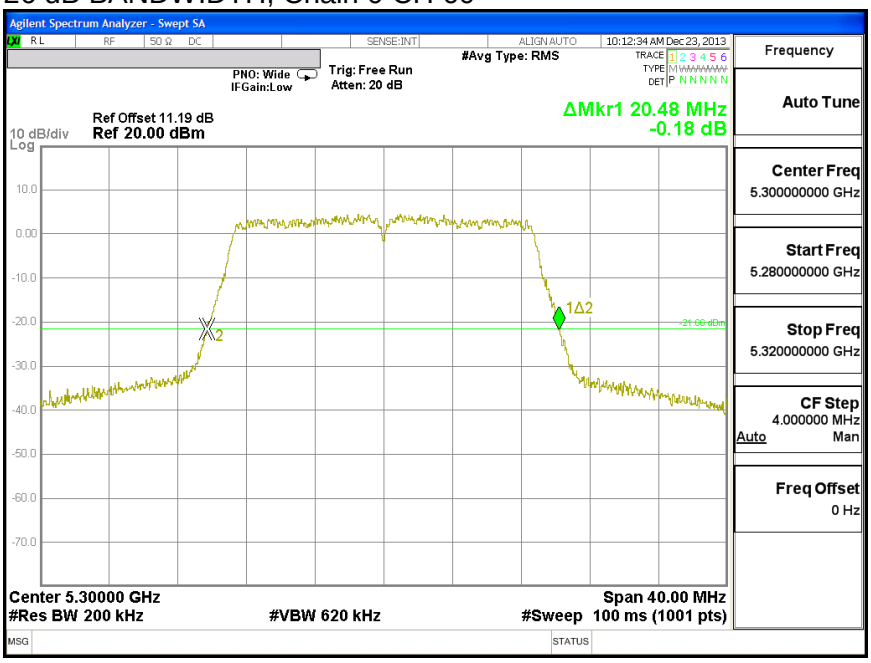
26 dB BANDWIDTH

26 dB BANDWIDTH, Chain 0

26 dB BANDWIDTH, Chain 0 CH 52

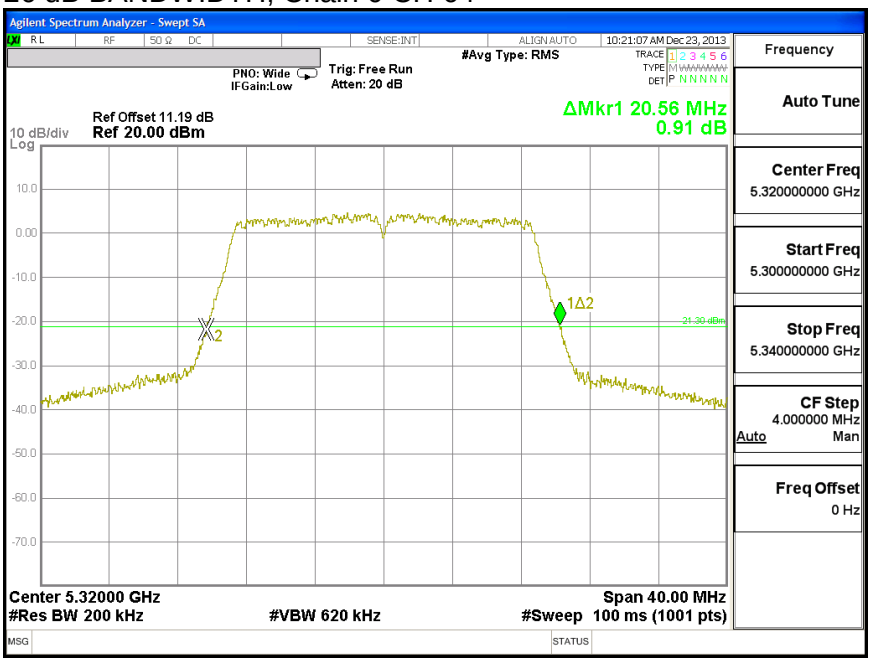


26 dB BANDWIDTH, Chain 0 CH 60



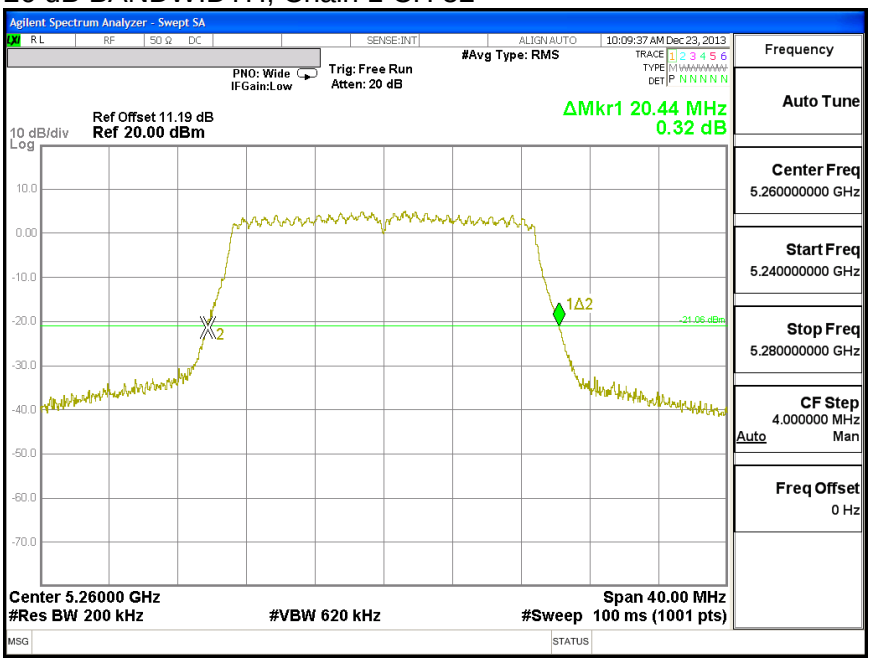
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

26 dB BANDWIDTH, Chain 0 CH 64



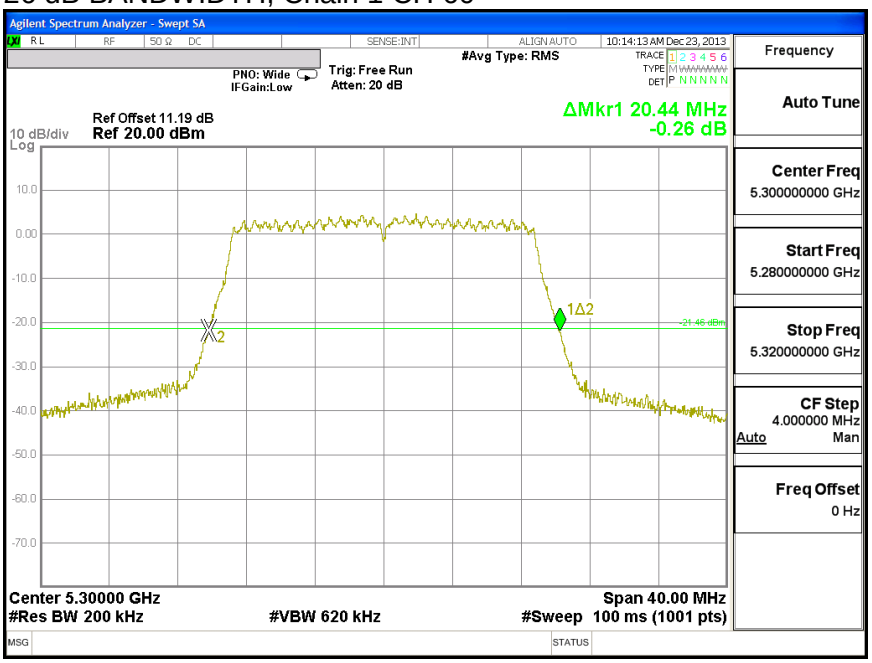
26 dB BANDWIDTH, Chain 1

26 dB BANDWIDTH, Chain 1 CH 52

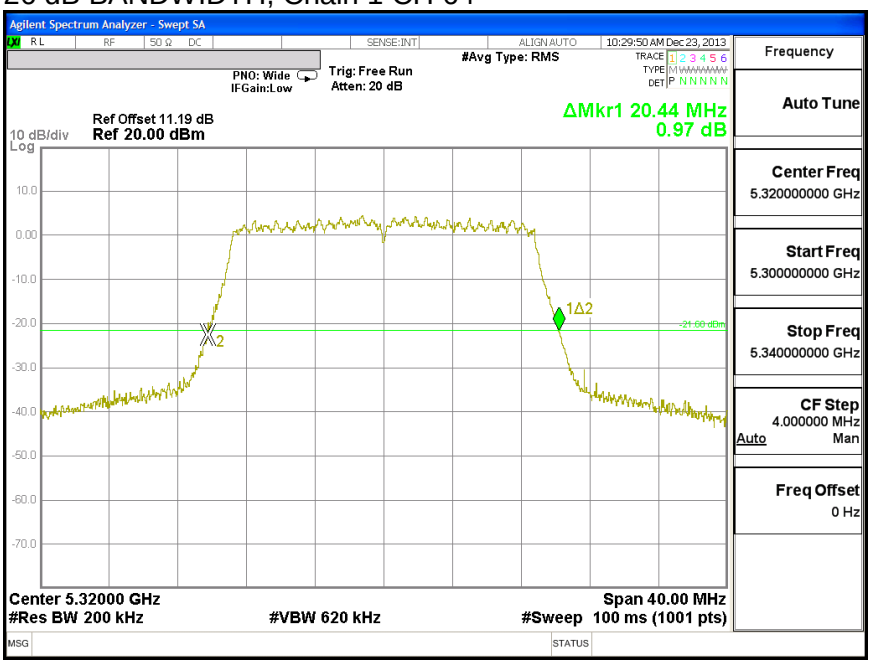


This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

26 dB BANDWIDTH, Chain 1 CH 60



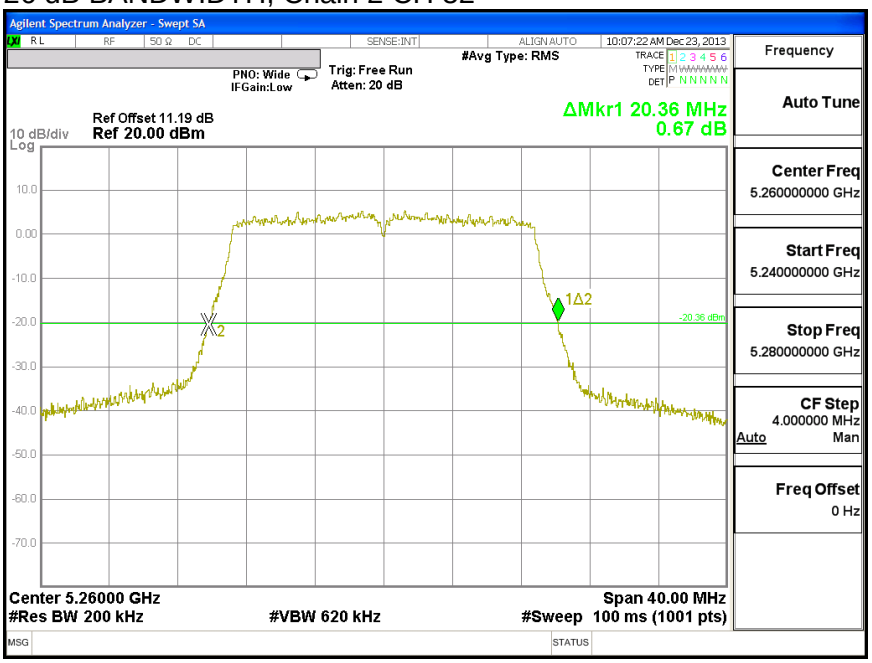
26 dB BANDWIDTH, Chain 1 CH 64



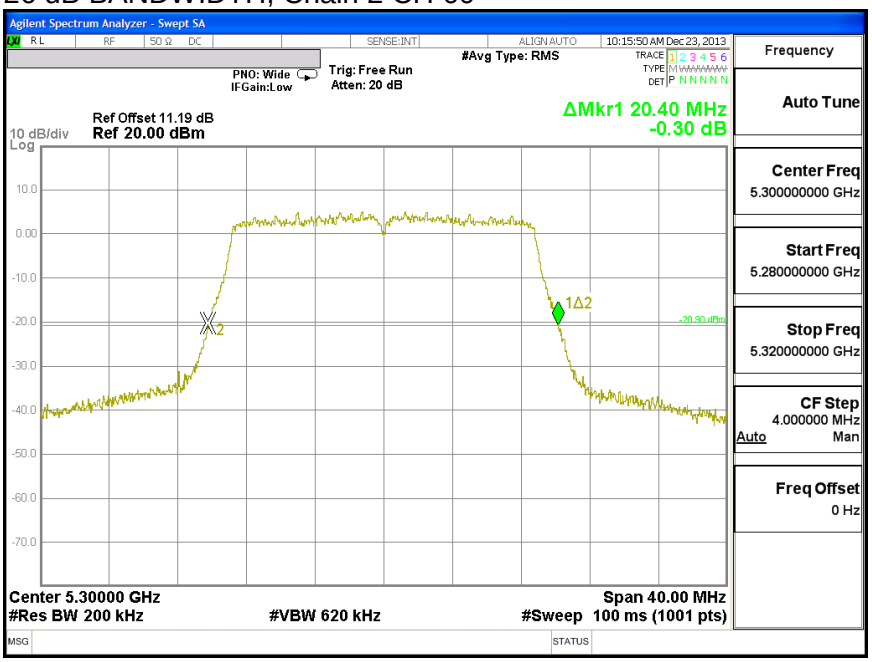
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

26 dB BANDWIDTH, Chain 2

26 dB BANDWIDTH, Chain 2 CH 52

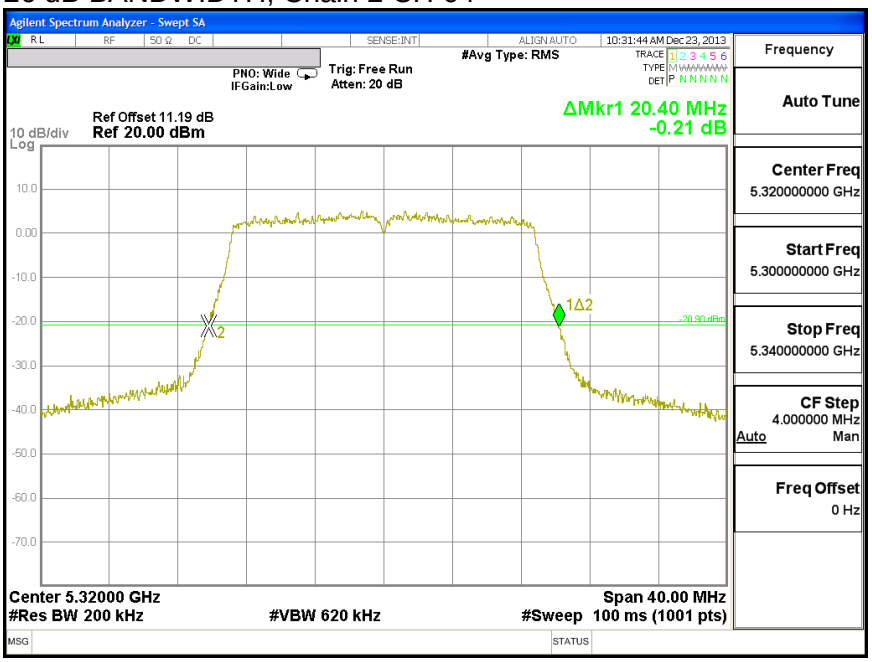


26 dB BANDWIDTH, Chain 2 CH 60



This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

26 dB BANDWIDTH, Chain 2 CH 64



This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

8.14.2. 99% BANDWIDTH

LIMITS

None; for reporting purposes only.

RESULTS

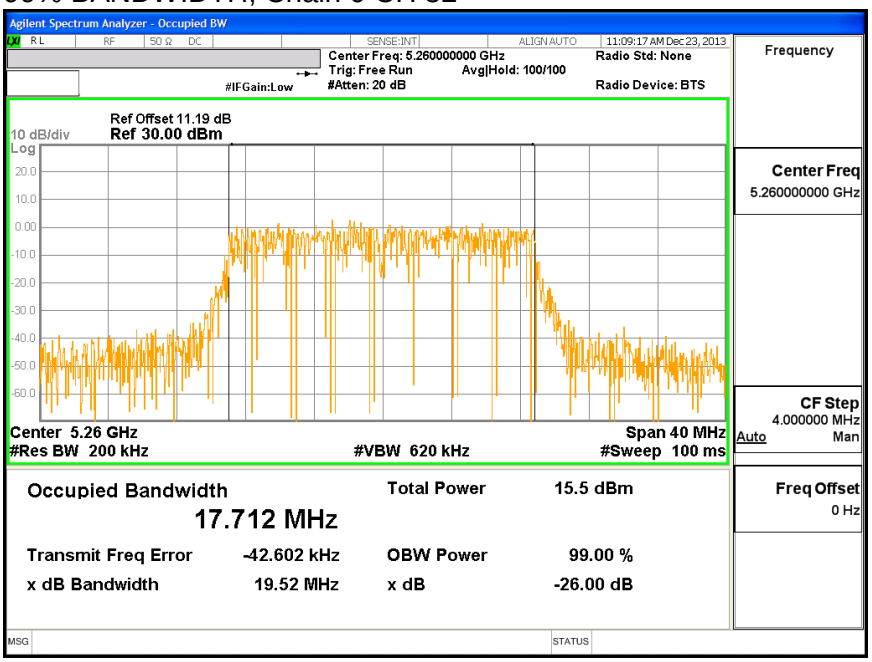
Channel	Frequency (MHz)	99% BW Chain 0 (MHz)	99% BW Chain 1 (MHz)	99% BW Chain 2 (MHz)
52	5260	17.712	17.672	17.761
60	5300	17.706	17.739	17.661
64	5320	17.671	17.653	17.683

This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

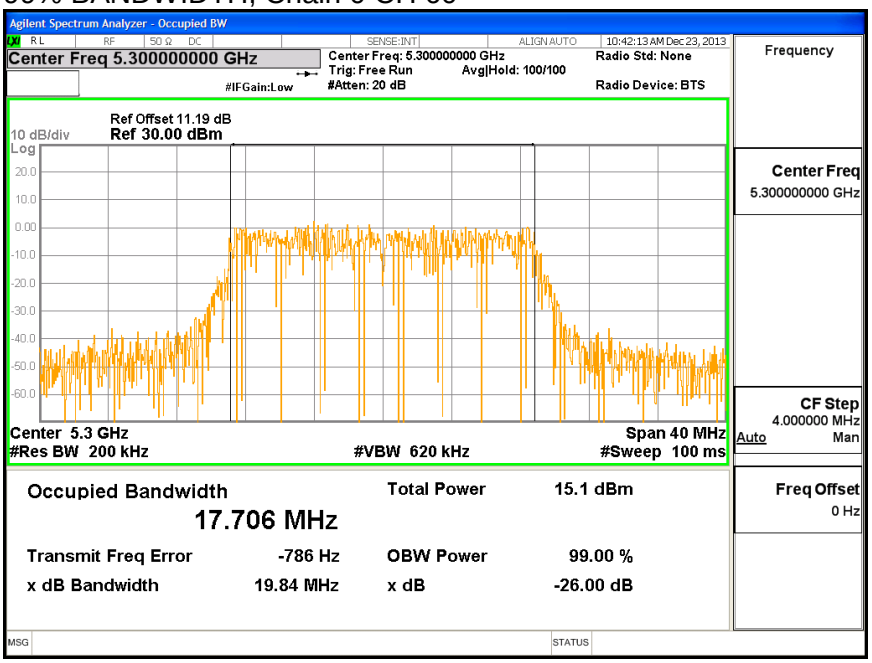
99% BANDWIDTH

99% BANDWIDTH, Chain 0

99% BANDWIDTH, Chain 0 CH 52

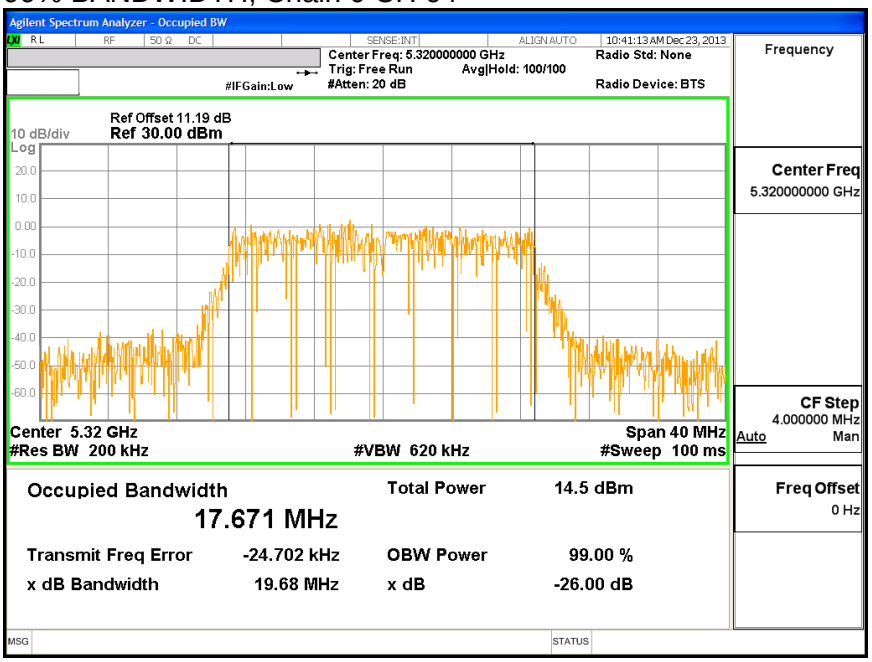


99% BANDWIDTH, Chain 0 CH 60



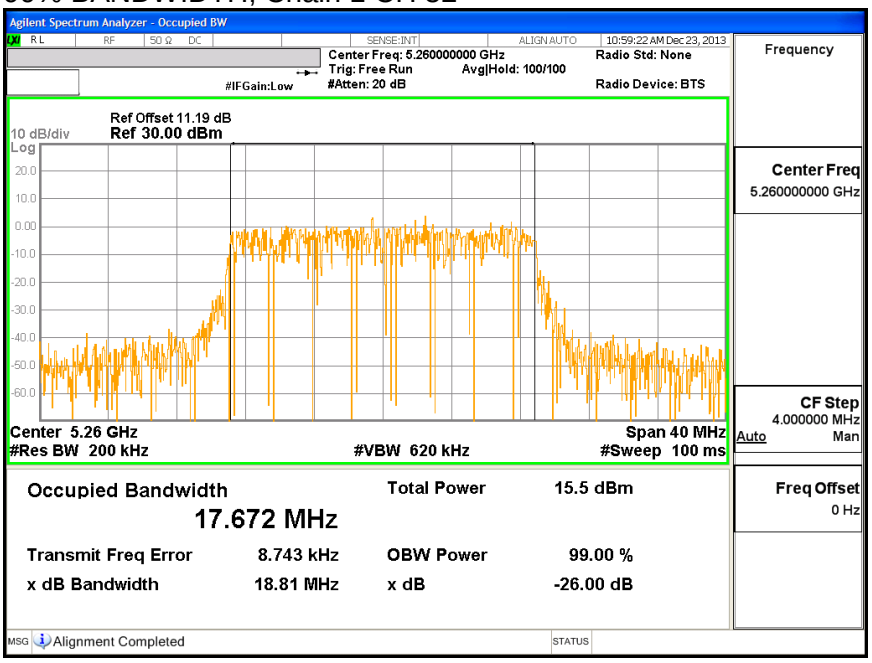
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

99% BANDWIDTH, Chain 0 CH 64



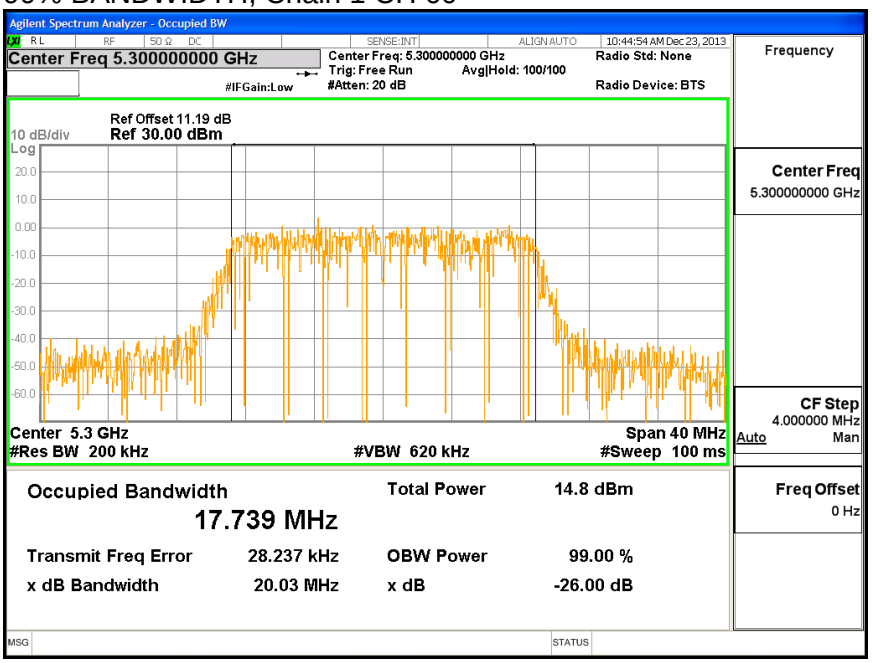
99% BANDWIDTH, Chain 1

99% BANDWIDTH, Chain 1 CH 52

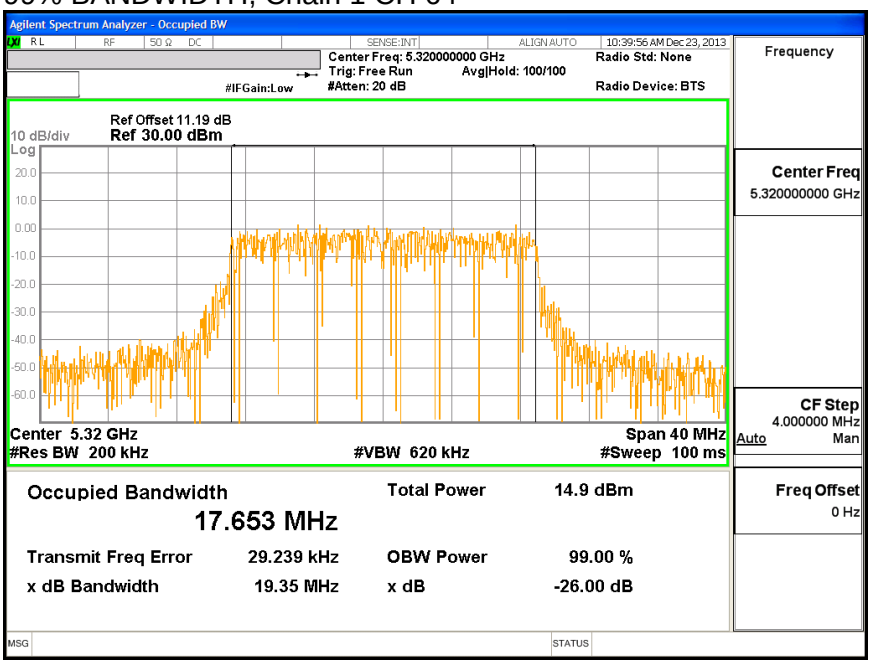


This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

99% BANDWIDTH, Chain 1 CH 60



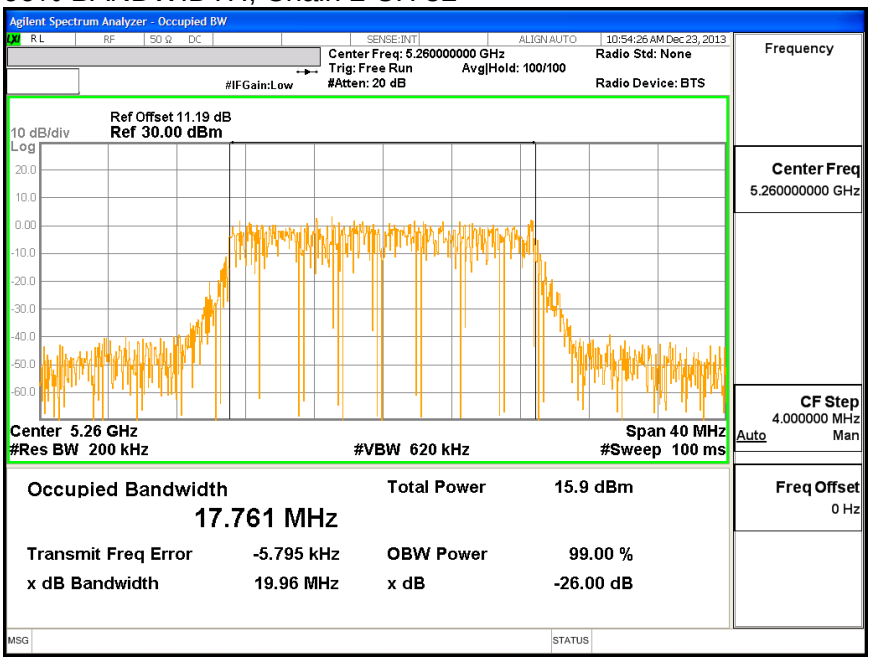
99% BANDWIDTH, Chain 1 CH 64



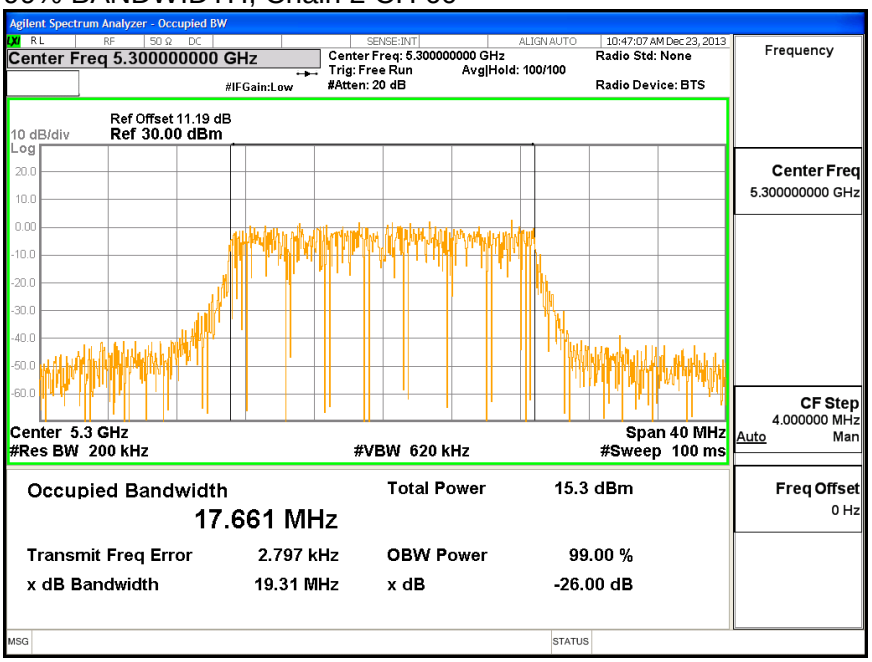
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

99% BANDWIDTH, Chain 2

99% BANDWIDTH, Chain 2 CH 52

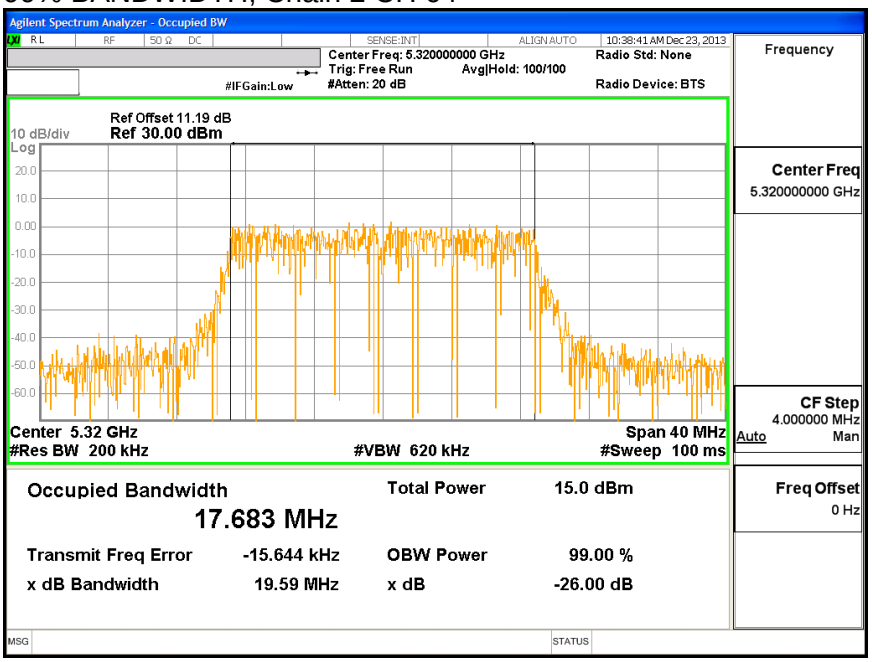


99% BANDWIDTH, Chain 2 CH 60



This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

99% BANDWIDTH, Chain 2 CH 64



This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

8.14.3. AVERAGE POWER

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

The transmitter output is connected to a power meter.

The cable assembly insertion loss of 11.19 dB (including 10 dB pad and 1.19 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

RESULTS

Average Power Results

Channel	Frequency (MHz)	Chain 0 Power (dBm)	Chain 1 Power (dBm)	Chain 2 Power (dBm)	Total Power (dBm)
52	5260	16.01	16.22	16.63	21.07
60	5300	15.96	16.08	16.40	20.92
64	5320	15.53	15.48	15.88	20.40

This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

8.14.4. OUTPUT POWER AND PPSD

LIMITS

FCC §15.407 (a) (2)

For the band 5.25–5.35 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the peak power spectral density shall not exceed 11 dBm in any 1–MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

DIRECTIONAL ANTENNA GAIN

The TX chains are uncorrelated and the antenna gain is the same for each chain. The directional gain is equal to the antenna gain.

Antenna Gain (dBi)
2.40

This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

RESULTS

Bandwidth and Antenna Gain

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Min 99% BW (MHz)	Directional Gain for Power (dBi)	Directional Gain for PPSD (dBi)
52	5260	20.36	17.6720	2.40	2.40
60	5300	20.40	17.6610	2.40	2.40
64	5320	20.40	17.6530	2.40	2.40

Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Power Limit (dBm)	FCC PPSD Limit (dBm)	IC PSD Limit (dBm)	PPSD Limit (dBm)
52	5260	24.00	23.47	29.47	23.47	11.00	11.00	11.00
60	5300	24.00	23.47	29.47	23.47	11.00	11.00	11.00
64	5320	24.00	23.47	29.47	23.47	11.00	11.00	11.00

Duty Cycle CF (dB)	0.17	**Included in Calculations of Corr'd Power & PPSD**

Output Power Results

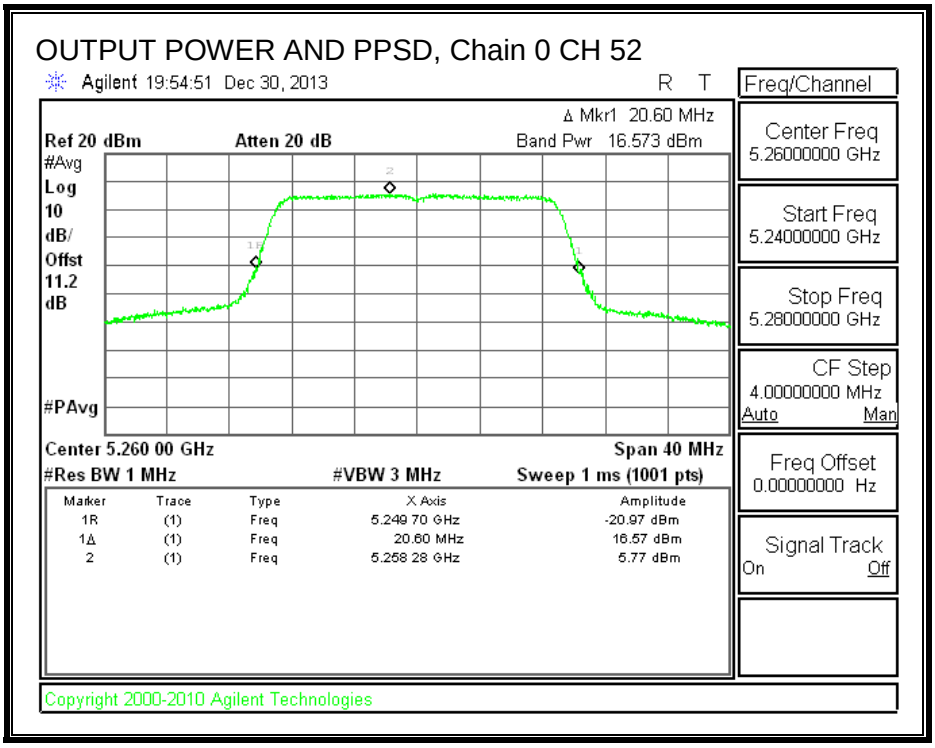
Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Chain 2 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
52	5260	16.57	16.65	16.94	21.66	23.47	-1.81
60	5300	16.42	16.62	16.84	21.57	23.47	-1.90
64	5320	15.81	15.82	16.42	20.97	23.47	-2.50

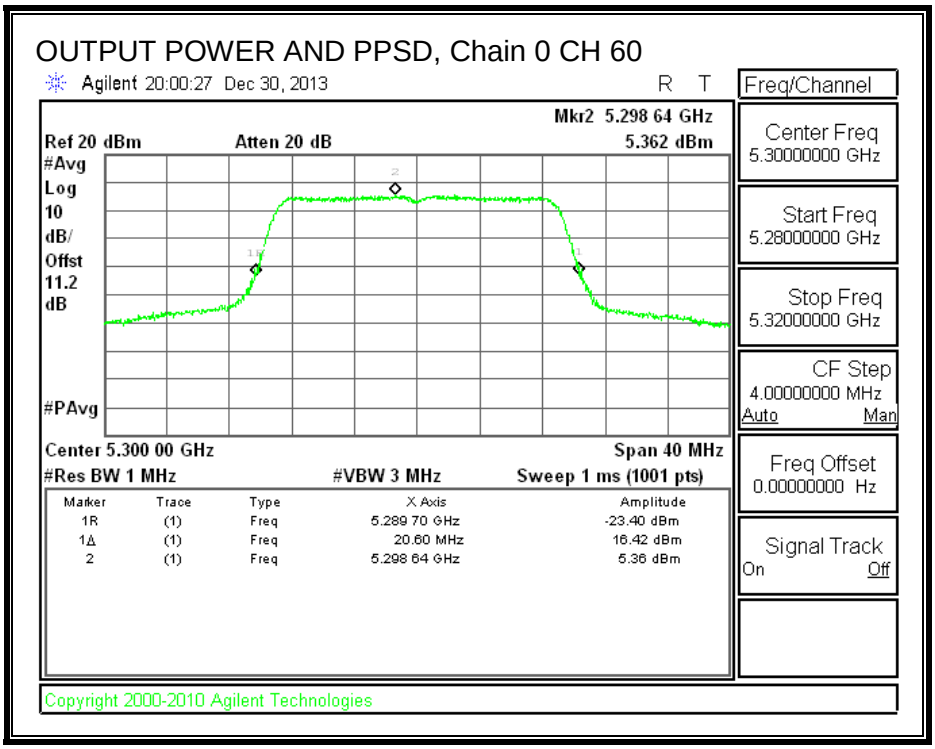
PPSD Results

Channel	Frequency (MHz)	Chain 0 Meas PPSD (dBm)	Chain 1 Meas PPSD (dBm)	Chain 2 Meas PPSD (dBm)	Total Corr'd PPSD (dBm)	PPSD Limit (dBm)	PPSD Margin (dB)
52	5260	5.77	6.07	5.89	10.85	11.00	-0.15
60	5300	5.36	5.78	5.91	10.63	11.00	-0.37
64	5320	4.93	5.11	5.50	10.13	11.00	-0.87

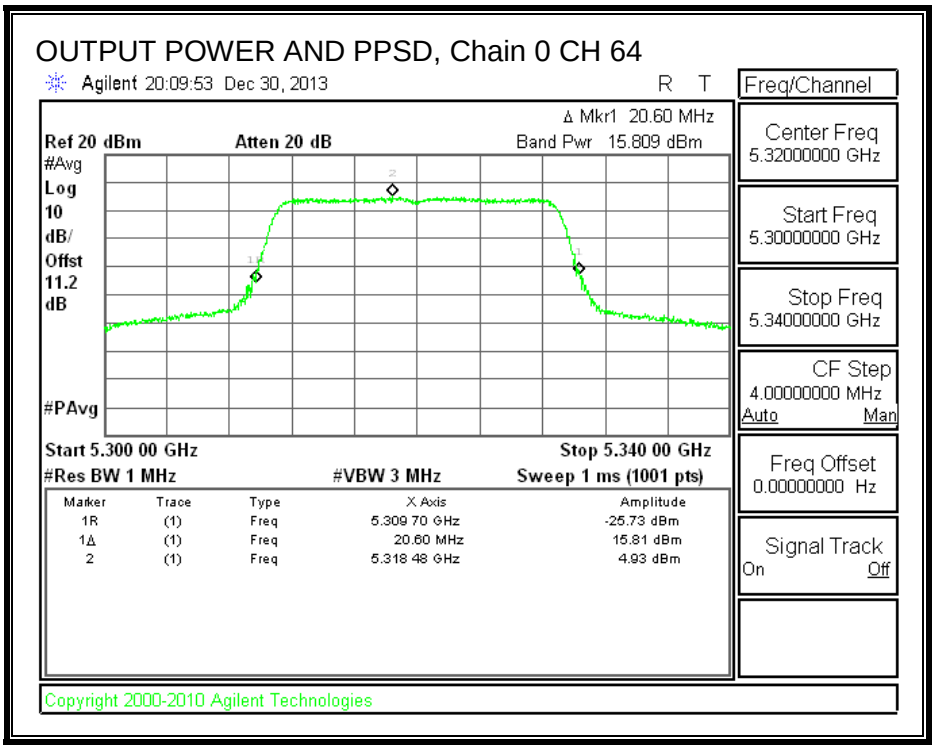
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

OUTPUT POWER AND PPSD, Chain 0

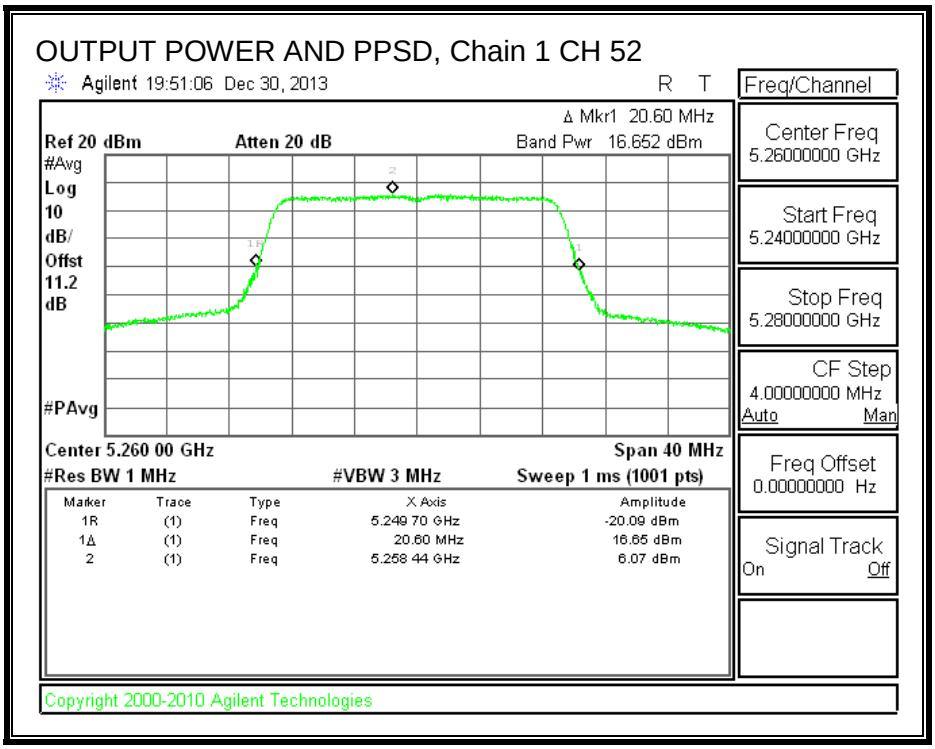




This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

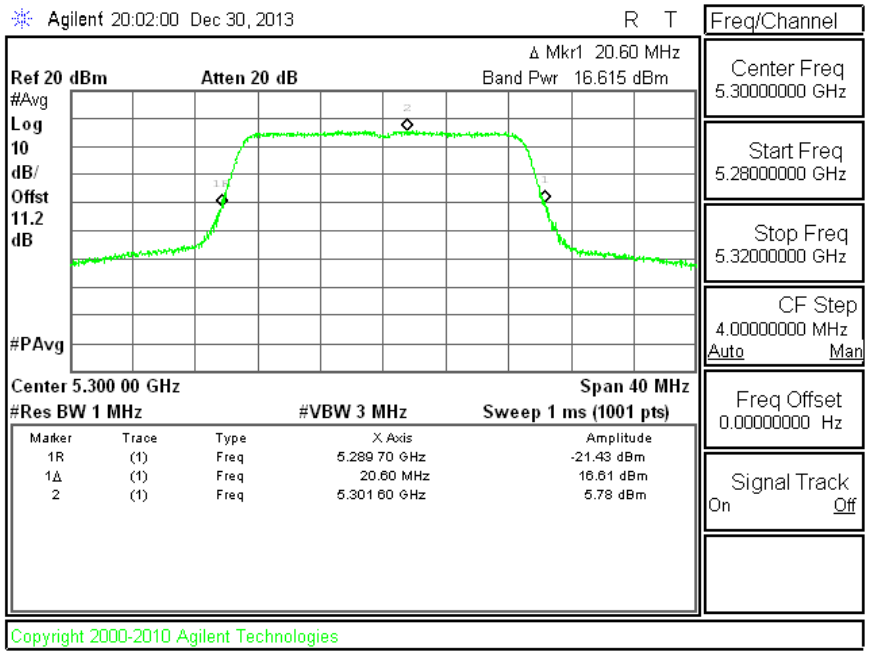


OUTPUT POWER AND PPSD, Chain 1

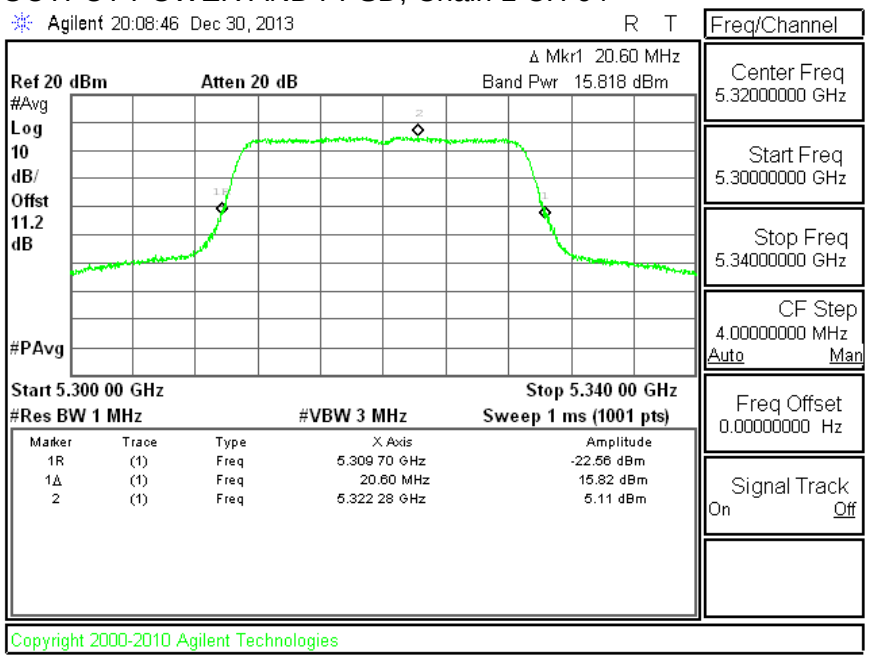


This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

OUTPUT POWER AND PPSD, Chain 1 CH 60

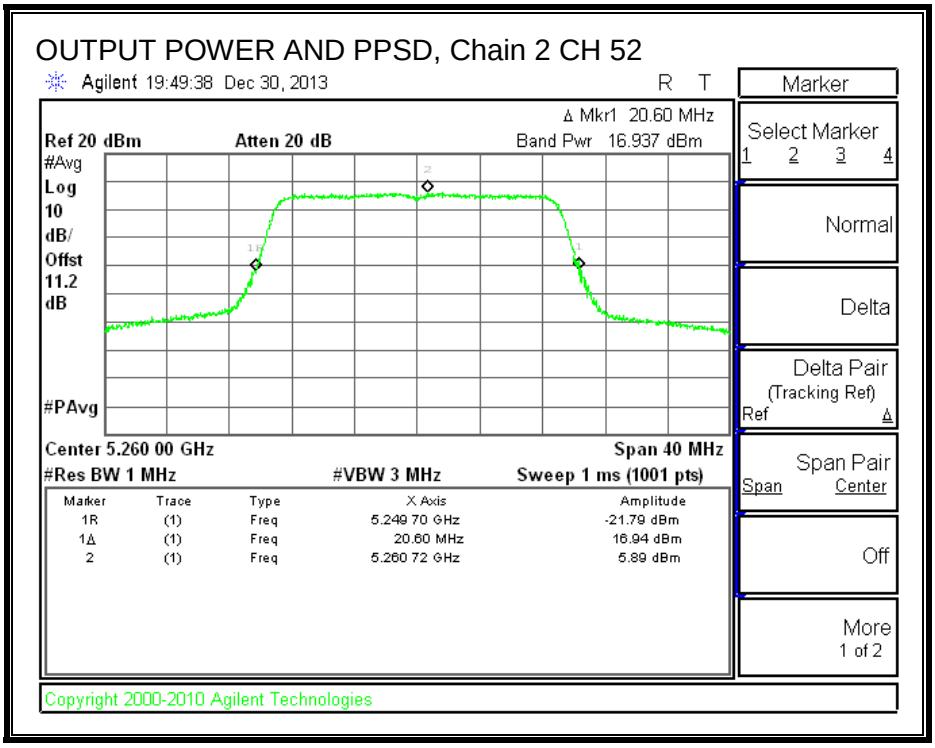


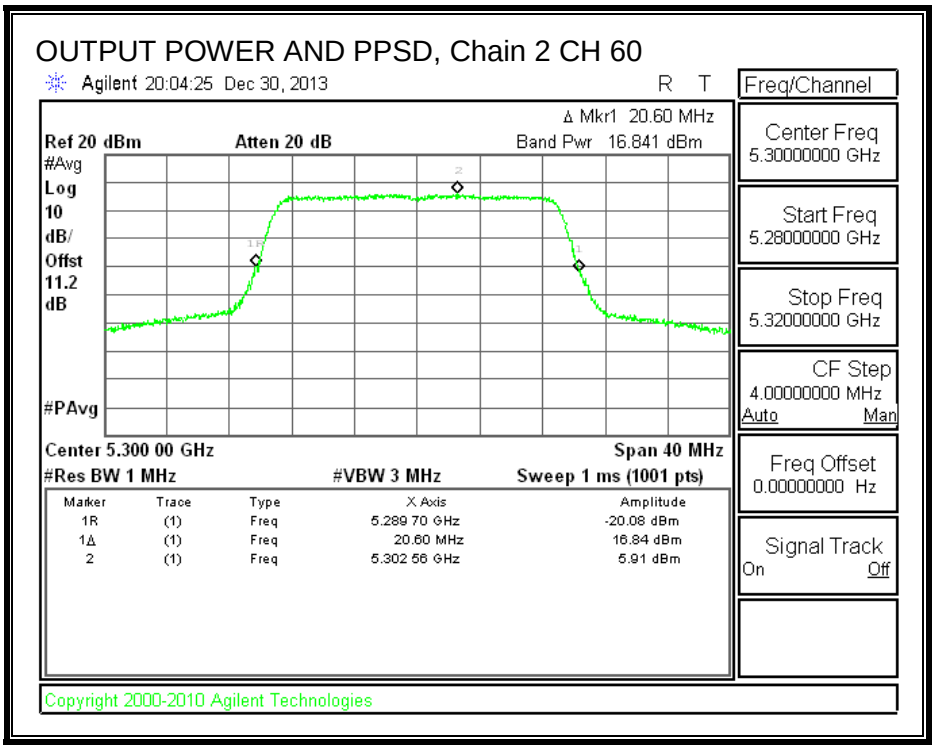
OUTPUT POWER AND PPSD, Chain 1 CH 64



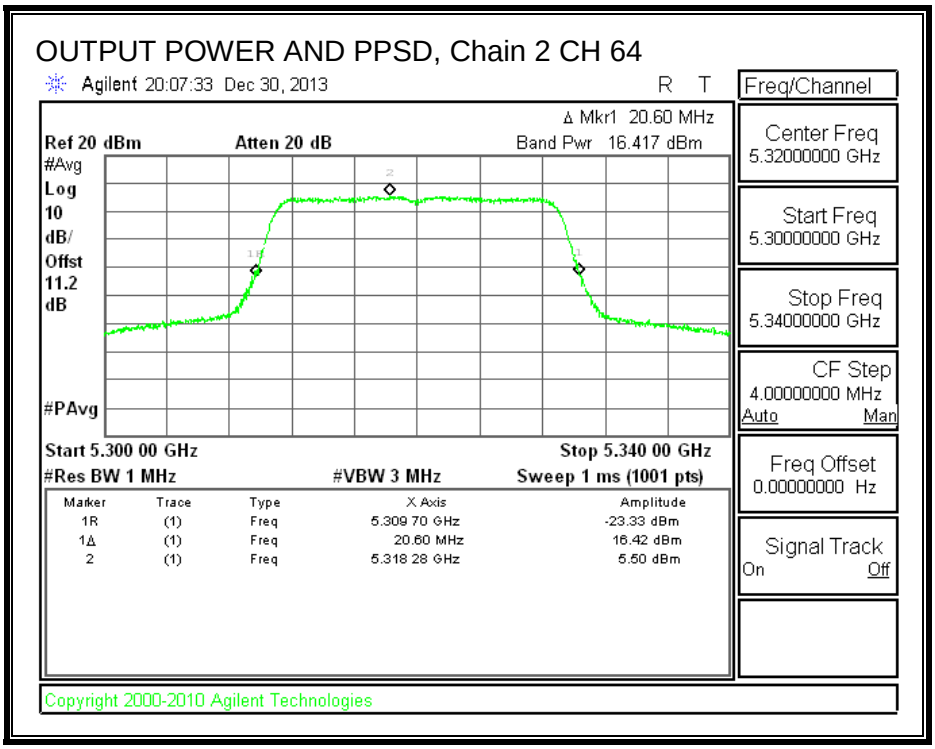
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

OUTPUT POWER AND PPSD, Chain 2





This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .



This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

8.15. 802.11n HT40 1TX SISO MODE IN THE 5.3 GHz BAND

8.15.1. 26 dB BANDWIDTH

LIMITS

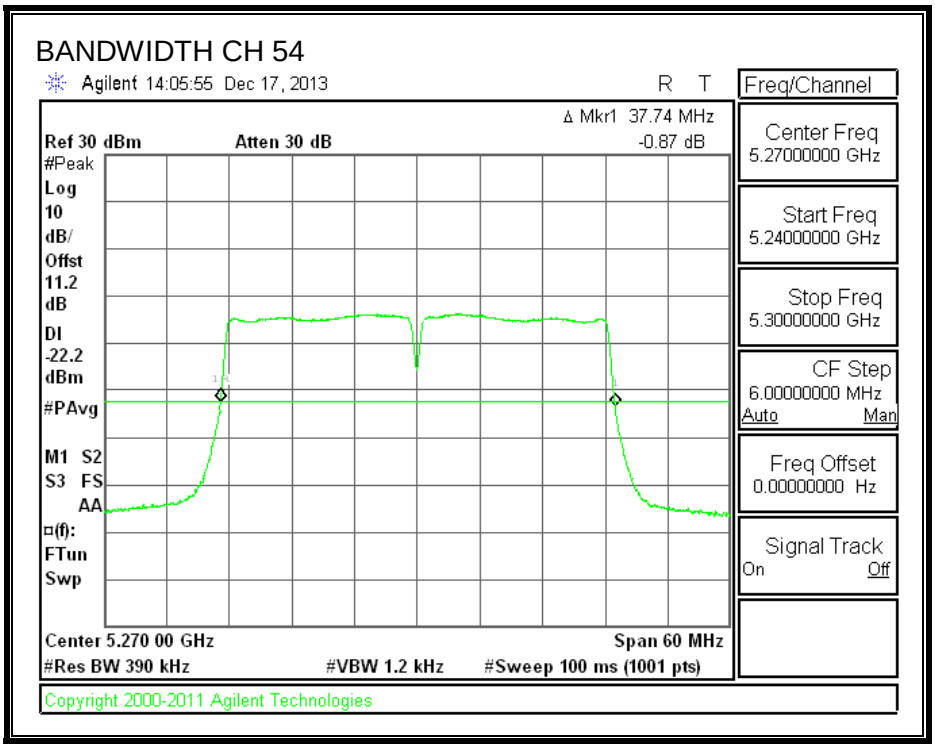
None; for reporting purposes only.

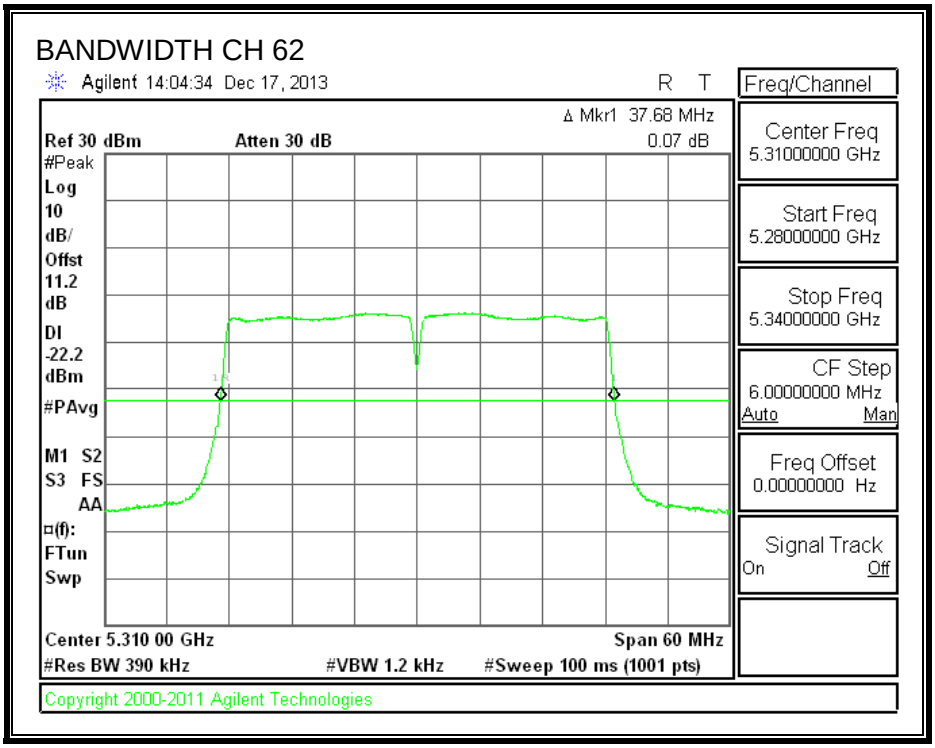
RESULTS

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
54	5270	37.74
62	5310	37.68

This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

26 dB BANDWIDTH





This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

8.15.2. 99% BANDWIDTH

LIMITS

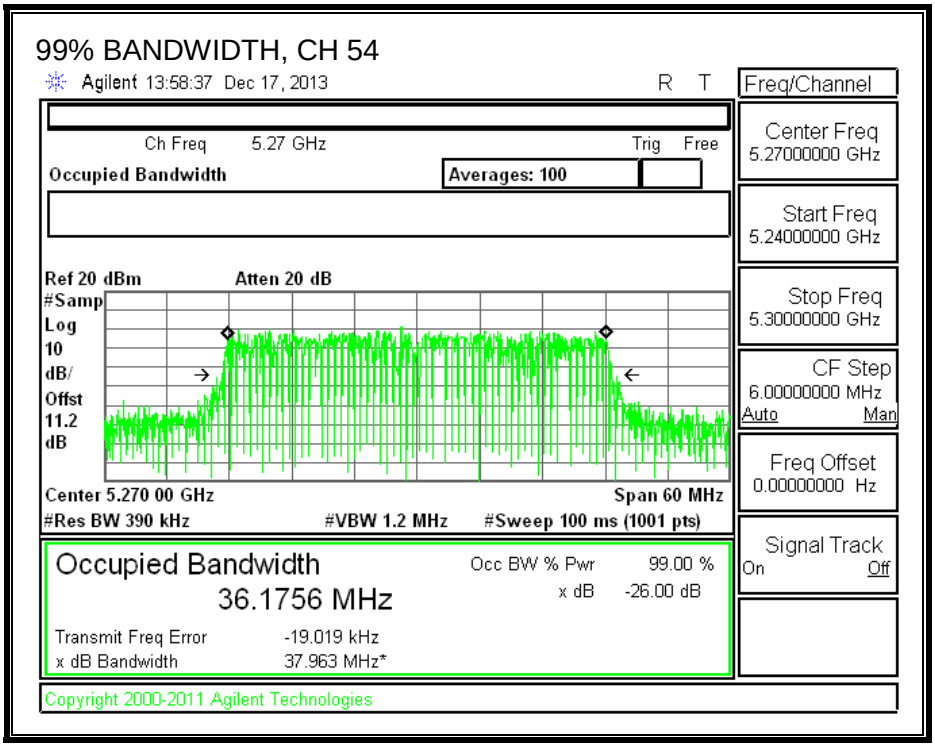
None; for reporting purposes only.

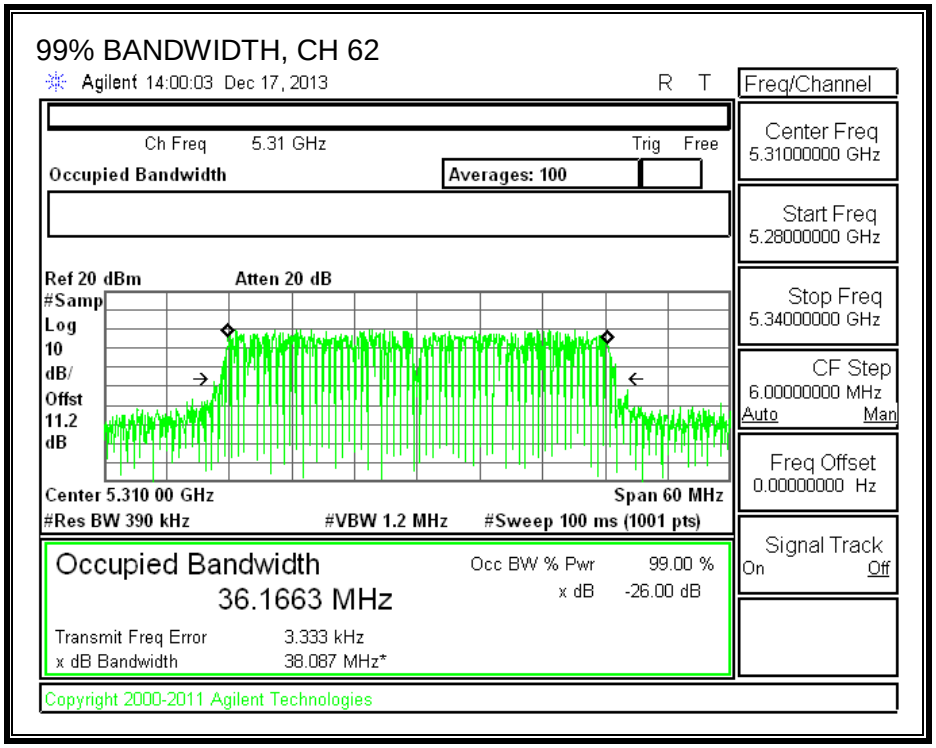
RESULTS

Channel	Frequency (MHz)	99% Bandwidth (MHz)
54	5270	36.1756
62	5310	36.1663

This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

99% BANDWIDTH





This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

8.15.3. AVERAGE POWER

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

The transmitter output is connected to a power meter.

The cable assembly insertion loss of 11.19 dB (including 10 dB pad and 1.19 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

RESULTS

Average Power Results

Channel	Frequency (MHz)	Chain 0 Power (dBm)
54	5270	17.50
62	5310	12.81

This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

8.15.4. OUTPUT POWER AND PPSD

LIMITS

FCC §15.407 (a) (2)

For the band 5.25–5.35 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the peak power spectral density shall not exceed 11 dBm in any 1–MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

DIRECTIONAL ANTENNA GAIN

There is only one transmitter output therefore the directional gain is equal to the antenna gain.

Antenna Gain (dBi)
2.40

This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

RESULTS

Bandwidth and Antenna Gain

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Min 99% BW (MHz)	Directional Gain (dBi)
54	5270	37.7	36.2	2.40
62	5310	37.7	36.2	2.40

Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Power Limit (dBm)	FCC PPSD Limit (dBm)	IC PSD Limit (dBm)	PPSD Limit (dBm)
54	5270	24.00	24.00	30.00	24.00	11.00	11.00	11.00
62	5310	24.00	24.00	30.00	24.00	11.00	11.00	11.00

Duty Cycle CF (dB)	0.42	Included in Calculations of Corr'd Power & PPSD

Output Power Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
54	5270	18.52	18.94	24.00	-5.06
62	5310	13.22	13.64	24.00	-10.37

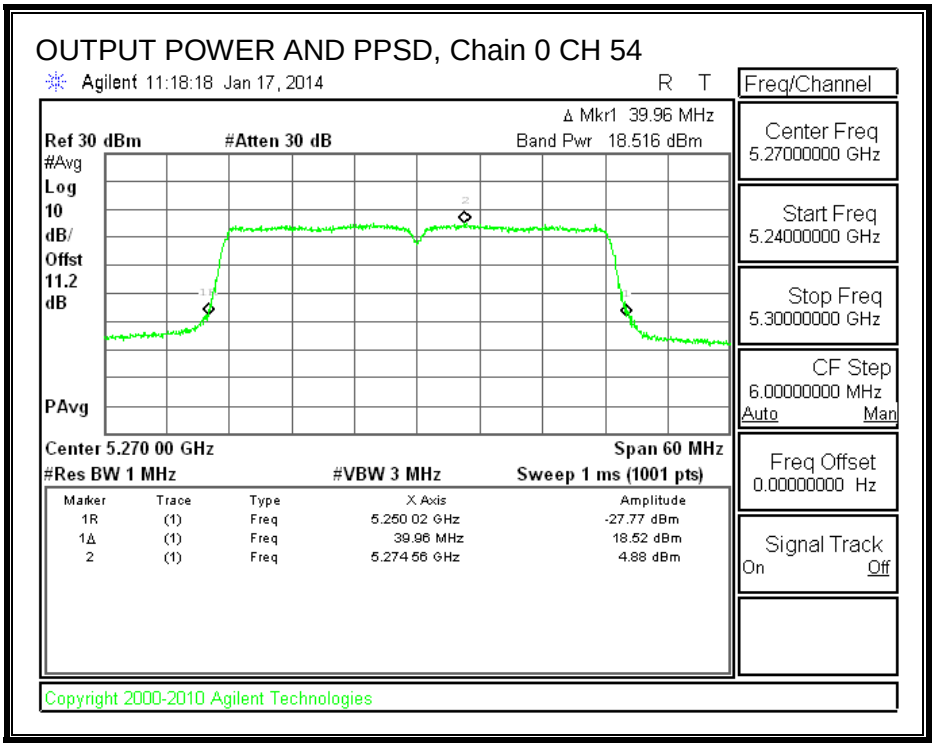
PPSD Results

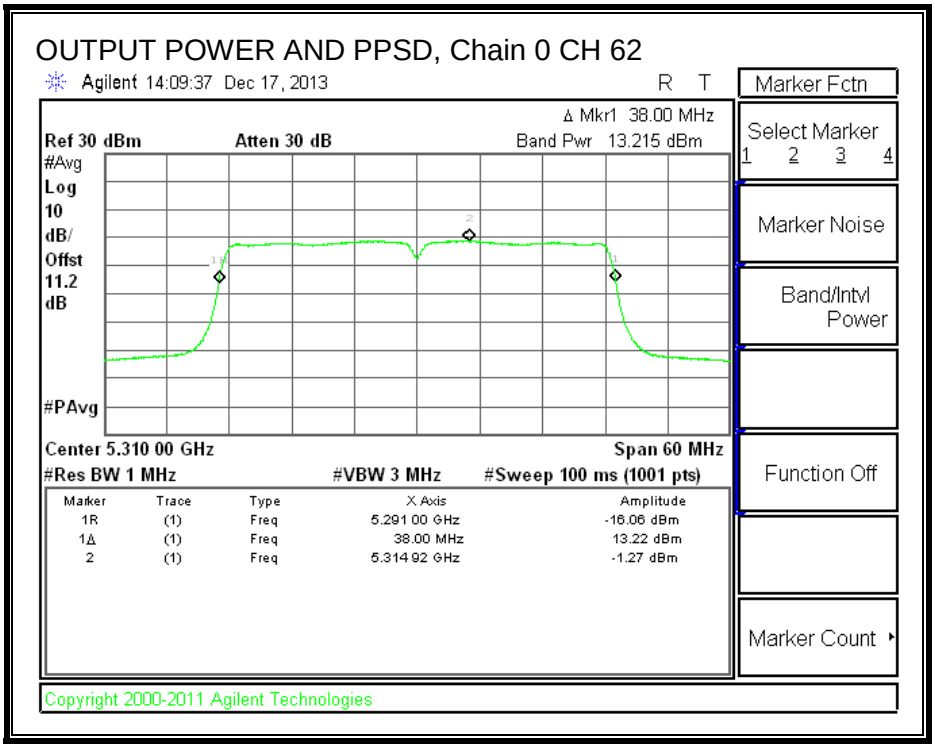
Channel	Frequency (MHz)	Chain 0 Meas PPSD (dBm)	Total Corr'd PPSD (dBm)	PPSD Limit (dBm)	PPSD Margin (dB)
54	5270	4.88	5.30	11.00	-5.70
62	5310	-1.27	-0.85	11.00	-11.85

* Note Channel 62 Peak power low due to BE results

This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

OUTPUT POWER AND PPSD, Chain 0





This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

8.16. 802.11n HT40 3TX CDD MODE IN THE 5.3 GHz BAND

8.16.1. 26 dB BANDWIDTH

LIMITS

None; for reporting purposes only.

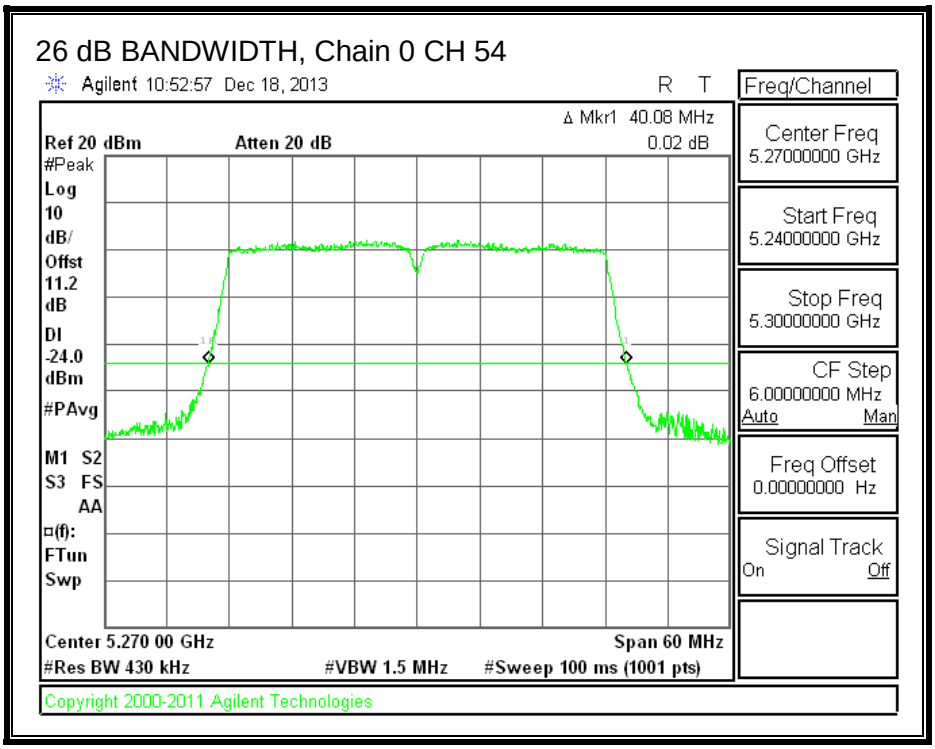
RESULTS

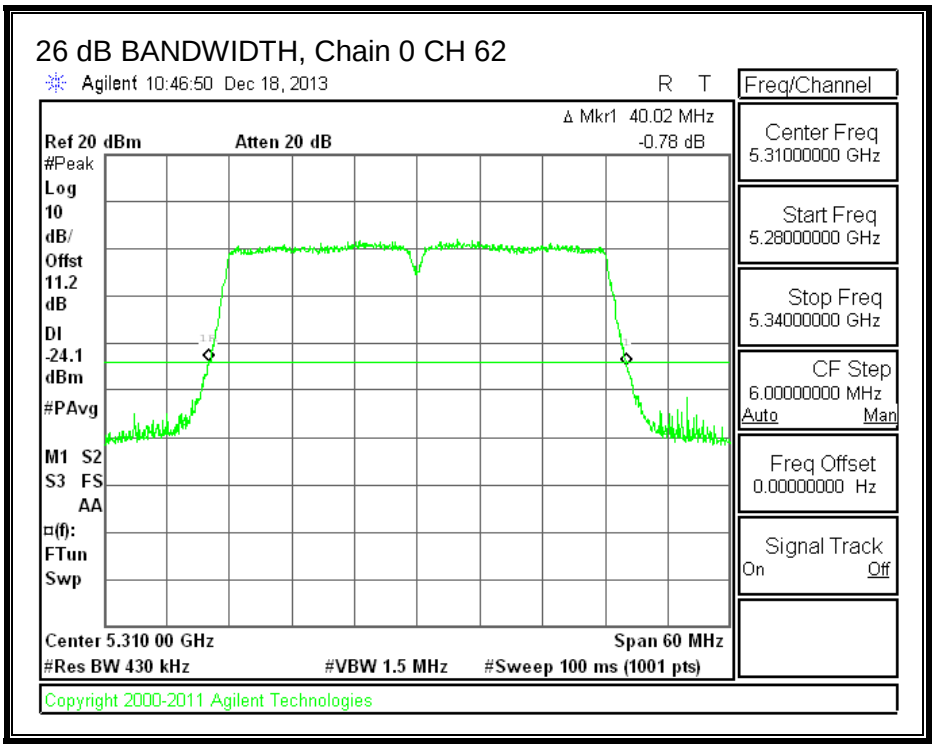
Channel	Frequency (MHz)	26 dB BW Chain 0 (MHz)	26 dB BW Chain 1 (MHz)	26 dB BW Chain 2 (MHz)
54	5270	40.08	39.36	39.54
62	5310	40.02	39.36	39.42

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701J
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

26 dB BANDWIDTH

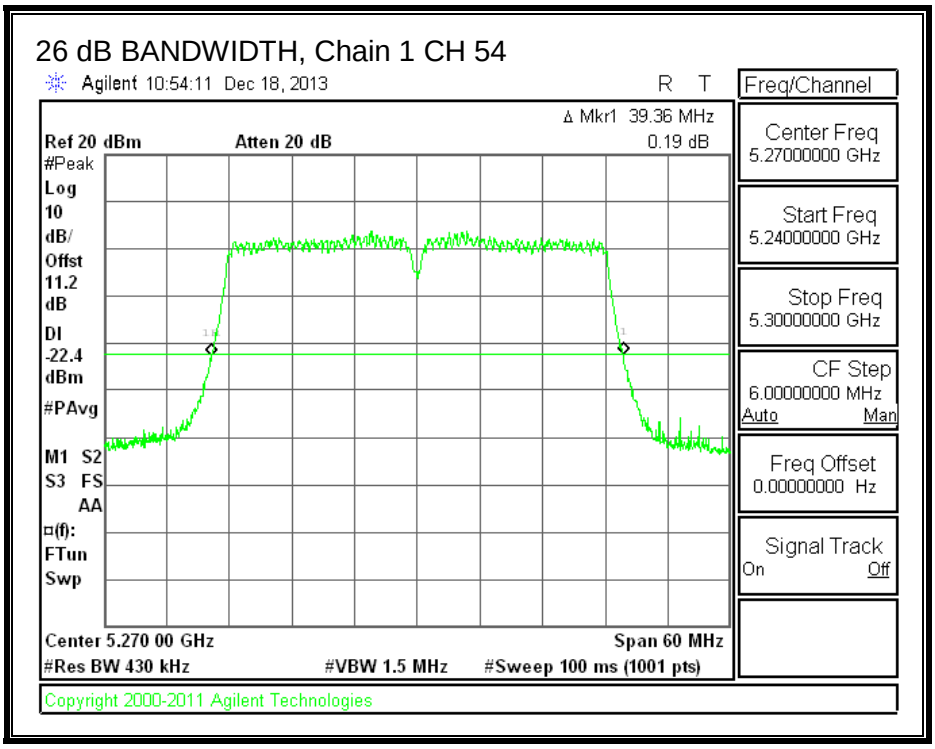
26 dB BANDWIDTH, Chain 0

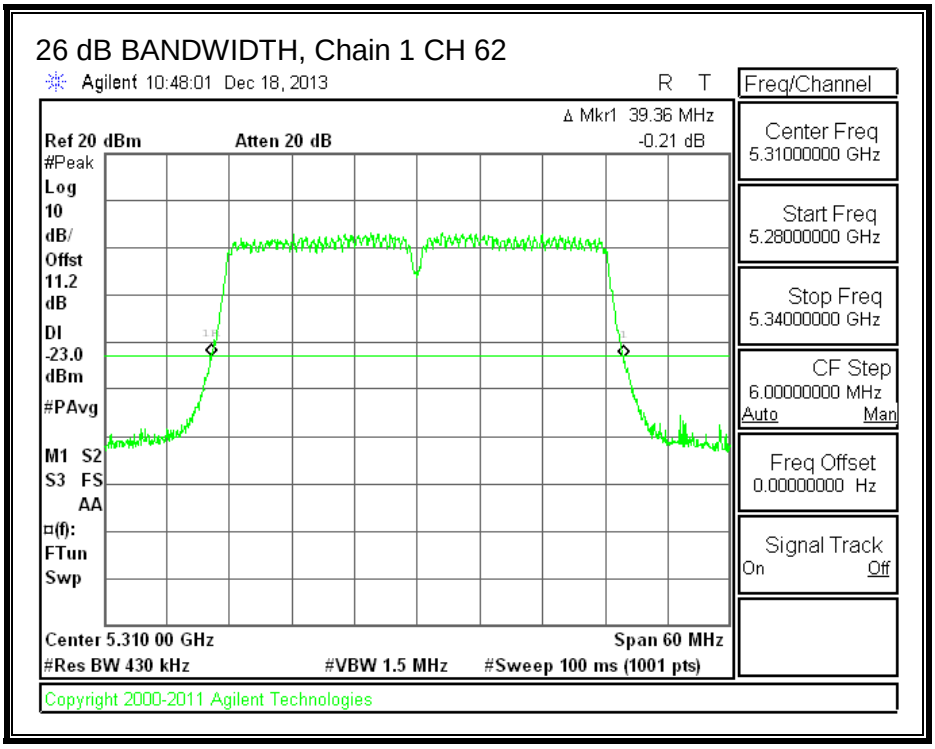




This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

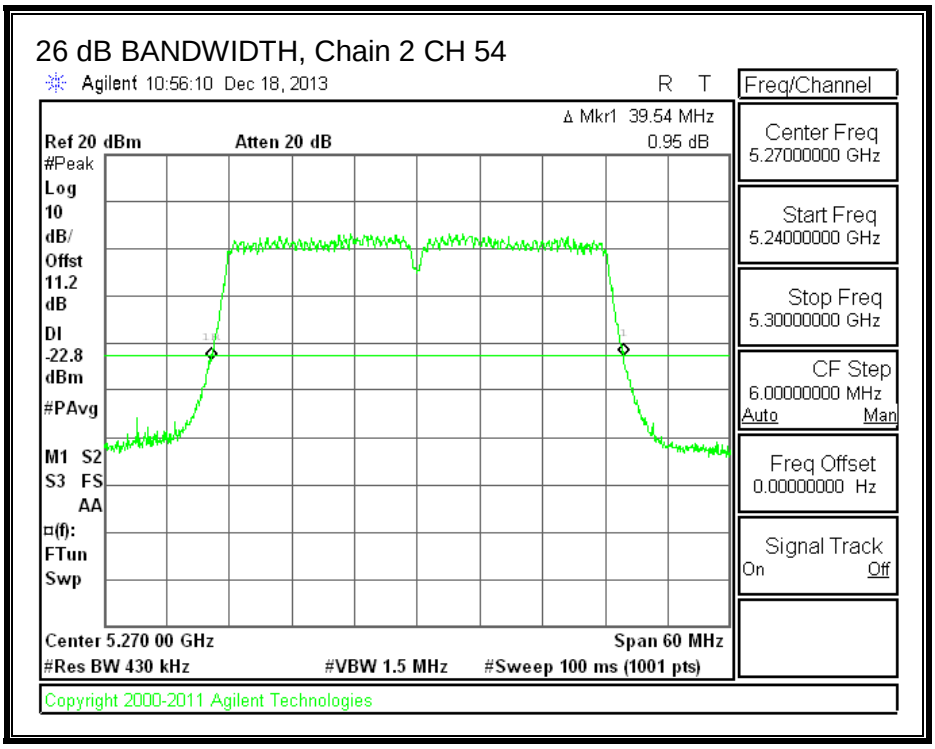
26 dB BANDWIDTH, Chain 1

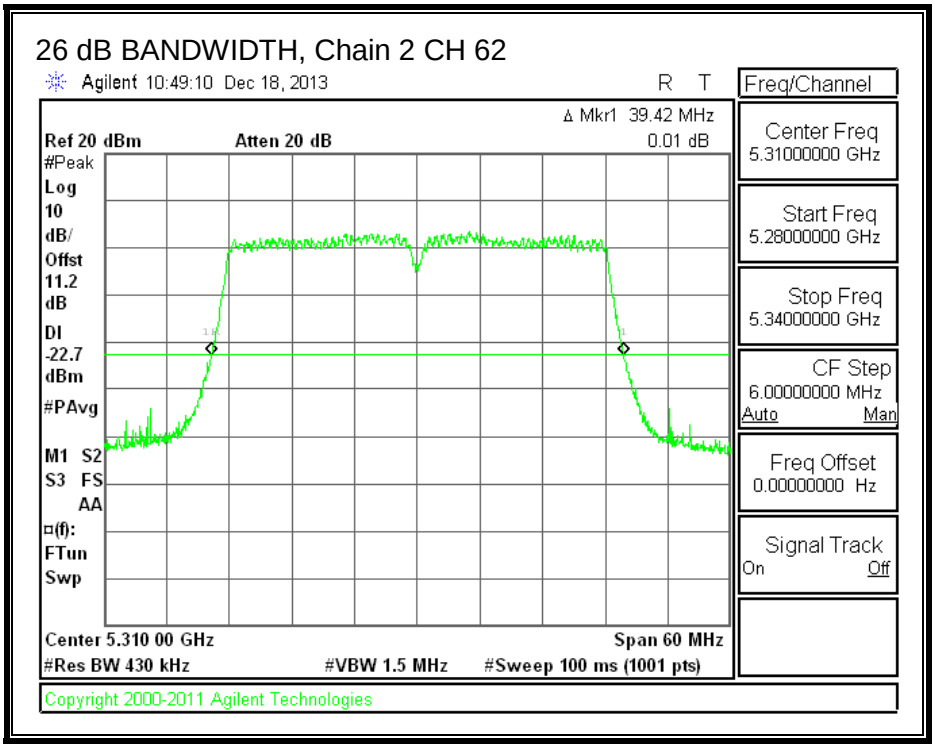




This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

26 dB BANDWIDTH, Chain 2





This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

8.16.2. 99% BANDWIDTH

LIMITS

None; for reporting purposes only.

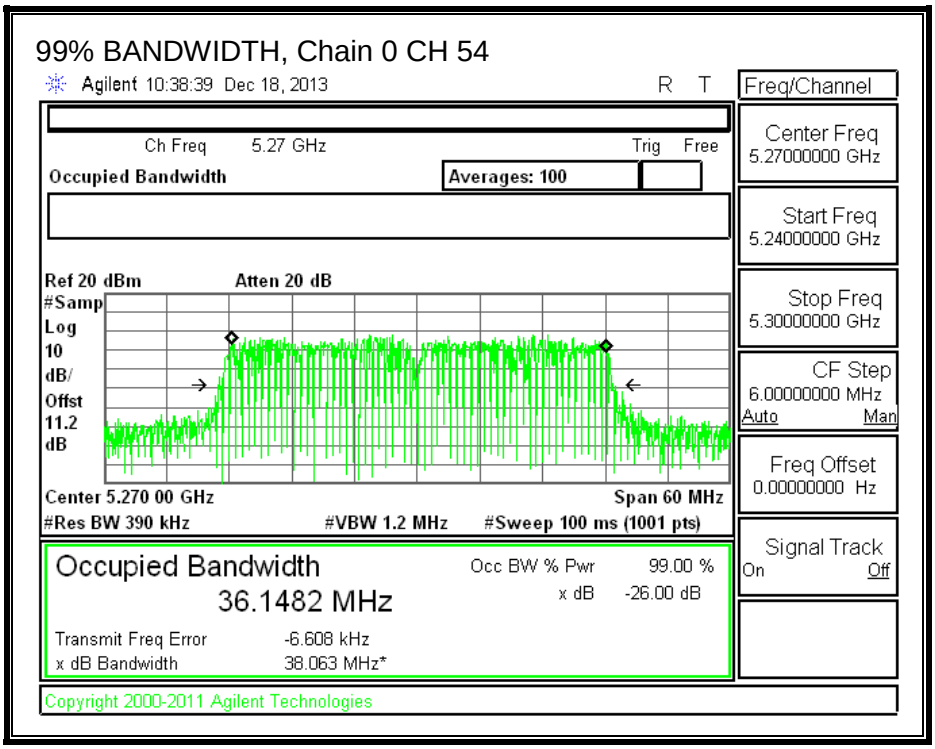
RESULTS

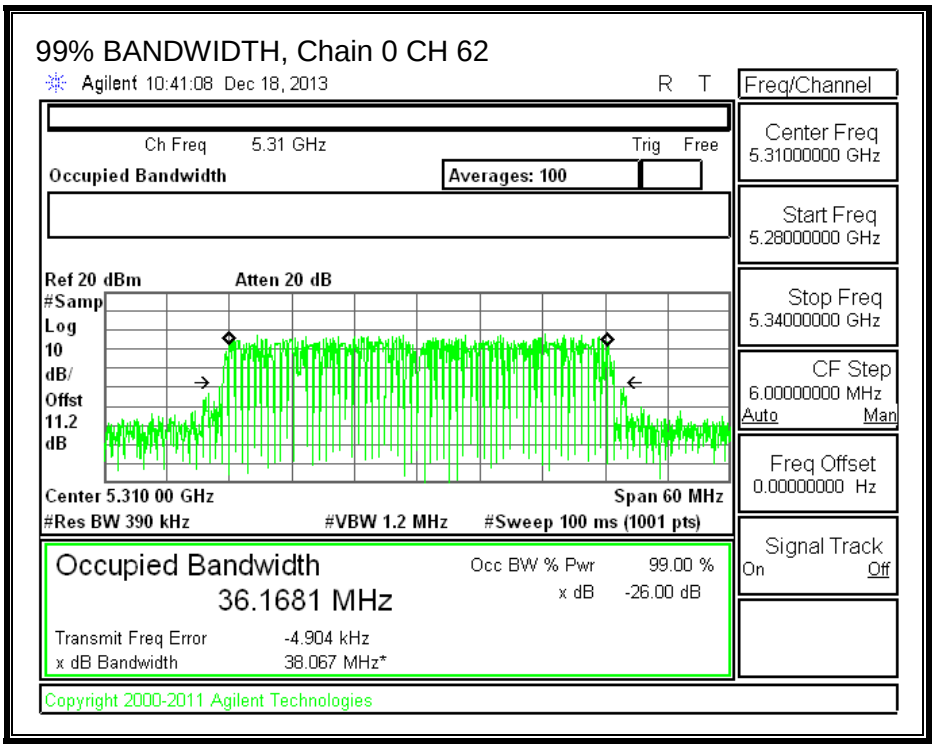
Channel	Frequency (MHz)	99% BW Chain 0 (MHz)	99% BW Chain 1 (MHz)	99% BW Chain 2 (MHz)
54	5270	36.1482	36.1456	36.1351
62	5310	36.1681	36.1494	36.1480

This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

99% BANDWIDTH

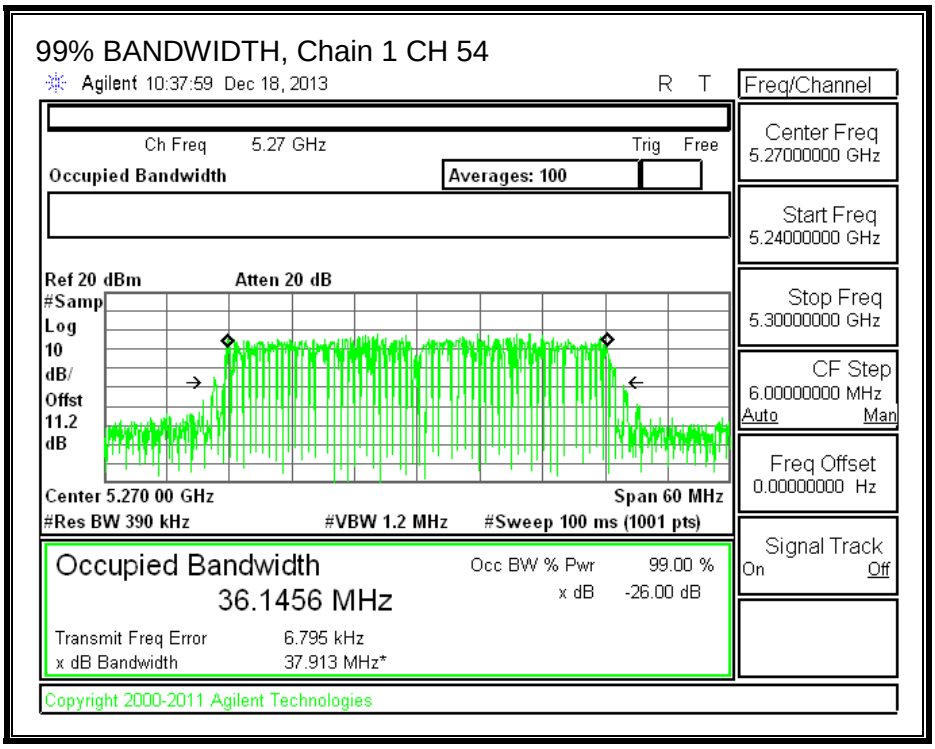
99% BANDWIDTH, Chain 0

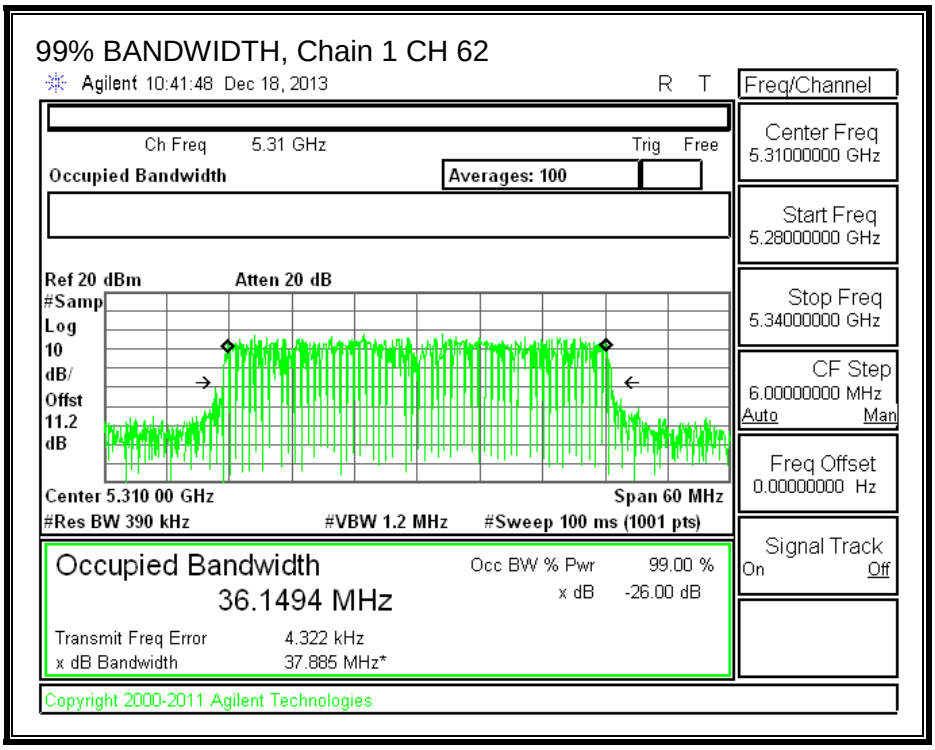




This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

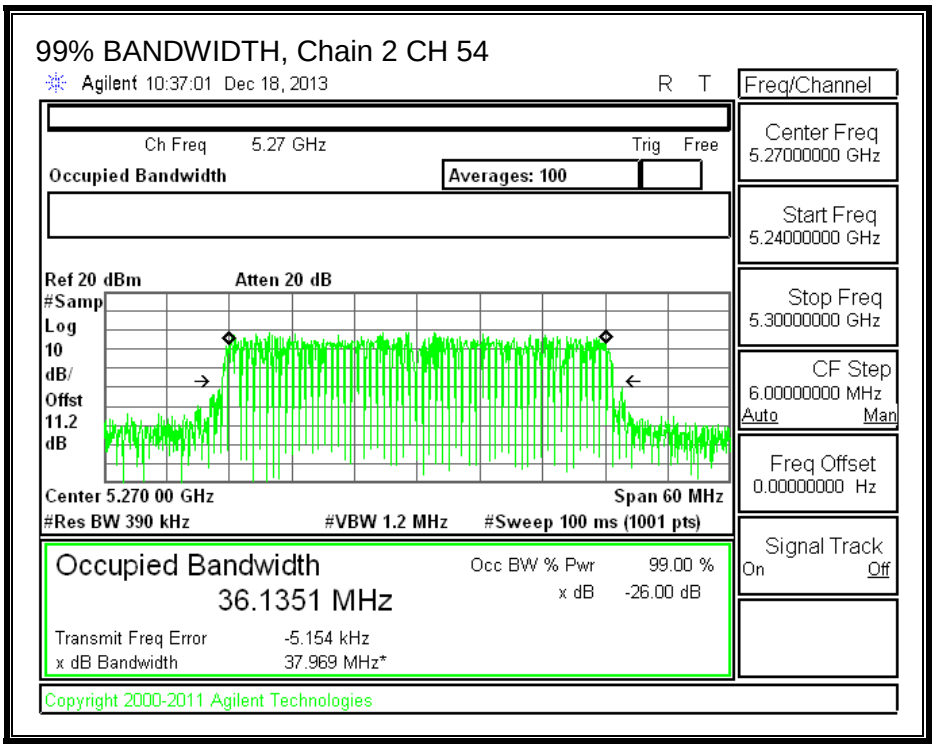
99% BANDWIDTH, Chain 1

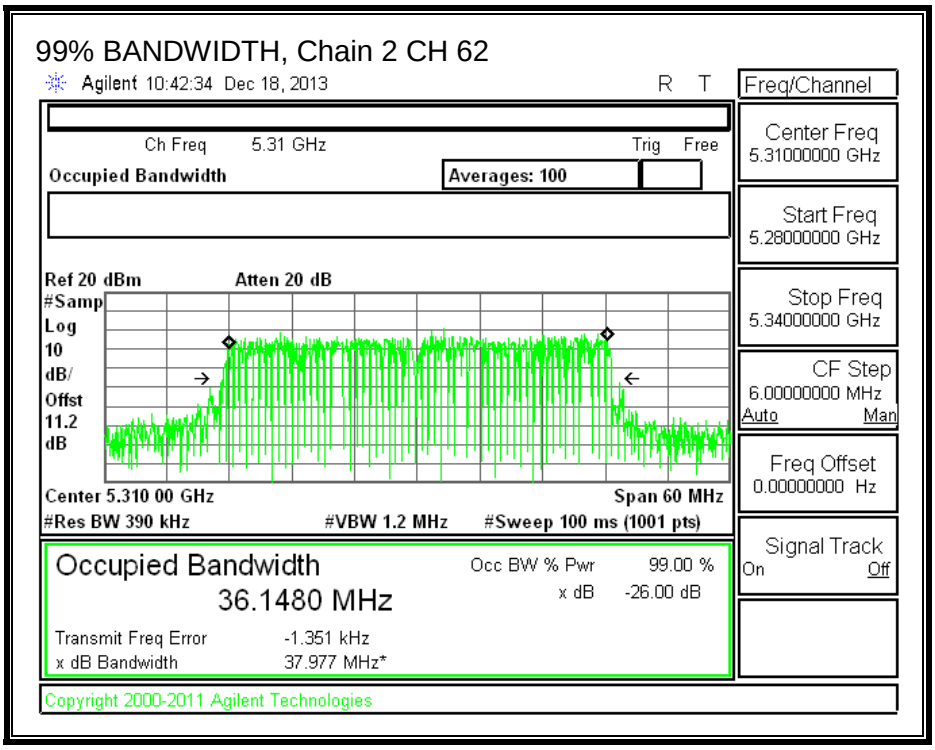




This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

99% BANDWIDTH, Chain 2





This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

8.16.3. AVERAGE POWER

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

The transmitter output is connected to a power meter.

The cable assembly insertion loss of 11.19 dB (including 10 dB pad and 1.19 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

RESULTS

Average Power Results

Channel	Frequency (MHz)	Chain 0 Power (dBm)	Chain 1 Power (dBm)	Chain 2 Power (dBm)	Total Power (dBm)
54	5270	12.61	12.90	13.11	17.65
62	5310	10.26	10.00	10.68	15.09

This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

8.16.4. OUTPUT POWER AND PPSD

LIMITS

FCC §15.407 (a) (2)

For the band 5.25–5.35 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the peak power spectral density shall not exceed 11 dBm in any 1–MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

DIRECTIONAL ANTENNA GAIN

The TX chains are correlated and the antenna gain is the same for each chain. The directional gain is:

Antenna Gain (dBi)	10 * Log (3 chains) (dB)	Correlated Chains Directional Gain (dBi)
2.40	4.77	7.17

This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

RESULTS

Bandwidth and Antenna Gain

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Min 99% BW (MHz)	Directional Gain for Power (dBi)	Directional Gain for PPSD (dBi)
54	5270	39.36	36.1351	2.40	7.17
62	5310	39.42	36.1480	2.40	7.17

Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Power Limit (dBm)	FCC PPSD Limit (dBm)	IC PSD Limit (dBm)	PPSD Limit (dBm)
54	5270	24.00	24.00	30.00	24.00	9.83	11.00	9.83
62	5310	24.00	24.00	30.00	24.00	9.83	11.00	9.83

Duty Cycle CF (dB)	0.14	Included in Calculations of Corr'd Power & PPSD

Output Power Results

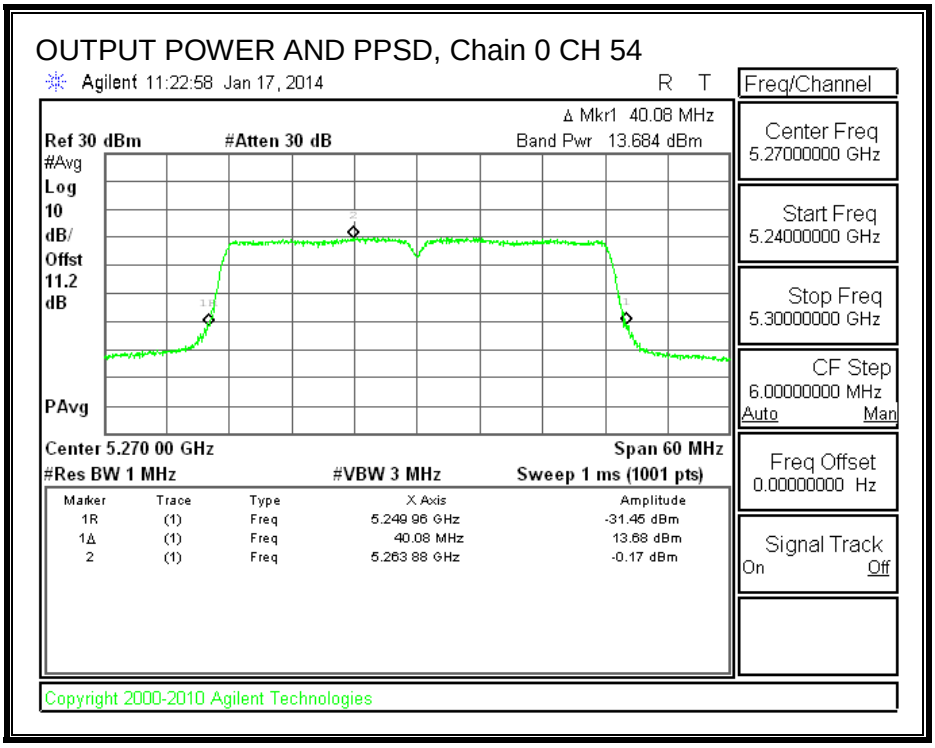
Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Chain 2 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
54	5270	13.68	13.65	14.09	18.72	24.00	-5.28
62	5310	10.82	10.67	11.16	15.80	24.00	-8.20

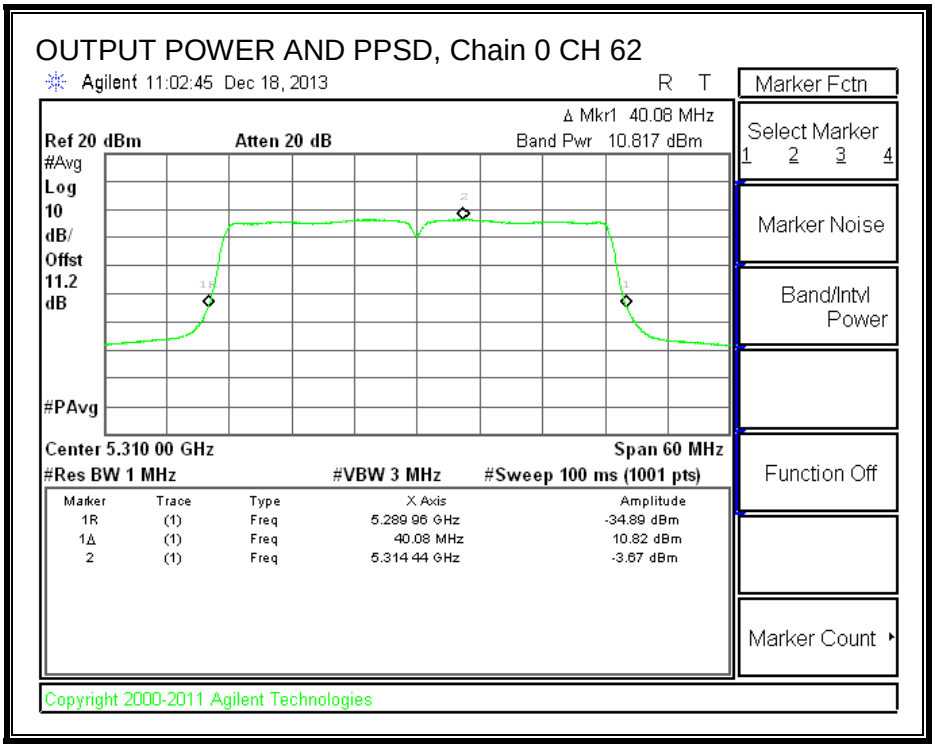
PPSD Results

Channel	Frequency (MHz)	Chain 0 Meas PPSD (dBm)	Chain 1 Meas PPSD (dBm)	Chain 2 Meas PPSD (dBm)	Total Corr'd PPSD (dBm)	PPSD Limit (dBm)	PPSD Margin (dB)
54	5270	-0.17	-0.08	0.53	5.02	9.83	-4.81
62	5310	-3.67	-3.63	-3.07	1.46	9.83	-8.37

This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

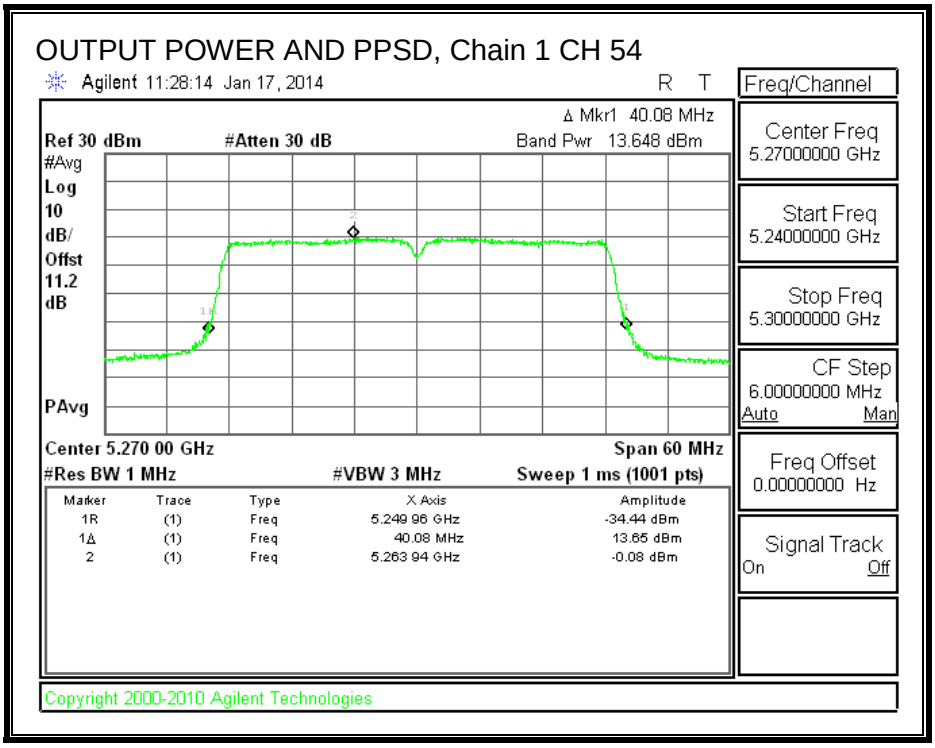
OUTPUT POWER AND PPSD, Chain 0

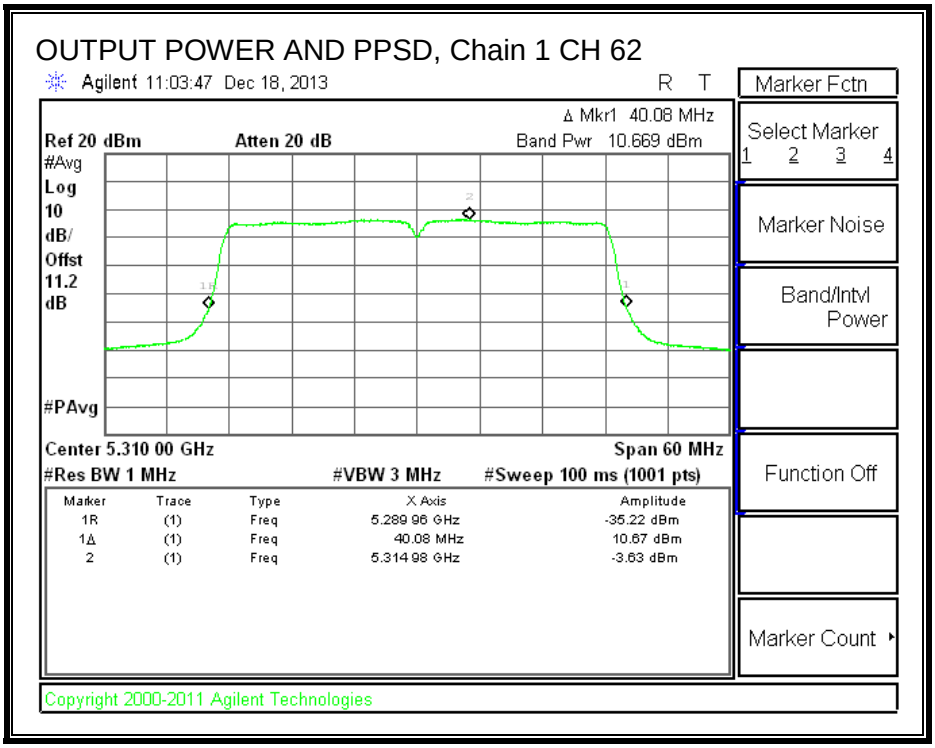




This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

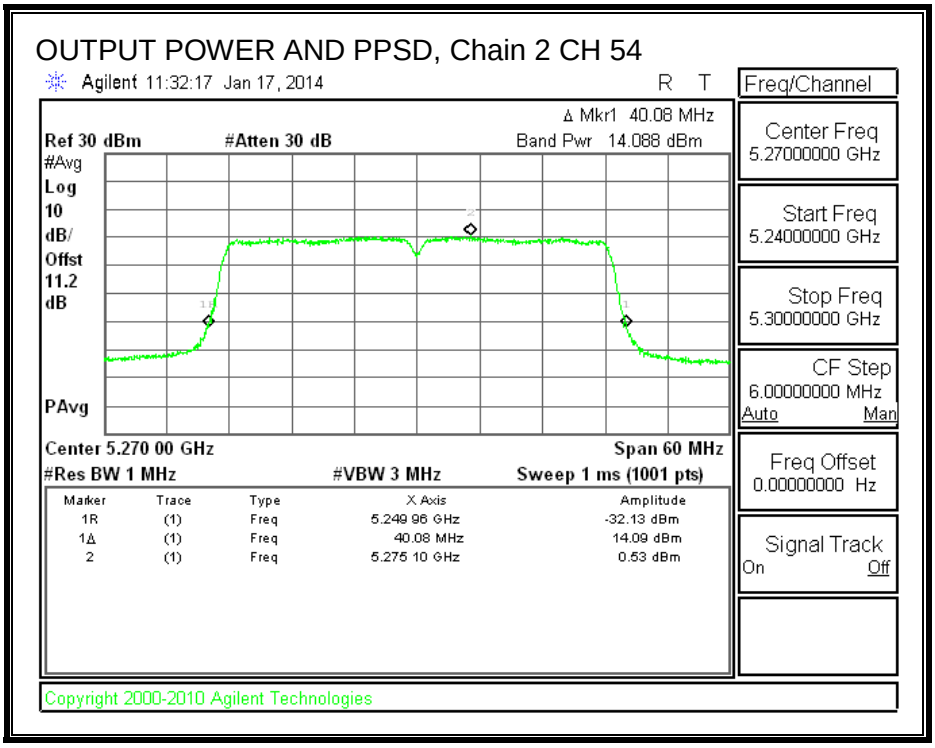
OUTPUT POWER AND PPSD, Chain 1

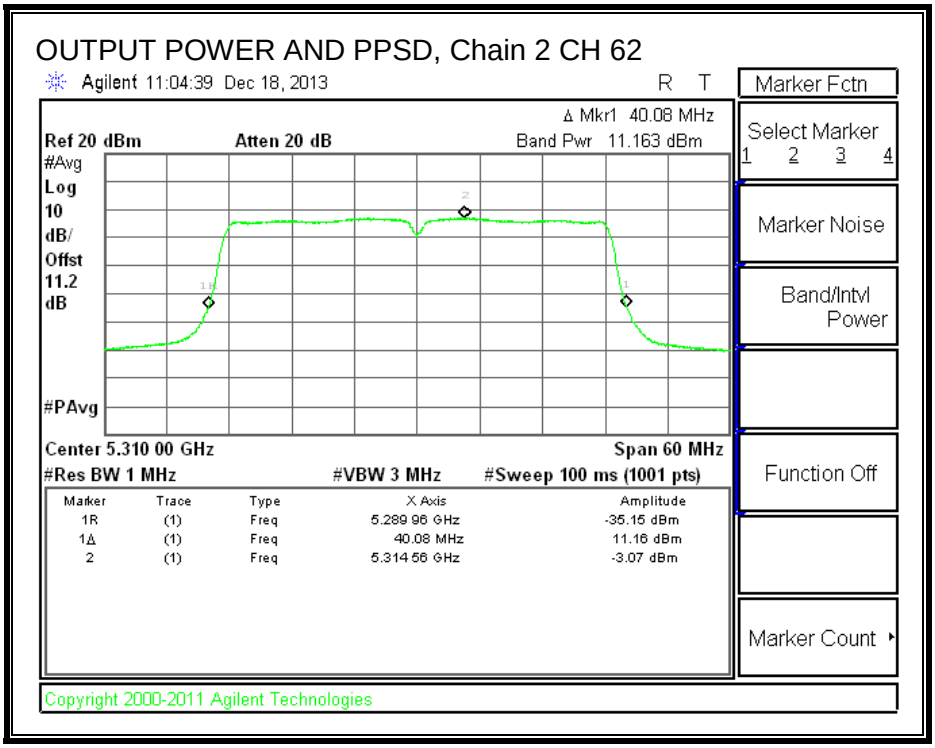




This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

OUTPUT POWER AND PPSD, Chain 2





This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

8.17. 802.11n HT40 3TX SDM MODE IN THE 5.3 GHz BAND

8.17.1. 26 dB BANDWIDTH

LIMITS

None; for reporting purposes only.

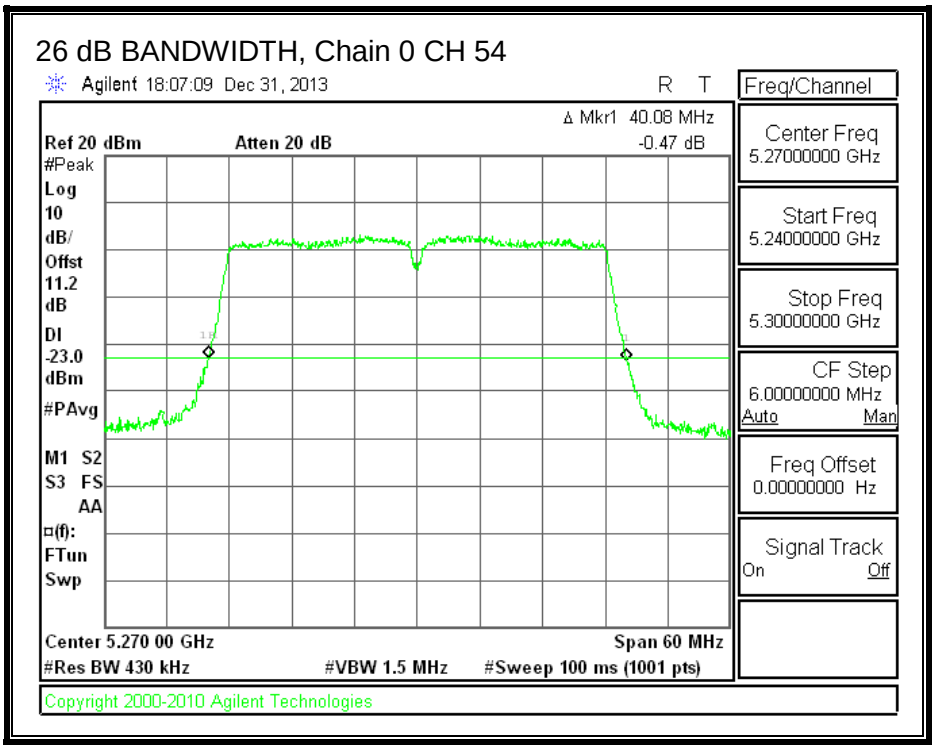
RESULTS

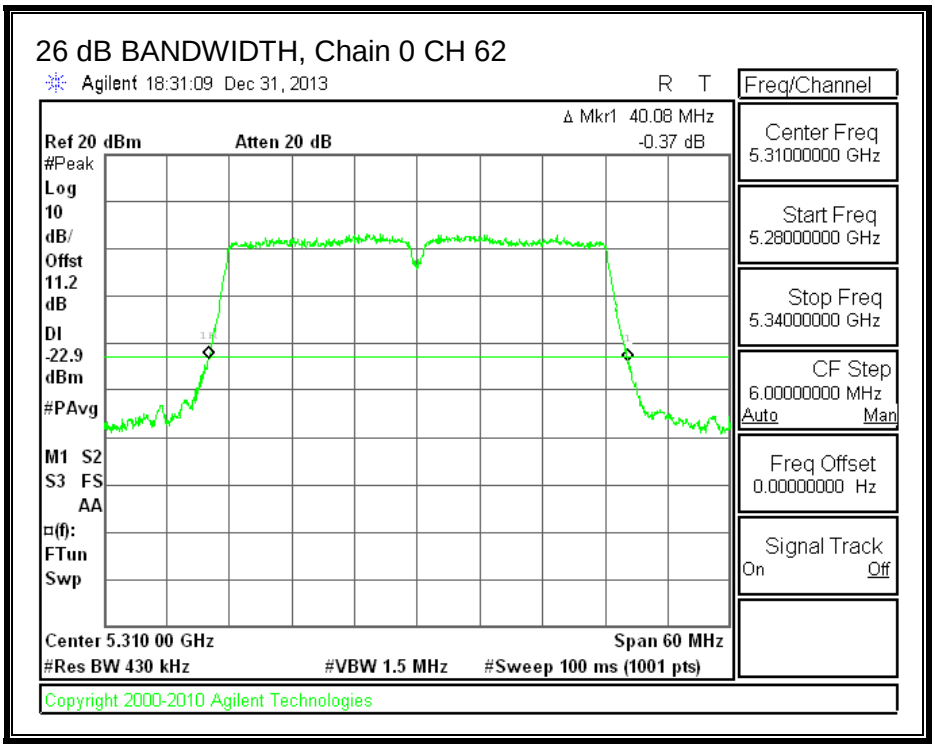
Channel	Frequency (MHz)	26 dB BW Chain 0 (MHz)	26 dB BW Chain 1 (MHz)	26 dB BW Chain 2 (MHz)
54	5270	40.08	39.42	39.60
62	5310	40.08	39.36	39.52

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701J
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

26 dB BANDWIDTH

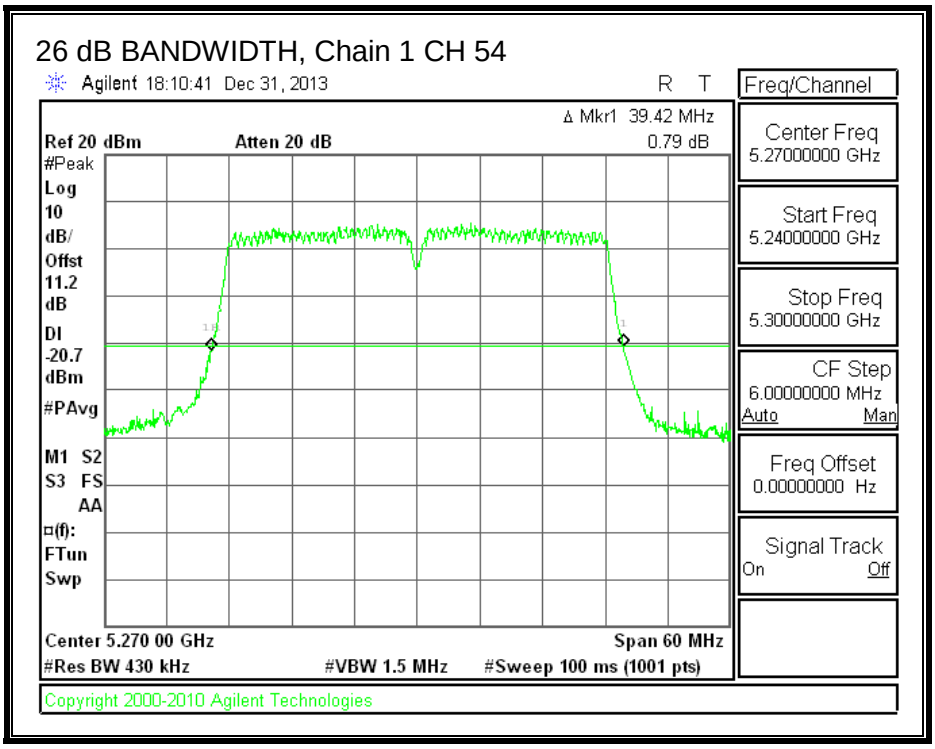
26 dB BANDWIDTH, Chain 0

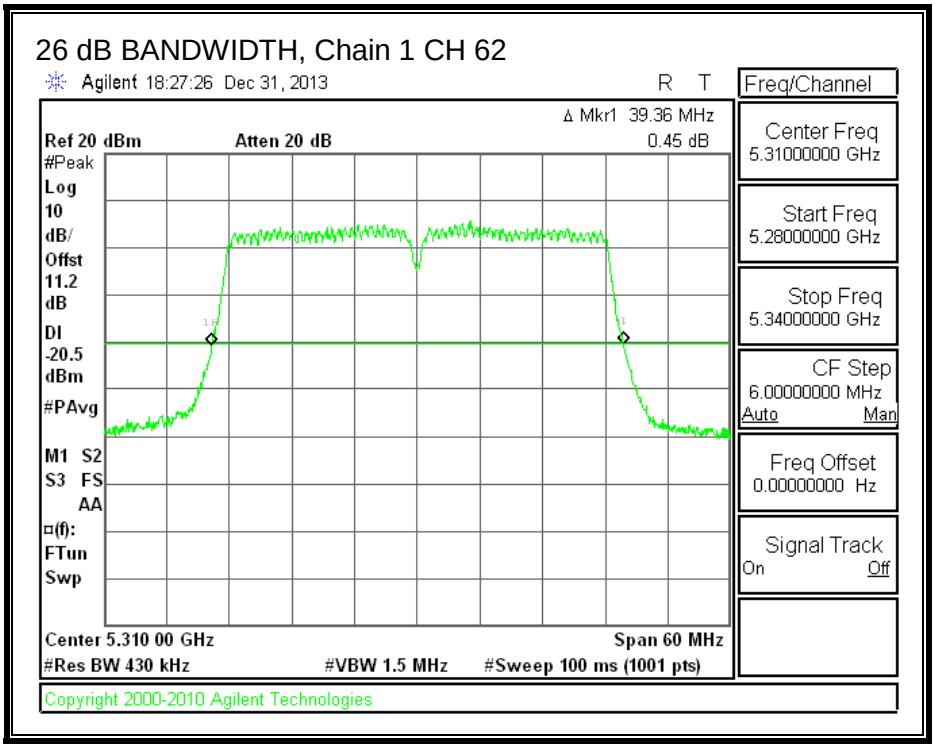




This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

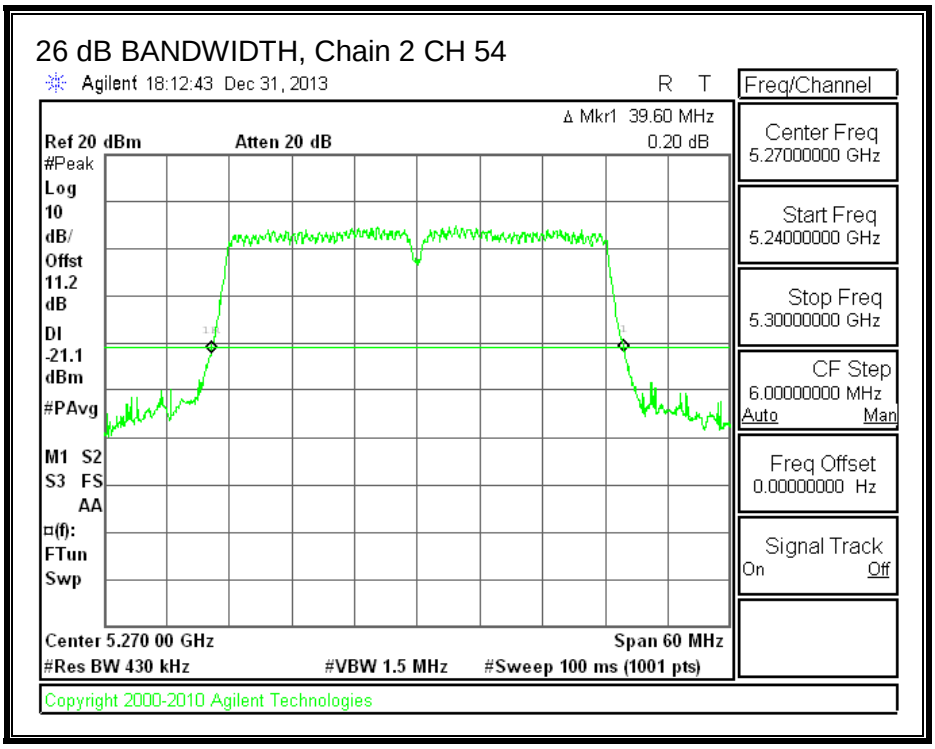
26 dB BANDWIDTH, Chain 1

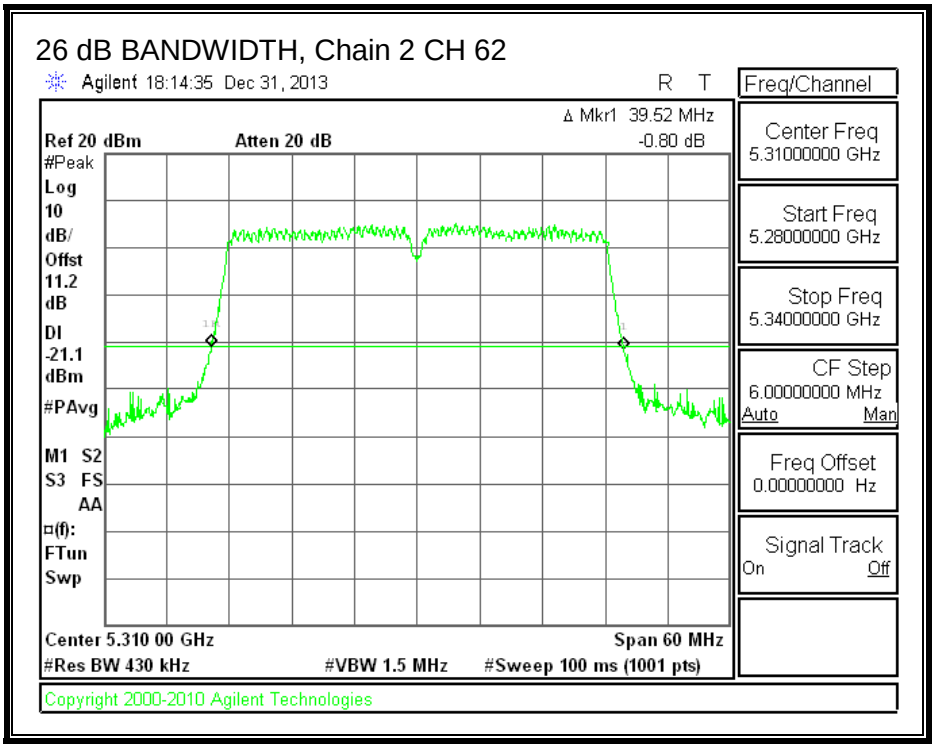




This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

26 dB BANDWIDTH, Chain 2





This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

8.17.2. 99% BANDWIDTH

LIMITS

None; for reporting purposes only.

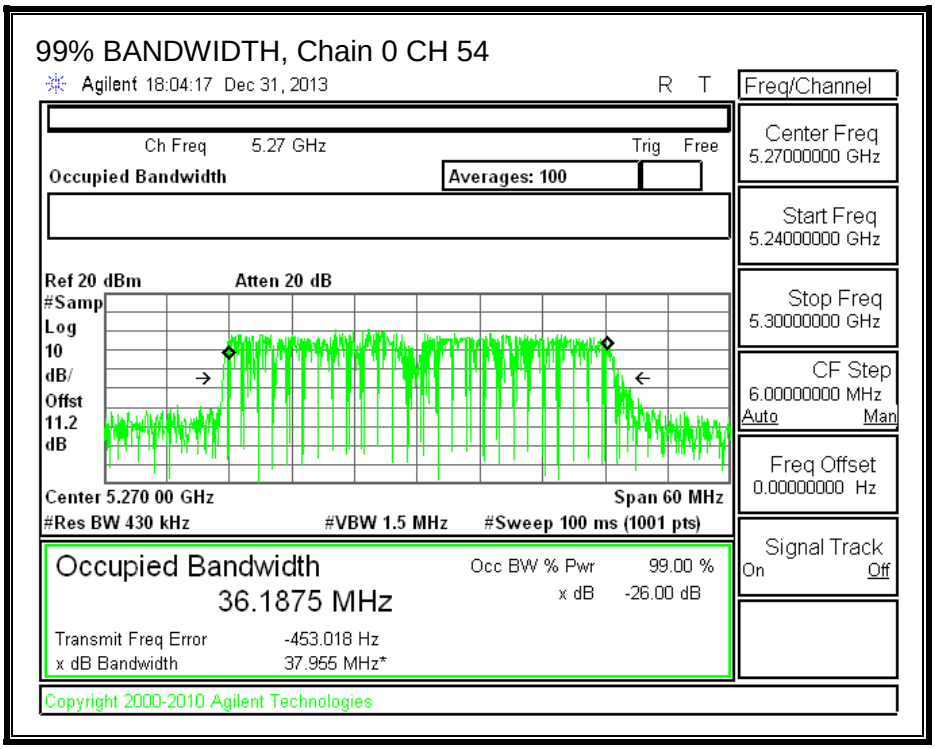
RESULTS

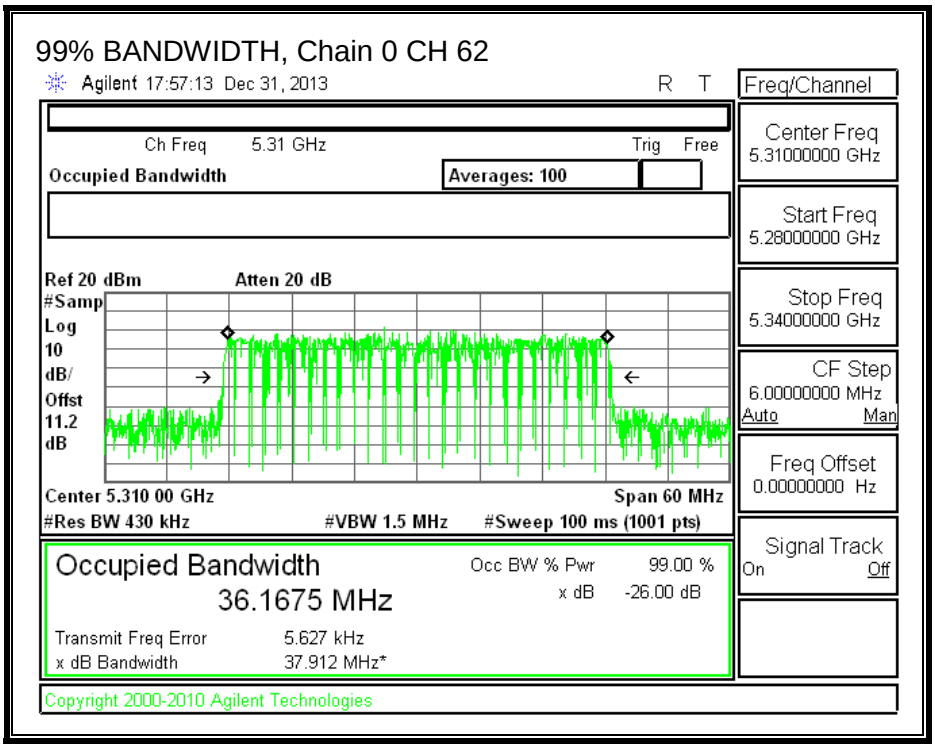
Channel	Frequency (MHz)	99% BW Chain 0 (MHz)	99% BW Chain 1 (MHz)	99% BW Chain 2 (MHz)
54	5270	36.1875	36.1717	36.1561
62	5310	36.1675	36.1642	36.1619

This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

99% BANDWIDTH

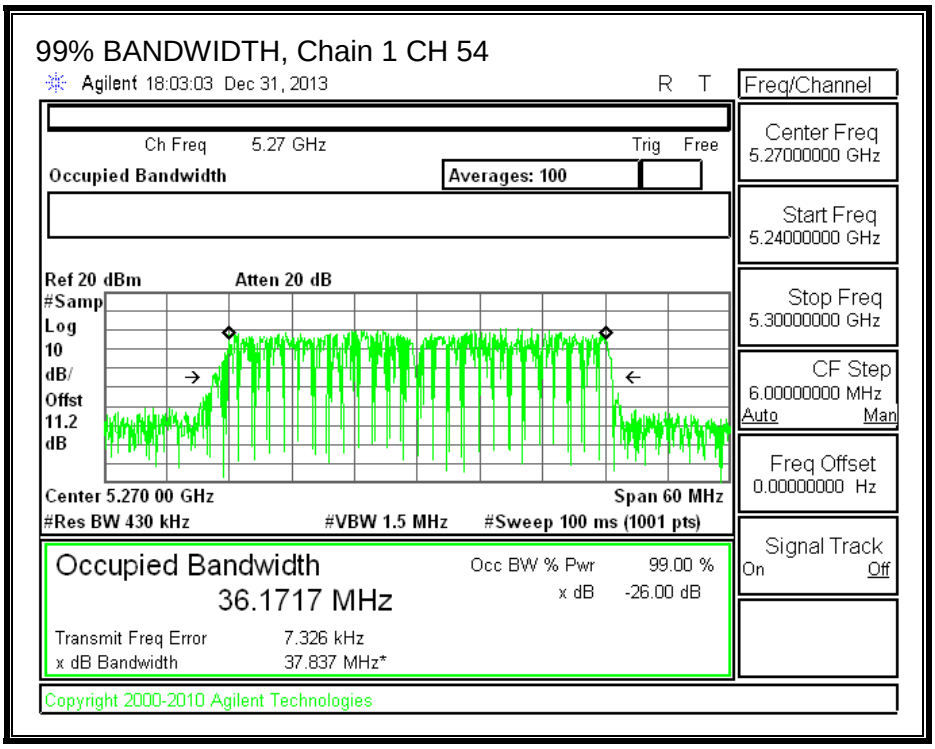
99% BANDWIDTH, Chain 0

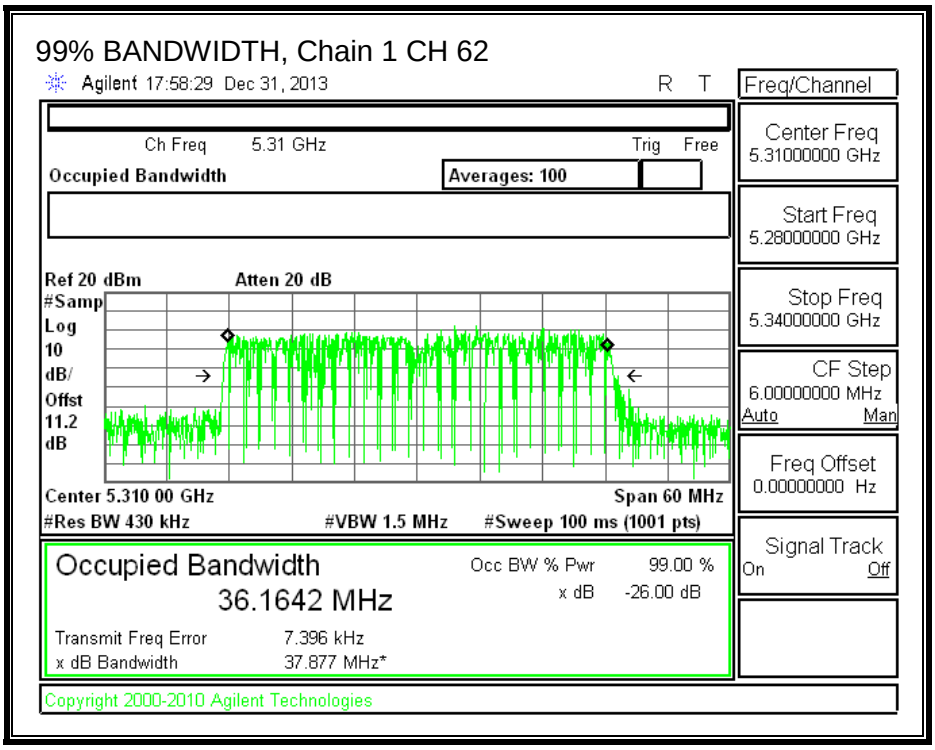




This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

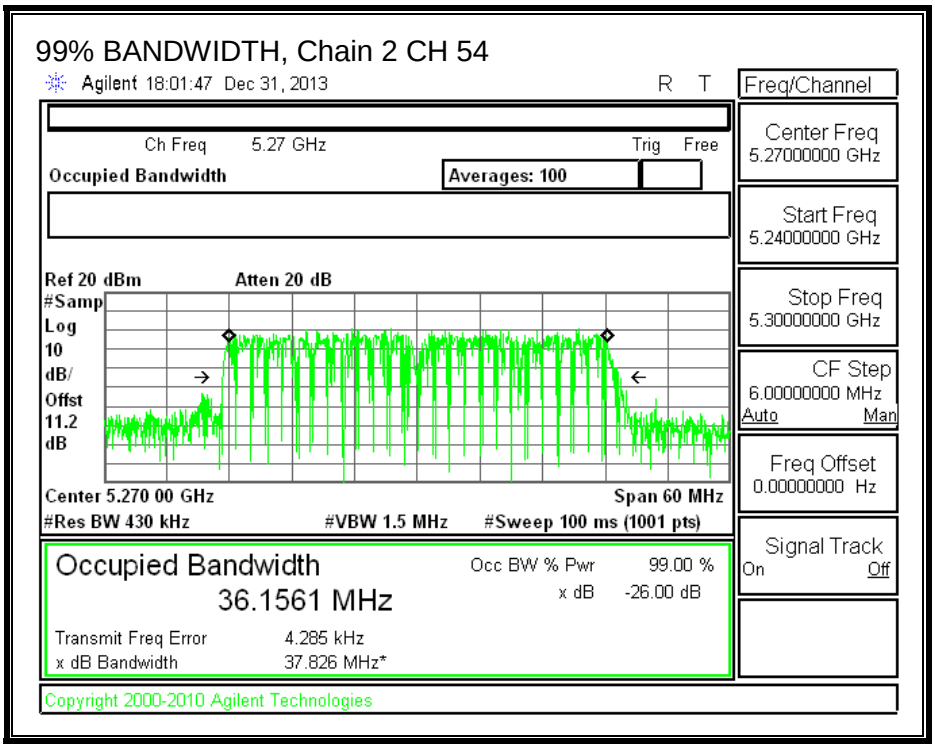
99% BANDWIDTH, Chain 1

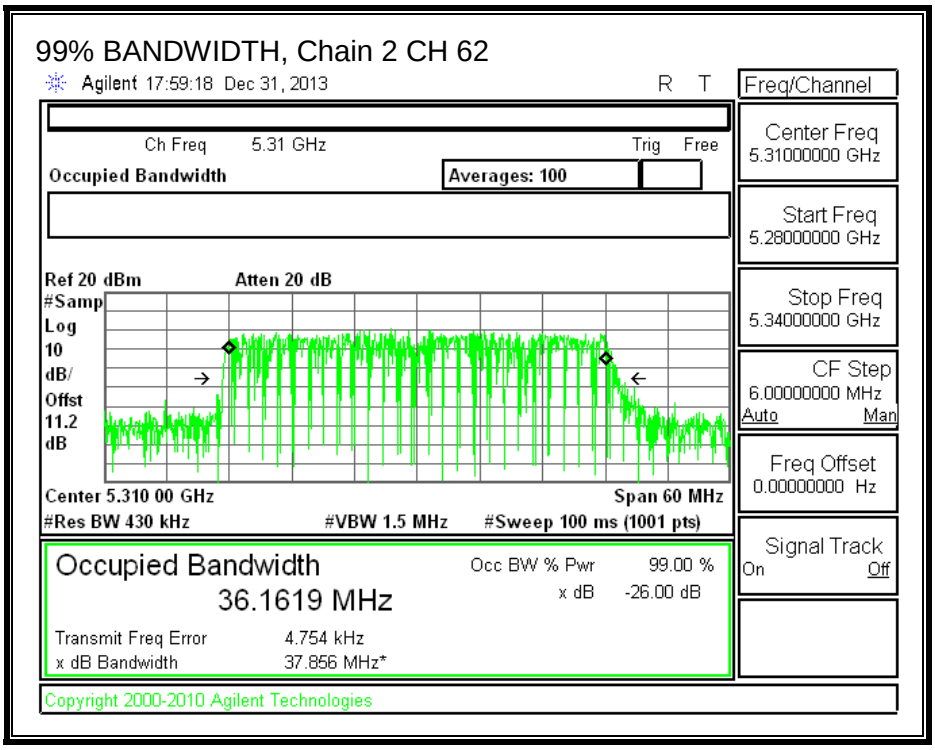




This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

99% BANDWIDTH, Chain 2





This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

8.17.3. AVERAGE POWER

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

The transmitter output is connected to a power meter.

The cable assembly insertion loss of 11.19 dB (including 10 dB pad and 1.19 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

RESULTS

Average Power Results

Channel	Frequency (MHz)	Chain 0 Power (dBm)	Chain 1 Power (dBm)	Chain 2 Power (dBm)	Total Power (dBm)
54	5270	15.82	15.84	16.10	20.69
62	5310	12.01	12.13	12.34	16.93

This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

8.17.4. OUTPUT POWER AND PPSD

LIMITS

FCC §15.407 (a) (2)

For the band 5.25–5.35 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the peak power spectral density shall not exceed 11 dBm in any 1–MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

DIRECTIONAL ANTENNA GAIN

The TX chains are uncorrelated and the antenna gain is the same for each chain. The directional gain is equal to the antenna gain.

Antenna Gain (dBi)
2.40

This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

RESULTS

Bandwidth and Antenna Gain

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Min 99% BW (MHz)	Directional Gain for Power (dBi)	Directional Gain for PPSD (dBi)
54	5270	39.42	36.1561	2.40	2.40
62	5310	39.36	36.1619	2.40	2.40

Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Power Limit (dBm)	FCC PPSD Limit (dBm)	IC PSD Limit (dBm)	PPSD Limit (dBm)
54	5270	24.00	24.00	30.00	24.00	11.00	11.00	11.00
62	5310	24.00	24.00	30.00	24.00	11.00	11.00	11.00

Duty Cycle CF (dB)	0.34	**Included in Calculations of Corr'd Power & PPSD**

Output Power Results

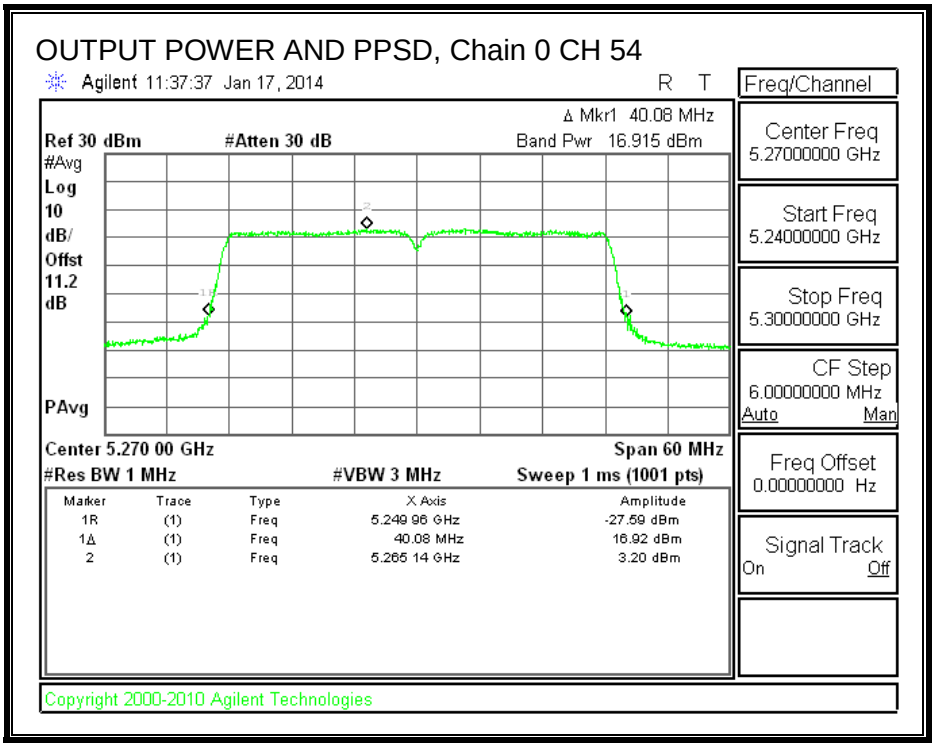
Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Chain 2 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
54	5270	16.92	16.85	17.25	22.12	24.00	-1.88
62	5310	12.45	12.66	13.19	17.89	24.00	-6.11

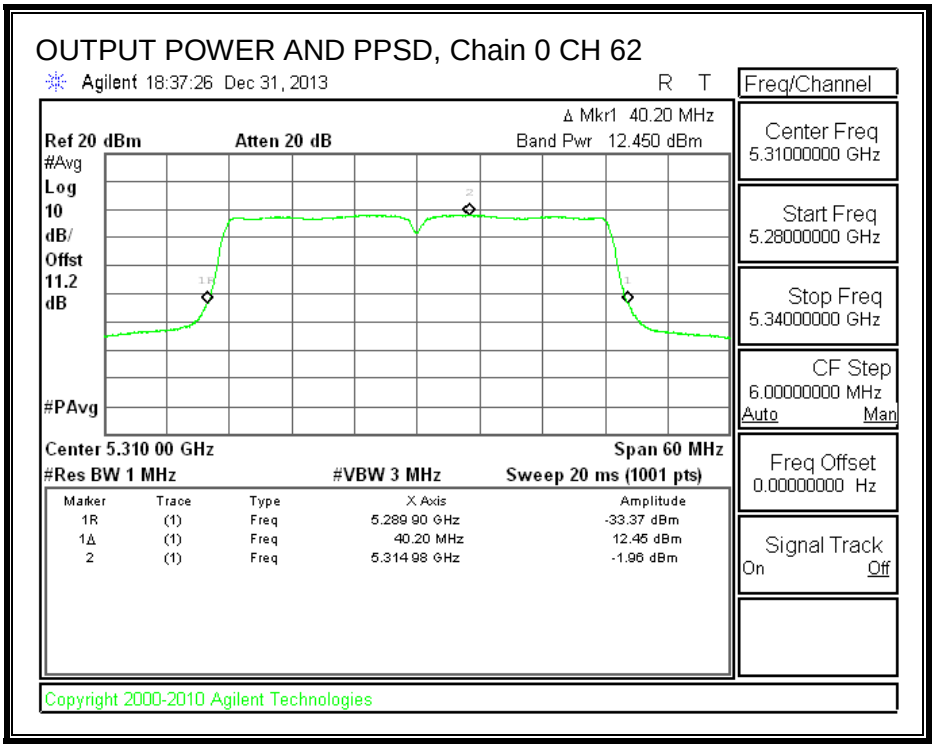
PPSD Results

Channel	Frequency (MHz)	Chain 0 Meas PPSD (dBm)	Chain 1 Meas PPSD (dBm)	Chain 2 Meas PPSD (dBm)	Total Corr'd PPSD (dBm)	PPSD Limit (dBm)	PPSD Margin (dB)
54	5270	3.20	3.30	3.73	8.53	11.00	-2.47
62	5310	-1.96	-1.69	-1.24	3.49	11.00	-7.51

This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

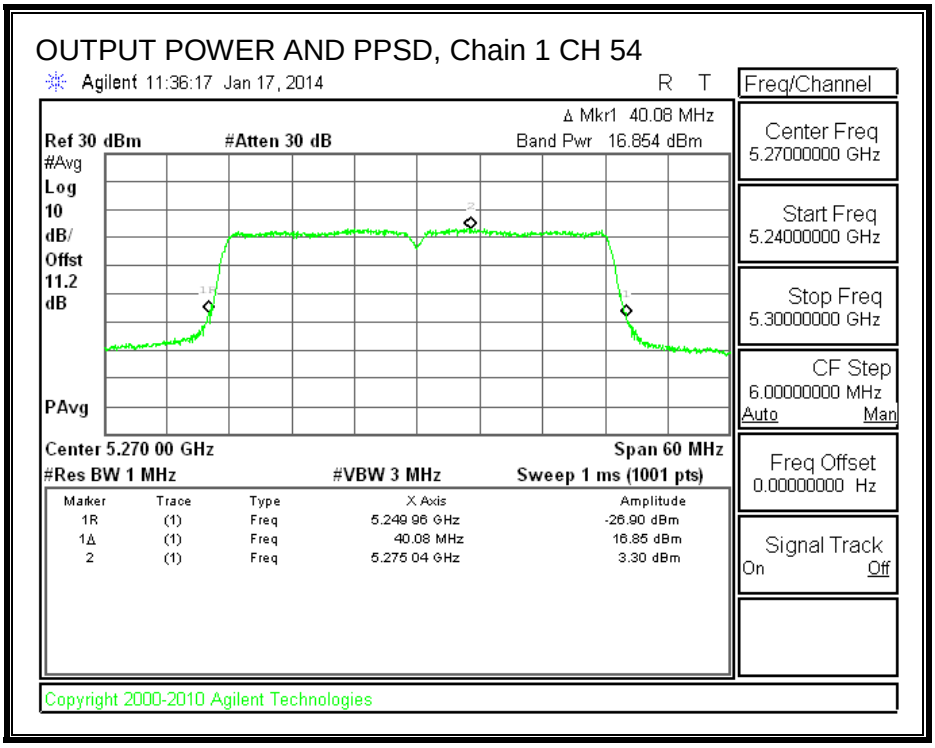
OUTPUT POWER AND PPSD, Chain 0

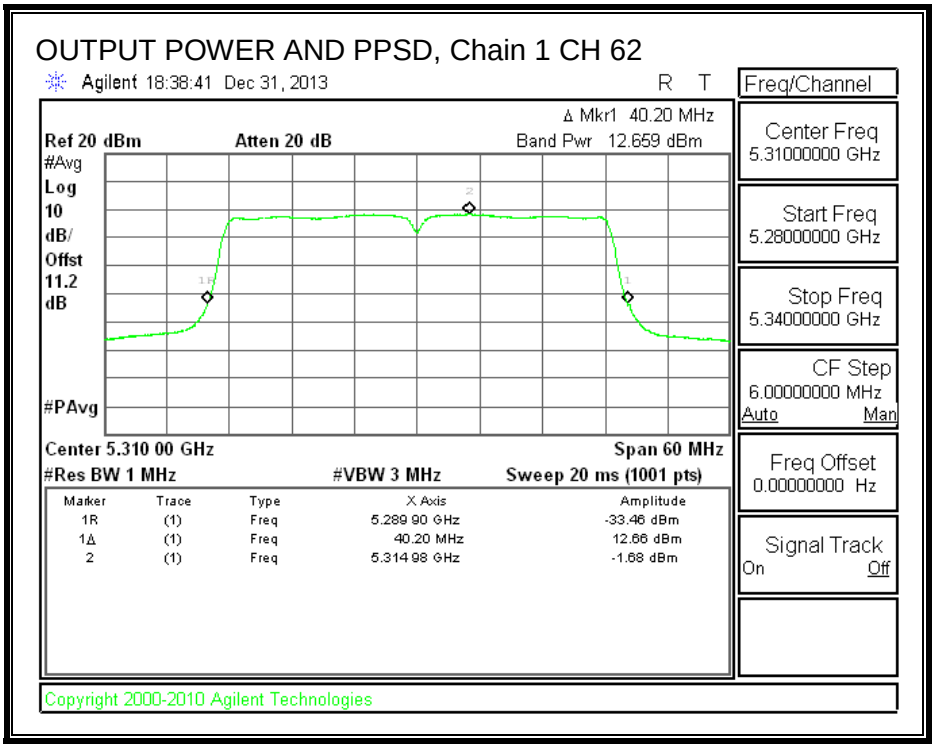




This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

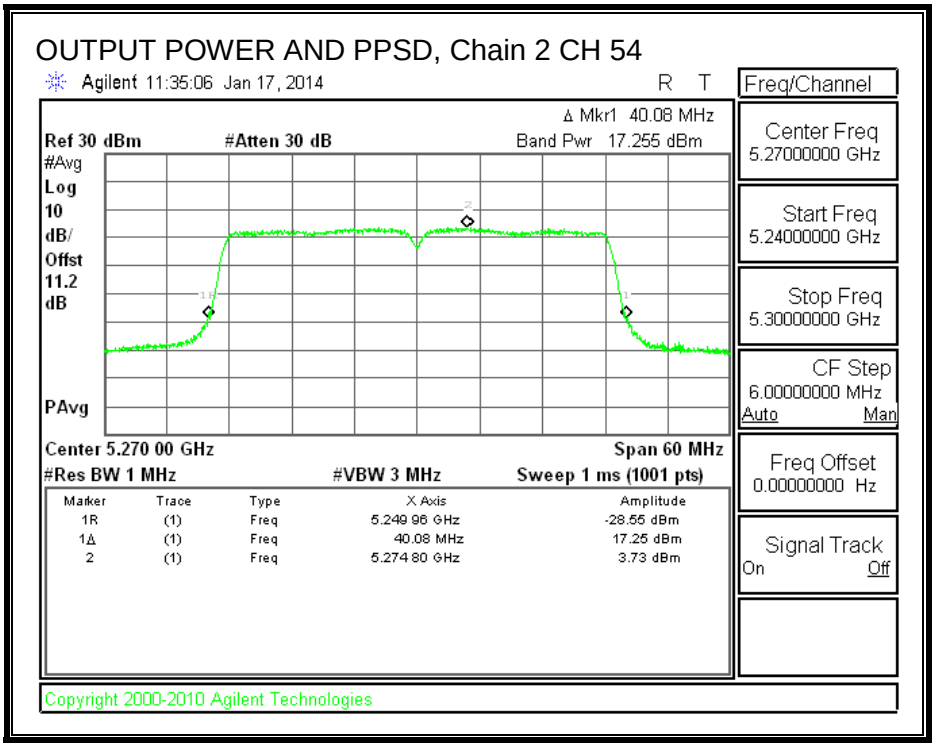
OUTPUT POWER AND PPSD, Chain 1

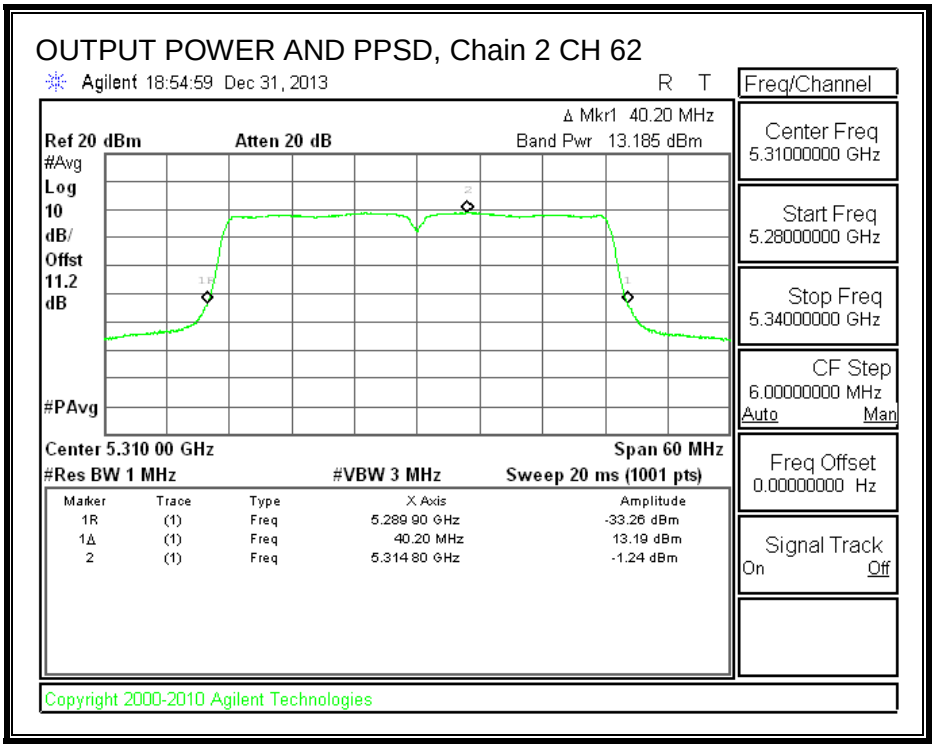




This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

OUTPUT POWER AND PPSD, Chain 2





This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

8.18. 802.11ac 80MHz 1TX SISO MODE IN THE 5.3 GHz BAND

8.18.1. 26 dB BANDWIDTH

LIMITS

None; for reporting purposes only.

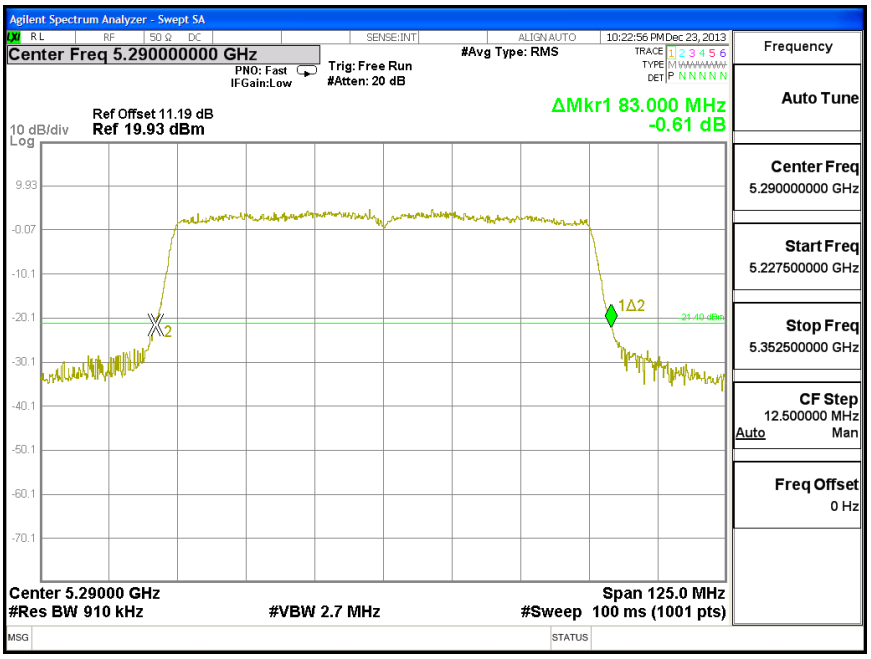
RESULTS

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
58	5290	83.00

This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

26 dB BANDWIDTH

BANDWIDTH CH 58



This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

8.18.2. 99% BANDWIDTH

LIMITS

None; for reporting purposes only.

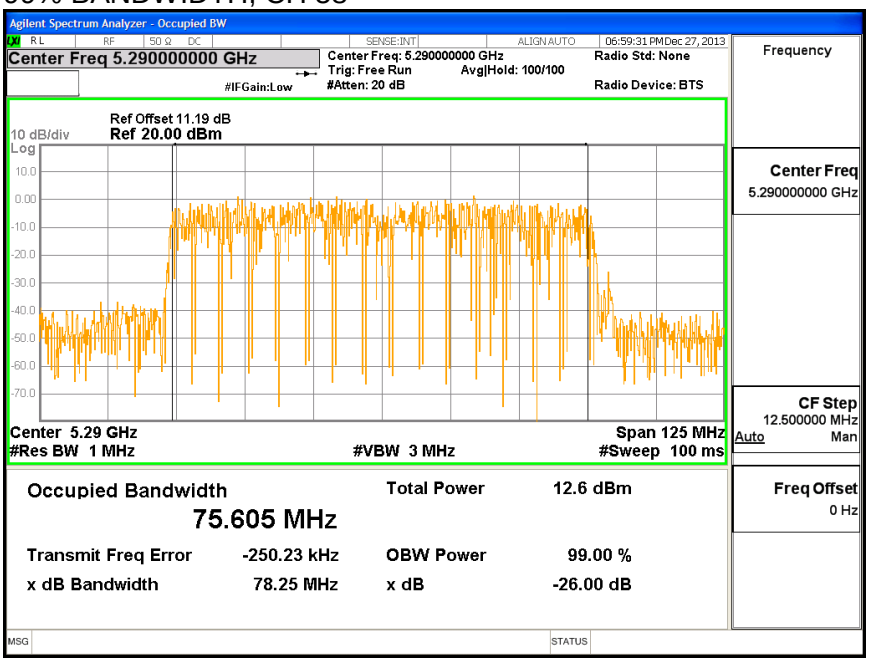
RESULTS

Channel	Frequency (MHz)	99% Bandwidth (MHz)
58	5210	75.605

This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

99% BANDWIDTH

99% BANDWIDTH, CH 58



This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

8.18.3. AVERAGE POWER

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

The transmitter output is connected to a power meter.

The cable assembly insertion loss of 11.26 dB (including 10 dB pad and 1.26 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

RESULTS

Channel	Frequency (MHz)	Power (dBm)
58	5290	13.18

This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

8.18.4. OUTPUT POWER AND PPSD

LIMITS

FCC §15.407 (a) (2)

For the band 5.25–5.35 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the peak power spectral density shall not exceed 11 dBm in any 1–MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

DIRECTIONAL ANTENNA GAIN

There is only one transmitter output therefore the directional gain is equal to the antenna gain.

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701J
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

RESULTS

Bandwidth and Antenna Gain

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Min 99% BW (MHz)	Directional Gain (dBi)
58	5290	83.0	75.5	2.40

Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)	IC EIRP Limit (dBm)	Max IC Power (dBm)	Power Limit (dBm)	FCC PPSD Limit (dBm)	IC eirp PSD Limit (dBm)	PPSD Limit (dBm)
58	5290	24.00	24.00	30.00	24.00	11.00	11.00	11.00

Duty Cycle CF (dB)	0.27	Included in Calculations of Corr'd Power & PPSD

Output Power Results

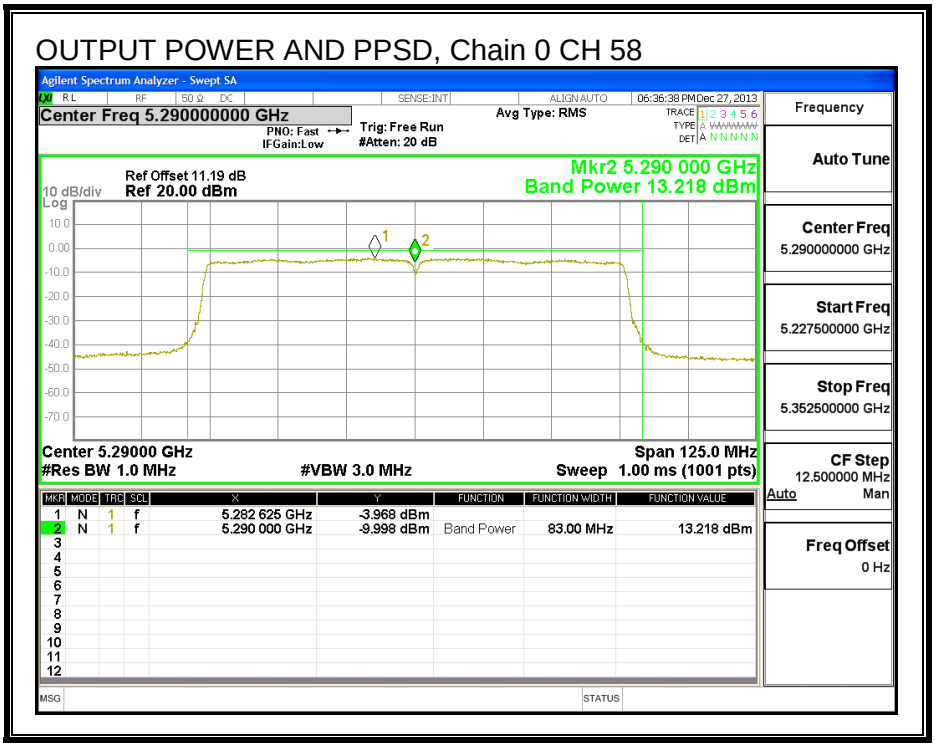
Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
58	5290	13.22	13.49	24.00	-10.51

PPSD Results

Channel	Frequency (MHz)	Chain 0 Meas PPSD (dBm)	Total Corr'd PPSD (dBm)	PPSD Limit (dBm)	PPSD Margin (dB)
58	5290	-3.97	-3.70	11.00	-14.70

This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

OUTPUT POWER AND PPSD, Chain 0



This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

8.19. 802.11ac 80MHz 3TX CDD MODE IN THE 5.3 GHz BAND

8.19.1. 26 dB BANDWIDTH

LIMITS

None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	26 dB BW Chain 0 (MHz)	26 dB BW Chain 1 (MHz)	26 dB BW Chain 2 (MHz)
58	5290	83.00	82.63	82.38

This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

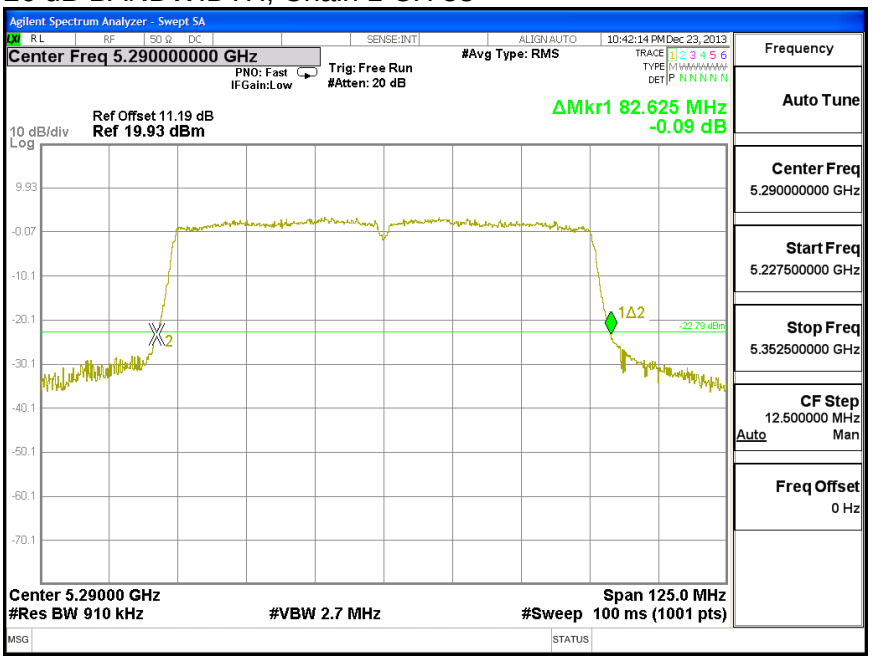
26 dB BANDWIDTH

26 dB BANDWIDTH, Chain 0

26 dB BANDWIDTH, Chain 0 CH 58

26 dB BANDWIDTH, Chain 1

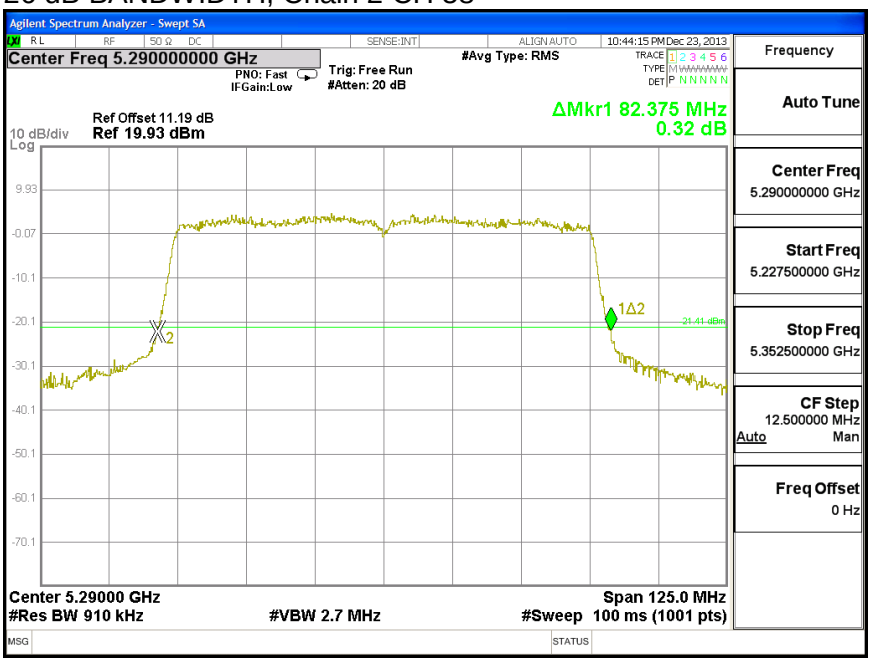
26 dB BANDWIDTH, Chain 1 CH 58



This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

26 dB BANDWIDTH, Chain 2

26 dB BANDWIDTH, Chain 2 CH 58



This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

8.19.2. 99% BANDWIDTH

LIMITS

None; for reporting purposes only.

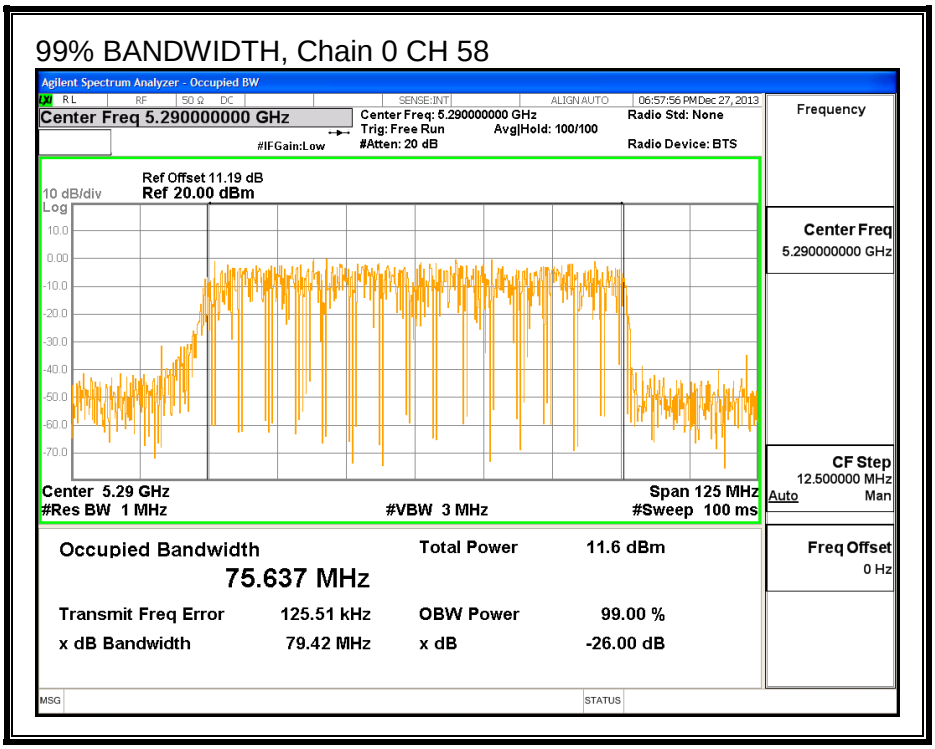
RESULTS

Channel	Frequency (MHz)	99% BW Chain 0 (MHz)	99% BW Chain 1 (MHz)	99% BW Chain 2 (MHz)
58	5290	75.637	75.918	75.549

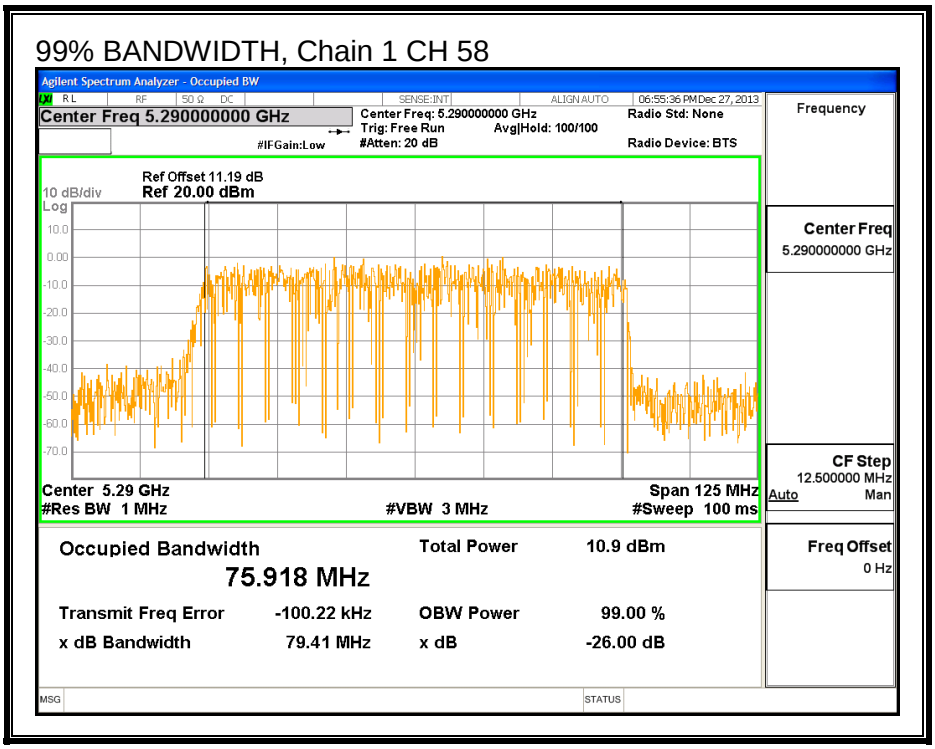
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

99% BANDWIDTH

99% BANDWIDTH, Chain 0

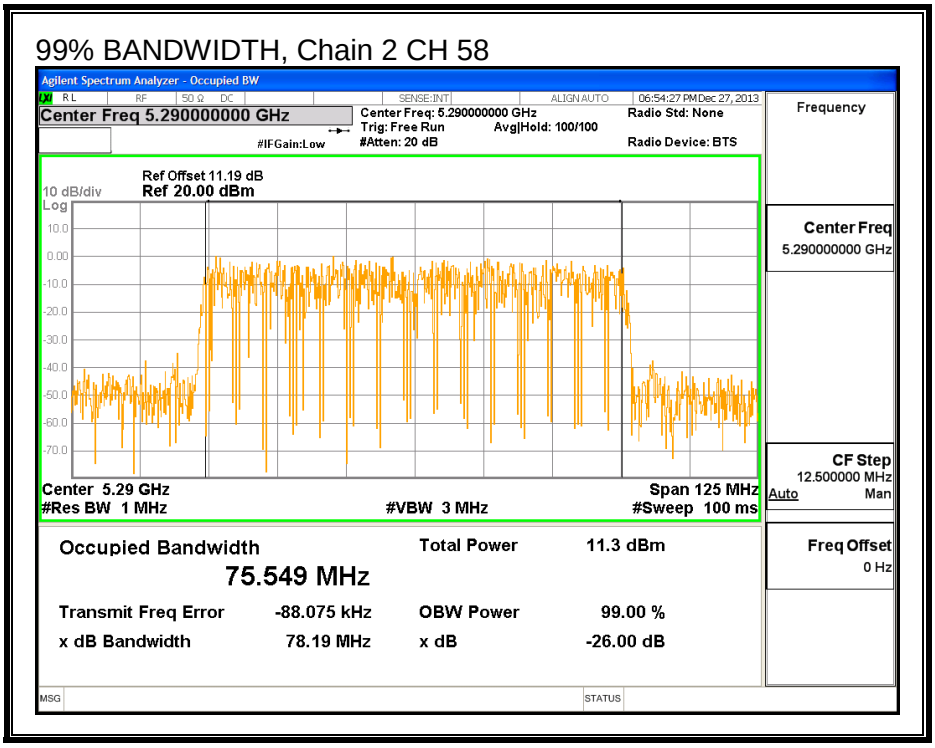


99% BANDWIDTH, Chain 1



This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

99% BANDWIDTH, Chain 2



This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

8.19.3. AVERAGE POWER

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

The transmitter output is connected to a power meter.

The cable assembly insertion loss of 11.26 dB (including 10 dB pad and 1.26 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

RESULTS

Average Power Results

Channel	Frequency (MHz)	Chain 0 Power (dBm)	Chain 1 Power (dBm)	Chain 2 Power (dBm)	Total Power (dBm)
42	5210	9.89	10.22	10.81	15.09

This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

8.19.4. OUTPUT POWER AND PPSD

LIMITS

FCC §15.407 (a) (2)

For the band 5.25–5.35 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the peak power spectral density shall not exceed 11 dBm in any 1–MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

DIRECTIONAL ANTENNA GAIN

The TX chains are correlated and the antenna gain is the same for each chain. The directional gain is:

Antenna Gain (dBi)	10 * Log (3 chains) (dB)	Correlated Chains Directional Gain (dBi)
2.40	4.77	7.17

This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

RESULTS

Bandwidth and Antenna Gain

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Min 99% BW (MHz)	Directional Gain for Power (dBi)	Directional Gain for PPSD (dBi)
58	5290	82.56	75.5680	2.25	7.02

Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)	IC EIRP Limit (dBm)	Max IC Power (dBm)	Power Limit (dBm)	FCC PPSD Limit (dBm)	IC eirp PSD Limit (dBm)	PPSD Limit (dBm)
58	5290	24.00	24.00	30.00	24.00	9.98	11.00	9.98

Duty Cycle CF (dB)	0.26	Included in Calculations of Corr'd Power & PPSD

Output Power Results

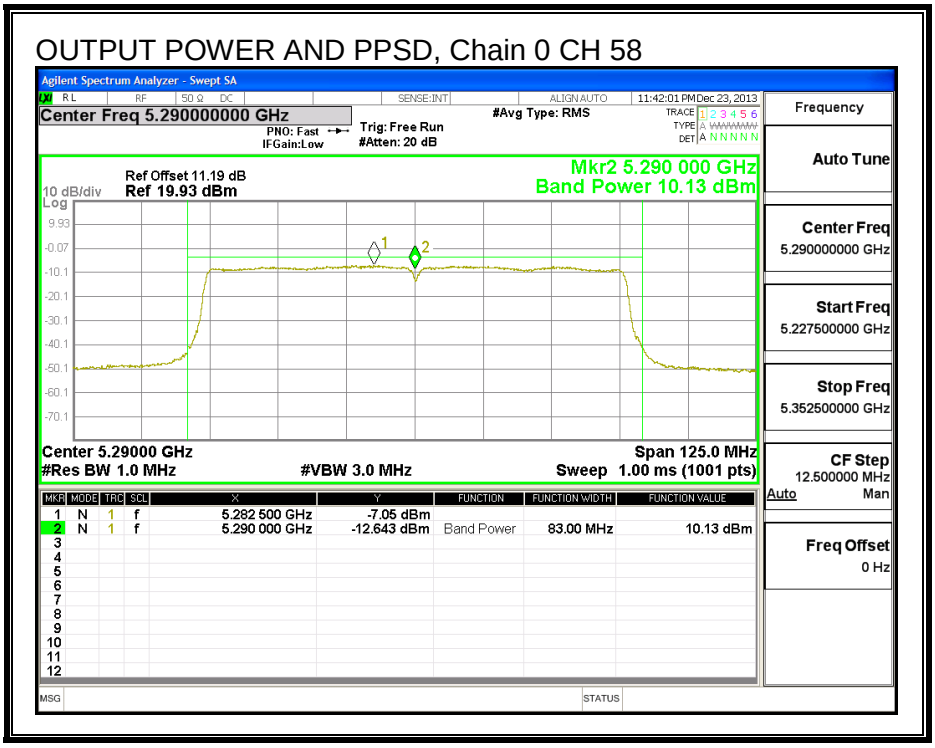
Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Chain 2 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
58	5290	10.13	10.24	11.18	15.58	24.00	-8.42

PPSD Results

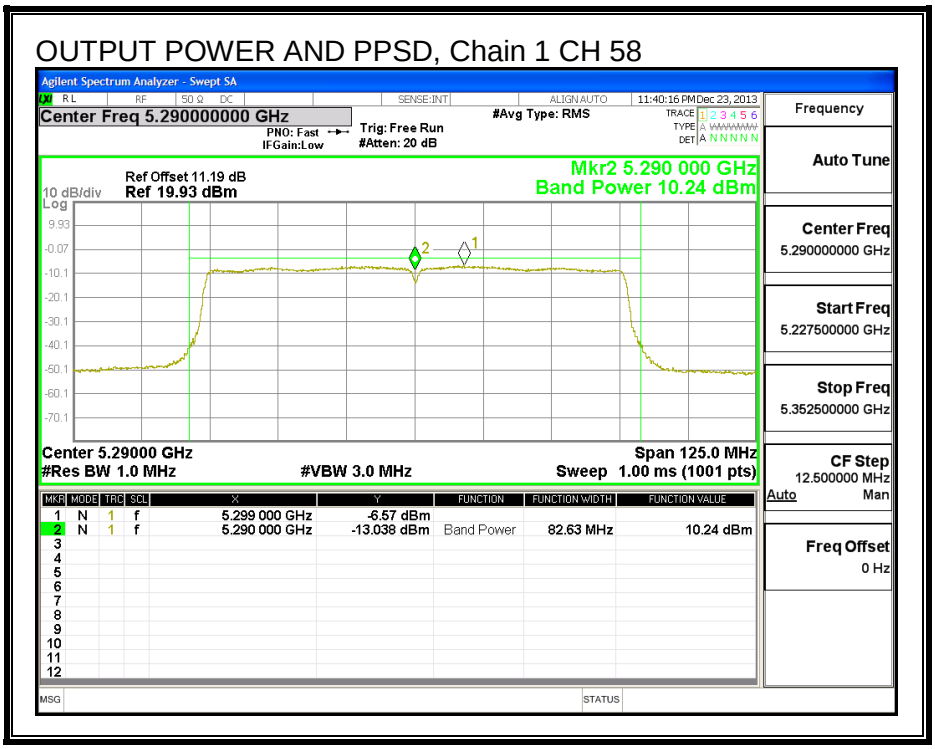
Channel	Frequency (MHz)	Chain 0 Meas PPSD (dBm)	Chain 1 Meas PPSD (dBm)	Chain 2 Meas PPSD (dBm)	Total Corr'd PPSD (dBm)	PPSD Limit (dBm)	PPSD Margin (dB)
58	5290	-7.05	-6.57	-6.05	-1.51	9.98	-11.49

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701J
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

OUTPUT POWER AND PPSD, Chain 0



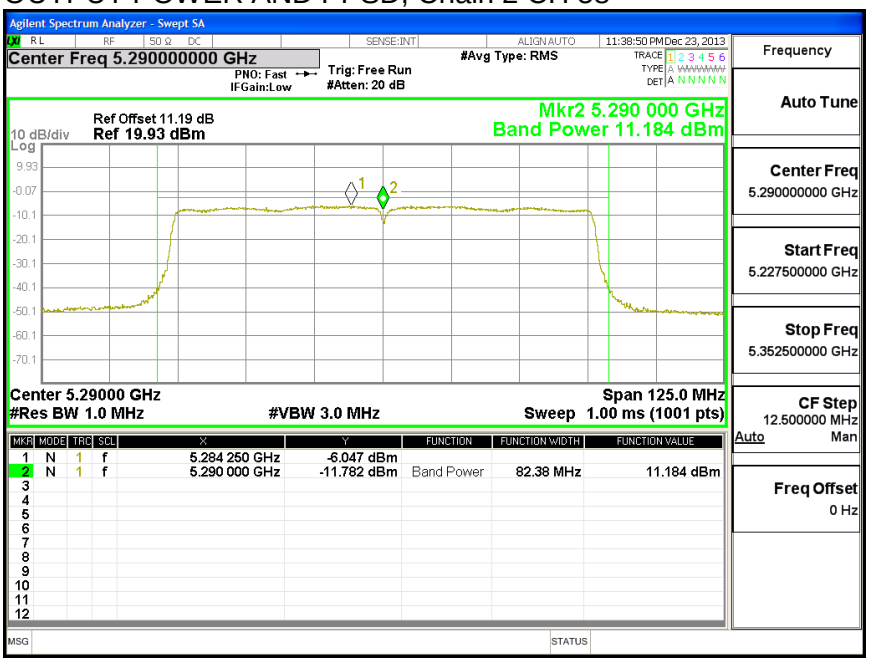
OUTPUT POWER AND PPSD, Chain 1



This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

OUTPUT POWER AND PPSD, Chain 2

OUTPUT POWER AND PPSD, Chain 2 CH 58



This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

8.20. 802.11ac 80MHz 3TX SDM MODE IN THE 5.3 GHz BAND

8.20.1. 26 dB BANDWIDTH

LIMITS

None; for reporting purposes only.

RESULTS

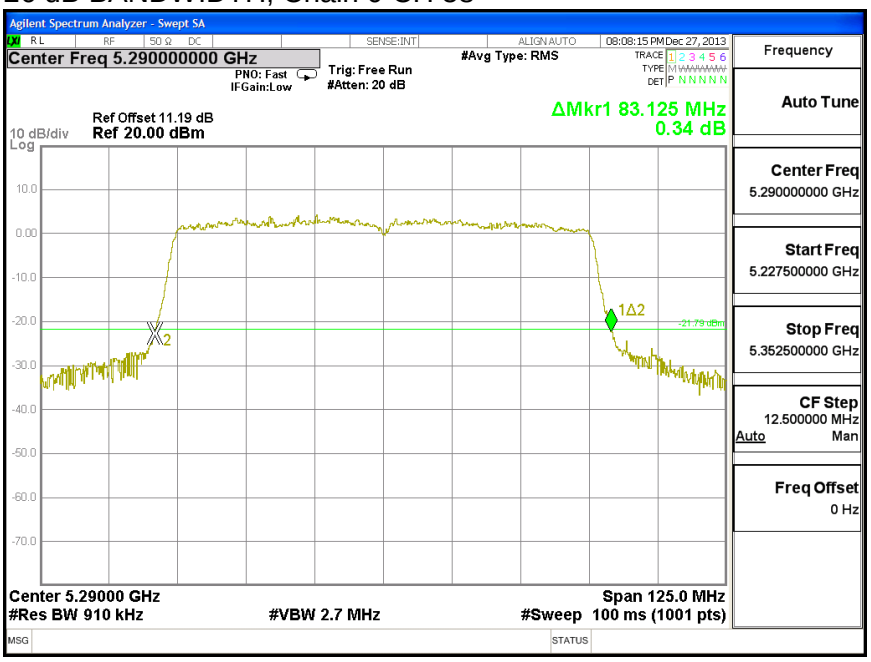
Channel	Frequency (MHz)	26 dB BW Chain 0 (MHz)	26 dB BW Chain 1 (MHz)	26 dB BW Chain 2 (MHz)
58	5290	83.13	82.25	82.13

This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

26 dB BANDWIDTH

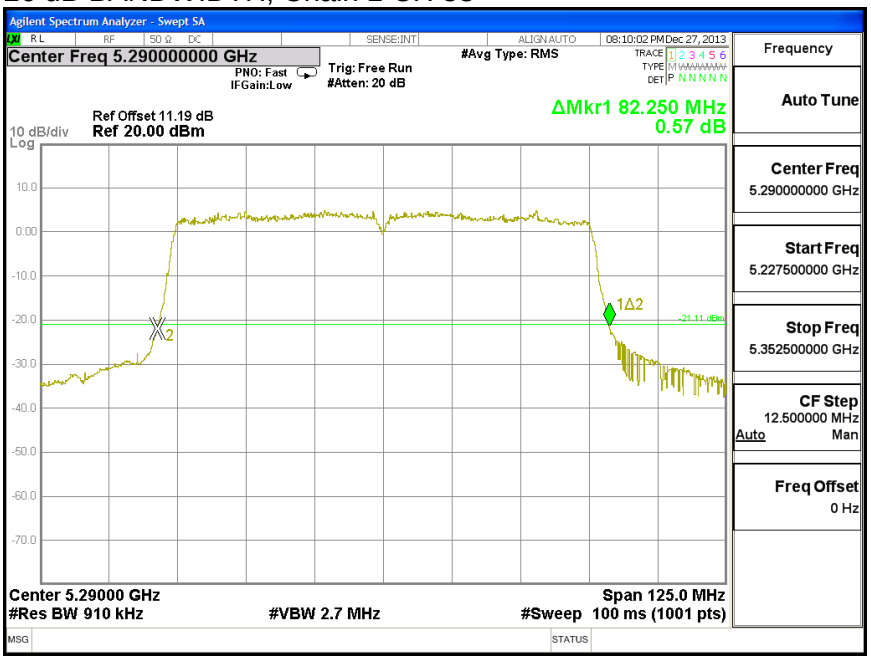
26 dB BANDWIDTH, Chain 0

26 dB BANDWIDTH, Chain 0 CH 58



26 dB BANDWIDTH, Chain 1

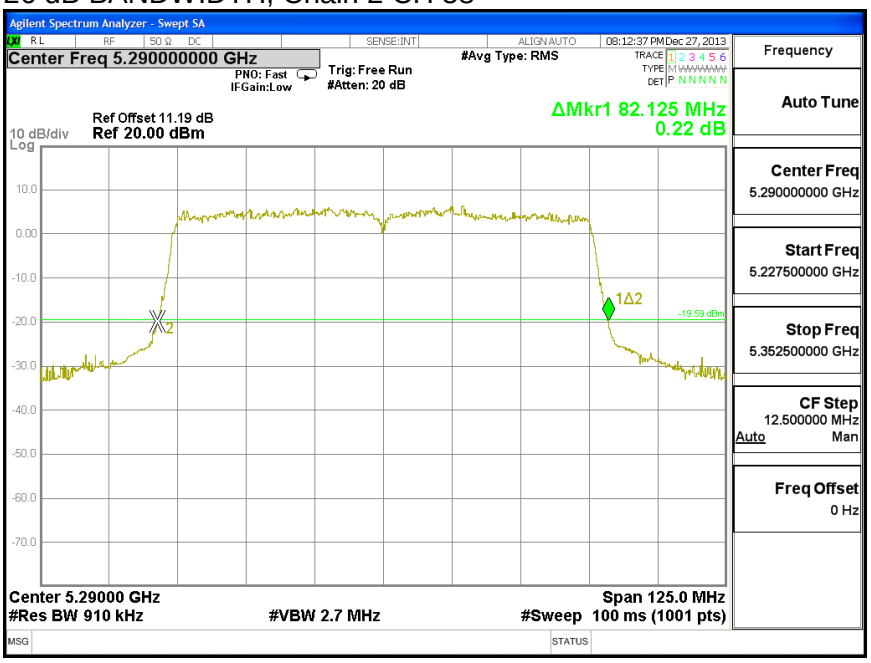
26 dB BANDWIDTH, Chain 1 CH 58



This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

26 dB BANDWIDTH, Chain 2

26 dB BANDWIDTH, Chain 2 CH 58



This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

8.20.2. 99% BANDWIDTH

LIMITS

None; for reporting purposes only.

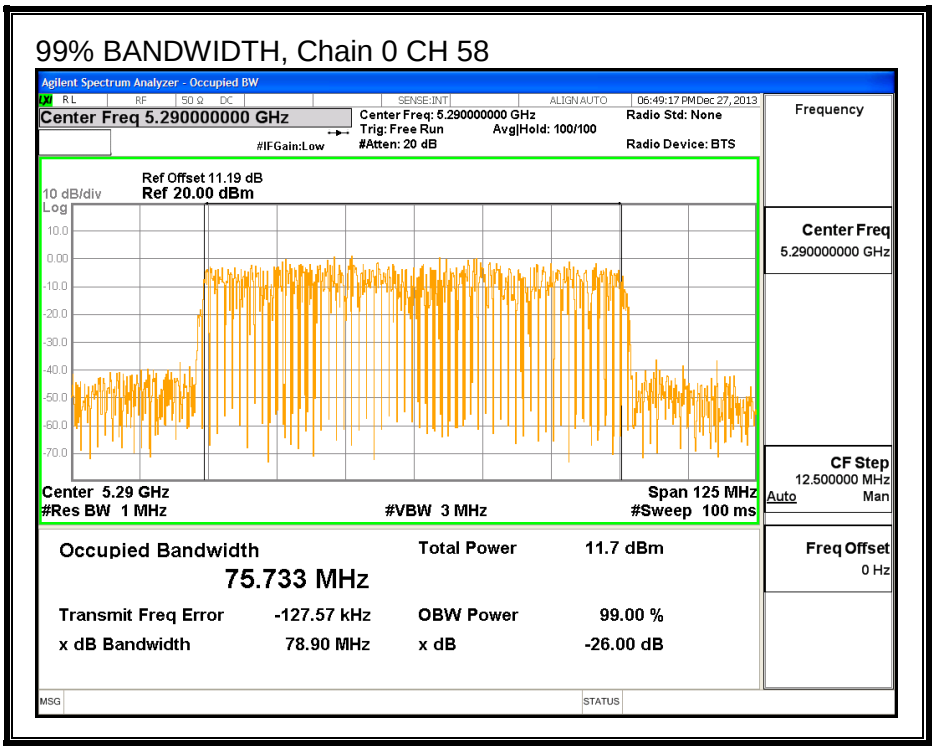
RESULTS

Channel	Frequency (MHz)	99% BW Chain 0 (MHz)	99% BW Chain 1 (MHz)	99% BW Chain 2 (MHz)
58	5290	75.7330	76.2590	74.5540

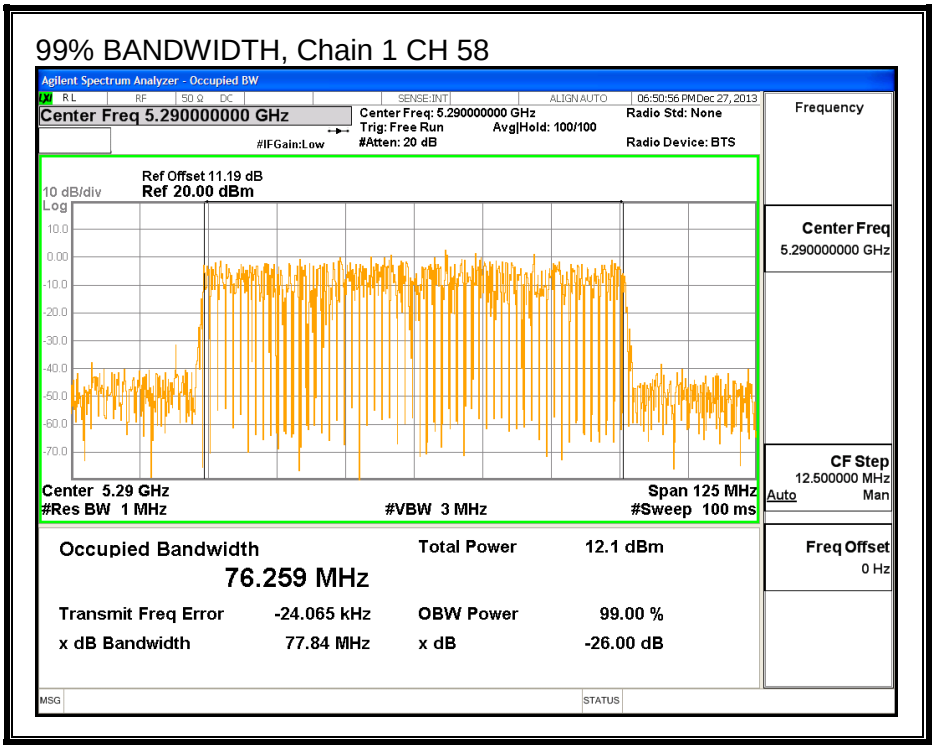
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

99% BANDWIDTH

99% BANDWIDTH, Chain 0

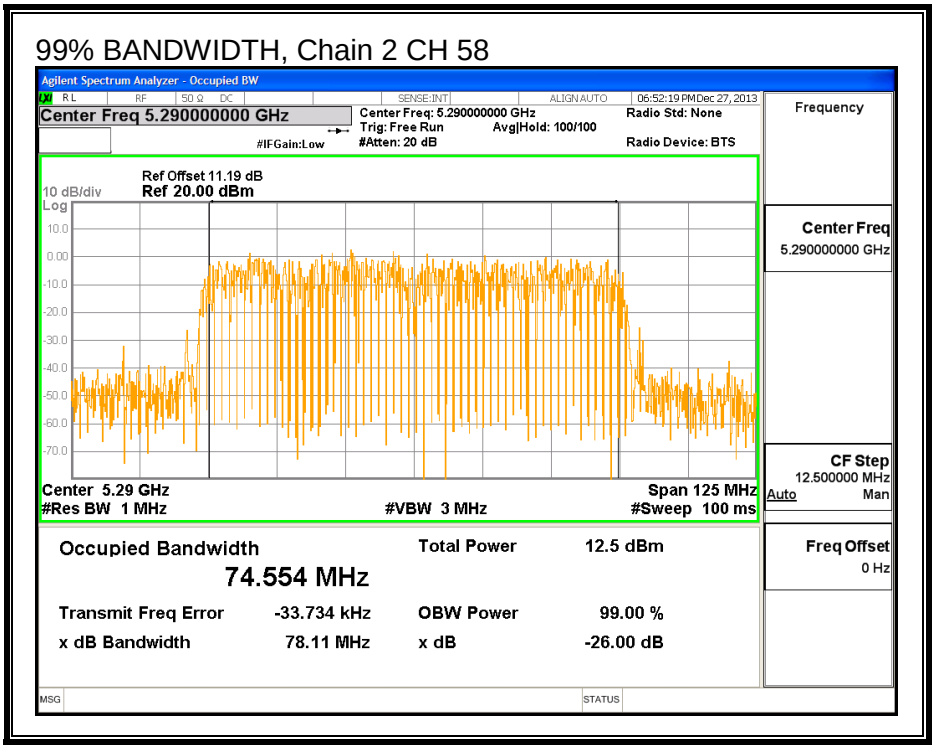


99% BANDWIDTH, Chain 1



This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

99% BANDWIDTH, Chain 2



This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

8.20.3. AVERAGE POWER

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

The transmitter output is connected to a power meter.

The cable assembly insertion loss of 11.26 dB (including 10 dB pad and 1.26 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

RESULTS

Average Power Results

Channel	Frequency (MHz)	Chain 0 Power (dBm)	Chain 1 Power (dBm)	Chain 2 Power (dBm)	Total Power (dBm)
58	5210	11.27	10.91	11.61	16.04

This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

8.20.4. OUTPUT POWER AND PPSD

LIMITS

FCC §15.407 (a) (2)

For the band 5.25–5.35 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the peak power spectral density shall not exceed 11 dBm in any 1–MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

DIRECTIONAL ANTENNA GAIN

The TX chains are uncorrelated and the antenna gain is the same for each chain. The directional gain is equal to the antenna gain.

Antenna Gain (dBi)
2.40

This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

RESULTS

Bandwidth and Antenna Gain

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Min 99% BW (MHz)	Directional Gain for Power (dBi)	Directional Gain for PPSD (dBi)
58	5290	83.14	76.2590	2.40	2.40

Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)	IC EIRP Limit (dBm)	Max IC Power (dBm)	Power Limit (dBm)	FCC PPSD Limit (dBm)	IC eirp PSD Limit (dBm)	PPSD Limit (dBm)
58	5290	24.00	24.00	30.00	24.00	11.00	11.00	11.00

Duty Cycle CF (dB)	0.60	Included in Calculations of Corr'd Power & PPSD

Output Power Results

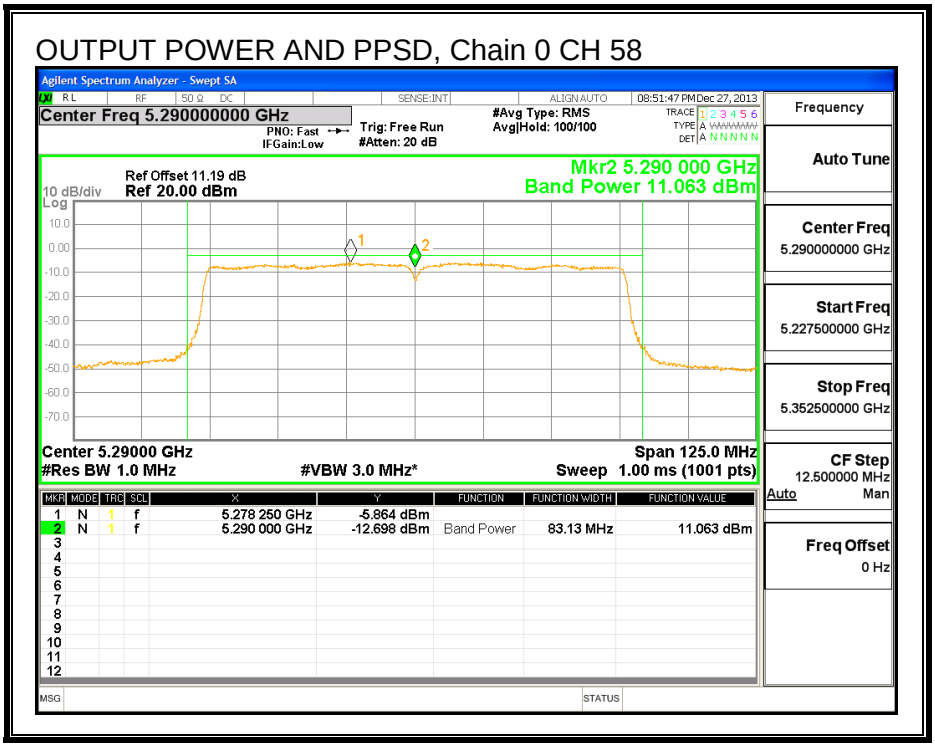
Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Chain 2 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
58	5290	11.06	11.36	11.97	16.85	24.00	-7.15

PPSD Results

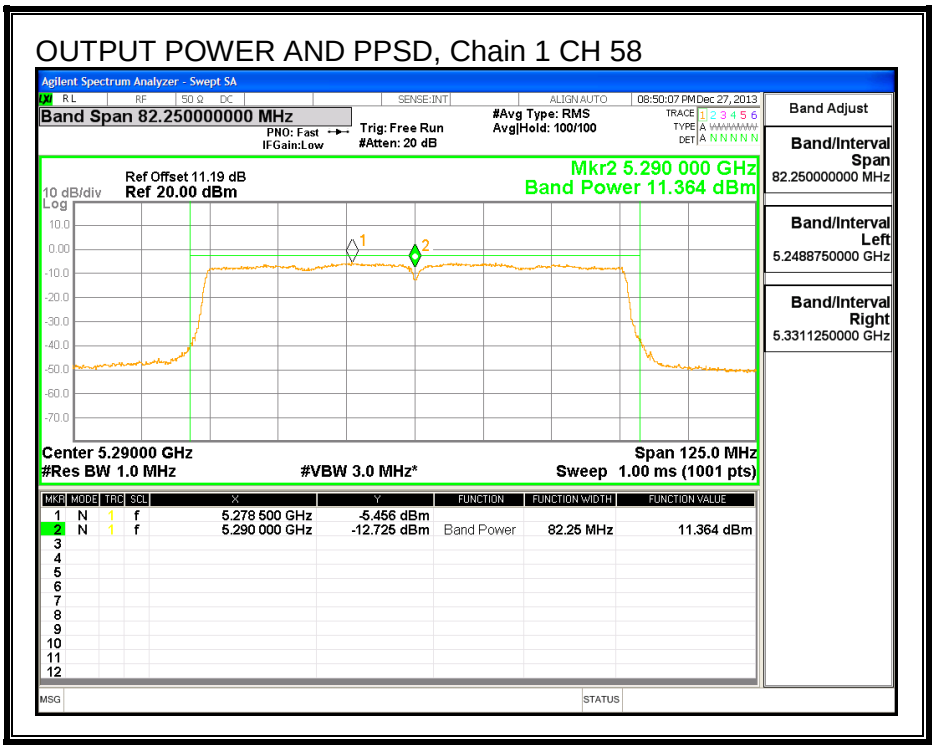
Channel	Frequency (MHz)	Chain 0 Meas PPSD (dBm)	Chain 1 Meas PPSD (dBm)	Chain 2 Meas PPSD (dBm)	Total Corr'd PPSD (dBm)	PPSD Limit (dBm)	PPSD Margin (dB)
58	5290	-5.86	-5.46	-5.05	-0.07	11.00	-11.07

This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

OUTPUT POWER AND PPSD, Chain 0



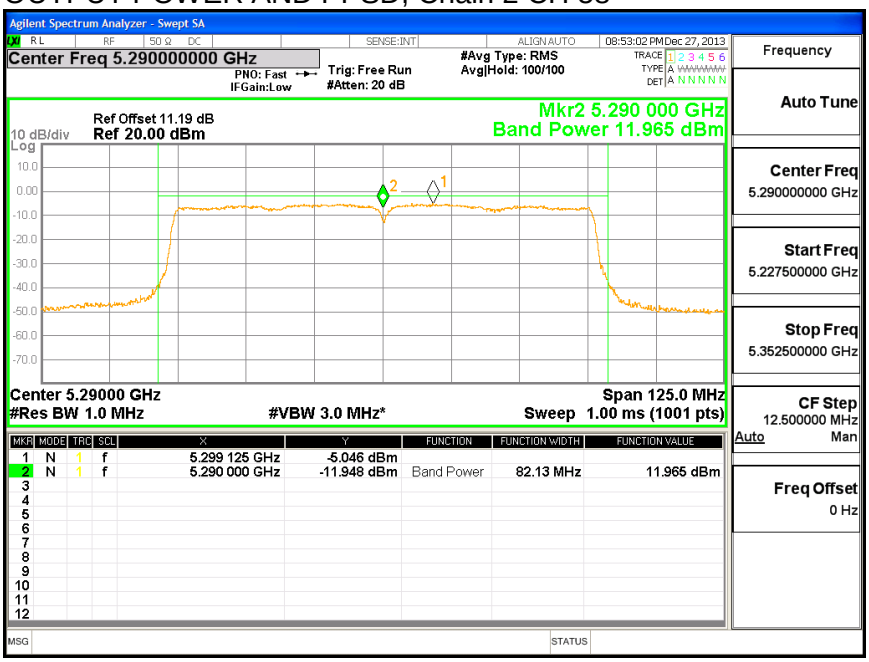
OUTPUT POWER AND PPSD, Chain 1



This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

OUTPUT POWER AND PPSD, Chain 2

OUTPUT POWER AND PPSD, Chain 2 CH 58



This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

8.21. 802.11a 1TX SISO MODE IN THE 5.6 GHz BAND

8.21.1. 26 dB BANDWIDTH

LIMITS

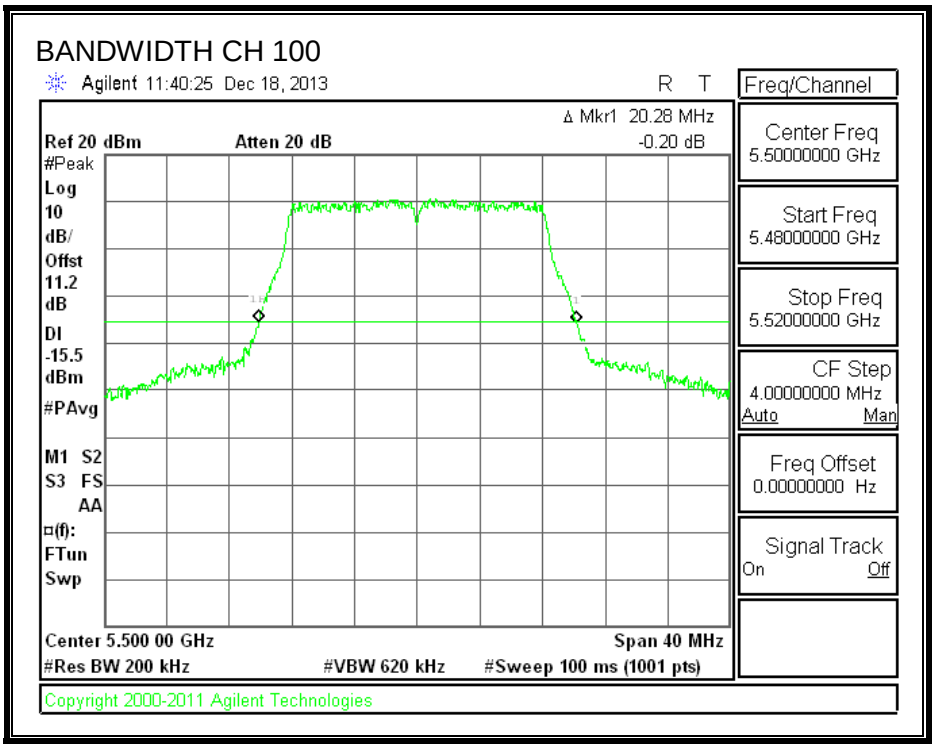
None; for reporting purposes only.

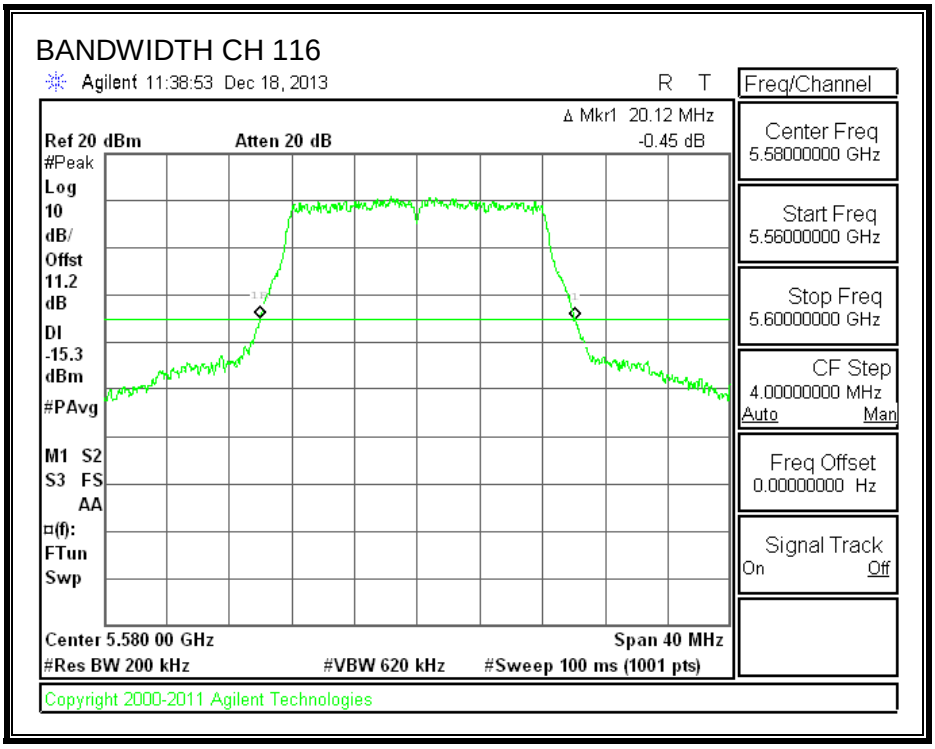
RESULTS

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
100	5500	20.28
116	5580	20.12
140	5700	20.24

This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

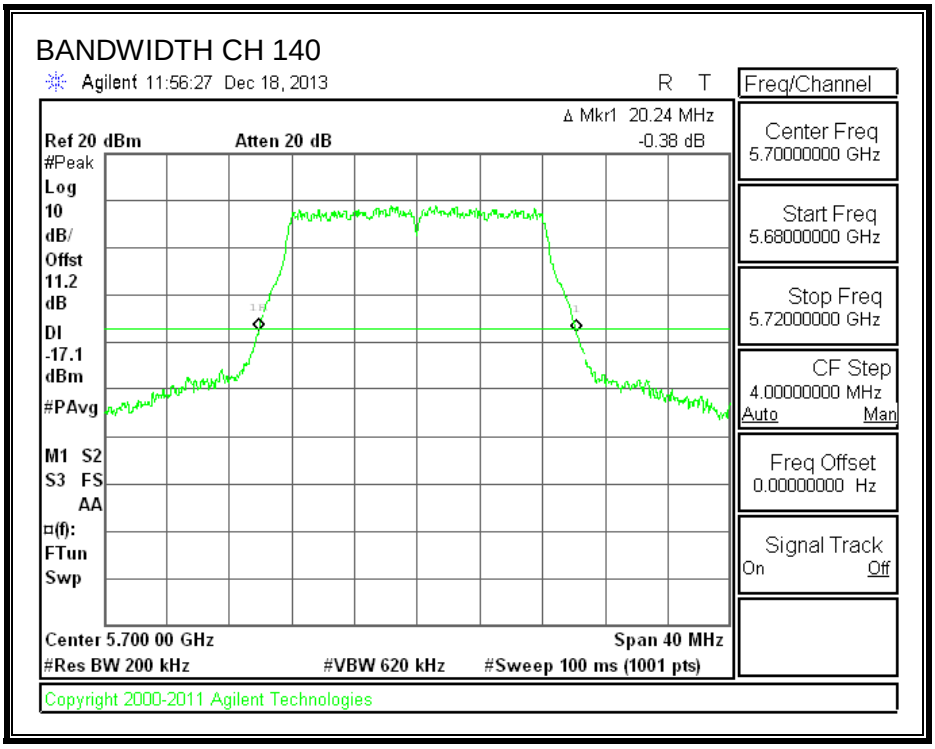
26 dB BANDWIDTH





This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

BANDWIDTH CH 140



This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

8.21.2. 99% BANDWIDTH

LIMITS

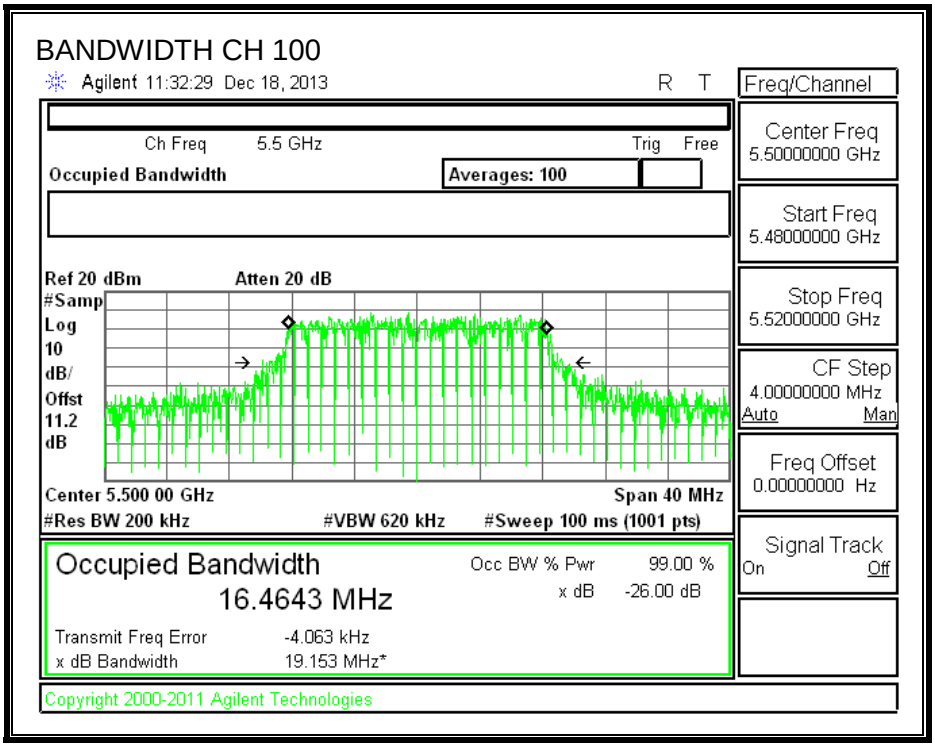
None; for reporting purposes only.

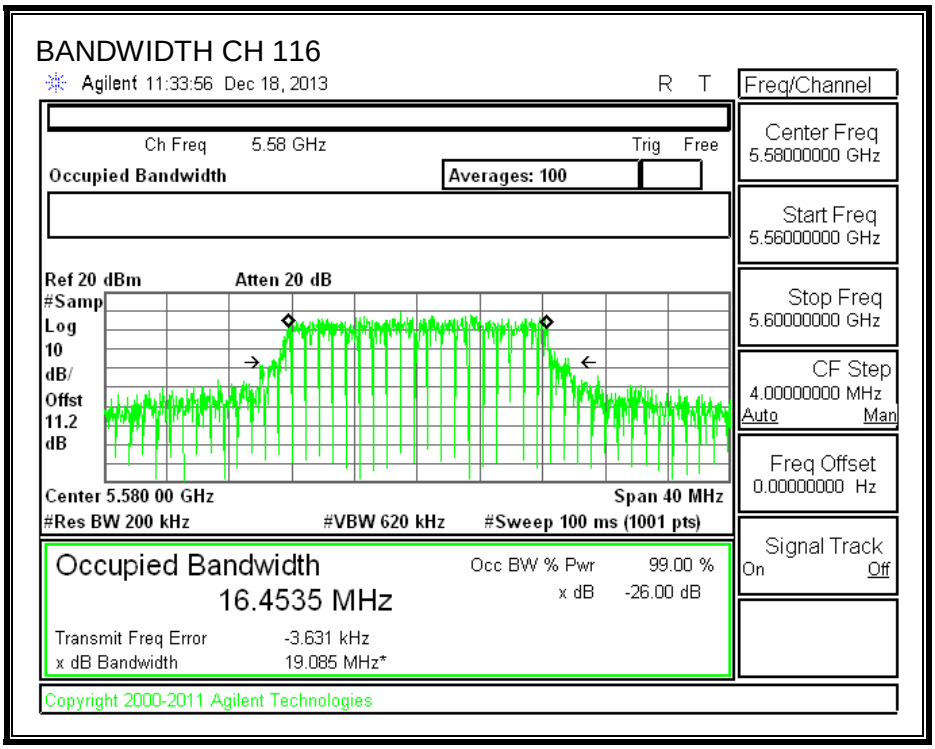
RESULTS

Channel	Frequency (MHz)	99% Bandwidth (MHz)
100	5500	16.4643
116	5580	16.4535
140	5700	16.4480

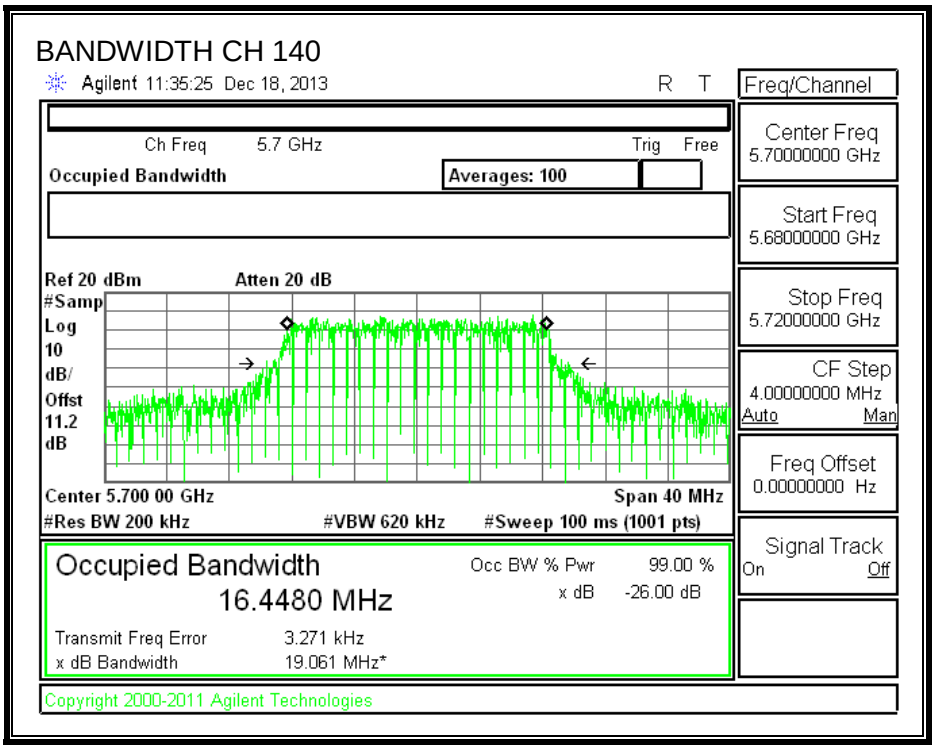
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

99% BANDWIDTH





This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .



This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

8.21.3. AVERAGE POWER

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

The transmitter output is connected to a power meter.

The cable assembly insertion loss of 11.21 dB (including 10 dB pad and 1.21 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

RESULTS

Channel	Frequency (MHz)	Power (dBm)
100	5500	20.22
116	5580	19.56
140	5700	17.95

This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

8.21.4. OUTPUT POWER AND PPSD

LIMITS

FCC §15.407 (a) (2)

For the band 5.5–5.7 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the peak power spectral density shall not exceed 11 dBm in any 1–MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

DIRECTIONAL ANTENNA GAIN

There is only one transmitter output therefore the directional gain is equal to the antenna gain.

Antenna Gain (dBi)
2.40

This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

RESULTS

Bandwidth and Antenna Gain

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Min 99% BW (MHz)	Directional Gain (dBi)
100	5500	20.28	16.4643	2.82
116	5580	20.12	16.4535	2.82
140	5700	20.24	16.4480	2.82

Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Power Limit (dBm)	FCC PPSD Limit (dBm)	IC PSD Limit (dBm)	PPSD Limit (dBm)
100	5500	24.00	23.17	29.17	23.17	11.00	11.00	11.00
116	5580	24.00	23.16	29.16	23.16	11.00	11.00	11.00
140	5700	24.00	23.16	29.16	23.16	11.00	11.00	11.00

Duty Cycle CF (dB)	0.22	**Included in Calculations of Corr'd Power & PPSD**

Output Power Results

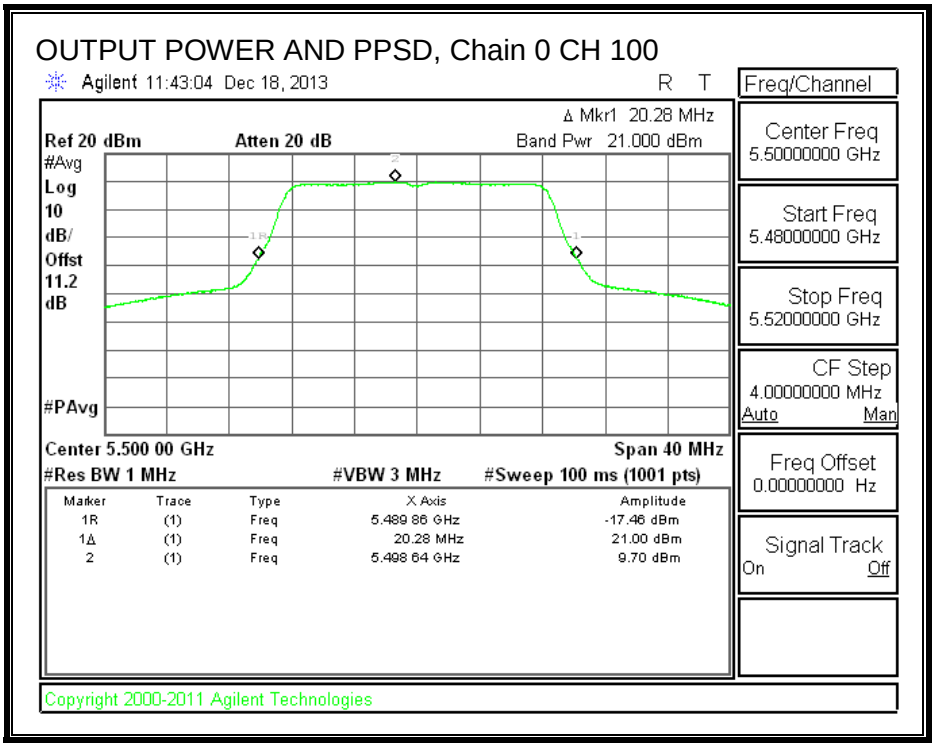
Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
100	5500	21.00	21.22	23.17	-1.95
116	5580	20.86	21.08	23.16	-2.08
140	5700	19.04	19.26	23.16	-3.90

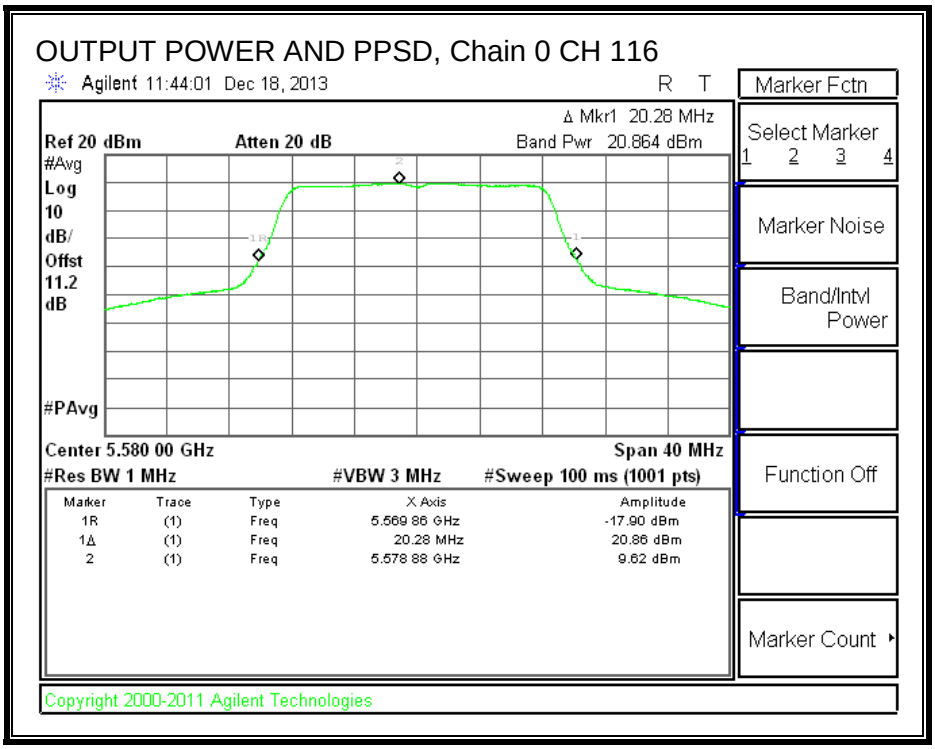
PPSD Results

Channel	Frequency (MHz)	Chain 0 Meas PPSD (dBm)	Total Corr'd PPSD (dBm)	PPSD Limit (dBm)	PPSD Margin (dB)
100	5500	9.70	9.92	11.00	-1.08
116	5580	9.62	9.84	11.00	-1.16
140	5700	7.76	7.98	11.00	-3.02

This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

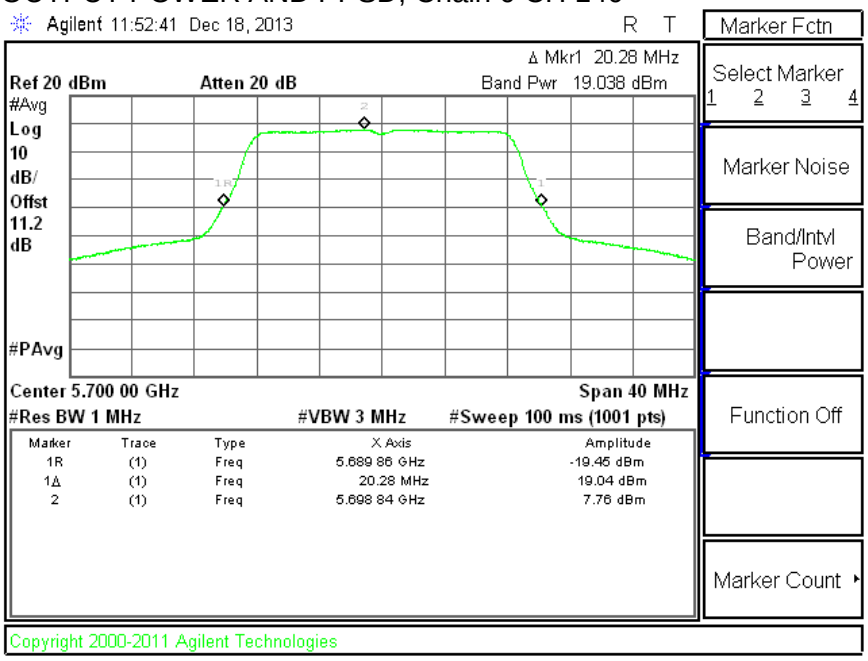
OUTPUT POWER AND PPSD, Chain 0





This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

OUTPUT POWER AND PPSD, Chain 0 CH 140



This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

8.22. 802.11n HT20 1TX SISO MODE IN THE 5.6 GHz BAND

8.22.1. 26 dB BANDWIDTH

LIMITS

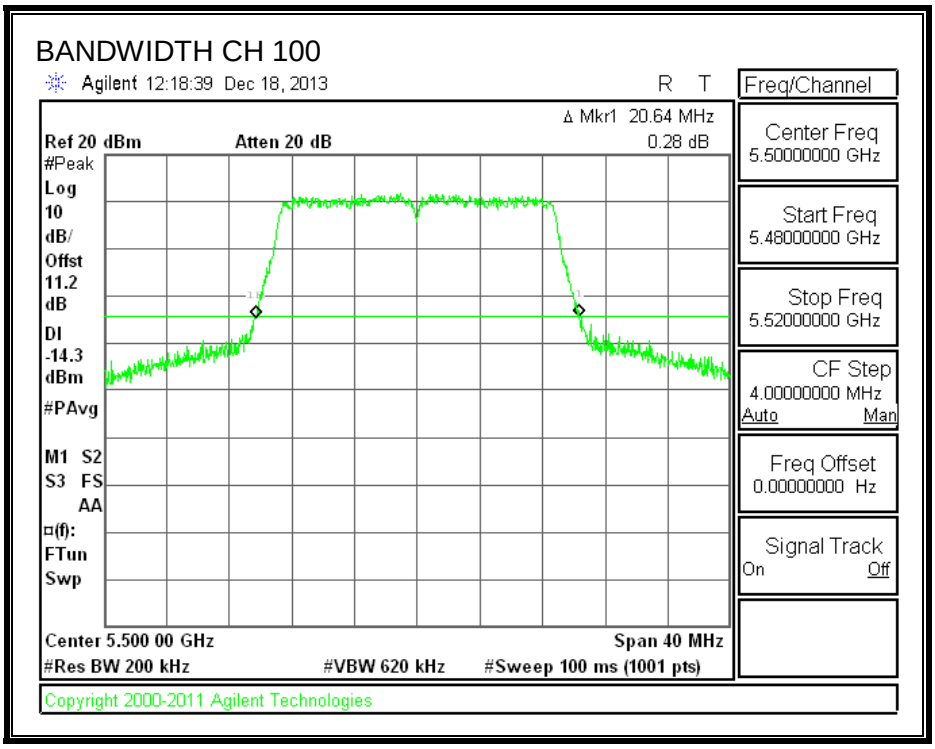
None; for reporting purposes only.

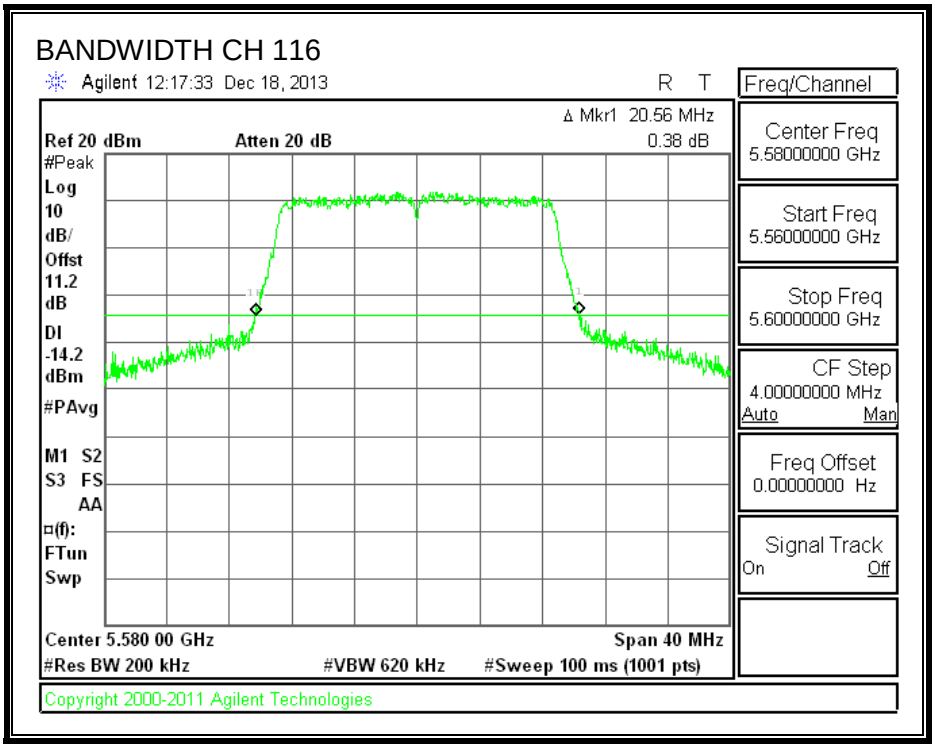
RESULTS

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
100	5500	20.64
116	5580	20.56
140	5700	20.60

This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

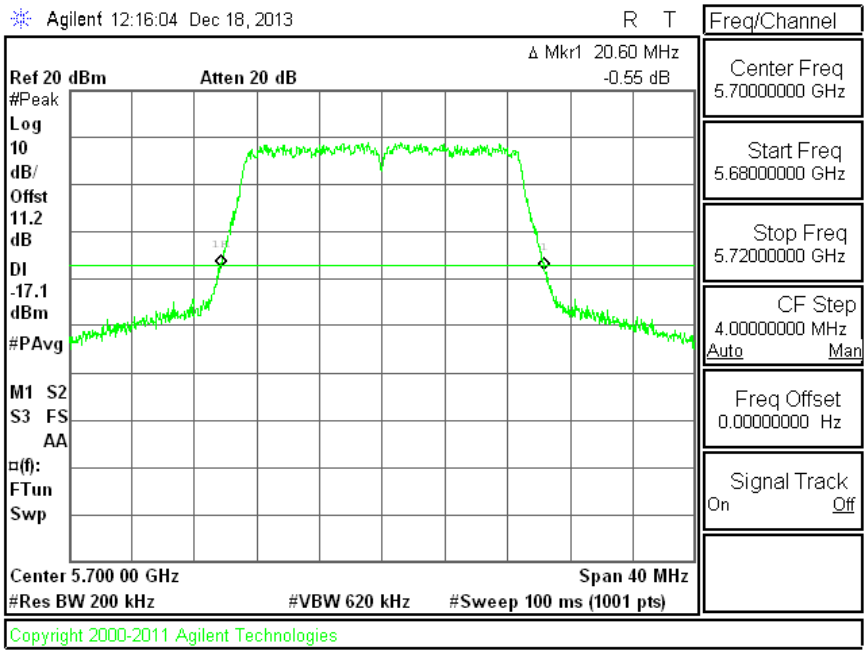
26 dB BANDWIDTH





This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

BANDWIDTH CH 140



This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

8.22.2. 99% BANDWIDTH

LIMITS

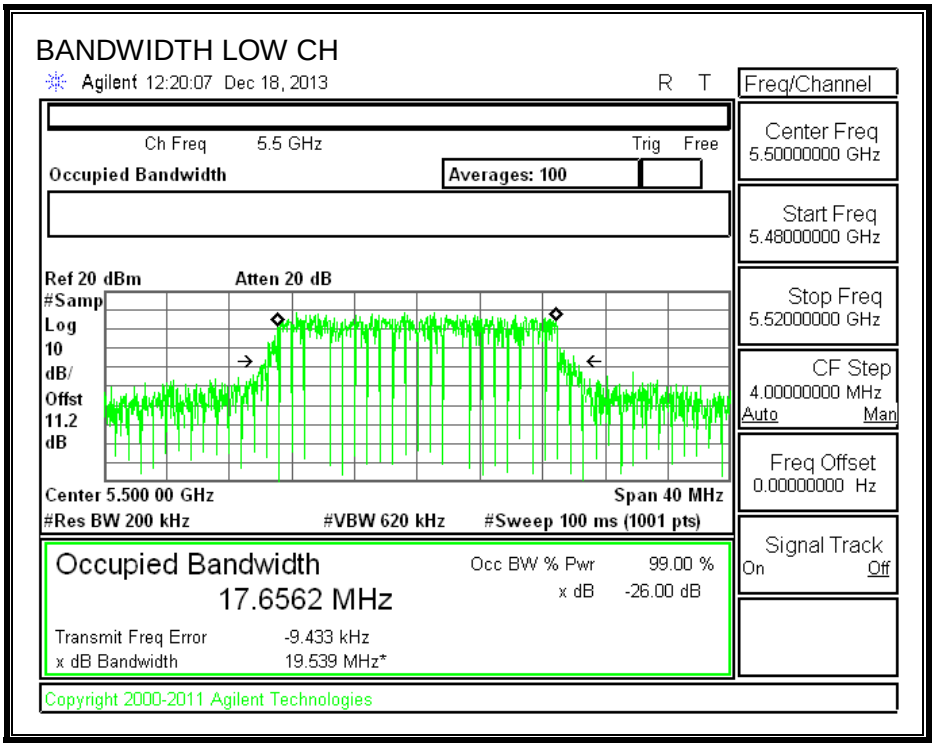
None; for reporting purposes only.

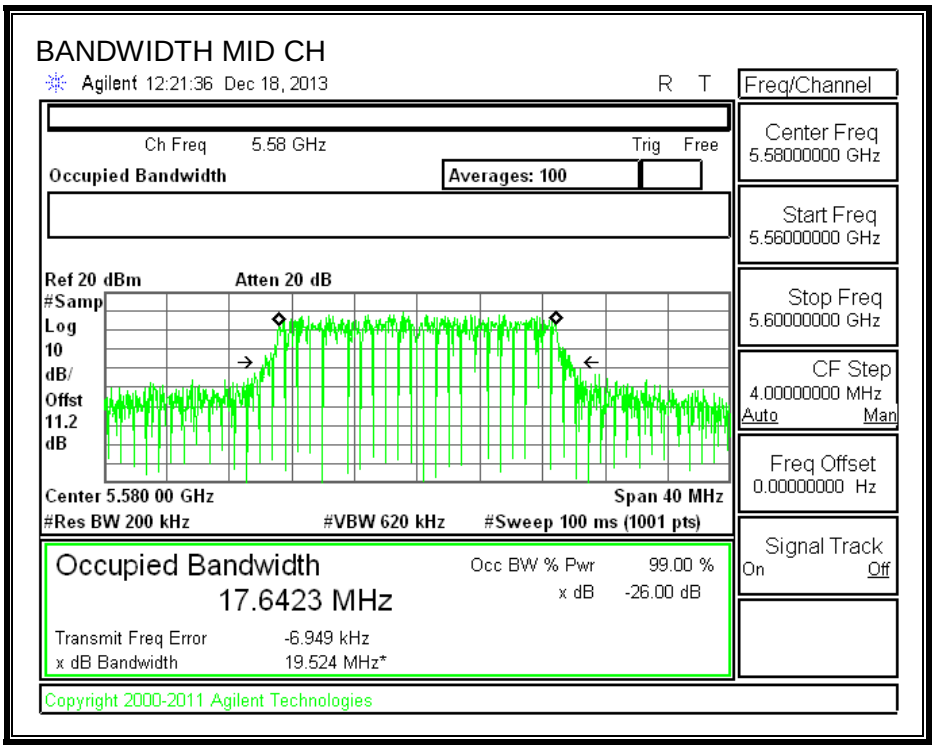
RESULTS

Channel	Frequency (MHz)	99% Bandwidth (MHz)
100	5500	17.6562
116	5580	17.6423
140	5700	17.6592

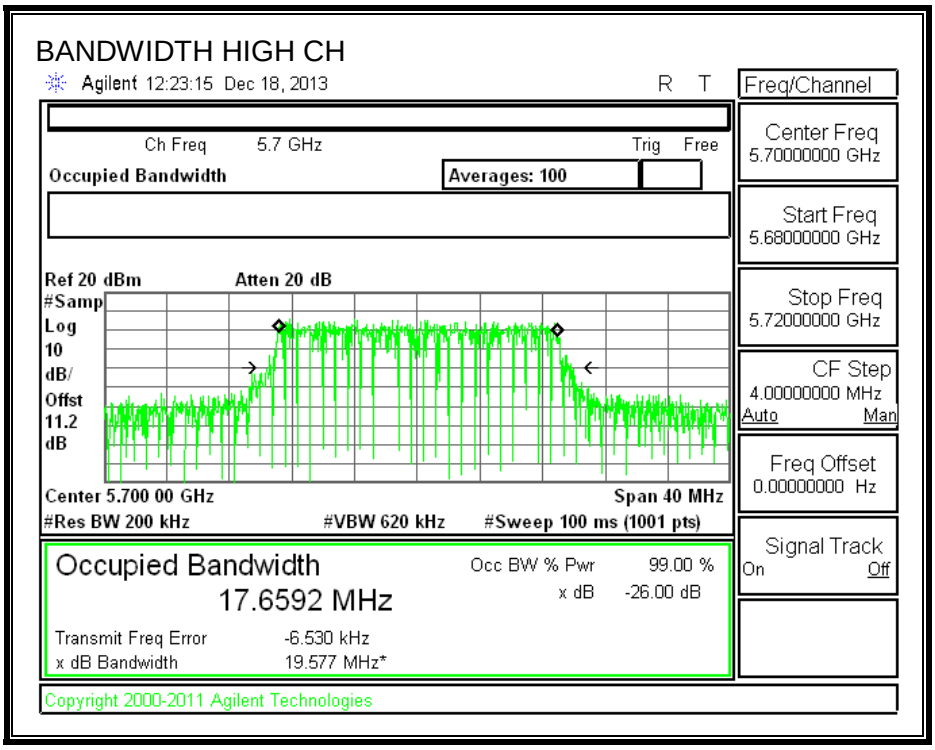
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

99% BANDWIDTH





This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .



This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

8.22.3. AVERAGE POWER

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

The transmitter output is connected to a power meter.

The cable assembly insertion loss of 11.21 dB (including 10 dB pad and 11.21 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

RESULTS

Channel	Frequency (MHz)	Power (dBm)
100	5500	21.26
116	5580	21.17
140	5700	19.84

This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

8.22.4. OUTPUT POWER AND PPSD

LIMITS

FCC §15.407 (a) (2)

For the band 5.5–5.7 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the peak power spectral density shall not exceed 11 dBm in any 1–MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

DIRECTIONAL ANTENNA GAIN

There is only one transmitter output therefore the directional gain is equal to the antenna gain.

Antenna Gain (dBi)
2.82

This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

RESULTS

Bandwidth and Antenna Gain

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Min 99% BW (MHz)	Directional Gain (dBi)
100	5500	20.6	17.7	2.82
116	5580	20.6	17.6	2.82
140	5700	20.6	17.7	2.82

Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Power Limit (dBm)	FCC PPSD Limit (dBm)	IC PSD Limit (dBm)	PPSD Limit (dBm)
100	5500	24.00	23.47	29.47	23.47	11.00	11.00	11.00
116	5580	24.00	23.47	29.47	23.47	11.00	11.00	11.00
140	5700	24.00	23.47	29.47	23.47	11.00	11.00	11.00

Duty Cycle CF (dB)	0.22	**Included in Calculations of Corr'd Power & PPSD**

Output Power Results

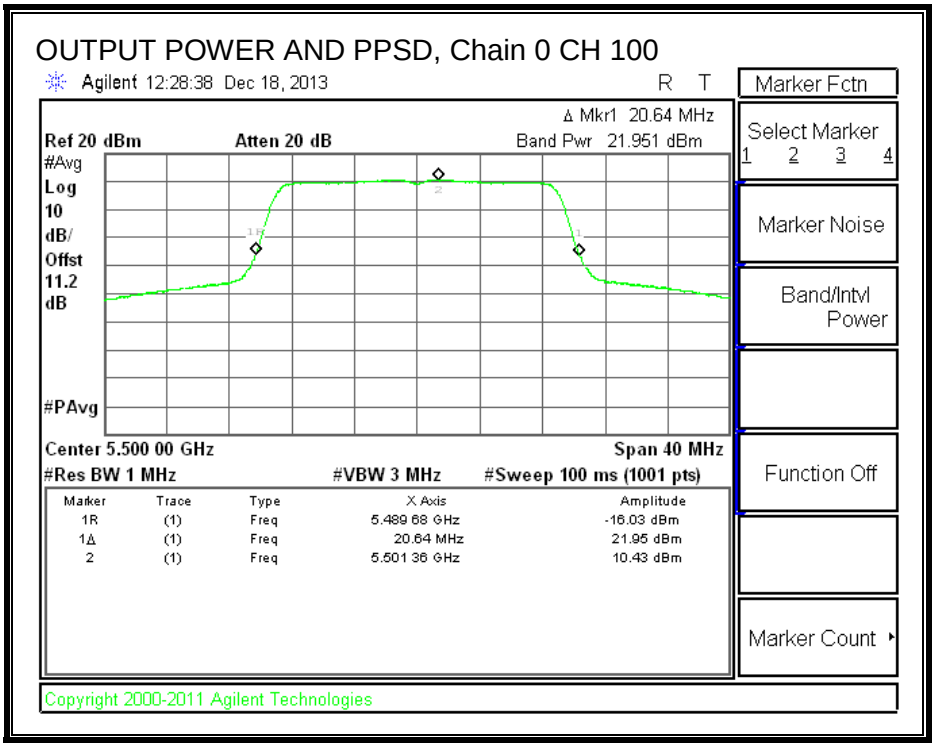
Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
100	5500	21.95	22.17	23.47	-1.30
116	5580	21.93	22.15	23.47	-1.32
140	5700	19.07	19.29	23.47	-4.18

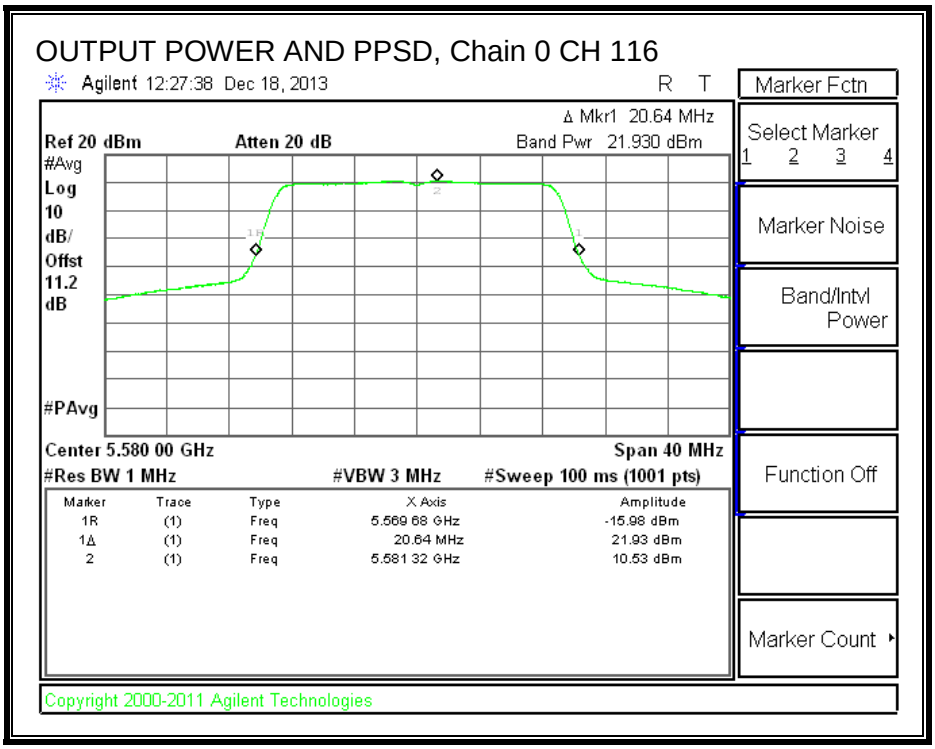
PPSD Results

Channel	Frequency (MHz)	Chain 0 Meas PPSD (dBm)	Total Corr'd PPSD (dBm)	PPSD Limit (dBm)	PPSD Margin (dB)
100	5500	10.43	10.65	11.00	-0.35
116	5580	10.53	10.75	11.00	-0.25
140	5700	7.40	7.62	11.00	-3.38

This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

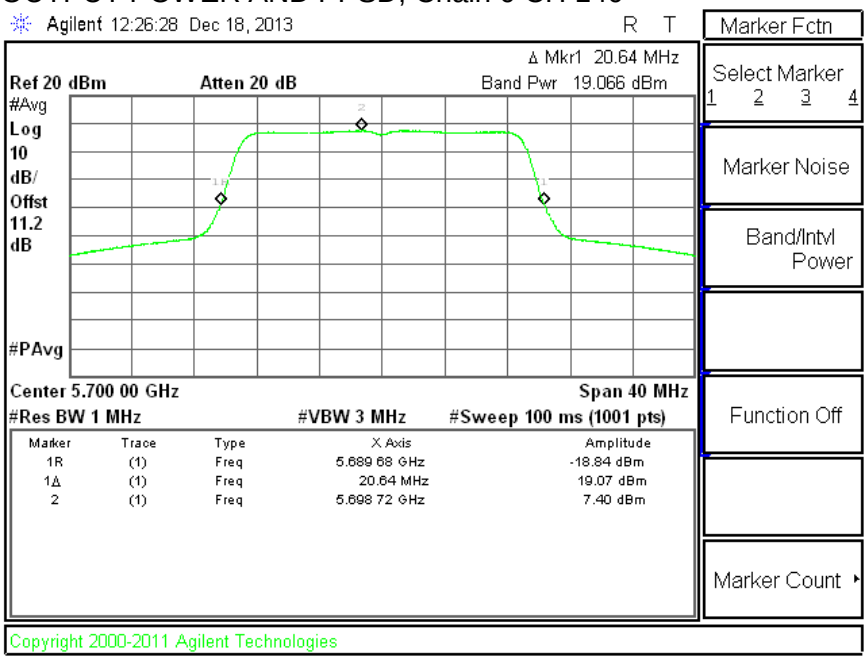
OUTPUT POWER AND PPSD, Chain 0





This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

OUTPUT POWER AND PPSD, Chain 0 CH 140



This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

8.22.5. PEAK EXCURSION

LIMITS

FCC §15.407 (a) (6)

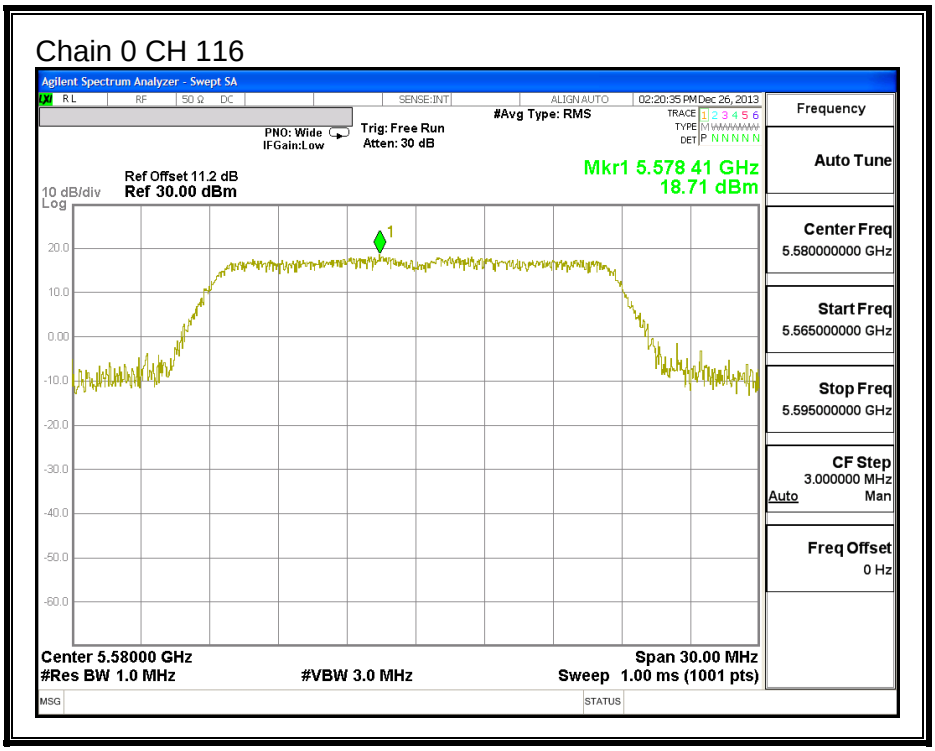
The ratio of the peak excursion of the modulation envelope (measured using a peak hold function) to the peak transmit power (measured as specified above) shall not exceed 13 dB across any 1 MHz bandwidth or the emission bandwidth whichever is less.

RESULTS

Channel	Frequency (MHz)	PK Level (dBm)	PSD (dBm)	DCCF (dB)	Peak Excursion (dB)	Limit (dB)	Margin (dB)
116	5580	18.71	10.53	0.22	7.96	13	-5.04

This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

PEAK EXCURSION, Chain 0



This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

8.23. 802.11ac 20MHz LEGACY 1TX MODE, CHANNEL 144, 5.6 GHz BAND

8.23.1. 26 dB BANDWIDTH

LIMITS

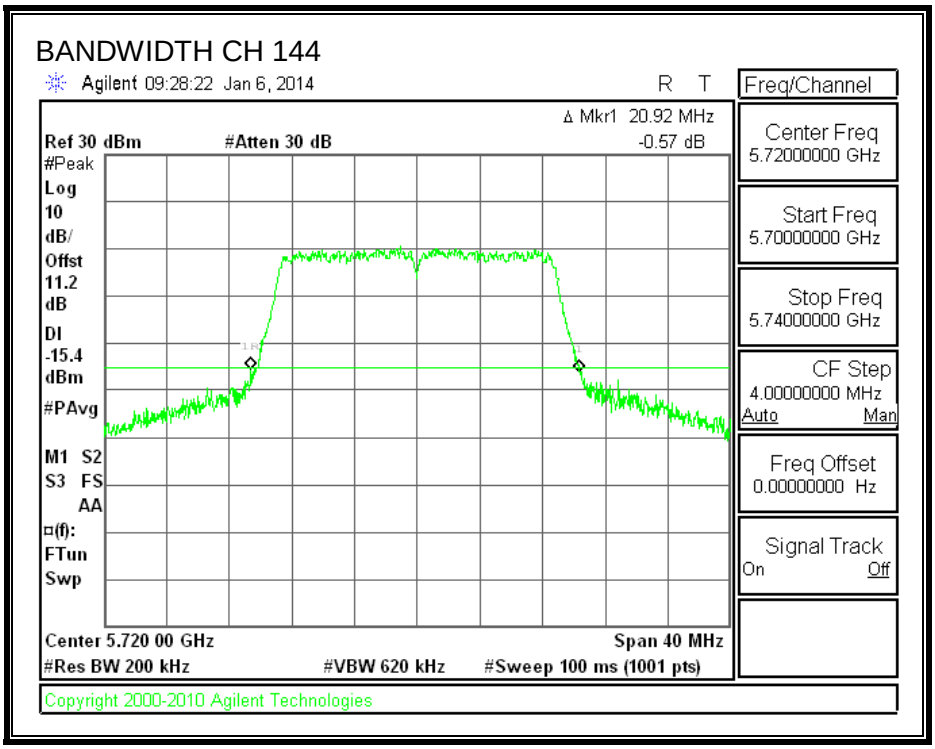
None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
144	5720	20.92

This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

26 dB BANDWIDTH



This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

8.23.2. 99% BANDWIDTH

LIMITS

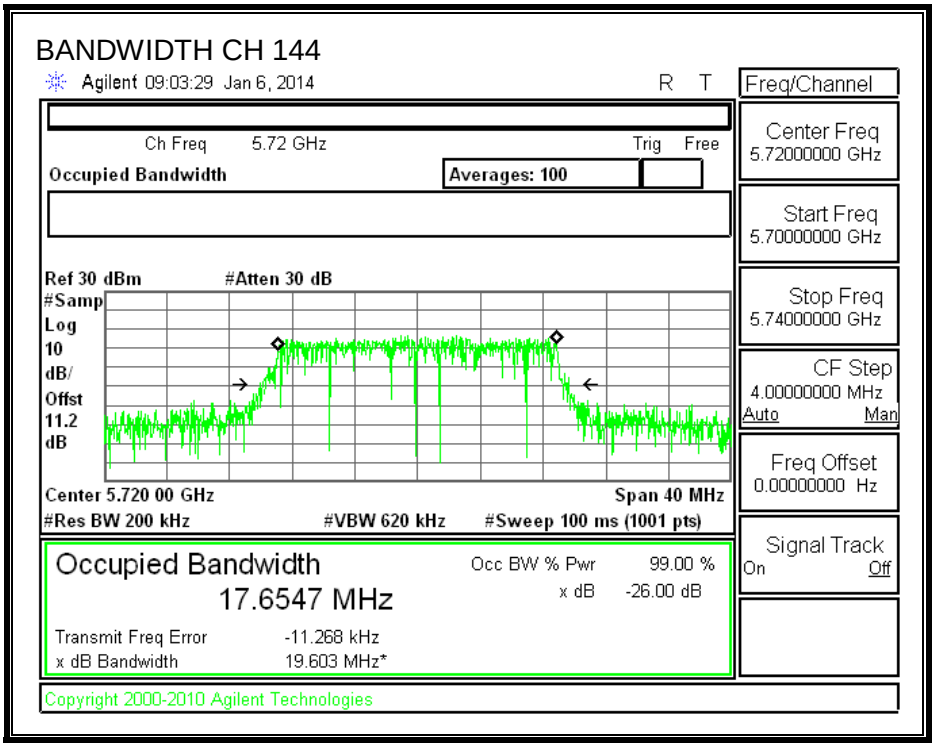
None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	99% Bandwidth (MHz)
144	5720	17.6547

This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

99% BANDWIDTH



This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

8.23.3. OUTPUT POWER AND PSD

LIMITS

FCC §15.407 (a) (2)

For the band 5.5–5.7 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the peak power spectral density shall not exceed 11 dBm in any 1–MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

DIRECTIONAL ANTENNA GAIN

There is only one transmitter output therefore the directional gain is equal to the antenna gain.

Antenna Gain (dBi)
2.82

This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

RESULTS

Limits (FCC), portion in UNII 2 ext band

Bandwidth and Antenna Gain

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Min 99% BW (MHz)	Directional Gain (dBi)
144	5720	15.46	13.8274	2.82

Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Power Limit (dBm)	FCC PSD Limit (dBm)	IC PSD Limit (dBm)	PSD Limit (dBm)
144	5720	22.89	22.41	28.41	22.41	11.00	11.00	11.00

Output Power Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
144	5720	19.58	19.80	22.41	-2.61

PSD Results

Channel	Frequency (MHz)	Chain 0 Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
144	5720	8.900	9.12	11.00	-1.88

Duty Cycle CF (dB)	0.22	**Included in Calculations of Corr'd Power & PPSD**

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701J
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

Bandwidth and Antenna Gain

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Min 99% BW (MHz)	Directional Gain (dBi)
144	5720	5.46	3.8274	2.82

Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Power Limit (dBm)	FCC PSD Limit (dBm)	IC PSD Limit (dBm)	PSD Limit (dBm)
144	5720	18.37	16.83	22.83	16.83	11.00	11.00	11.00

Output Power Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
144	5720	14.03	14.25	16.83	-2.58

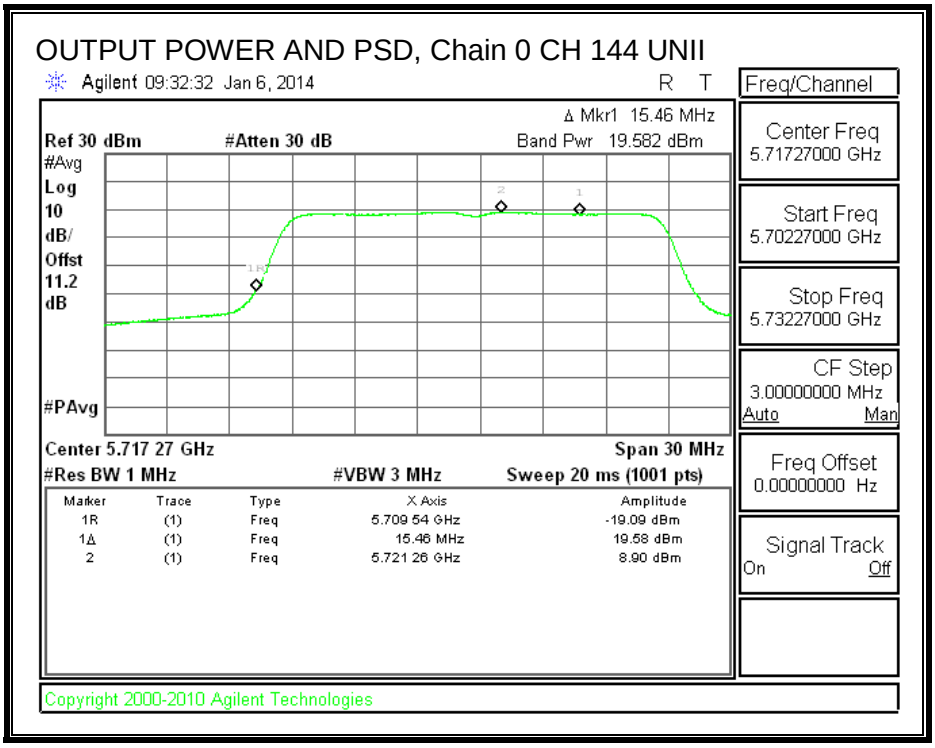
PSD Results

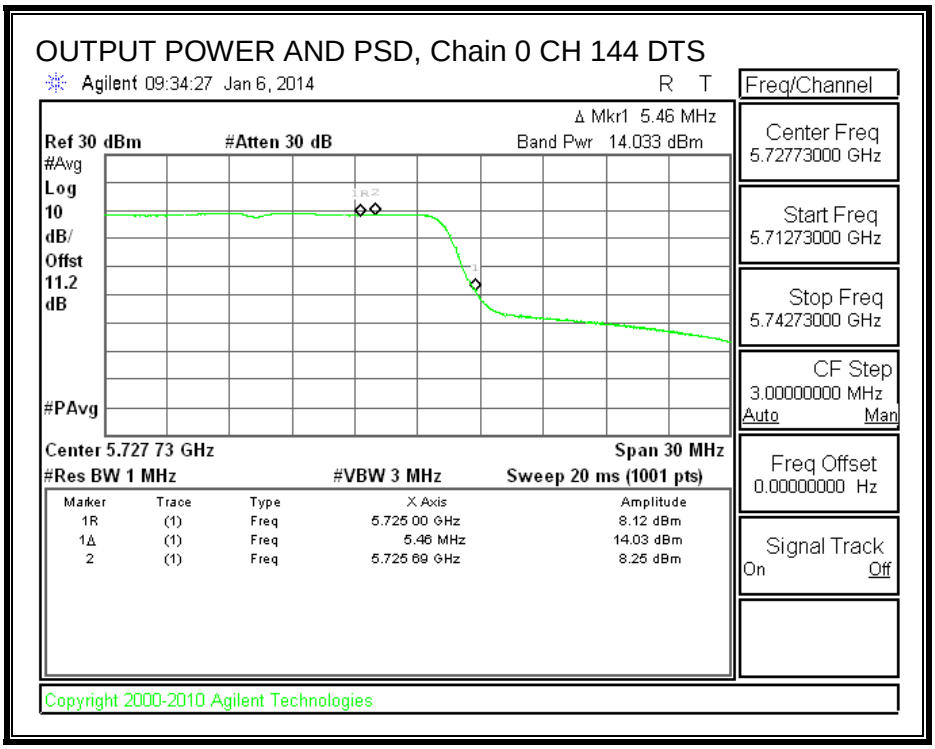
Channel	Frequency (MHz)	Chain 0 Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
144	5720	8.250	8.47	11.00	-2.53

Duty Cycle CF (dB)	0.22	**Included in Calculations of Corr'd Power & PPSD**

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701J
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

OUTPUT POWER AND PSD, Chain 0





This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

8.24. 802.11n HT20 3TX CDD MODE IN THE 5.6 GHz BAND

8.24.1. 26 dB BANDWIDTH

LIMITS

None; for reporting purposes only.

RESULTS

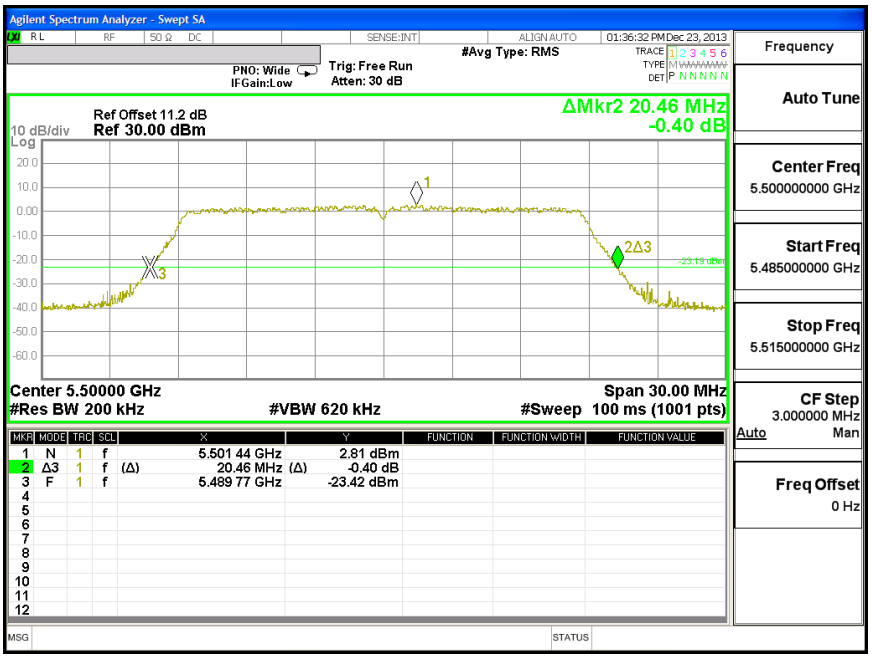
Channel	Frequency (MHz)	26 dB BW Chain 0 (MHz)	26 dB BW Chain 1 (MHz)	26 dB BW Chain 2 (MHz)
100	5500	20.46	20.46	20.55
116	5580	20.49	20.37	20.40
140	5700	20.67	20.46	20.61

This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .

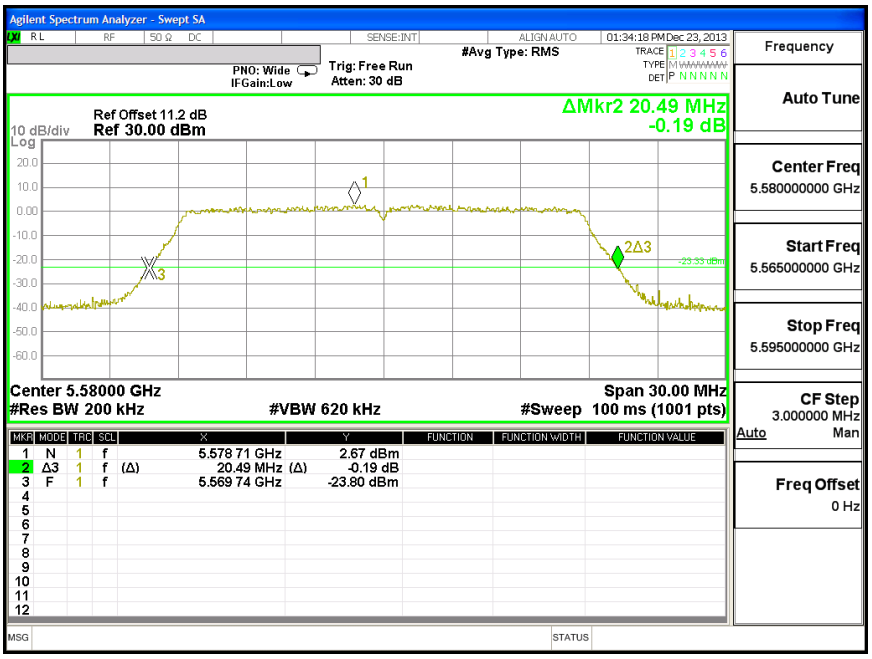
26 dB BANDWIDTH

26 dB BANDWIDTH, Chain 0

BANDWIDTH Chain 0 CH 100



BANDWIDTH Chain 0 CH 116



This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc. .