TEST REPORT

KCTL Inc.
65, Sinwon-ro, Yeongtong-gu,
Suwon-si, Gyeonggi-do, 443-390, Korea
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http://www.kctl.co.kr

1. Applicant

Name:	E-TECH Co., Ltd.
Address:	#403-901, 655, Pyeongcheon-ro, Wonmi-gu, Bucheon-si, Gyeonggi-do, Korea

2. Sample Description:

FCC ID:	R72NEP100
Type of equipment:	FM Handheld Transceiver(VHF)
Basic Model:	NEP100

3. Date of Test:	October 2 ~ October 14, 2015 April 5 ~ April 15, 2016
4. Test method used:	FCC Part 2 Subpart J, FCC Part 90 Subpart I

5. Test Results

Test Item:	Refer to page 8
Result:	Refer to page 9 ~ page 154
Measurement Uncertainty:	Refer to page 8

This result shown in this report refer only to the sample(s) tested unless otherwise stated.

Affirmation	Tested by Name: MYEONG HWA, JANG	Technical Manager Name: MIN GI, SON

2016. 04. 18

KCTL Inc. Testing Laboratory

History of Issued Test Report

Issued date:.	Report Number	History
November 18, 2015	KCTL15-FR0070	Issued the original test teport
April 18, 2016	KCTL15-FR0070(1)	Added and tested more test mode

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6. Test equipment used for test **155**

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1. Client information

Applicant:	E-TECH Co., Ltd.
Address:	#403-901, 655, Pyeongcheon-ro, Wonmi-gu, Bucheon-si, Gyeonggi-do, Korea
Telephone number:	+82-32-328-3184
Facsimile number:	+82-32-328-3186
Contact person:	Jae-Hyun Kim / pico76@etech2004.co.kr

Manufacturer:	E-TECH Co., Ltd.
Address:	#403-901, 655, Pyeongcheon-ro, Wonmi-gu, Bucheon-si, Gyeonggi-do, Korea

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2. Laboratory information

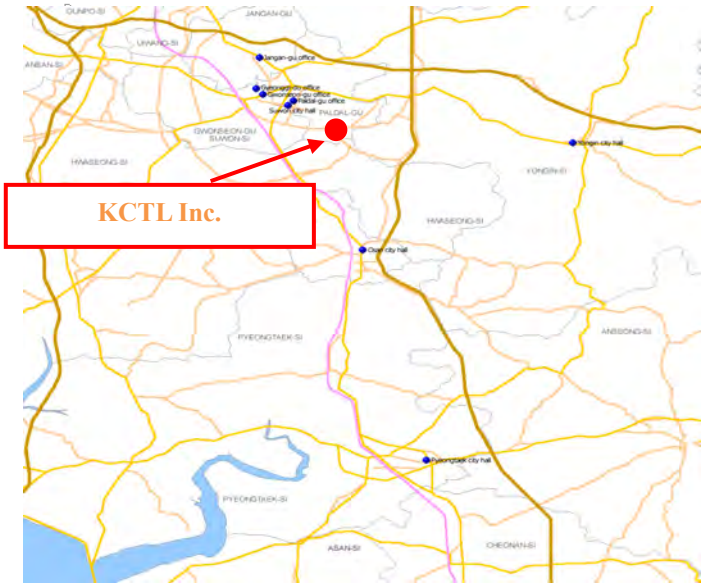
Address

KCTL Inc.
65 Sinwon-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, Korea
Telephone Number: 82-70-5008-1016 Facsimile Number: 82-505-299-8311

Certificate

KOLAS No.: KT231
FCC Site Designation No.: KR0040
FCC Site Registration No.: 687132
VCCI Site Registration No.: R-3327, G-198, C-3706, T-1849
IC Site Registration No.:8035A-2

SITE MAP



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3. Description of E.U.T.

3.1 Basic description

Applicant:	E-TECH Co., Ltd.
Address of Applicant	#403-901, 655, Pyeongcheon-ro, Wonmi-gu, Bucheon-si, Gyeonggi-do, Korea
Manufacturer	E-TECH Co., Ltd.
Address of Manufacturer	#403-901, 655, Pyeongcheon-ro, Wonmi-gu, Bucheon-si, Gyeonggi-do, Korea
Type of equipment	FM Handheld Transceiver(VHF)
Basic Model	NEP100
Serial number	N/A

3.2 General description

Frequency Range	150.05 ㎒ ~ 173.40 ㎒
Type of Modulation	12.5BW, 6.25BW
Emission Designators	9K4F3E for 12.5BW 4K6F3E for 6.25BW
Number of Channels	32 ch
Type of Antenna	Helical Antenna
Transmit Power	1 W / 5 W
Power supply	DC 7.4 ㏸
H/W Version	1.0
S/W version	1.0
Test SW Version	N/A
RF power setting in TEST SW	N/A

Note : The above EUT information was declared by the manufacturer.

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3.3 Test frequency

	Frequency
Low frequency	150.05 ㎒
Middle frequency	155.7525 ㎒
Middle frequency	162.00 ㎒
High frequency	173.40 ㎒

3.4 Test Voltage

Mode	Voltage
Norminal voltage	DC 7.4 V

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4. Summary of test results

4.1 Standards & results

FCC Rule Reference	Parameter	Report Section	Test Result
2.1046(a), 90.205	Output Power Conducted	5.1	C
90.213, 2.1055	Frequency Stability	5.2	C
2.1047(b)	Modulation Limiting	5.3	C
2.1047(a)	Audio Frequency Response	5.4	C
2.1047(a)	Audio Low Pass Filter Frequency Response	5.5	C
2.1049, 90.209, 90.210	Occupied Bandwidth and Emission Mask	5.6	C
90.214	Transient Frequency Behaviour of the Transmitter	5.7	C
2.1051, 90.210	Conducted Spurious Emission	5.8	C
2.1053(a), 90.210	Radiated Spurious Emission	5.9	C

Note: C = complies
NC = Not complies
NT = Not tested
NA = Not Applicable

* The general test methods used to test this device is TIA-603-D.

4.2 Uncertainty

Measurement Item	Expanded Uncertainty U = *k*Uc (*k* = 2)	
Conducted RF power	1.30 dB	
Conducted Spurious Emissions	1.52 dB	
Radiated Spurious Emissions	30 MHz ~ 300 MHz:	+ 4.94 dB, - 5.06 dB
		+ 4.93 dB, - 5.05 dB
	300 MHz ~ 1 000 MHz:	+ 4.97 dB, - 5.08 dB
		+ 4.84 dB, - 4.96 dB
	1 GHz ~ 25 GHz:	+ 6.03 dB, - 6.05 dB
Conducted Emissions	9 kHz ~ 150 kHz:	3.75 dB
	150 kHz ~ 30 MHz:	3.36 dB

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5. Test results

5.1 Output Power Conducted

5.1.1 Regulation

According to §90.205, (r) All other frequency bands. Requested transmitter power will be considered and authorized on a case by case basis.

(s) The output power shall not exceed by more than 20 percent either the output power shown in the Radio Equipment List [available in accordance with §90.203(a)(1)] for transmitters included in this list or when not so listed, the manufacturer's rated output power for the particular transmitter specifically listed on the authorization.

5.1.2 Measurement Procedure

1. The conducted RF output power is the available power at the output terminals of the transmitter when the output terminals are corrected to the standard transmitter load.
2. The test sample is feeding a 50 ohm coaxial attenuator which is connected to a spectrum analyzer.
3. The power output at the transmitter antenna port is determined by adding the value of the attenuator to the spectrum analyzer reading.
4. The test are performed at the frequencies(low, middle, high channels of the EUT operating band) and full rated power levels of the transmitter.

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5.1.3 Test Result

- Complied

* 12.5BW

-Target Power_1W

Channel	Frequency [MHz]	Result [dBm]	Result [W]	Limit [W]	Margin [W]	Current [A]
Lowest	150.05	30.41	1.10	1.20	0.10	0.66
Middle	155.7525	30.09	1.02	1.20	0.18	0.63
Middle	162.00	29.96	0.99	1.20	0.21	0.63
Highest	173.40	29.98	1.00	1.20	0.20	0.65

-Target Power_5W

Channel	Frequency [MHz]	Result [dBm]	Result [W]	Limit [W]	Margin [W]	Current [A]
Lowest	150.05	37.10	5.12	6.00	0.88	1.40
Middle	155.7525	36.93	4.93	6.00	1.07	1.44
Middle	162.00	37.14	5.18	6.00	0.82	1.46
Highest	173.40	37.10	5.13	6.00	0.87	1.48

* 6.25BW

-Target Power_1W

Channel	Frequency [MHz]	Result [dBm]	Result [W]	Limit [W]	Margin [W]	Current [A]
Lowest	150.05	30.47	1.11	1.20	0.09	0.67
Middle	155.7525	30.10	1.02	1.20	0.18	0.63
Middle	162.00	29.99	1.00	1.20	0.20	0.63
Highest	173.40	30.27	1.06	1.20	0.14	0.66

-Target Power_5W

Channel	Frequency [MHz]	Result [dBm]	Result [W]	Limit [W]	Margin [W]	Current [A]
Lowest	150.05	36.87	4.86	6.00	1.14	1.40
Middle	155.7525	36.94	4.94	6.00	1.06	1.44
Middle	162.00	36.89	4.89	6.00	1.11	1.45
Highest	173.40	37.00	5.01	6.00	0.99	1.49

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5.2 Frequency Stability

5.2.1 Regulation

According to §90.213, in the 150-174 ㎒ band, fixed and base stations with a 12.5 ㎑ channel bandwidth must have a frequency stability of 2.5 ppm. Fixed and base stations with a 6.25 ㎑ channel bandwidth must have a frequency stability of 1.0 ppm.

In the 150-174 ㎒ band, mobile stations designed to operate with a 12.5 ㎑ channel bandwidth or designed to operate on a frequency specifically designated for itinerant use or designed for low-power operation of two watts or less, must have a frequency stability of 5.0 ppm. Mobile stations designed to operate with a 6.25 ㎑ channel bandwidth must have a frequency stability of 2.0 ppm.

In the 421-512 ㎒ band, fixed and base stations with a 12.5 ㎑ channel bandwidth must have a frequency stability of 1.5 ppm. Fixed and base stations with a 6.25 ㎑ channel bandwidth must have a frequency stability of 0.5 ppm.

In the 421-512 ㎒ band, mobile stations designed to operate with a 12.5 ㎑ channel bandwidth must have a frequency stability of 2.5 ppm. Mobile stations designed to operate with a 6.25 ㎑ channel bandwidth must have a frequency stability of 1.0 ppm.

5.2.2 Measurement Procedure

1. The carrier frequency is the stability of the transmitter to maintain an assigned carrier frequency.
2. The frequency stability is measured with variation of ambient temperature from -30℃ to +60℃.

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5.2.3 Test Result

- Complied

* 12.5BW

-Target Power_1W_150.05 ㎒

Voltage [%]	Power [V_{DC}]	Temp. [℃]	Reading Frequency [㎐]	Frequency Error [㎐]	Frequency Error [ppm]
100	7.4	-30	150 049 657	-343	-2.286
		-20	150 049 644	-356	-2.373
		-10	150 049 699	-301	-2.006
		0	150 049 702	-298	-1.986
		10	150 049 781	-219	-1.460
		20	150 049 797	-203	-1.353
		30	150 049 767	-233	-1.553
		40	150 049 758	-242	-1.613
		50	150 049 716	-284	-1.893
		60	150 049 700	-300	-1.999
		Normal	150 049 799	-201	-1.340
85	6.29	Normal	150 049 795	-205	-1.366
115	8.51	Normal	150 049 793	-207	-1.380

-Target Power_1W_155.7525 ㎒

Voltage [%]	Power [V_{DC}]	Temp. [℃]	Reading Frequency [㎐]	Frequency Error [㎐]	Frequency Error [ppm]
100	7.4	-30	155 752 163	-337	-2.164
		-20	155 752 140	-360	-2.311
		-10	155 752 145	-355	-2.279
		0	155 752 173	-327	-2.099
		10	155 752 204	-296	-1.900
		20	155 752 275	-225	-1.445
		30	155 752 259	-241	-1.547
		40	155 752 217	-283	-1.817
		50	155 752 192	-308	-1.977
		60	155 752 164	-336	-2.157
		Normal	155 752 244	-256	-1.644
85	6.29	Normal	155 752 244	-256	-1.644
115	8.51	Normal	155 752 243	-257	-1.650

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-Target Power_1W_162.00 ㎒

Voltage [%]	Power [VDC]	Temp. [℃]	Reading Frequency [㎐]	Frequency Error [㎐]	Frequency Error [ppm]
100	7.4	-30	161 999 638	-362	-2.235
		-20	161 999 618	-382	-2.358
		-10	161 999 674	-326	-2.012
		0	161 999 680	-320	-1.975
		10	161 999 759	-241	-1.488
		20	161 999 783	-217	-1.340
		30	161 999 750	-250	-1.543
		40	161 999 736	-264	-1.630
		50	161 999 695	-305	-1.883
		60	161 999 676	-324	-2.000
		Normal	161 999 772	-228	-1.407
85	6.29	Normal	161 999 769	-231	-1.426
115	8.51	Normal	161 999 767	-233	-1.438

-Target Power_1W_173.40 ㎒

Voltage [%]	Power [VDC]	Temp. [℃]	Reading Frequency [㎐]	Frequency Error [㎐]	Frequency Error [ppm]
100	7.4	-30	173 399 621	-379	-2.186
		-20	173 399 593	-407	-2.347
		-10	173 399 650	-350	-2.018
		0	173 399 659	-341	-1.967
		10	173 399 733	-267	-1.540
		20	173 399 769	-231	-1.332
		30	173 399 735	-265	-1.528
		40	173 399 715	-285	-1.644
		50	173 399 676	-324	-1.869
		60	173 399 653	-347	-2.001
		Normal	173 399 745	-255	-1.471
85	6.29	Normal	173 399 738	-262	-1.511
115	8.51	Normal	173 399 736	-264	-1.522

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-Target Power_5W_150.05 ㎒

Voltage [%]	Power [VDC]	Temp. [℃]	Reading Frequency [㎐]	Frequency Error [㎐]	Frequency Error [ppm]
100	7.4	-30	150 049 692	-308	-2.053
		-20	150 049 665	-335	-2.233
		-10	150 049 688	-312	-2.079
		0	150 049 711	-289	-1.926
		10	150 049 754	-246	-1.639
		20	150 049 801	-199	-1.326
		30	150 049 780	-220	-1.466
		40	150 049 746	-254	-1.693
		50	150 049 727	-273	-1.819
		60	150 049 698	-302	-2.013
		Normal	150 049 748	-252	-1.679
85	6.29	Normal	150 049 747	-253	-1.686
115	8.51	Normal	150 049 744	-256	-1.706

-Target Power_5W_155.7525 ㎒

Voltage [%]	Power [VDC]	Temp. [℃]	Reading Frequency [㎐]	Frequency Error [㎐]	Frequency Error [ppm]
100	7.4	-30	155 752 158	-342	-2.196
		-20	155 752 156	-344	-2.209
		-10	155 752 160	-340	-2.183
		0	155 752 172	-328	-2.106
		10	155 752 213	-287	-1.843
		20	155 752 270	-230	-1.477
		30	155 752 255	-245	-1.573
		40	155 752 227	-273	-1.753
		50	155 752 182	-318	-2.042
		60	155 752 164	-336	-2.157
		Normal	155 752 241	-259	-1.663
85	6.29	Normal	155 752 240	-260	-1.669
115	8.51	Normal	155 752 239	-261	-1.676

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-Target Power_5W_162.00 ㎒

Voltage [%]	Power [VDC]	Temp. [℃]	Reading Frequency [㎐]	Frequency Error [㎐]	Frequency Error [ppm]
100	7.4	-30	161 999 663	-337	-2.080
		-20	161 999 631	-369	-2.278
		-10	161 999 666	-334	-2.062
		0	161 999 684	-316	-1.951
		10	161 999 738	-262	-1.617
		20	161 999 785	-215	-1.327
		30	161 999 760	-240	-1.481
		40	161 999 728	-272	-1.679
		50	161 999 703	-297	-1.833
		60	161 999 674	-326	-2.012
		Normal	161 999 737	-263	-1.623
85	6.29	Normal	161 999 735	-265	-1.636
115	8.51	Normal	161 999 733	-267	-1.648

-Target Power_5W_173.40 ㎒

Voltage [%]	Power [VDC]	Temp. [℃]	Reading Frequency [㎐]	Frequency Error [㎐]	Frequency Error [ppm]
100	7.4	-30	173 399 630	-370	-2.134
		-20	173 399 596	-404	-2.330
		-10	173 399 648	-352	-2.030
		0	173 399 660	-340	-1.961
		10	173 399 726	-274	-1.580
		20	173 399 770	-230	-1.326
		30	173 399 738	-262	-1.511
		40	173 399 712	-288	-1.661
		50	173 399 678	-322	-1.857
		60	173 399 652	-348	-2.007
		Normal	173 399 731	-269	-1.551
85	6.29	Normal	173 399 728	-272	-1.569
115	8.51	Normal	173 399 725	-275	-1.586

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* 6.25BW

-Target Power_1W_150.05 ㎒

Voltage [%]	Power [VDC]	Temp. [℃]	Reading Frequency [㎐]	Frequency Error [㎐]	Frequency Error [ppm]
100	7.4	-30	150 049 653	-347	-2.313
		-20	150 049 692	-308	-2.053
		-10	150 049 685	-315	-2.099
		0	150 049 741	-259	-1.726
		10	150 049 720	-280	-1.866
		20	150 049 780	-220	-1.466
		30	150 049 776	-224	-1.493
		40	150 049 717	-283	-1.886
		50	150 049 706	-294	-1.959
		60	150 049 685	-315	-2.099
		Normal	150 049 768	-232	-1.546
85	6.29	Normal	150 049 767	-233	-1.553
115	8.51	Normal	150 049 763	-237	-1.579

-Target Power_1W_155.7525 ㎒

Voltage [%]	Power [VDC]	Temp. [℃]	Reading Frequency [㎐]	Frequency Error [㎐]	Frequency Error [ppm]
100	7.4	-30	155 752 180	-320	-2.055
		-20	155 752 124	-376	-2.414
		-10	155 752 127	-373	-2.395
		0	155 752 173	-327	-2.099
		10	155 752 195	-305	-1.958
		20	155 752 275	-225	-1.445
		30	155 752 261	-239	-1.534
		40	155 752 219	-281	-1.804
		50	155 752 190	-310	-1.990
		60	155 752 164	-336	-2.157
		Normal	155 752 260	-240	-1.541
85	6.29	Normal	155 752 259	-241	-1.547
115	8.51	Normal	155 752 258	-242	-1.554

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-Target Power_1W_162.00 ㎒

Voltage [%]	Power [VDC]	Temp. [℃]	Reading Frequency [㎐]	Frequency Error [㎐]	Frequency Error [ppm]
100	7.4	-30	161 999 653	-347	-2.142
		-20	161 999 666	-334	-2.062
		-10	161 999 667	-333	-2.056
		0	161 999 703	-297	-1.833
		10	161 999 723	-277	-1.710
		20	161 999 769	-231	-1.426
		30	161 999 751	-249	-1.537
		40	161 999 702	-298	-1.840
		50	161 999 678	-322	-1.988
		60	161 999 656	-344	-2.123
		Normal	161 999 730	-270	-1.667
85	6.29	Normal	161 999 728	-272	-1.679
115	8.51	Normal	161 999 726	-274	-1.691

-Target Power_1W_173.40 ㎒

Voltage [%]	Power [VDC]	Temp. [℃]	Reading Frequency [㎐]	Frequency Error [㎐]	Frequency Error [ppm]
100	7.4	-30	173 399 640	-360	-2.076
		-20	173 399 636	-364	-2.099
		-10	173 399 646	-354	-2.042
		0	173 399 657	-343	-1.978
		10	173 399 730	-270	-1.557
		20	173 399 757	-243	-1.401
		30	173 399 724	-276	-1.592
		40	173 399 692	-308	-1.776
		50	173 399 649	-351	-2.024
		60	173 399 629	-371	-2.140
		Normal	173 399 695	-305	-1.759
85	6.29	Normal	173 399 693	-307	-1.770
115	8.51	Normal	173 399 692	-308	-1.776

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-Target Power_5W_150.05 ㎒

Voltage [%]	Power [VDC]	Temp. [℃]	Reading Frequency [㎐]	Frequency Error [㎐]	Frequency Error [ppm]
100	7.4	-30	150 049 666	-334	-2.226
		-20	150 049 691	-309	-2.059
		-10	150 049 690	-310	-2.066
		0	150 049 731	-269	-1.793
		10	150 049 728	-272	-1.813
		20	150 049 783	-217	-1.446
		30	150 049 774	-226	-1.506
		40	150 049 721	-279	-1.859
		50	150 049 705	-295	-1.966
		60	150 049 683	-317	-2.113
		Normal	150 049 756	-244	-1.626
85	6.29	Normal	150 049 756	-244	-1.626
115	8.51	Normal	150 049 754	-246	-1.639

-Target Power_5W_155.7525 ㎒

Voltage [%]	Power [VDC]	Temp. [℃]	Reading Frequency [㎐]	Frequency Error [㎐]	Frequency Error [ppm]
100	7.4	-30	155 752 174	-326	-2.093
		-20	155 752 168	-332	-2.132
		-10	155 752 169	-331	-2.125
		0	155 752 170	-330	-2.119
		10	155 752 219	-281	-1.804
		20	155 752 269	-231	-1.483
		30	155 752 254	-246	-1.579
		40	155 752 225	-275	-1.766
		50	155 752 186	-314	-2.016
		60	155 752 164	-336	-2.157
		Normal	155 752 253	-247	-1.586
85	6.29	Normal	155 752 252	-248	-1.592
115	8.51	Normal	155 752 250	-250	-1.605

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-Target Power_5W_162.00 ㎒

Voltage [%]	Power [VDC]	Temp. [℃]	Reading Frequency [㎐]	Frequency Error [㎐]	Frequency Error [ppm]
100	7.4	-30	161 999 658	-342	-2.111
		-20	161 999 664	-336	-2.074
		-10	161 999 668	-332	-2.049
		0	161 999 686	-314	-1.938
		10	161 999 736	-264	-1.630
		20	161 999 772	-228	-1.407
		30	161 999 747	-253	-1.562
		40	161 999 707	-293	-1.809
		50	161 999 675	-325	-2.006
		60	161 999 654	-346	-2.136
		Normal	161 999 724	-276	-1.704
85	6.29	Normal	161 999 722	-278	-1.716
115	8.51	Normal	161 999 720	-280	-1.728

-Target Power_5W_173.40 ㎒

Voltage [%]	Power [VDC]	Temp. [℃]	Reading Frequency [㎐]	Frequency Error [㎐]	Frequency Error [ppm]
100	7.4	-30	173 399 641	-359	-2.070
		-20	173 399 630	-370	-2.134
		-10	173 399 649	-351	-2.024
		0	173 399 652	-348	-2.007
		10	173 399 740	-260	-1.499
		20	173 399 756	-244	-1.407
		30	173 399 719	-281	-1.621
		40	173 399 697	-303	-1.747
		50	173 399 646	-354	-2.042
		60	173 399 628	-372	-2.145
		Normal	173 399 690	-310	-1.788
85	6.29	Normal	173 399 689	-311	-1.794
115	8.51	Normal	173 399 684	-316	-1.822

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5.3 Modulation Limiting

5.3.1 Regulation

According to TIA-603-D, the instantaneous peak and steady state deviations shall not exceed rated system deviation at any audio frequency or change in level, as specified in the method of measurement.

5.3.2 Measurement Procedure

1. Modulation limiting is the transmitter circuit's ability to limit the transmitter from producing deviations in excess of rated system deviation.
2. The modulation response is measured at certain modulation frequencies, related to 1000 Hz reference signal.
3. The basic setting is 60% of full rated deviation which will be increased the audio generator level from –20 dB to 20 dB in nine steps.
4. Tests are performed for positive and negative modulation.

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5.3.3 Test Result
- Complied

* 12.5BW

-Target Power_1W_150.05 ㎒

Audio input level relative [dB]	Positive peak deviation [㎑]			Negative peak deviation [㎑]			Limit [㎑]
	300 [Hz]	1 000 [Hz]	3 000 [Hz]	300 [Hz]	1 000 [Hz]	3 000 [Hz]	
-20	0.062	0.175	0.243	0.062	0.177	0.244	2.5
-15	0.082	0.294	0.415	0.081	0.299	0.412	
-10	0.117	0.494	0.701	0.119	0.494	0.694	
-5	0.190	0.864	1.220	0.188	0.859	1.215	
0	0.317	1.514	1.234	0.314	1.507	1.229	
5	0.541	1.768	1.233	0.537	1.778	1.228	
10	0.926	1.701	1.232	0.927	1.702	1.224	
15	1.581	1.674	1.233	1.581	1.694	1.227	
20	2.091	1.670	1.232	2.115	1.676	1.226	

-Target Power_1W_155.7525 ㎒

Audio input level relative [dB]	Positive peak deviation [㎑]			Negative peak deviation [㎑]			Limit [㎑]
	300 [Hz]	1 000 [Hz]	3 000 [Hz]	300 [Hz]	1 000 [Hz]	3 000 [Hz]	
-20	0.066	0.186	0.266	0.070	0.190	0.263	2.5
-15	0.087	0.298	0.439	0.089	0.295	0.447	
-10	0.124	0.501	0.753	0.122	0.498	0.746	
-5	0.178	0.859	1.304	0.176	0.863	1.303	
0	0.282	1.505	1.341	0.290	1.504	1.336	
5	0.471	1.852	1.349	0.475	1.863	1.339	
10	0.818	1.816	1.343	0.809	1.824	1.339	
15	1.417	1.798	1.338	1.414	1.801	1.337	
20	2.047	1.796	1.344	2.070	1.798	1.339	

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-Target Power_1W_162.00 ㎒

Audio input level relative [dB]	Positive peak deviation [㎑]			Negative peak deviation [㎑]			Limit [㎑]
	300 [Hz]	1 000 [Hz]	3 000 [Hz]	300 [Hz]	1 000 [Hz]	3 000 [Hz]	
-20	0.075	0.191	0.272	0.075	0.196	0.263	2.5
-15	0.091	0.304	0.436	0.093	0.305	0.434	
-10	0.139	0.512	0.742	0.135	0.512	0.739	
-5	0.201	0.877	1.293	0.194	0.871	1.283	
0	0.322	1.546	1.360	0.323	1.530	1.351	
5	0.530	1.868	1.351	0.533	1.866	1.345	
10	0.895	1.780	1.355	0.900	1.781	1.349	
15	1.543	1.755	1.348	1.526	1.763	1.349	
20	2.189	1.751	1.346	2.215	1.756	1.341	

-Target Power_1W_173.40 ㎒

Audio input level relative [dB]	Positive peak deviation [㎑]			Negative peak deviation [㎑]			Limit [㎑]
	300 [Hz]	1 000 [Hz]	3 000 [Hz]	300 [Hz]	1 000 [Hz]	3 000 [Hz]	
-20	0.053	0.174	0.257	0.047	0.186	0.255	2.5
-15	0.070	0.301	0.437	0.067	0.289	0.433	
-10	0.104	0.493	0.753	0.102	0.506	0.752	
-5	0.164	0.874	1.340	0.165	0.870	1.330	
0	0.266	1.529	1.420	0.266	1.520	1.412	
5	0.459	1.880	1.421	0.460	1.889	1.417	
10	0.810	1.786	1.420	0.799	1.795	1.415	
15	1.410	1.763	1.422	1.412	1.777	1.416	
20	2.074	1.757	1.421	2.091	1.778	1.417	

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-Target Power_5W_150.05 ㎒

Audio input level relative [dB]	Positive peak deviation [㎑]			Negative peak deviation [㎑]			Limit [㎑]
	300 [Hz]	1 000 [Hz]	3 000 [Hz]	300 [Hz]	1 000 [Hz]	3 000 [Hz]	
-20	0.059	0.180	0.246	0.064	0.185	0.245	2.5
-15	0.082	0.301	0.415	0.089	0.295	0.419	
-10	0.121	0.492	0.701	0.119	0.503	0.703	
-5	0.188	0.861	1.226	0.190	0.852	1.223	
0	0.318	1.516	1.235	0.318	1.510	1.234	
5	0.534	1.770	1.226	0.536	1.768	1.222	
10	0.929	1.693	1.237	0.926	1.705	1.231	
15	1.578	1.685	1.236	1.583	1.681	1.227	
20	2.083	1.669	1.224	2.108	1.683	1.223	

-Target Power_5W_155.7525 ㎒

Audio input level relative [dB]	Positive peak deviation [㎑]			Negative peak deviation [㎑]			Limit [㎑]
	300 [Hz]	1 000 [Hz]	3 000 [Hz]	300 [Hz]	1 000 [Hz]	3 000 [Hz]	
-20	0.066	0.182	0.266	0.071	0.185	0.269	2.5
-15	0.088	0.296	0.444	0.089	0.295	0.441	
-10	0.120	0.491	0.748	0.115	0.496	0.744	
-5	0.181	0.857	1.311	0.187	0.854	1.300	
0	0.285	1.497	1.344	0.284	1.495	1.337	
5	0.474	1.852	1.336	0.467	1.847	1.328	
10	0.810	1.810	1.338	0.807	1.816	1.325	
15	1.413	1.794	1.341	1.410	1.803	1.335	
20	2.044	1.789	1.348	2.066	1.798	1.329	

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-Target Power_5W_162.00 ㎒

Audio input level relative [dB]	Positive peak deviation [㎑]			Negative peak deviation [㎑]			Limit [㎑]
	300 [Hz]	1 000 [Hz]	3 000 [Hz]	300 [Hz]	1 000 [Hz]	3 000 [Hz]	
-20	0.080	0.191	0.268	0.077	0.204	0.274	2.5
-15	0.103	0.323	0.455	0.101	0.316	0.452	
-10	0.142	0.527	0.761	0.142	0.521	0.759	
-5	0.187	0.886	1.314	0.193	0.894	1.313	
0	0.319	1.549	1.350	0.314	1.543	1.347	
5	0.529	1.846	1.353	0.524	1.867	1.339	
10	0.895	1.763	1.342	0.897	1.779	1.351	
15	1.717	1.747	1.344	1.721	1.757	1.338	
20	2.169	1.746	1.342	2.195	1.741	1.342	

-Target Power_5W_173.40 ㎒

Audio input level relative [dB]	Positive peak deviation [㎑]			Negative peak deviation [㎑]			Limit [㎑]
	300 [Hz]	1 000 [Hz]	3 000 [Hz]	300 [Hz]	1 000 [Hz]	3 000 [Hz]	
-20	0.046	0.171	0.257	0.050	0.186	0.255	2.5
-15	0.075	0.299	0.438	0.066	0.286	0.438	
-10	0.103	0.493	0.753	0.102	0.510	0.752	
-5	0.159	0.882	1.336	0.157	0.866	1.330	
0	0.263	1.527	1.423	0.267	1.522	1.419	
5	0.464	1.886	1.421	0.458	1.878	1.416	
10	0.801	1.784	1.432	0.800	1.808	1.419	
15	1.407	1.767	1.418	1.411	1.767	1.416	
20	2.066	1.758	1.421	2.084	1.768	1.417	

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* 6.25BW

-Target Power_1W_150.05 ㎒

Audio input level relative [dB]	Positive peak deviation [㎑]			Negative peak deviation [㎑]			Limit [㎑]
	300 [Hz]	1 000 [Hz]	3 000 [Hz]	300 [Hz]	1 000 [Hz]	3 000 [Hz]	
-20	0.072	0.127	0.153	0.078	0.126	0.155	1.25
-15	0.084	0.178	0.230	0.084	0.180	0.232	
-10	0.100	0.280	0.368	0.105	0.275	0.368	
-5	0.137	0.443	0.610	0.137	0.447	0.607	
0	0.190	0.745	0.681	0.196	0.751	0.676	
5	0.287	0.979	0.682	0.288	0.976	0.679	
10	0.463	0.935	0.680	0.461	0.934	0.677	
15	0.789	0.917	0.679	0.793	0.921	0.677	
20	1.097	0.917	0.676	1.119	0.924	0.674	

-Target Power_1W_155.7525 ㎒

Audio input level relative [dB]	Positive peak deviation [㎑]			Negative peak deviation [㎑]			Limit [㎑]
	300 [Hz]	1 000 [Hz]	3 000 [Hz]	300 [Hz]	1 000 [Hz]	3 000 [Hz]	
-20	0.062	0.119	0.163	0.062	0.114	0.155	1.25
-15	0.075	0.172	0.243	0.067	0.168	0.235	
-10	0.081	0.274	0.396	0.090	0.267	0.387	
-5	0.116	0.450	0.667	0.117	0.447	0.651	
0	0.170	0.756	0.707	0.166	0.748	0.701	
5	0.260	0.954	0.695	0.252	0.954	0.688	
10	0.418	0.933	0.693	0.427	0.929	0.686	
15	0.709	0.919	0.690	0.718	0.919	0.687	
20	1.032	0.919	0.696	1.043	0.915	0.683	

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-Target Power_1W_162.00 ㎒

Audio input level relative [dB]	Positive peak deviation [㎑]			Negative peak deviation [㎑]			Limit [㎑]
	300 [Hz]	1 000 [Hz]	3 000 [Hz]	300 [Hz]	1 000 [Hz]	3 000 [Hz]	
-20	0.055	0.110	0.148	0.058	0.117	0.152	1.25
-15	0.062	0.166	0.223	0.068	0.172	0.234	
-10	0.078	0.259	0.376	0.086	0.271	0.376	
-5	0.115	0.439	0.634	0.117	0.444	0.636	
0	0.160	0.756	0.714	0.172	0.763	0.719	
5	0.258	0.990	0.713	0.265	1.002	0.718	
10	0.431	0.951	0.717	0.434	0.960	0.717	
15	0.745	0.935	0.711	0.745	0.946	0.722	
20	1.131	0.936	0.711	1.150	0.946	0.722	

-Target Power_1W_173.40 ㎒

Audio input level relative [dB]	Positive peak deviation [㎑]			Negative peak deviation [㎑]			Limit [㎑]
	300 [Hz]	1 000 [Hz]	3 000 [Hz]	300 [Hz]	1 000 [Hz]	3 000 [Hz]	
-20	0.035	0.093	0.134	0.033	0.093	0.133	1.25
-15	0.047	0.149	0.217	0.046	0.148	0.216	
-10	0.062	0.248	0.370	0.063	0.250	0.369	
-5	0.085	0.429	0.649	0.088	0.428	0.646	
0	0.140	0.751	0.754	0.143	0.749	0.752	
5	0.231	1.007	0.750	0.230	1.011	0.752	
10	0.422	0.967	0.750	0.401	0.964	0.748	
15	0.697	0.943	0.752	0.699	0.946	0.747	
20	1.106	0.939	0.751	1.113	0.939	0.752	

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-Target Power_5W_150.05 ㎒

Audio input level relative [dB]	Positive peak deviation [㎑]			Negative peak deviation [㎑]			Limit [㎑]
	300 [Hz]	1 000 [Hz]	3 000 [Hz]	300 [Hz]	1 000 [Hz]	3 000 [Hz]	
-20	0.080	0.131	0.158	0.080	0.131	0.164	1.25
-15	0.088	0.183	0.236	0.091	0.184	0.238	
-10	0.106	0.276	0.377	0.105	0.278	0.378	
-5	0.134	0.444	0.617	0.140	0.448	0.615	
0	0.193	0.754	0.686	0.197	0.755	0.688	
5	0.296	0.979	0.685	0.297	0.984	0.687	
10	0.477	0.939	0.685	0.480	0.944	0.688	
15	0.795	0.924	0.681	0.796	0.929	0.685	
20	1.089	0.922	0.687	1.104	0.926	0.682	

-Target Power_5W_155.7525 ㎒

Audio input level relative [dB]	Positive peak deviation [㎑]			Negative peak deviation [㎑]			Limit [㎑]
	300 [Hz]	1 000 [Hz]	3 000 [Hz]	300 [Hz]	1 000 [Hz]	3 000 [Hz]	
-20	0.058	0.119	0.153	0.055	0.112	0.156	1.25
-15	0.066	0.172	0.239	0.075	0.167	0.240	
-10	0.093	0.270	0.385	0.086	0.264	0.378	
-5	0.114	0.443	0.653	0.112	0.437	0.651	
0	0.163	0.748	0.694	0.163	0.744	0.690	
5	0.252	0.941	0.691	0.253	0.945	0.688	
10	0.409	0.922	0.694	0.416	0.933	0.685	
15	0.700	0.912	0.685	0.696	0.918	0.692	
20	1.029	0.917	0.692	1.049	0.915	0.690	

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-Target Power_5W_162.00 ㎒

Audio input level relative [dB]	Positive peak deviation [㎑]			Negative peak deviation [㎑]			Limit [㎑]
	300 [Hz]	1 000 [Hz]	3 000 [Hz]	300 [Hz]	1 000 [Hz]	3 000 [Hz]	
-20	0.056	0.110	0.144	0.061	0.114	0.150	1.25
-15	0.062	0.163	0.223	0.072	0.163	0.230	
-10	0.081	0.259	0.365	0.085	0.271	0.374	
-5	0.110	0.429	0.627	0.115	0.438	0.629	
0	0.168	0.749	0.715	0.172	0.746	0.719	
5	0.253	0.999	0.719	0.263	1.007	0.723	
10	0.425	0.950	0.714	0.435	0.960	0.719	
15	0.733	0.932	0.716	0.732	0.944	0.724	
20	1.126	0.930	0.712	1.149	0.939	0.720	

-Target Power_5W_173.40 ㎒

Audio input level relative [dB]	Positive peak deviation [㎑]			Negative peak deviation [㎑]			Limit [㎑]
	300 [Hz]	1 000 [Hz]	3 000 [Hz]	300 [Hz]	1 000 [Hz]	3 000 [Hz]	
-20	0.037	0.092	0.133	0.034	0.095	0.130	1.25
-15	0.044	0.147	0.215	0.045	0.149	0.216	
-10	0.064	0.249	0.371	0.059	0.254	0.370	
-5	0.085	0.427	0.642	0.084	0.427	0.643	
0	0.146	0.749	0.755	0.142	0.750	0.754	
5	0.229	1.006	0.756	0.230	1.009	0.755	
10	0.393	0.955	0.748	0.391	0.961	0.744	
15	0.670	0.937	0.750	0.673	0.940	0.745	
20	1.088	0.933	0.745	1.099	0.939	0.744	

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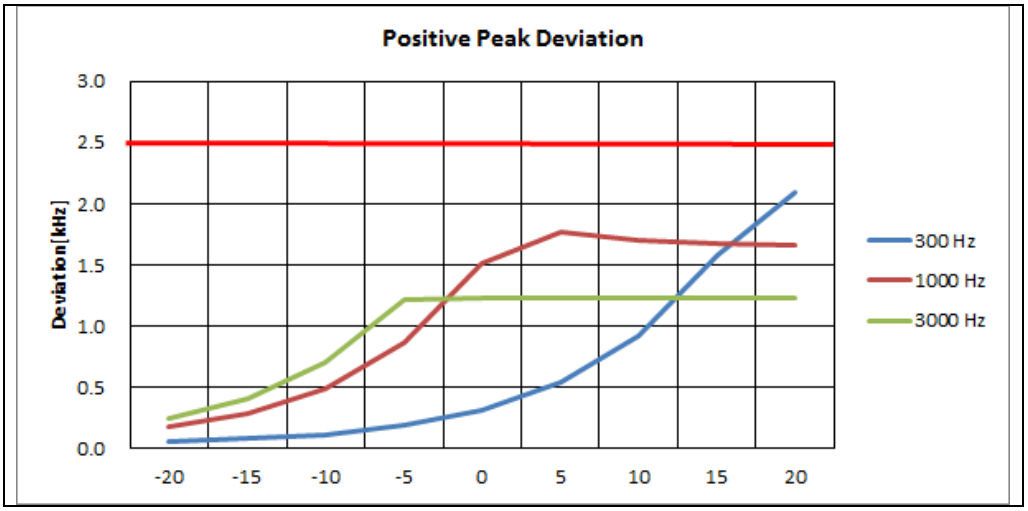
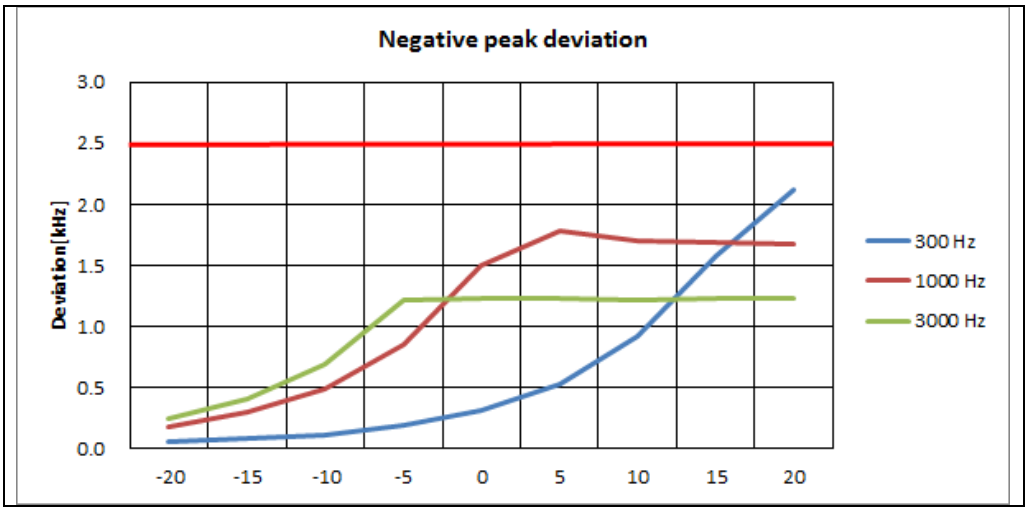
5.3.4 Test Plot

Figure 1. Plot of the Modulation Limiting

* 12.5BW

-Target Power_1W_150.05 ㎒





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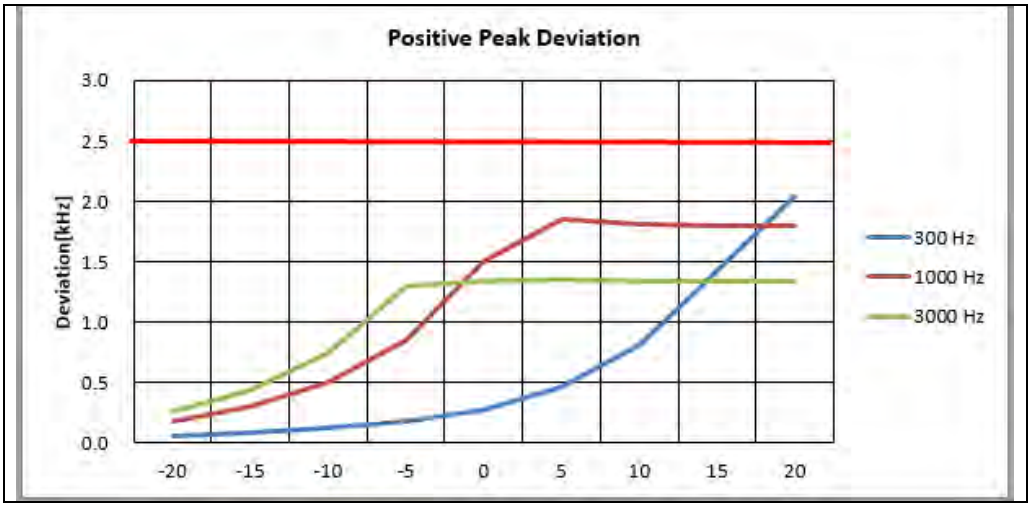
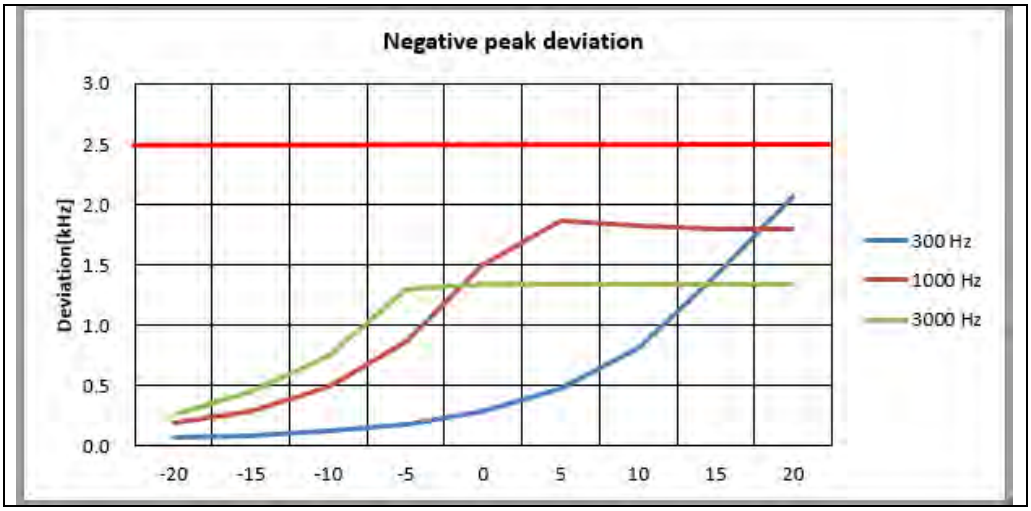
-Target Power_1W_155.7525 ㎒





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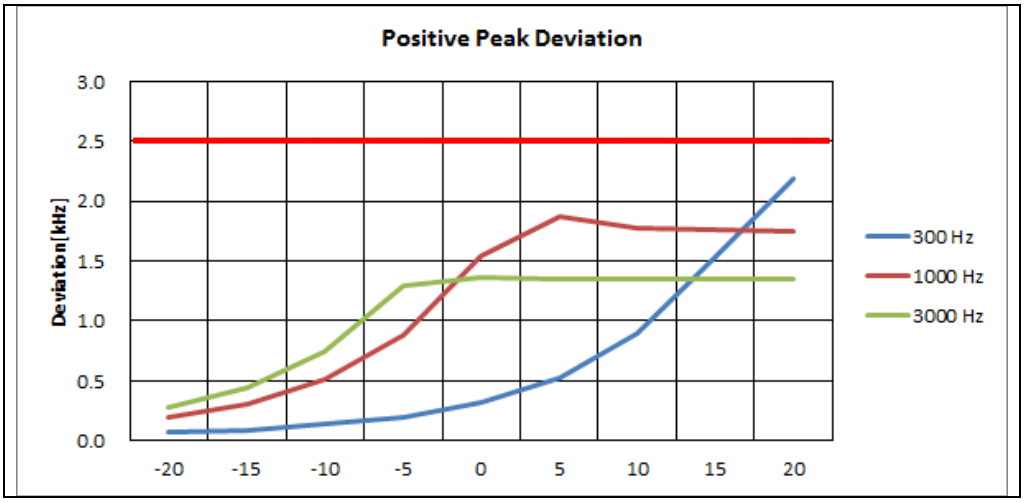
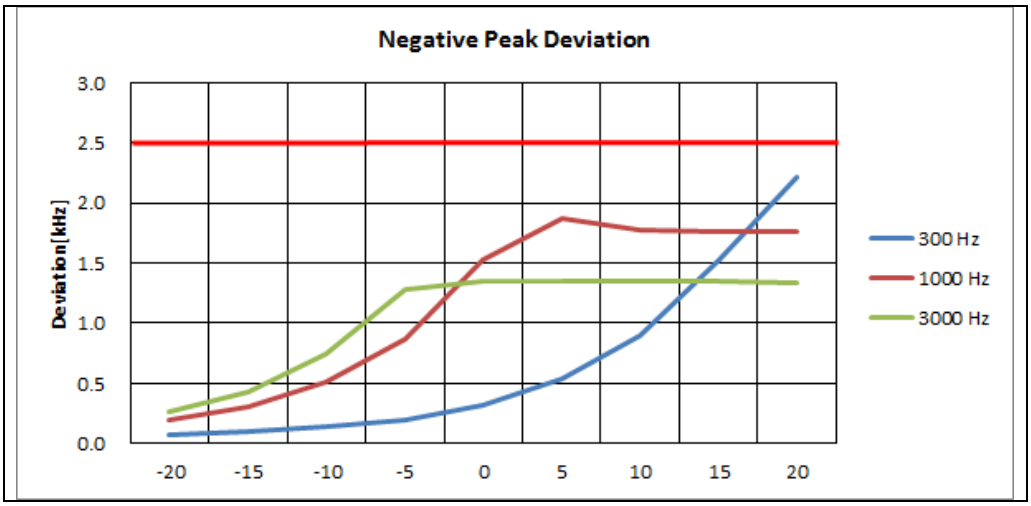
-Target Power_1W_162.00 ㎒





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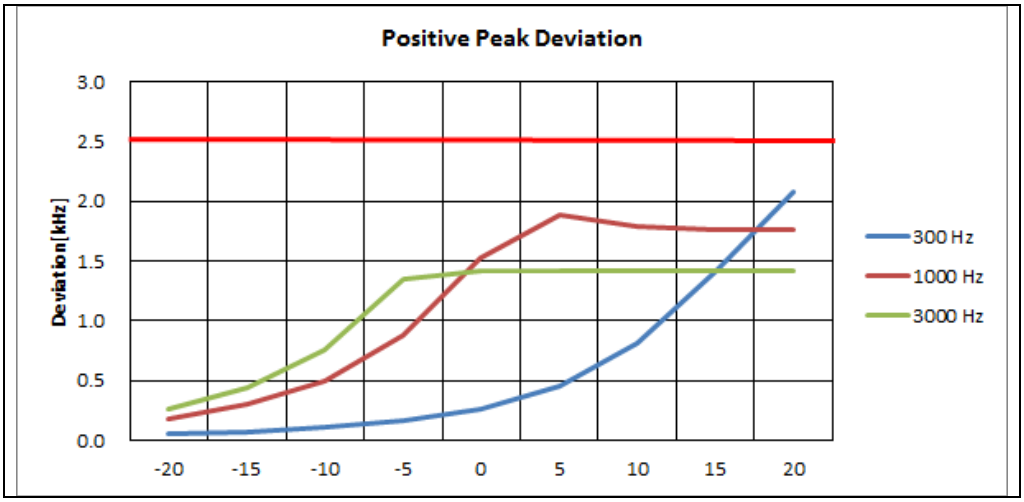
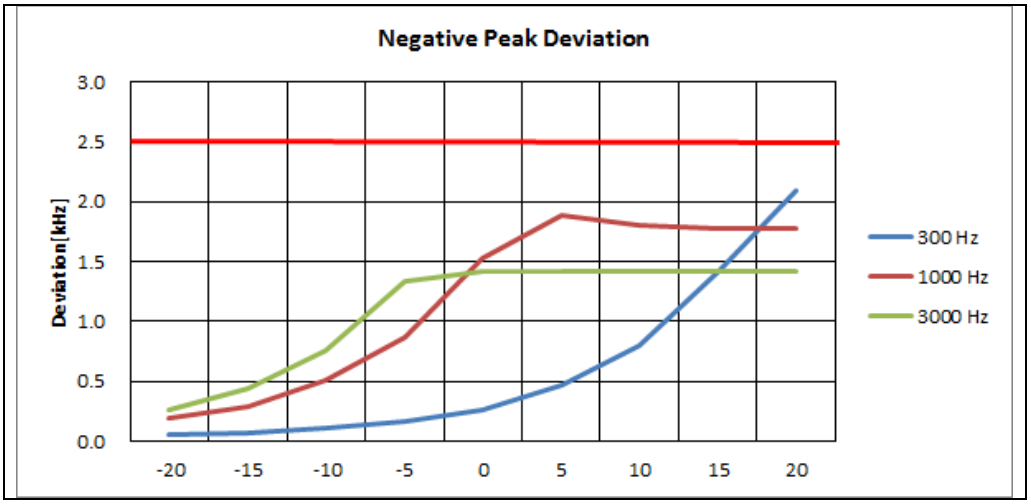
-Target Power_1W_173.40 ㎒





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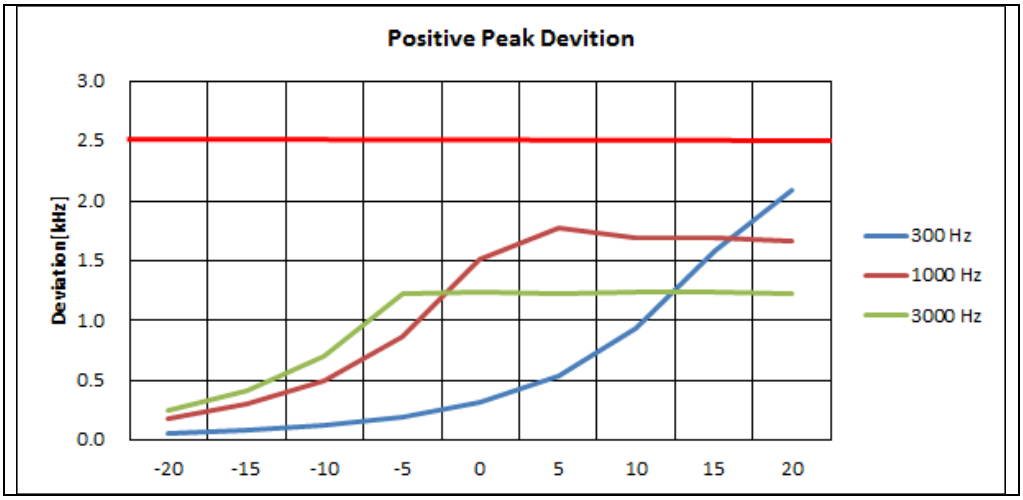
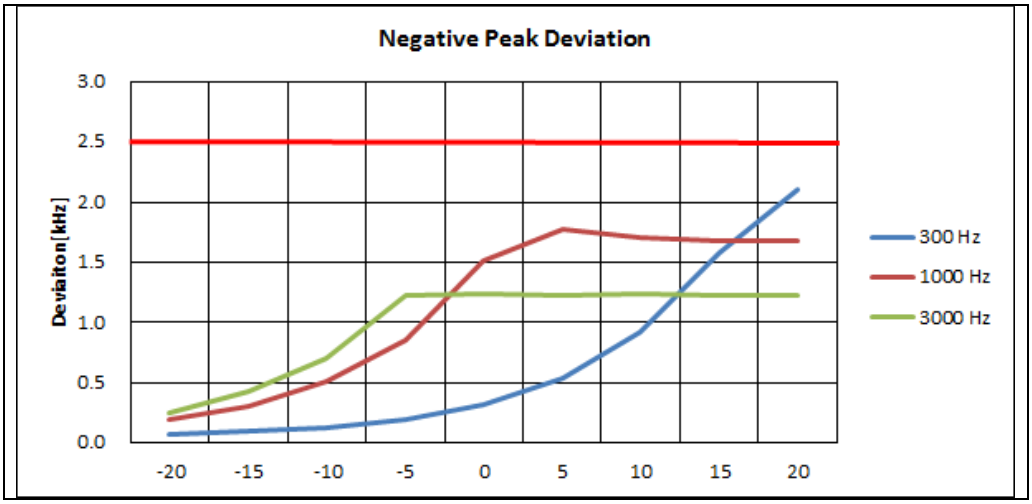
-Target Power_5W_150.05 ㎒





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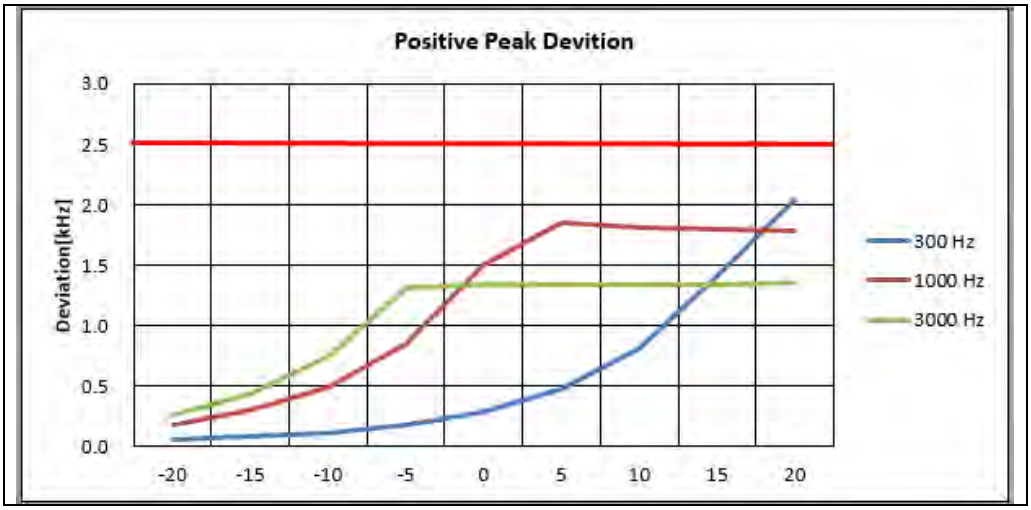
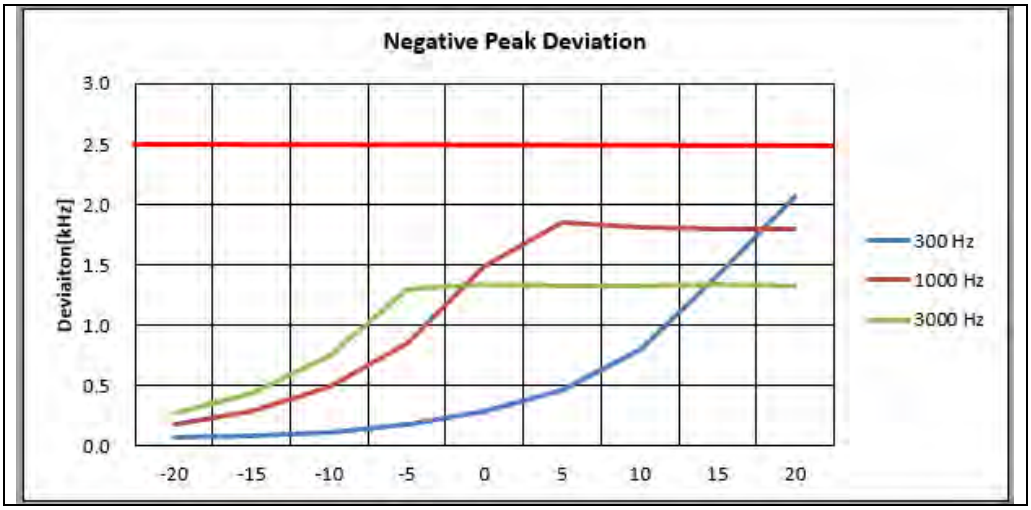
-Target Power_5W_155.7525 ㎒





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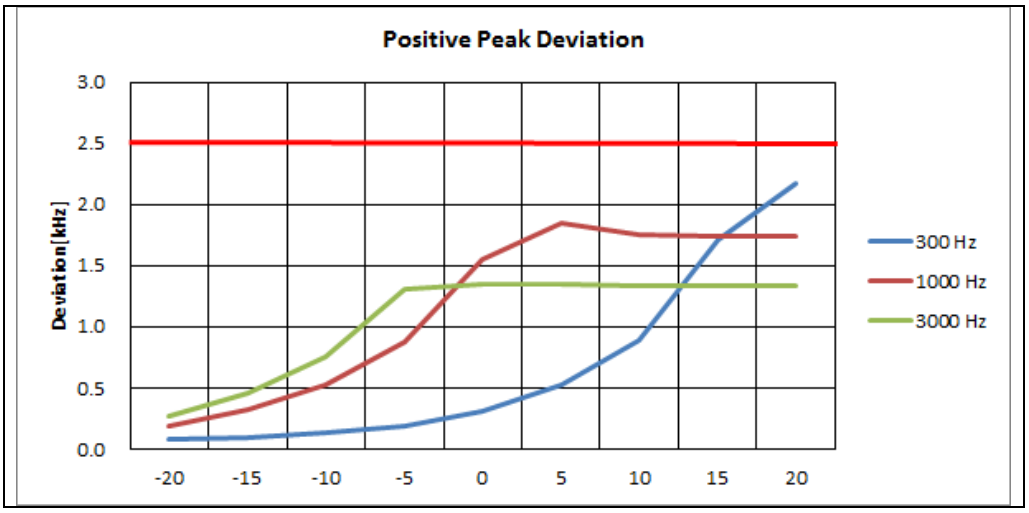
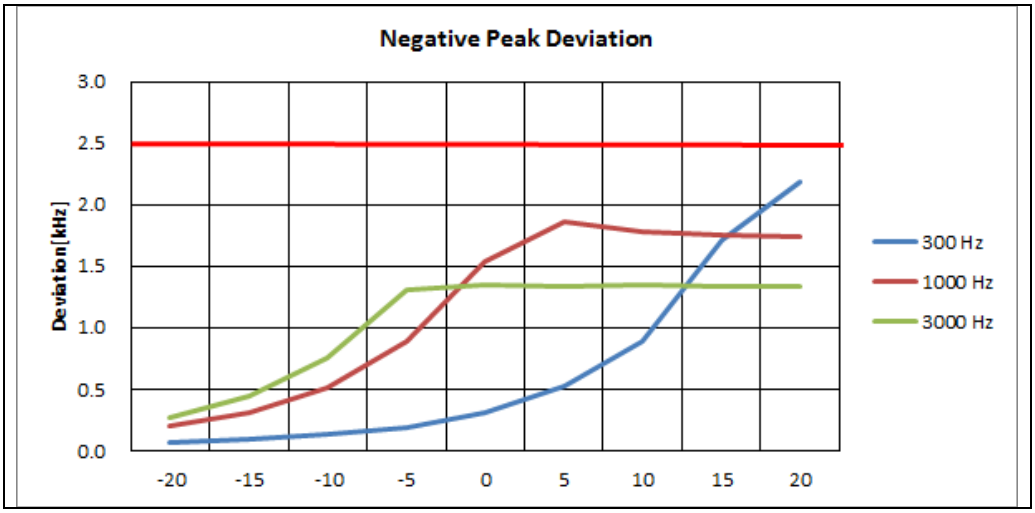
-Target Power_5W_162.00 ㎒





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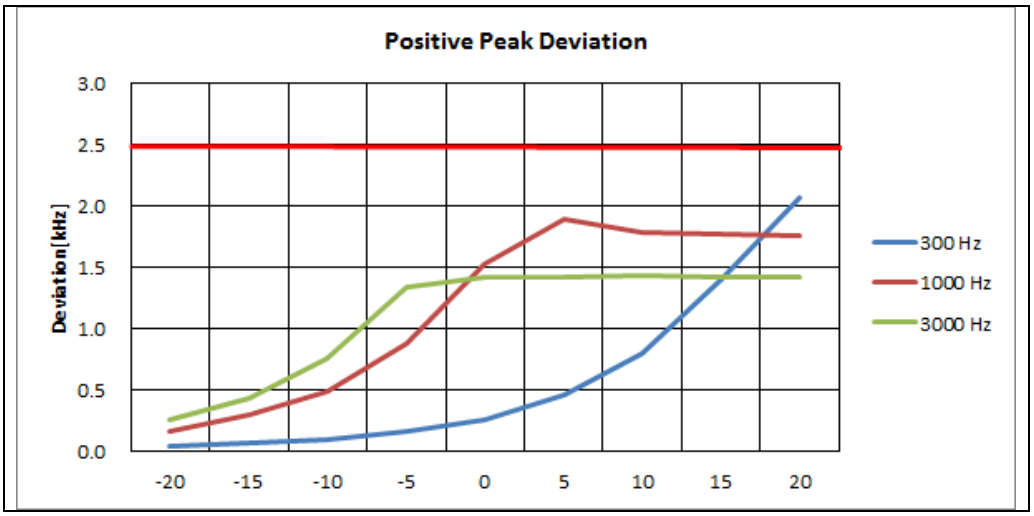
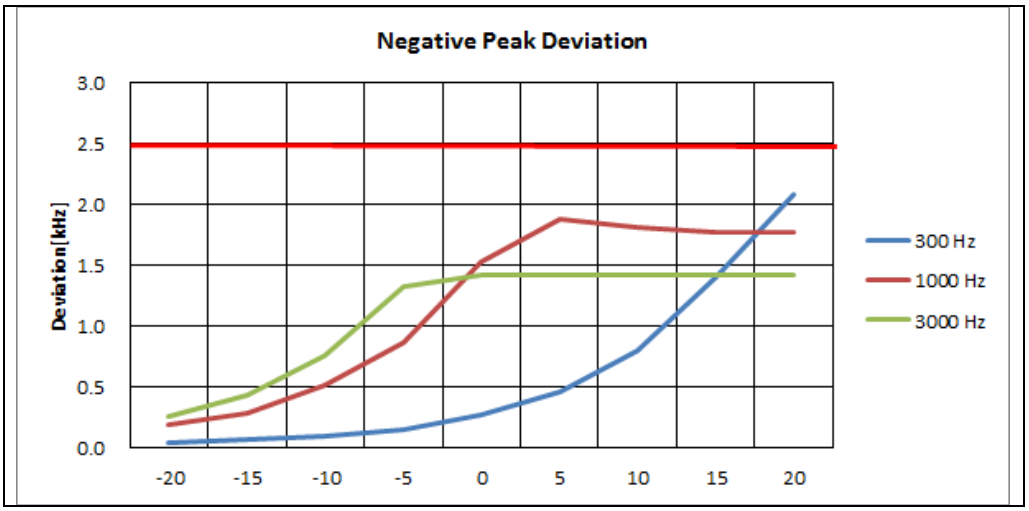
-Target Power_5W_173.40 ㎒





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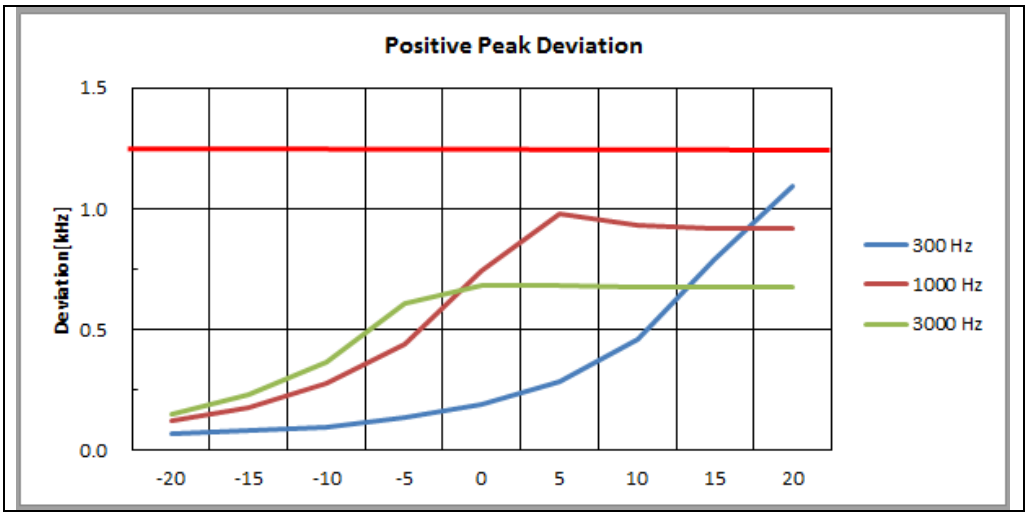
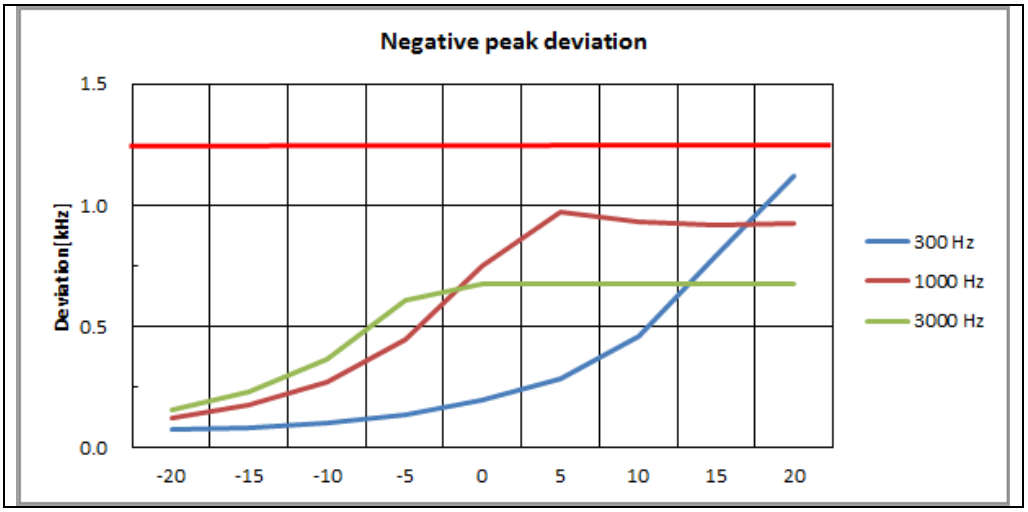
* 6.25BW

-Target Power_1W_150.05 ㎒





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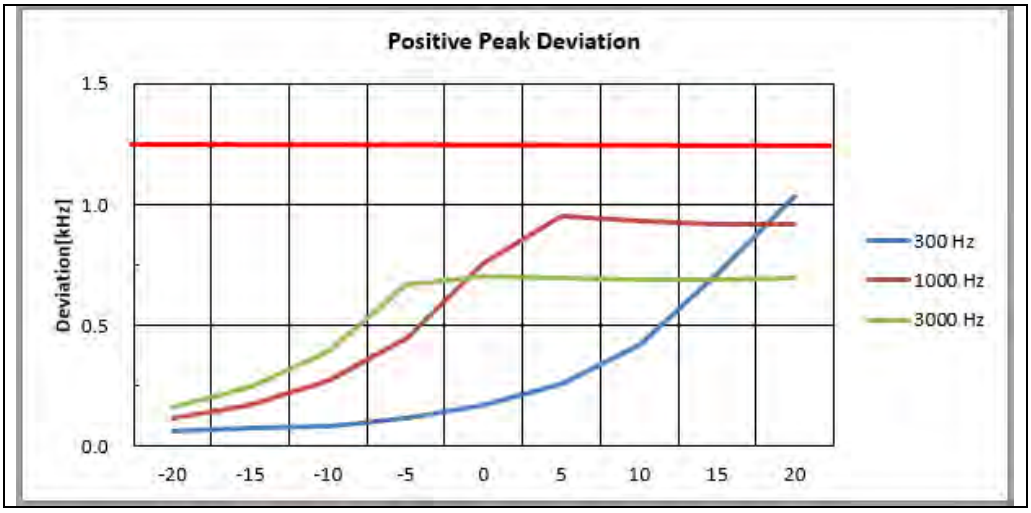
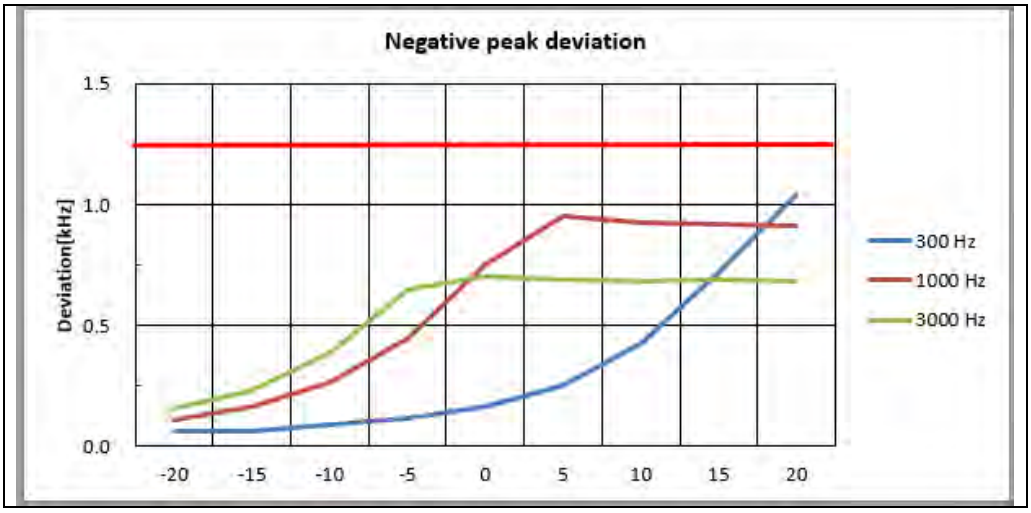
-Target Power_1W_155.7525㎒





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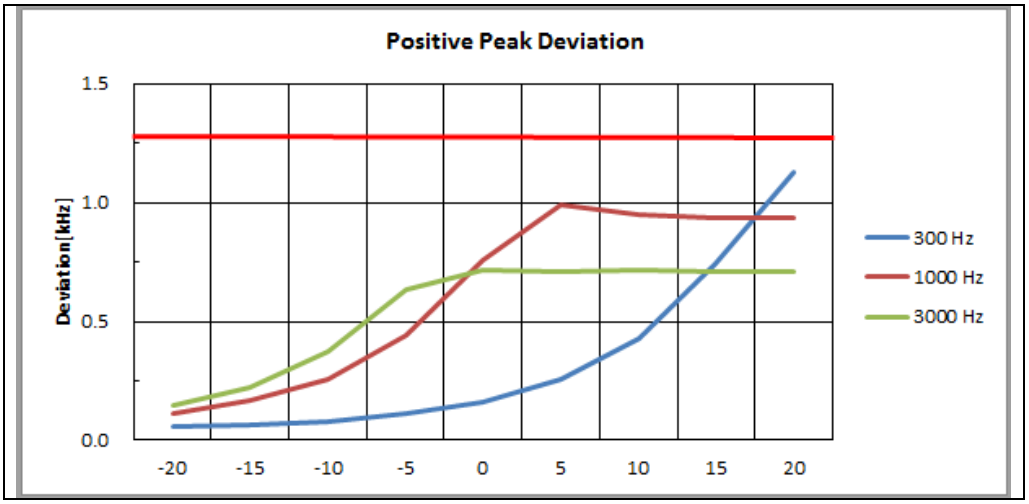
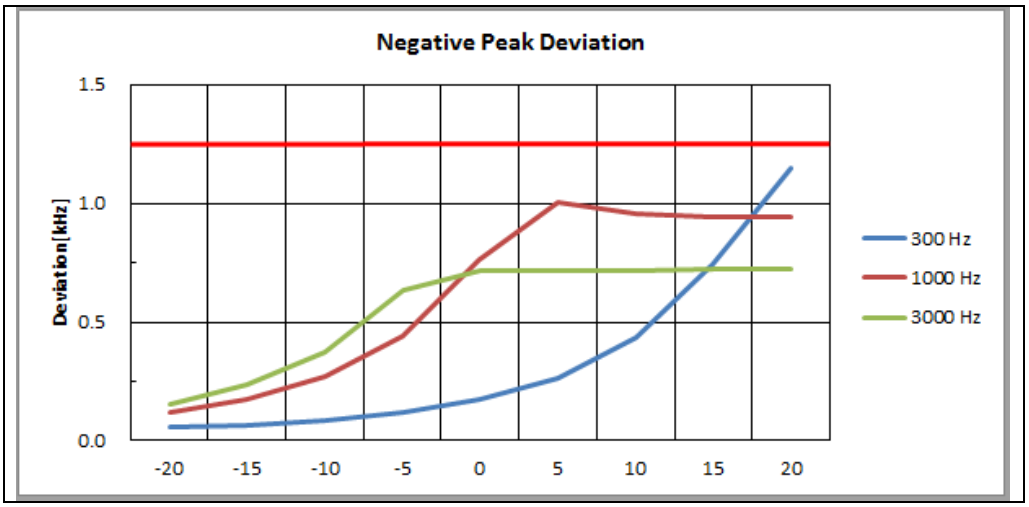
-Target Power_1W_162.00 ㎒





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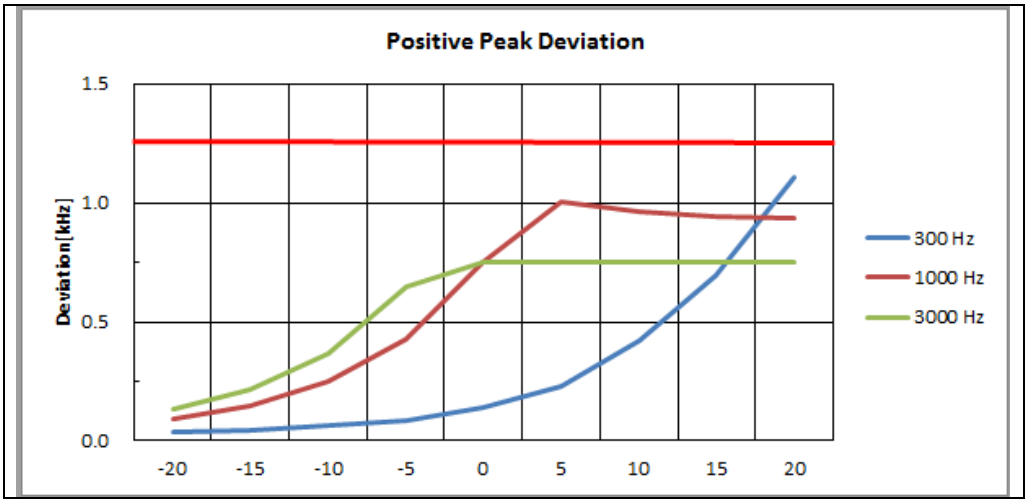
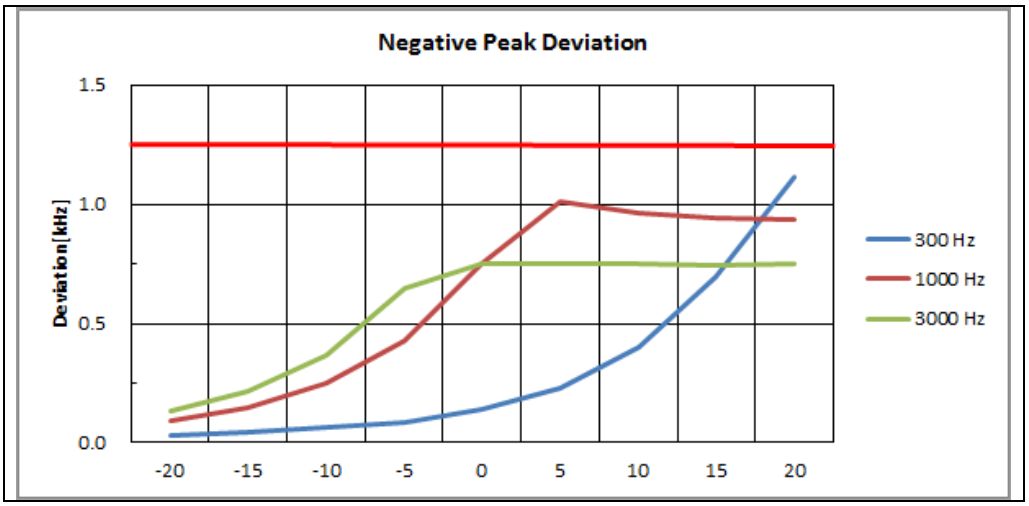
-Target Power_1W_173.40 ㎒





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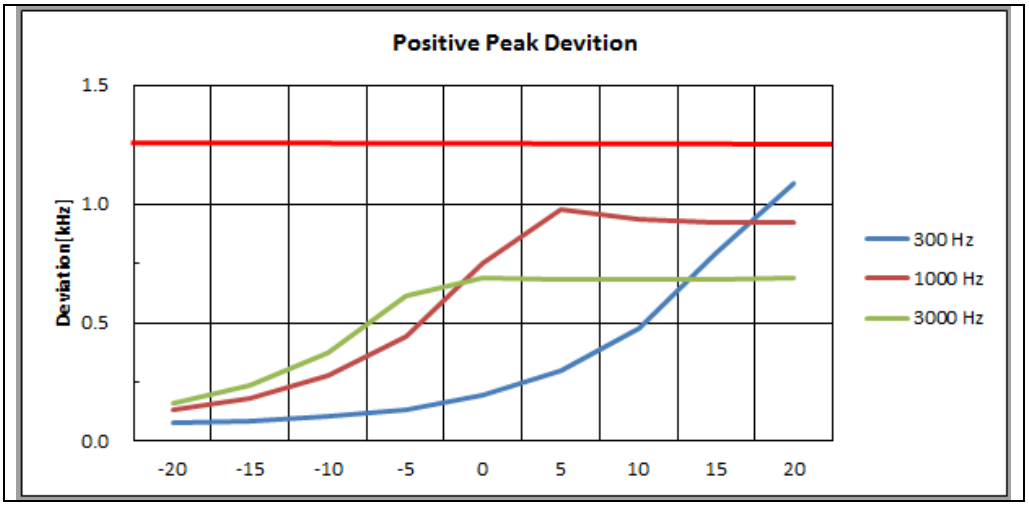
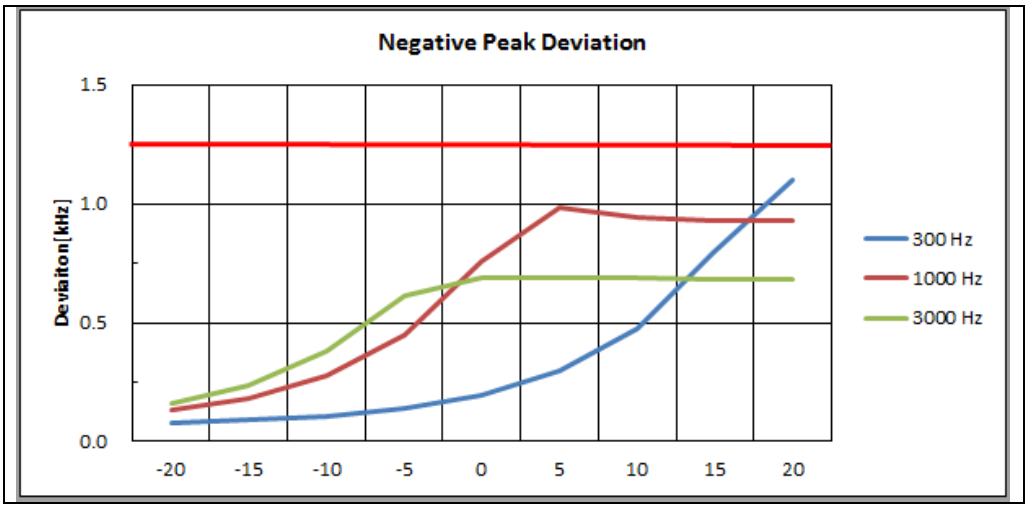
-Target Power_5W_150.05 ㎒





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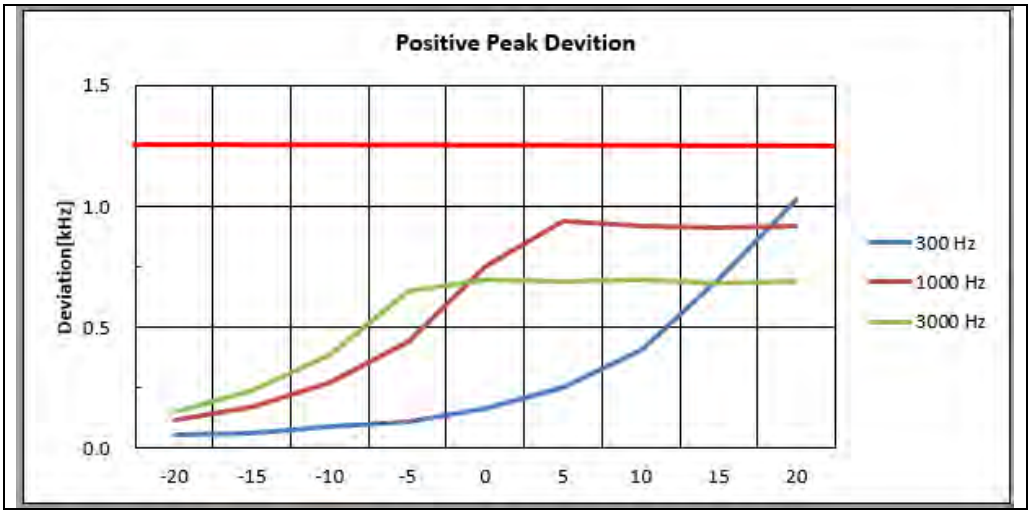
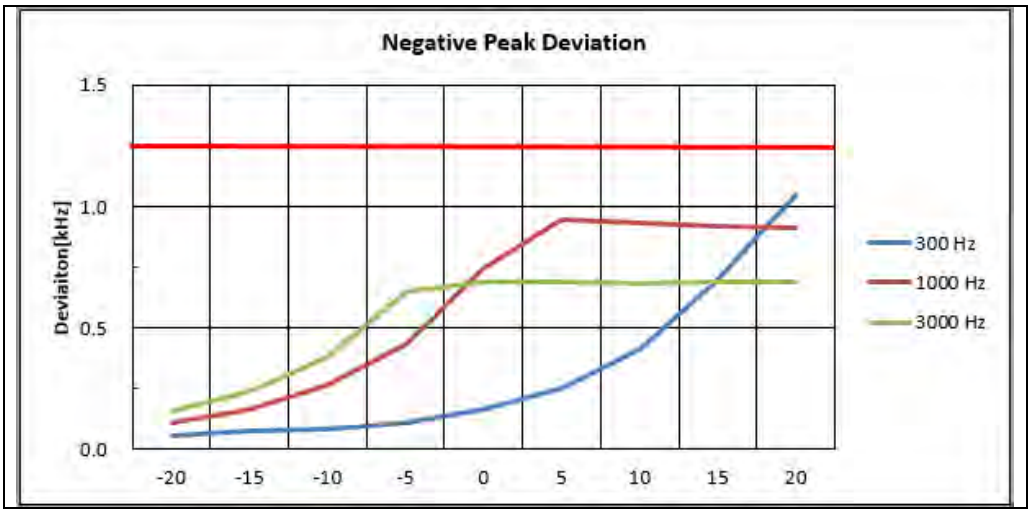
-Target Power_5W_155.7525 ㎒





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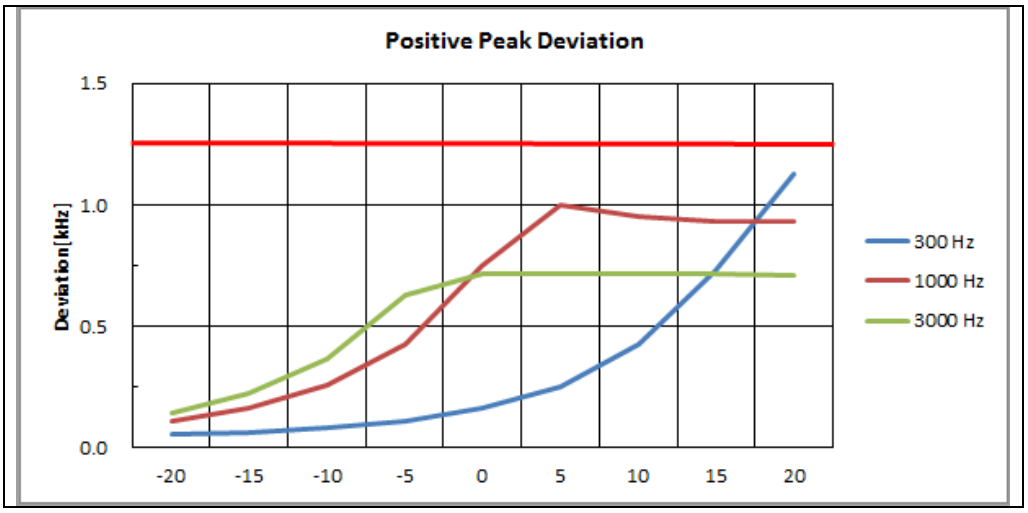
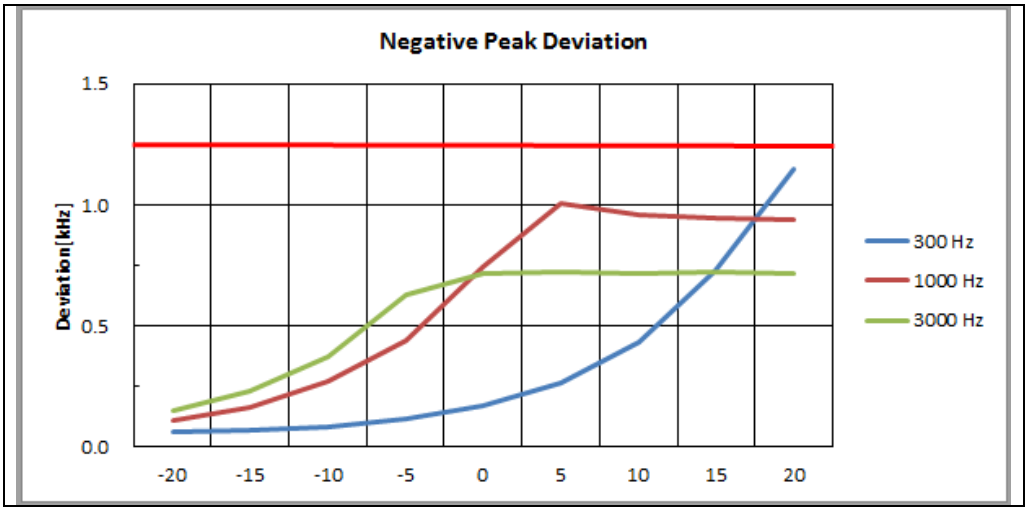
-Target Power_5W_162.00 ㎒





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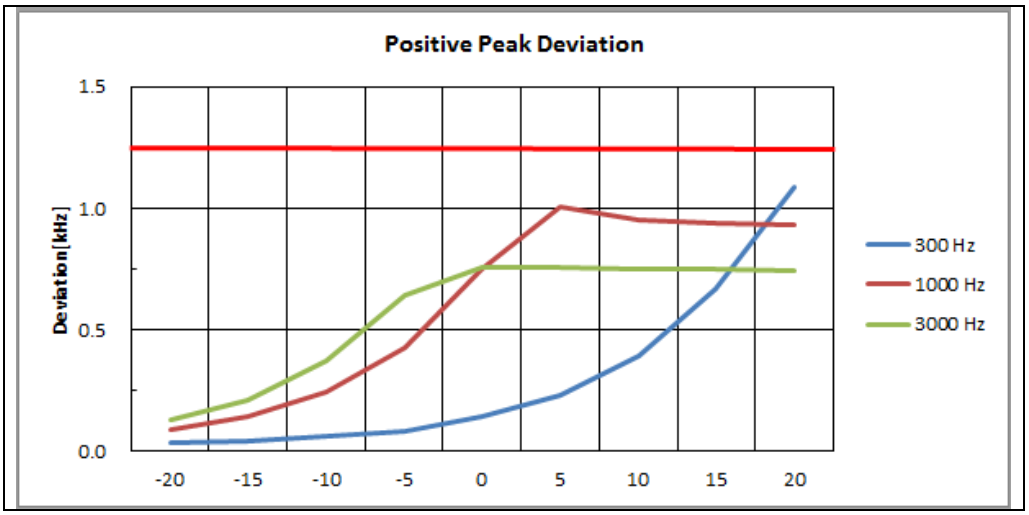
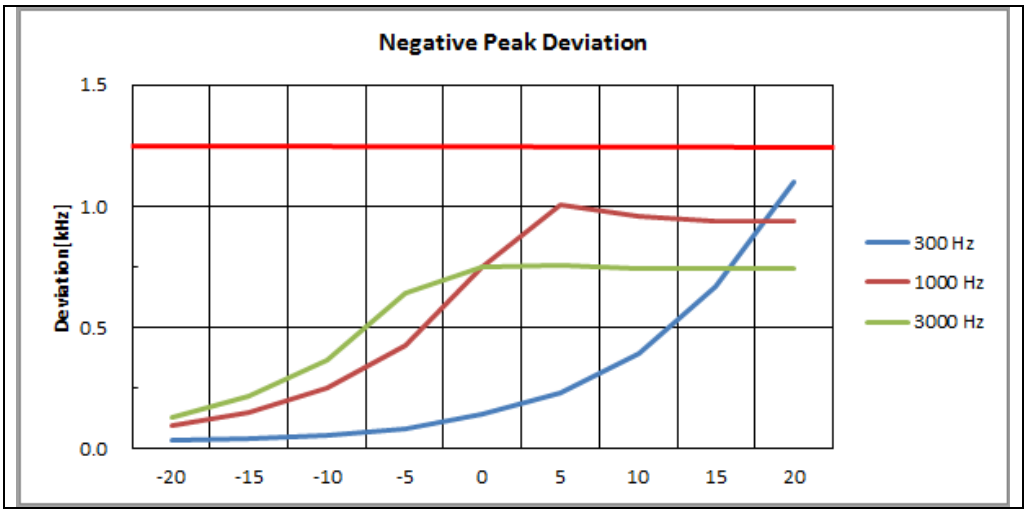
-Target Power_5W_173.40 ㎒





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5.4 Audio Frequency Response

5.4.1 Regulation

According to TIA-603-D, the audio frequency response from 300 Hz to 3000 Hz shall not vary more than +1 dB or -3 dB from a true 6 dB per octave pre-emphasis characteristics as referenced to the 1000 Hz level. The exception is from 500 Hz to 300 Hz, where additional 6 dB per octave rolloff is allowed.

5.4.2 Measurement Procedure

1. The audio frequency response is the degree of closeness to which the frequency deviation of the transmitter follows a prescribed characteristic.
2. The frequency response of the audio modulation part is adjusted to get 20% of the rated system deviation.
3. The deviations obtained over the frequency range from 100 Hz to 5000 Hz are recorded and compared with the reference deviation as follows:

$$\text{Audio Frequency Response} = 20\log\,[DEV_{Freq} / DEV_{ref}]$$

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5.4.3 Test Result

- Complied

* 12.5BW

-Target Power_1W_150.05 ㎒

Audio Frequency [㎐]	Measured Deviation [㎑]	Calculated Response [dB]
100	0.05	-20.72
200	0.04	-21.94
300	0.13	-11.90
400	0.19	-8.59
500	0.24	-6.30
600	0.30	-4.47
700	0.35	-3.10
800	0.40	-1.96
900	0.45	-0.86
1000	**0.50**	**0.00**
1500	0.74	3.45
2000	0.97	5.71
2500	1.02	6.19
3000	0.71	3.08
4000	0.05	-20.92
5000	0.04	-21.94

-Target Power_1W_155.7525 ㎒

Audio Frequency [㎐]	Measured Deviation [㎑]	Calculated Response [dB]
100	0.05	-19.67
200	0.05	-20.00
300	0.13	-12.21
400	0.18	-9.24
500	0.23	-6.92
600	0.28	-5.24
700	0.33	-3.70
800	0.39	-2.29
900	0.45	-1.13
1000	**0.51**	**0.00**
1500	0.76	3.44
2000	1.00	5.81
2500	1.02	6.05
3000	0.75	3.32
4000	0.06	-19.19
5000	0.05	-20.71

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-Target Power_1W_162.00 ㎒

Audio Frequency [Hz]	Measured Deviation [㎑]	Calculated Response [dB]
100	0.06	-19.10
200	0.06	-18.95
300	0.14	-11.30
400	0.19	-8.51
500	0.25	-6.26
600	0.29	-4.88
700	0.35	-3.34
800	0.41	-1.92
900	0.46	-0.89
1 000	**0.51**	**0.00**
1 500	0.76	3.44
2 000	0.99	5.68
2 500	1.05	6.22
3 000	0.75	3.22
4 000	0.07	-17.96
5 000	0.06	-18.66

-Target Power_1W_173.40 ㎒

Audio Frequency [Hz]	Measured Deviation [㎑]	Calculated Response [dB]
100	0.03	-23.61
200	0.03	-25.04
300	0.11	-13.39
400	0.16	-10.12
500	0.22	-7.21
600	0.27	-5.22
700	0.33	-3.69
800	0.39	-2.25
900	0.44	-1.13
1 000	**0.50**	**0.00**
1 500	0.76	3.65
2 000	1.00	5.99
2 500	1.07	6.59
3 000	0.75	3.46
4 000	0.03	-23.88
5 000	0.03	-24.73

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-Target Power_5W_150.05 ㎒

Audio Frequency [Hz]	Measured Deviation [㎑]	Calculated Response [dB]
100	0.04	-21.51
200	0.04	-21.51
300	0.13	-12.04
400	0.19	-8.64
500	0.24	-6.34
600	0.29	-4.61
700	0.35	-3.20
800	0.40	-1.92
900	0.47	-0.59
1 000	**0.50**	**0.00**
1 500	0.75	3.52
2 000	0.96	5.69
2 500	1.02	6.18
3 000	0.71	3.06
4 000	0.04	-21.31
5 000	0.05	-20.92

-Target Power_5W_155.7525 ㎒

Audio Frequency [Hz]	Measured Deviation [㎑]	Calculated Response [dB]
100	0.06	-19.19
200	0.05	-20.02
300	0.12	-12.49
400	0.17	-9.49
500	0.23	-6.76
600	0.28	-4.99
700	0.33	-3.73
800	0.39	-2.27
900	0.45	-0.97
1 000	**0.50**	**0.00**
1 500	0.77	3.72
2 000	1.00	6.01
2 500	1.03	6.29
3 000	0.75	3.49
4 000	0.06	-19.03
5 000	0.05	-19.68

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-Target Power_5W_162.00 ㎒

Audio Frequency [Hz]	Measured Deviation [㎑]	Calculated Response [dB]
100	0.06	-19.36
200	0.06	-19.05
300	0.13	-11.89
400	0.19	-8.64
500	0.24	-6.42
600	0.29	-4.95
700	0.34	-3.56
800	0.39	-2.28
900	0.46	-1.01
1 000	**0.51**	**0.00**
1 500	0.75	3.31
2 000	0.97	5.53
2 500	1.03	6.06
3 000	0.72	3.00
4 000	0.06	-18.46
5 000	0.06	-19.20

-Target Power_5W_173.40 ㎒

Audio Frequency [Hz]	Measured Deviation [㎑]	Calculated Response [dB]
100	0.03	-24.10
200	0.03	-23.56
300	0.10	-14.01
400	0.16	-9.95
500	0.21	-7.44
600	0.27	-5.36
700	0.33	-3.69
800	0.38	-2.29
900	0.44	-1.10
1 000	**0.50**	**0.00**
1 500	0.76	3.67
2 000	1.00	6.05
2 500	1.07	6.63
3 000	0.75	3.54
4 000	0.04	-22.33
5 000	0.04	-22.56

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* 6.25BW

-Target Power_1W_150.05 ㎒

Audio Frequency [㎐]	Measured Deviation [㎑]	Calculated Response [dB]
100	0.05	-14.01
200	0.05	-13.67
300	0.08	-10.49
400	0.11	-7.41
500	0.13	-5.71
600	0.15	-4.30
700	0.18	-2.84
800	0.20	-1.84
900	0.23	-0.83
1000	**0.25**	**0.00**
1500	0.35	2.96
2000	0.45	4.99
2500	0.47	5.50
3000	0.35	2.79
4000	0.05	-13.67
5000	0.05	-14.55

-Target Power_1W_155.7525 ㎒

Audio Frequency [㎐]	Measured Deviation [㎑]	Calculated Response [dB]
100	0.06	-13.06
200	0.06	-12.32
300	0.07	-10.88
400	0.10	-7.69
500	0.13	-5.75
600	0.16	-4.00
700	0.18	-2.97
800	0.20	-2.14
900	0.23	-0.87
1000	**0.25**	**0.00**
1500	0.36	3.12
2000	0.47	5.32
2500	0.48	5.63
3000	0.36	3.03
4000	0.06	-13.22
5000	0.05	-13.71

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-Target Power_1W_162.00 ㎒

Audio Frequency [Hz]	Measured Deviation [㎑]	Calculated Response [dB]
100	0.06	-12.32
200	0.06	-12.46
300	0.08	-9.97
400	0.10	-7.86
500	0.13	-5.55
600	0.15	-4.33
700	0.18	-3.17
800	0.20	-1.92
900	0.23	-0.87
1 000	**0.25**	**0.00**
1 500	0.36	3.12
2 000	0.47	5.34
2 500	0.49	5.81
3 000	0.35	2.85
4 000	0.05	-13.71
5 000	0.05	-14.05

-Target Power_1W_173.40 ㎒

Audio Frequency [Hz]	Measured Deviation [㎑]	Calculated Response [dB]
100	0.03	-18.75
200	0.03	-18.45
300	0.06	-12.15
400	0.09	-8.81
500	0.12	-6.63
600	0.14	-5.07
700	0.17	-3.28
800	0.20	-2.06
900	0.23	-0.87
1 000	**0.25**	**0.00**
1 500	0.37	3.44
2 000	0.50	5.90
2 500	0.53	6.41
3 000	0.37	3.32
4 000	0.03	-18.45
5 000	0.03	-19.69

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-Target Power_5W_152.05 ㎒

Audio Frequency [㎐]	Measured Deviation [㎑]	Calculated Response [dB]
100	0.06	-13.19
200	0.06	-13.03
300	0.08	-9.93
400	0.11	-7.24
500	0.13	-5.85
600	0.16	-3.91
700	0.18	-2.99
800	0.21	-1.76
900	0.23	-0.95
1 000	**0.25**	**0.00**
1 500	0.35	2.91
2 000	0.46	5.19
2 500	0.48	5.56
3 000	0.35	2.76
4 000	0.05	-13.67
5 000	0.05	-14.01

-Target Power_5W_155.7525 ㎒

Audio Frequency [㎐]	Measured Deviation [㎑]	Calculated Response [dB]
100	0.05	-13.37
200	0.05	-13.87
300	0.07	-10.47
400	0.10	-7.77
500	0.13	-5.78
600	0.15	-4.16
700	0.17	-3.04
800	0.21	-1.49
900	0.21	-1.25
1 000	**0.25**	**0.00**
1 500	0.37	3.42
2 000	0.47	5.55
2 500	0.48	5.84
3 000	0.35	3.10
4 000	0.05	-13.53
5 000	0.05	-13.87

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-Target Power_5W_162.00 ㎒

Audio Frequency [㎐]	Measured Deviation [㎑]	Calculated Response [dB]
100	0.05	-14.70
200	0.05	-13.64
300	0.08	-10.12
400	0.10	-7.70
500	0.13	-5.42
600	0.16	-4.15
700	0.18	-2.76
800	0.20	-1.77
900	0.23	-0.65
1 000	**0.25**	**0.00**
1 500	0.36	3.07
2 000	0.46	5.37
2 500	0.49	5.76
3 000	0.36	3.12
4 000	0.06	-12.84
5 000	0.05	-14.15

-Target Power_5W_173.40 ㎒

Audio Frequency [㎐]	Measured Deviation [㎑]	Calculated Response [dB]
100	0.03	-18.75
200	0.03	-17.89
300	0.06	-12.72
400	0.09	-8.72
500	0.11	-6.93
600	0.14	-5.07
700	0.17	-3.59
800	0.19	-2.24
900	0.22	-1.15
1 000	**0.25**	**0.00**
1 500	0.37	3.44
2 000	0.49	5.85
2 500	0.52	6.36
3 000	0.37	3.46
4 000	0.03	-19.05
5 000	0.03	-19.37

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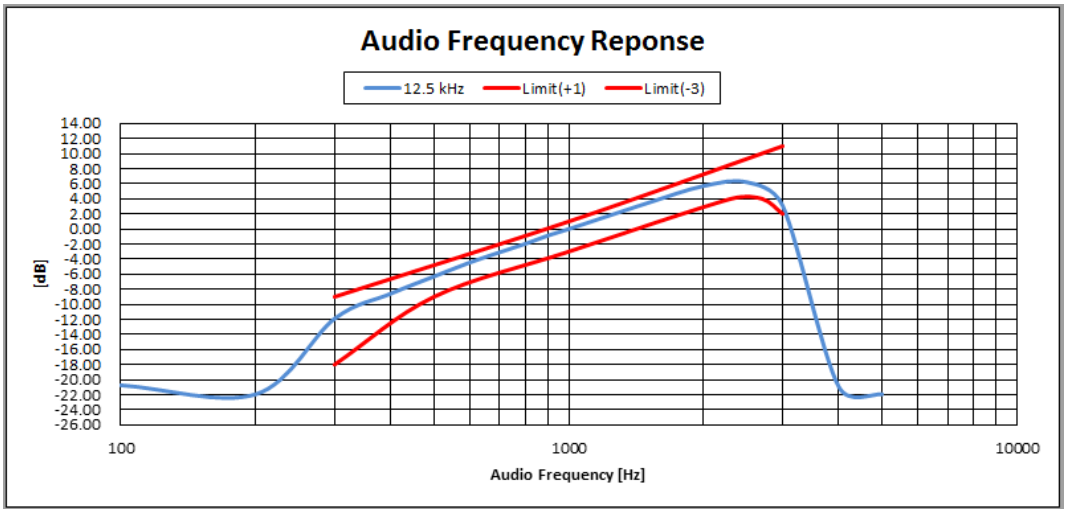
5.4.4 Test Plot

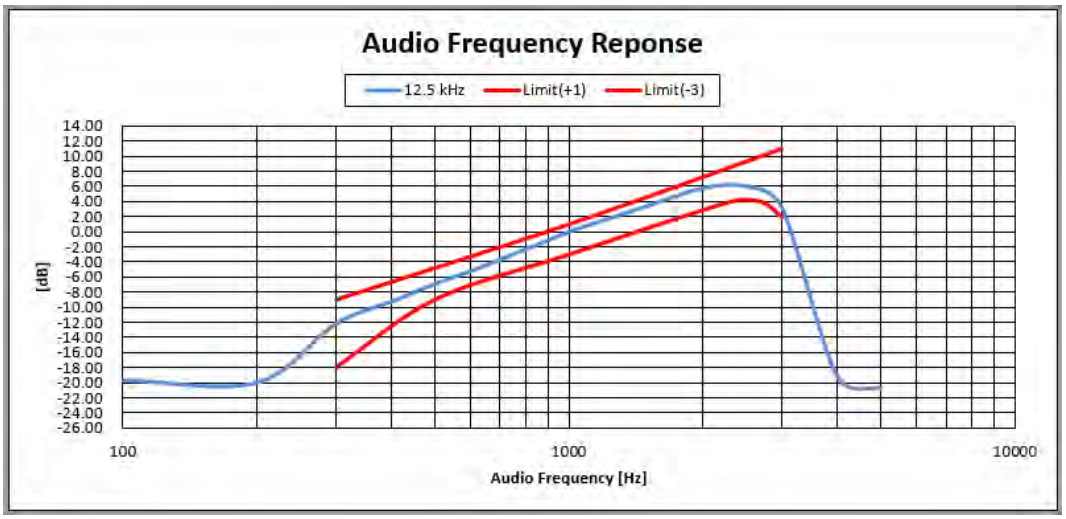
- Complied

* 12.5BW

-Target Power_1W_150.05 ㎒



-Target Power_1W_155.7525 ㎒



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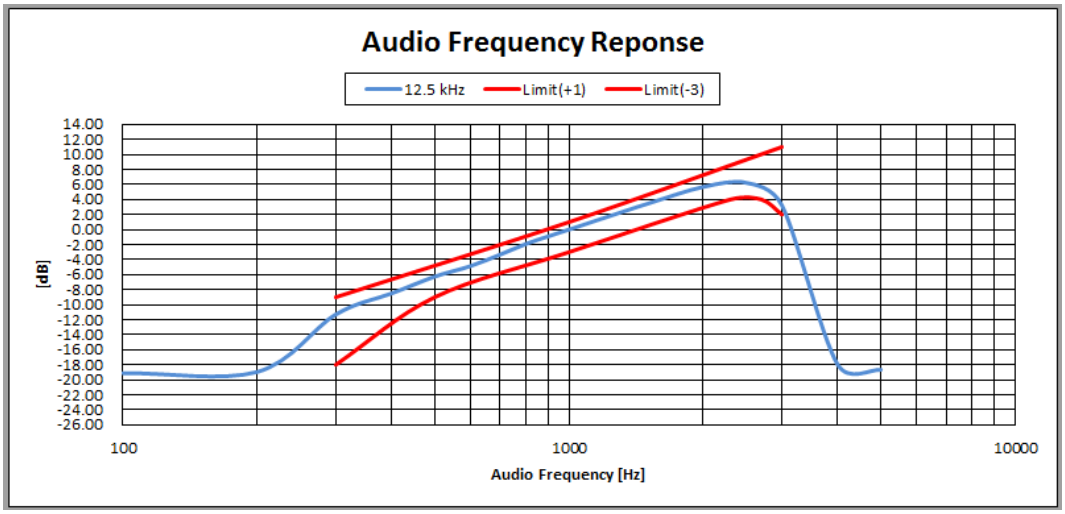
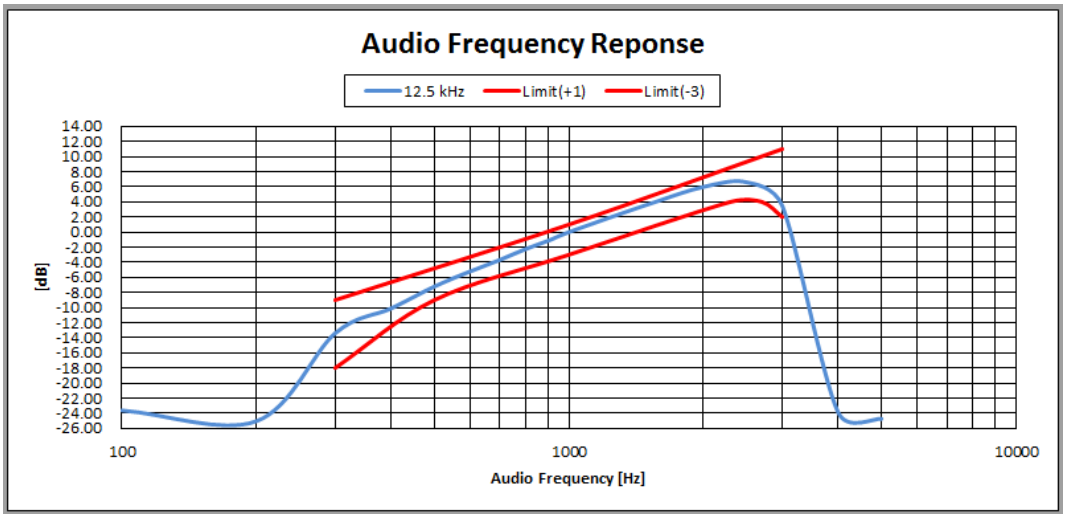
-Target Power_1W_162.00 ㎒



-Target Power_1W_173.40 ㎒



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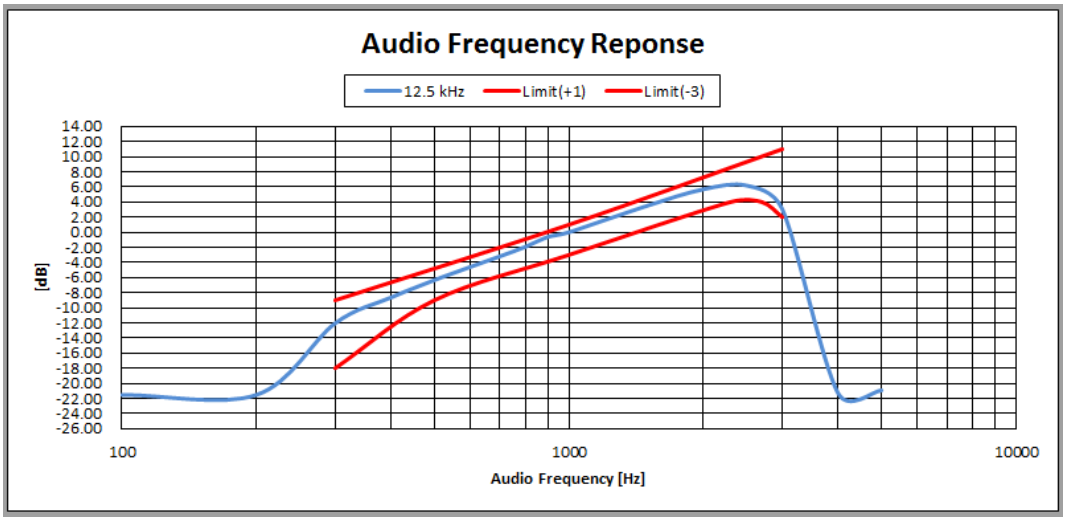
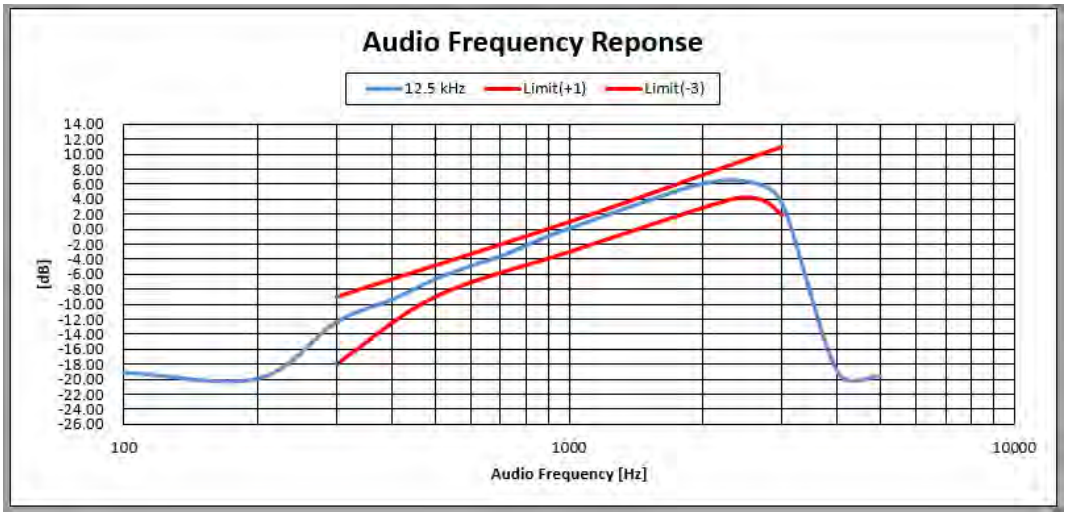
-Target Power_5W_150.05 ㎒



-Target Power_5W_155.7525 ㎒



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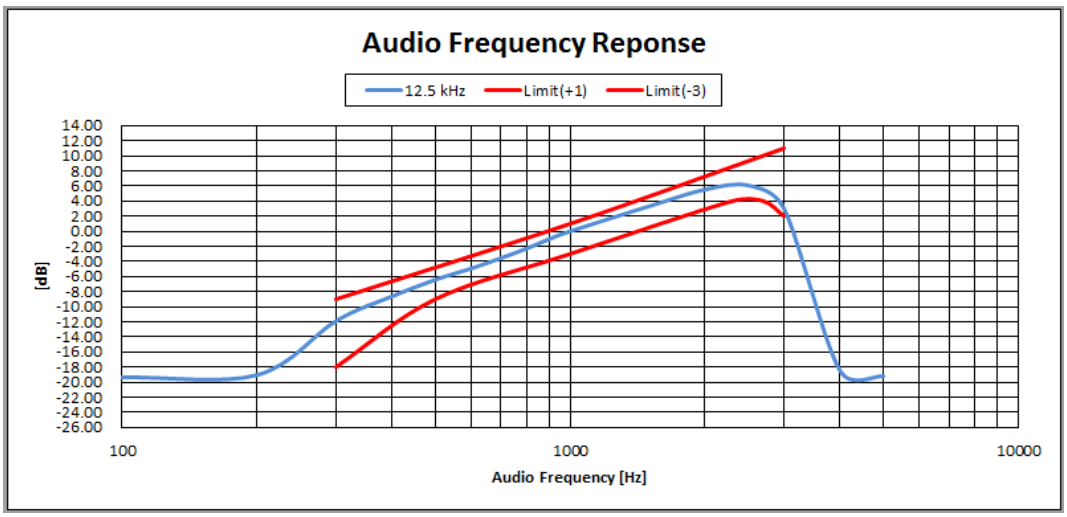
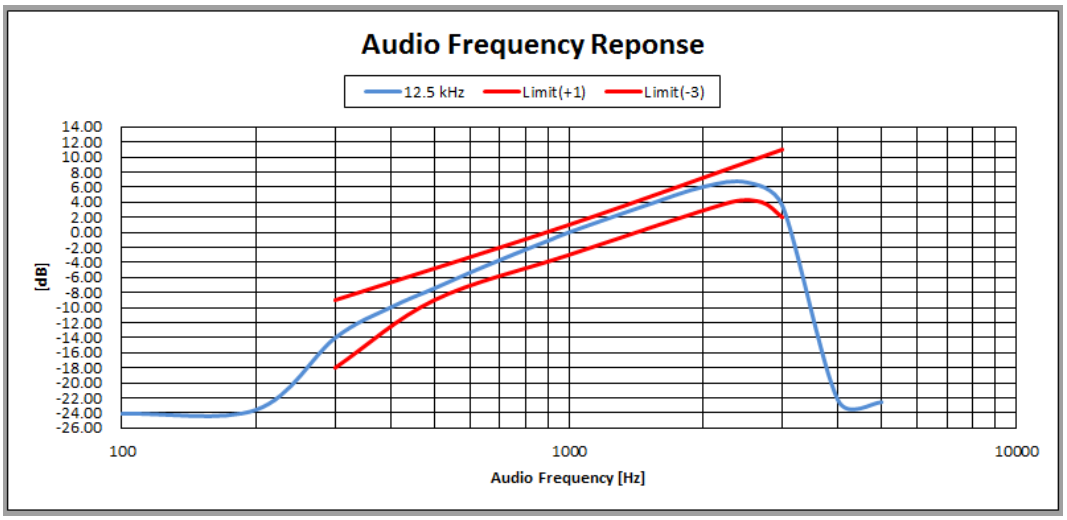
-Target Power_5W_162.00 ㎒



-Target Power_5W_173.40 ㎒



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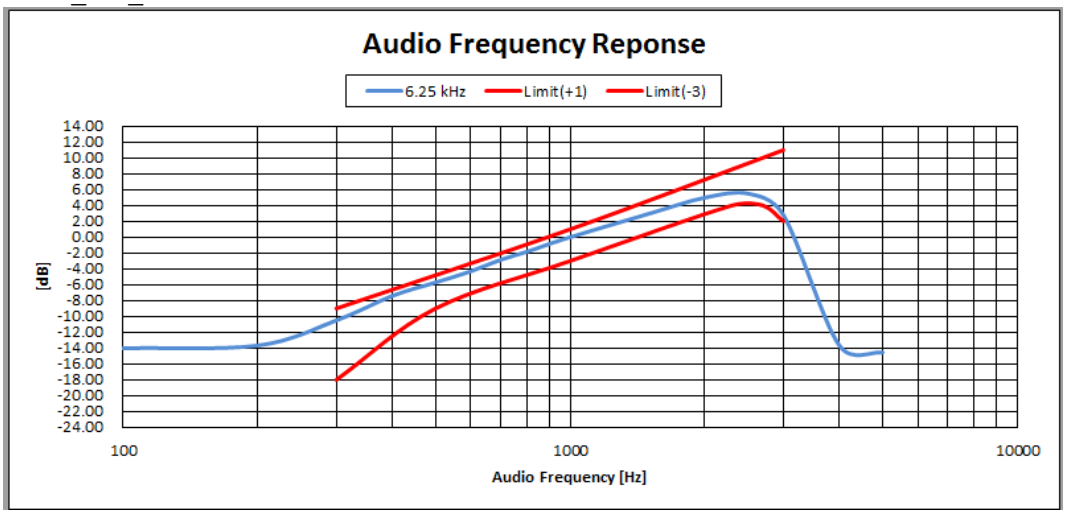
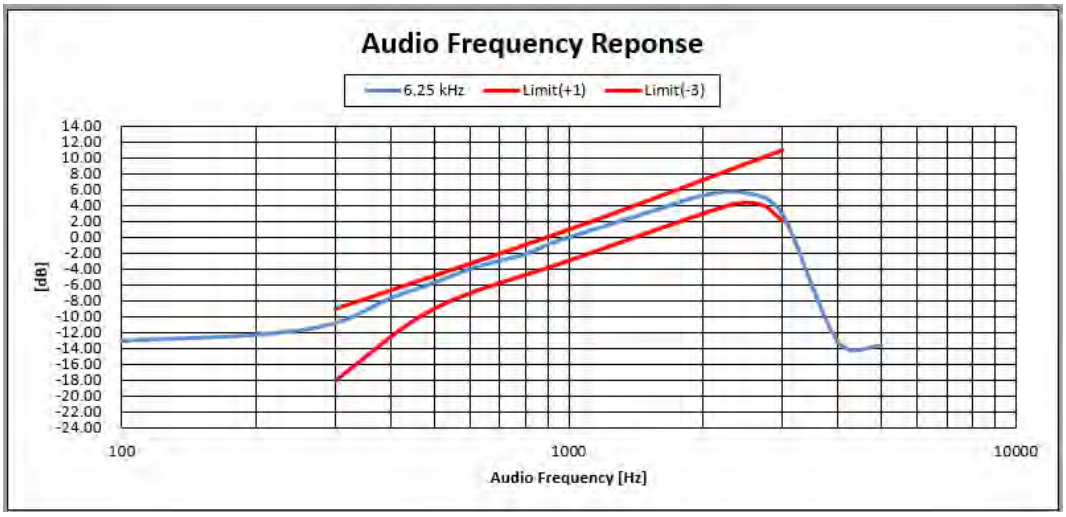
* 6.25BW

-Target Power_1W_150.05 ㎒



-Target Power_1W_155.7525 ㎒



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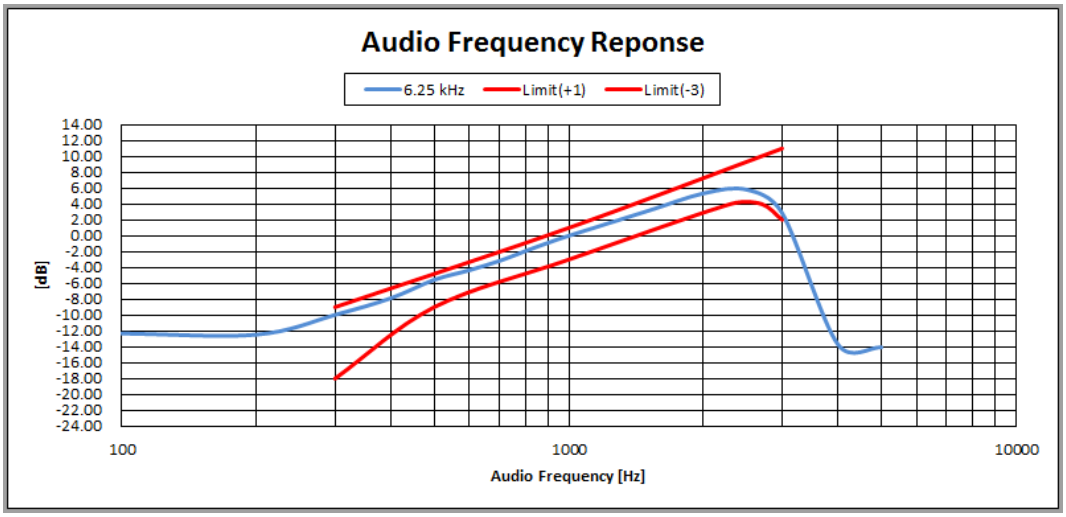
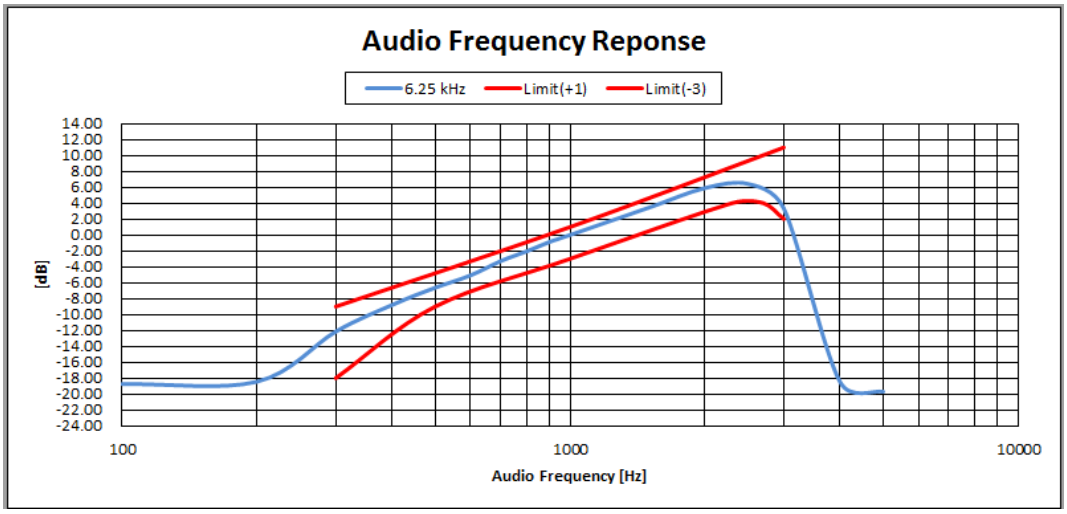
-Target Power_1W_162.00 ㎒



-Target Power_1W_173.40 ㎒



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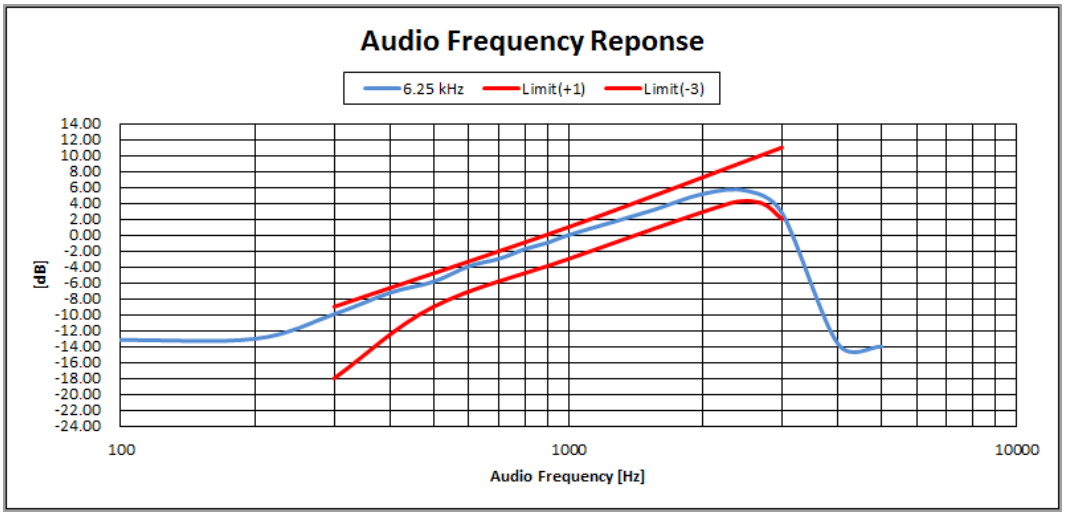
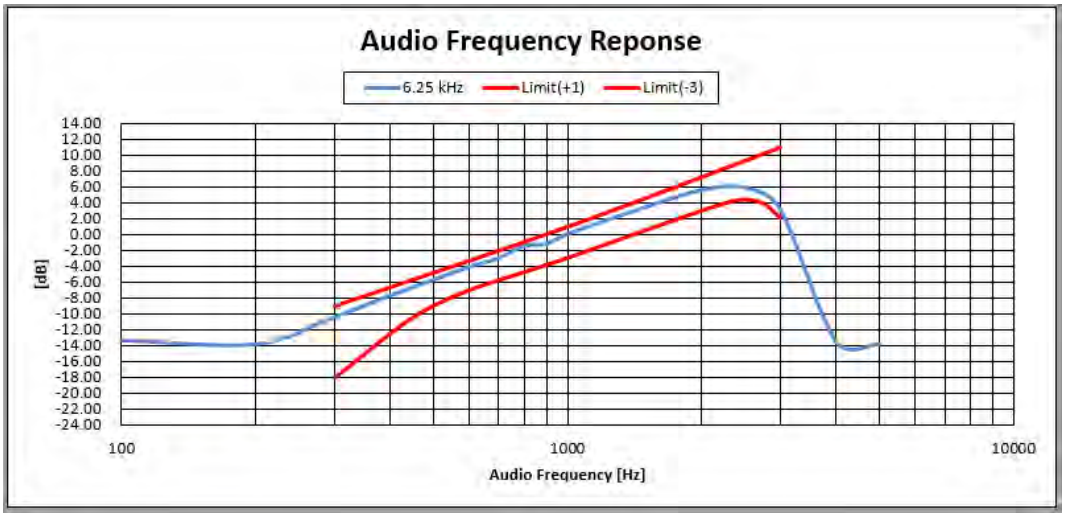
-Target Power_5W_150.05 ㎒



-Target Power_5W_155.7525 ㎒



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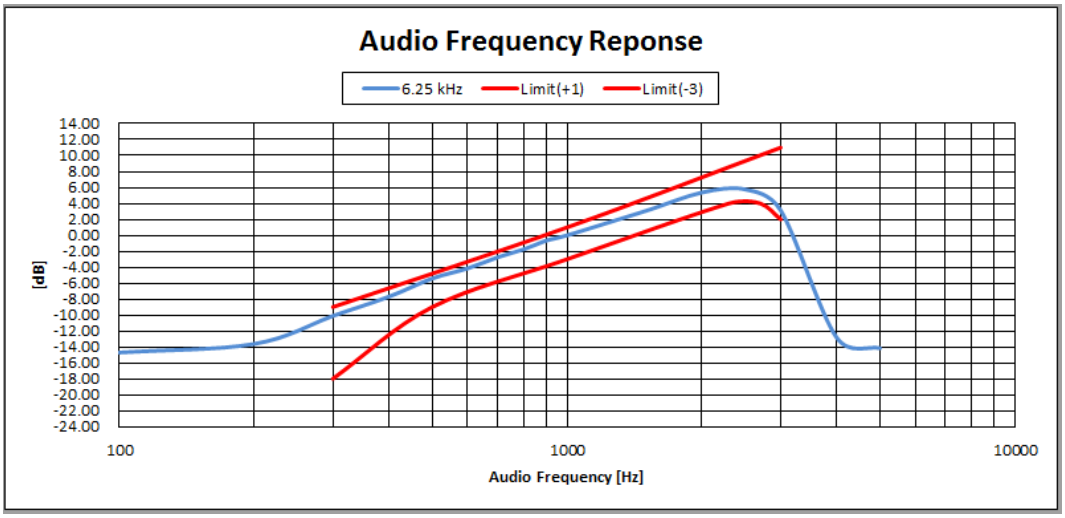
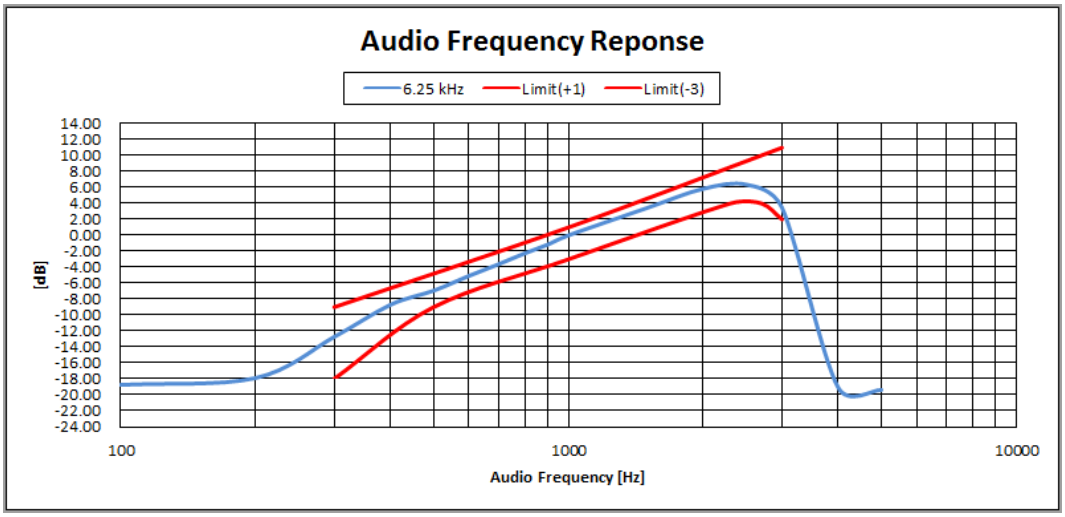
-Target Power_5W_162.00 ㎒



-Target Power_5W_173.40 ㎒



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5.5 Audio Low Pass Filter Frequency Response

5.5.1 Regulation

According to TIA-603-D, for equipment operating on channels between 896 ㎒ through 901 ㎒, between 935 ㎒ through 940 ㎒, and 12.5 or 15 ㎑ spaced channels in the frequency range 138-174 ㎒ and 406-512 ㎒.

5.5.2 Measurement Procedure

1. Connect the audio frequency generator as close as possible the input of the post limiter low pass filter within the transmitter under test.
2. Connect the audio spectrum analyzer to the output of the post limiter low pass filter within the transmitter under test.
3. Apply a 1000 ㎐ tone from the audio frequency generator and adjust the level per manufacturer's specifications.
4. Record the ㏈ level of the 1000 ㎐ spectral line on the audio spectrum analyzer as LEV_{REF} .
5. Set the audio frequency generator to the desired test frequency between 3000 ㎐ and the upper low pass filter limit.
6. Record audio spectrum analyzer levels, at the test frequency in step 5).
7. Record the ㏈ level on the audio spectrum analyzer as LEV_{FREQ}
8. Calculate the audio frequency response at the test frequency as: low pass frequency response $=LEV_{FREQ} - LEV_{REF}$
9. Repeat steps 7) through 8) for all the desired test frequencies.

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5.5.3 Test Result

- Complied

* 12.5BW

-Target Power_1W_150.05 ㎒

Audio Frequency [㎑]	Calculated Response [dB]	Limit [dB]
1	0.0	0.0
2	-3.2	0.0
3	-5.9	0.0
4	-15.7	-12.5
5	-34.2	-22.2
6	-41.8	-30.1
7	-42.8	-36.8
8	<-50	-42.6
9	<-50	-47.7
10	<-55	-52.3
20	<-85	-82.4

-Target Power_1W_155.7525 ㎒

Audio Frequency [㎑]	Calculated Response [dB]	Limit [dB]
1	0.0	0.0
2	-3.1	0.0
3	-6.2	0.0
4	-15.1	-12.5
5	-34.9	-22.2
6	-49.6	-30.1
7	-65.6	-36.8
8	<-50	-42.6
9	<-50	-47.7
10	<-55	-52.3
20	<-85	-82.4

This test report shall not be reproduced, except in full, without the written approval

-Target Power_1W_162.00 ㎒

Audio Frequency [㎑]	Calculated Response [dB]	Limit [dB]
1	0.0	0.0
2	-3.3	0.0
3	-5.8	0.0
4	-15.7	-12.5
5	-34.1	-22.2
6	-41.1	-30.1
7	-41.8	-36.8
8	<-50	-42.6
9	<-50	-47.7
10	<-55	-52.3
20	<-85	-82.4

-Target Power_1W_173.40 ㎒

Audio Frequency [㎑]	Calculated Response [dB]	Limit [dB]
1	0.0	0.0
2	-3.3	0.0
3	-5.7	0.0
4	-15.5	-12.5
5	-33.9	-22.2
6	-37.0	-30.1
7	-41.7	-36.8
8	<-50	-42.6
9	<-50	-47.7
10	<-55	-52.3
20	<-85	-82.4

This test report shall not be reproduced, except in full, without the written approval

-Target Power_5W_150.05 ㎒

Audio Frequency [㎑]	Calculated Response [dB]	Limit [dB]
1	0.0	0.0
2	-3.2	0.0
3	-5.9	0.0
4	-15.6	-12.5
5	-34.7	-22.2
6	-46.0	-30.1
7	-49.1	-36.8
8	<-50	-42.6
9	<-50	-47.7
10	<-55	-52.3
20	<-85	-82.4

-Target Power_5W_155.7525 ㎒

Audio Frequency [㎑]	Calculated Response [dB]	Limit [dB]
1	0.0	0.0
2	-3.1	0.0
3	-6.3	0.0
4	-15.2	-12.5
5	-35.1	-22.2
6	-50.0	-30.1
7	-67.5	-36.8
8	<-50	-42.6
9	<-50	-47.7
10	<-55	-52.3
20	<-85	-82.4

This test report shall not be reproduced, except in full, without the written approval

-Target Power_5W_162.00 ㎒

Audio Frequency [㎑]	Calculated Response [dB]	Limit [dB]
1	0.0	0.0
2	-3.3	0.0
3	-5.9	0.0
4	-15.8	-12.5
5	-34.7	-22.2
6	-45.9	-30.1
7	-49.0	-36.8
8	<-50	-42.6
9	<-50	-47.7
10	<-55	-52.3
20	<-85	-82.4

-Target Power_5W_173.40 ㎒

Audio Frequency [㎑]	Calculated Response [dB]	Limit [dB]
1	0.0	0.0
2	-3.3	0.0
3	-5.7	0.0
4	-15.5	-12.5
5	-34.6	-22.2
6	-45.1	-30.1
7	-48.4	-36.8
8	<-50	-42.6
9	<-50	-47.7
10	<-55	-52.3
20	<-85	-82.4

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* 6.25BW

-Target Power_1W_150.05 ㎒

Audio Frequency [㎑]	Calculated Response [dB]	Limit [dB]
1	0.0	0.0
2	-2.4	0.0
3	-5.8	0.0
4	-15.7	-12.5
5	-34.2	-22.2
6	-41.6	-30.1
7	-42.6	-36.8
8	<-50	-42.6
9	<-50	-47.7
10	<-55	-52.3
20	<-85	-82.4

-Target Power_1W_155.7525 ㎒

Audio Frequency [㎑]	Calculated Response [dB]	Limit [dB]
1	0.0	0.0
2	-3.0	0.0
3	-6.3	0.0
4	-15.2	-12.5
5	-35.0	-22.2
6	-50.1	-30.1
7	-65.6	-36.8
8	<-50	-42.6
9	<-50	-47.7
10	<-55	-52.3
20	<-85	-82.4

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-Target Power_1W_162.00 ㎒

Audio Frequency [㎑]	Calculated Response [dB]	Limit [dB]
1	0.0	0.0
2	-2.4	0.0
3	-5.7	0.0
4	-15.8	-12.5
5	-34.3	-22.2
6	-41.7	-30.1
7	-42.4	-36.8
8	<-50	-42.6
9	<-50	-47.7
10	<-55	-52.3
20	<-85	-82.4

-Target Power_1W_173.40 ㎒

Audio Frequency [㎑]	Calculated Response [dB]	Limit [dB]
1	0.0	0.0
2	-2.4	0.0
3	-5.7	0.0
4	-15.7	-12.5
5	-34.1	-22.2
6	-41.7	-30.1
7	-42.4	-36.8
8	<-50	-42.6
9	<-50	-47.7
10	<-55	-52.3
20	<-85	-82.4

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-Target Power_5W_150.05 ㎒

Audio Frequency [㎑]	Calculated Response [dB]	Limit [dB]
1	0.0	0.0
2	-2.4	0.0
3	-5.8	0.0
4	-15.8	-12.5
5	-35.0	-22.2
6	-46.2	-30.1
7	-49.7	-36.8
8	<-50	-42.6
9	<-50	-47.7
10	<-55	-52.3
20	<-85	-82.4

-Target Power_5W_155.7525 ㎒

Audio Frequency [㎑]	Calculated Response [dB]	Limit [dB]
1	0.0	0.0
2	-3.1	0.0
3	-6.4	0.0
4	-15.4	-12.5
5	-35.2	-22.2
6	-50.2	-30.1
7	-67.7	-36.8
8	<-50	-42.6
9	<-50	-47.7
10	<-55	-52.3
20	<-85	-82.4

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-Target Power_5W_162.00 ㎒

Audio Frequency [㎑]	Calculated Response [dB]	Limit [dB]
1	0.0	0.0
2	-2.4	0.0
3	-5.8	0.0
4	-16.1	-12.5
5	-35.2	-22.2
6	-46.7	-30.1
7	-49.6	-36.8
8	<-50	-42.6
9	<-50	-47.7
10	<-55	-52.3
20	<-85	-82.4

-Target Power_5W_173.40 ㎒

Audio Frequency [㎑]	Calculated Response [dB]	Limit [dB]
1	0.0	0.0
2	-2.4	0.0
3	-5.7	0.0
4	-15.8	-12.5
5	-35.8	-22.2
6	-46.1	-30.1
7	-49.7	-36.8
8	<-50	-42.6
9	<-50	-47.7
10	<-55	-52.3
20	<-85	-82.4

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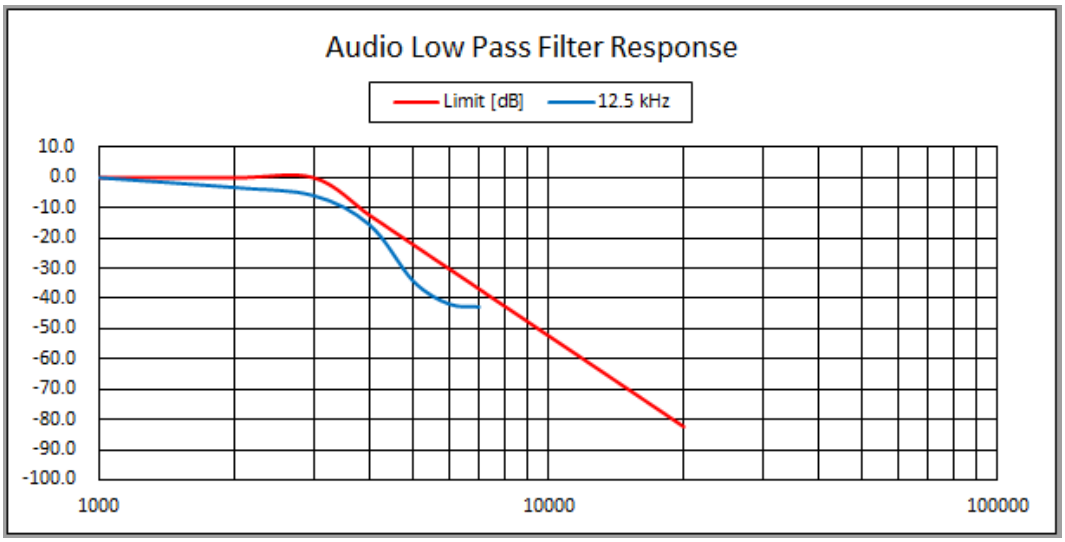
5.5.4 Test Plots

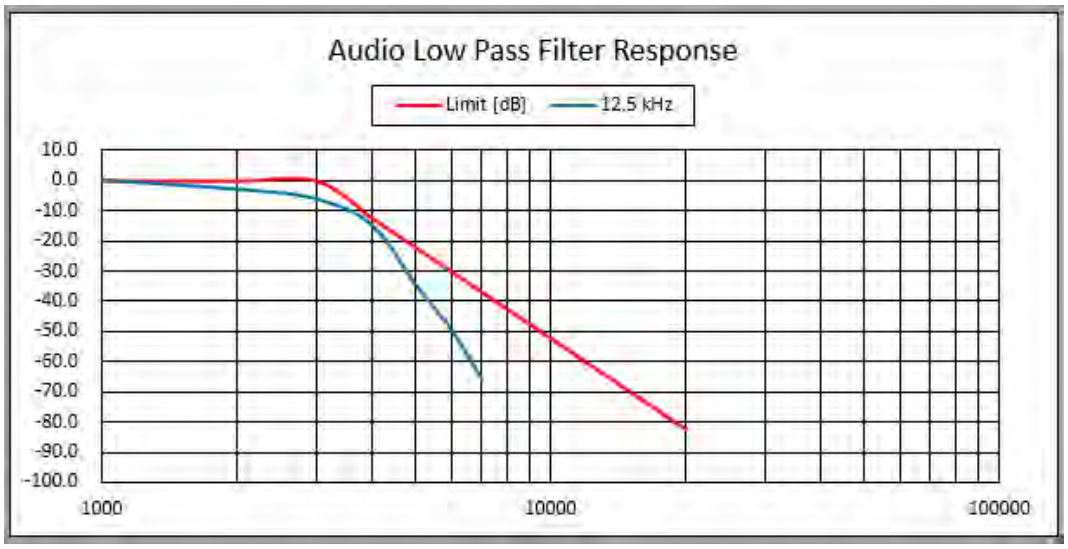
- Complied

* 12.5BW

-Target Power_1W_150.05 ㎒



-Target Power_1W_155.7525 ㎒



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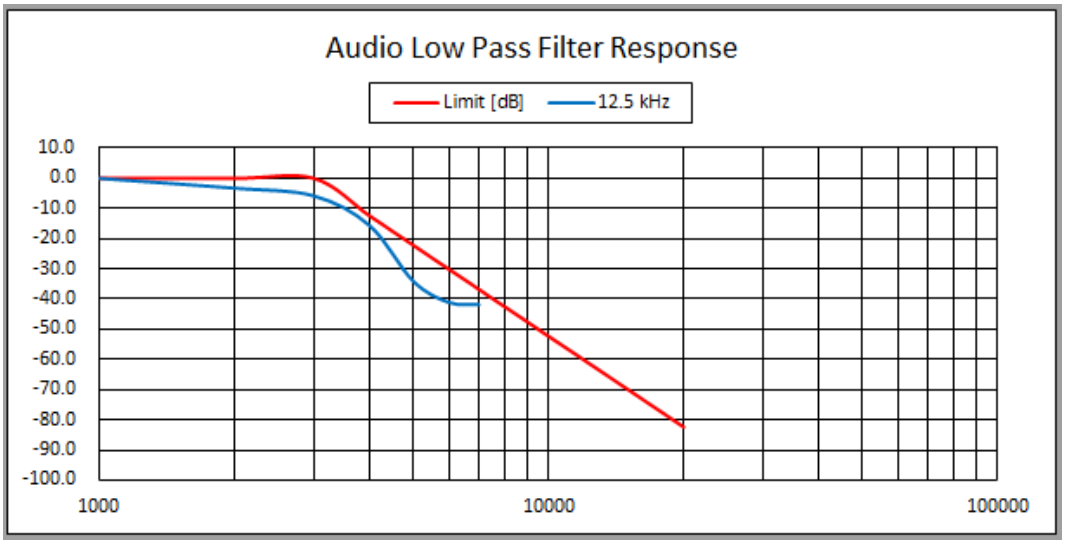
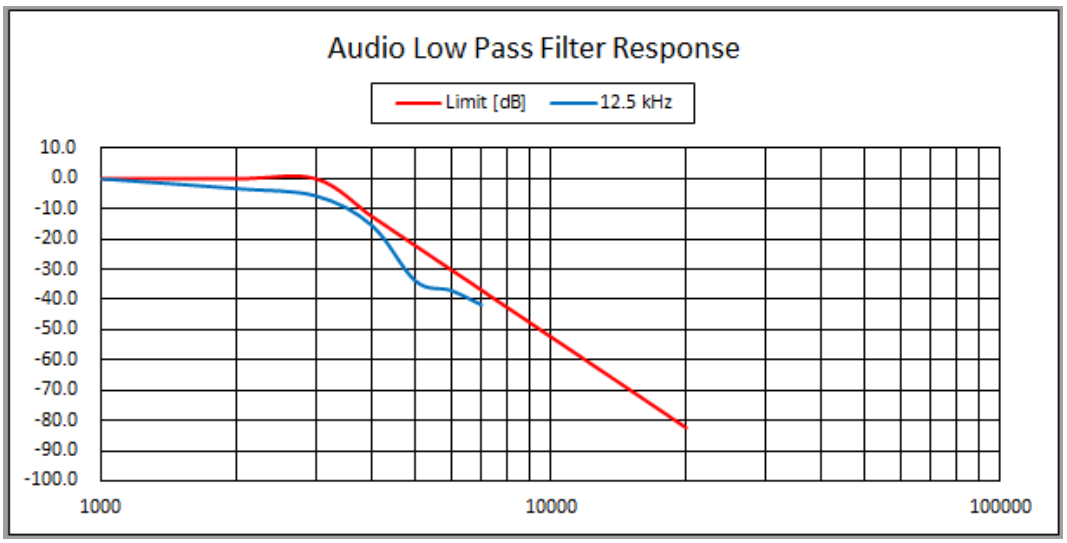
-Target Power_1W_162.00 ㎒

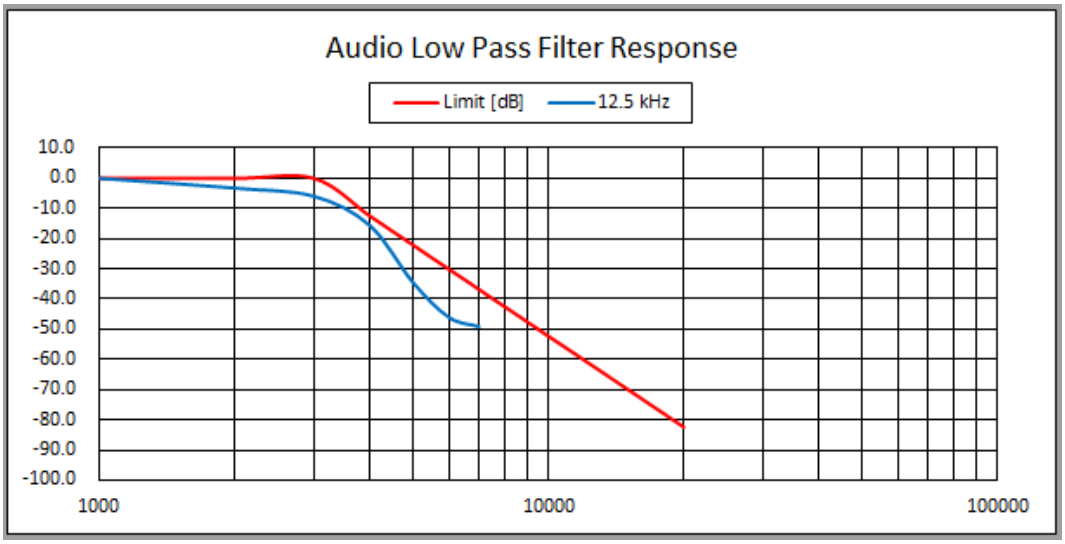


-Target Power_1W_173.40 ㎒

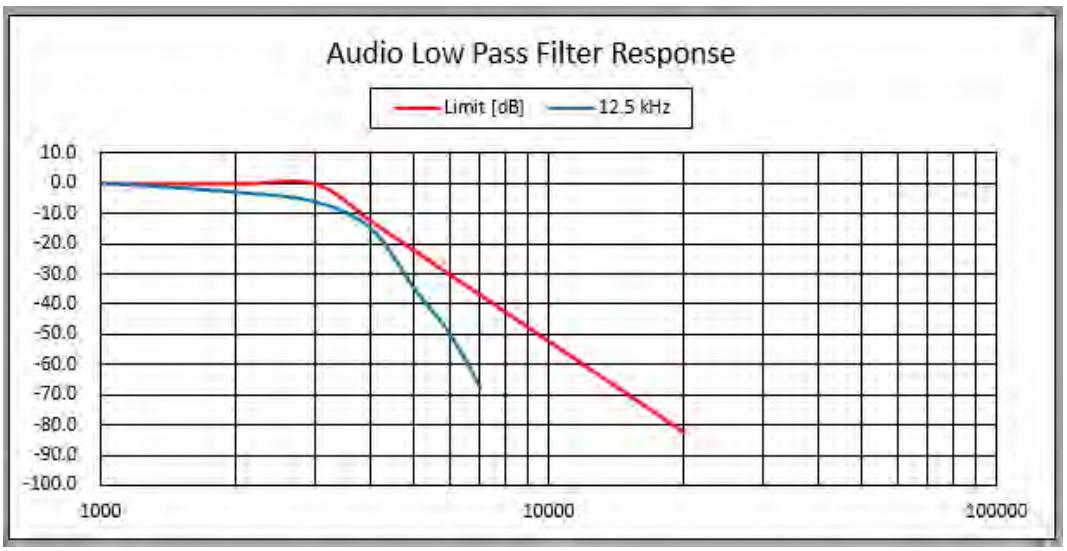


This test report shall not be reproduced, except in full, without the written approval

-Target Power_5W_150.05 ㎒



-Target Power_5W_155.7525 ㎒



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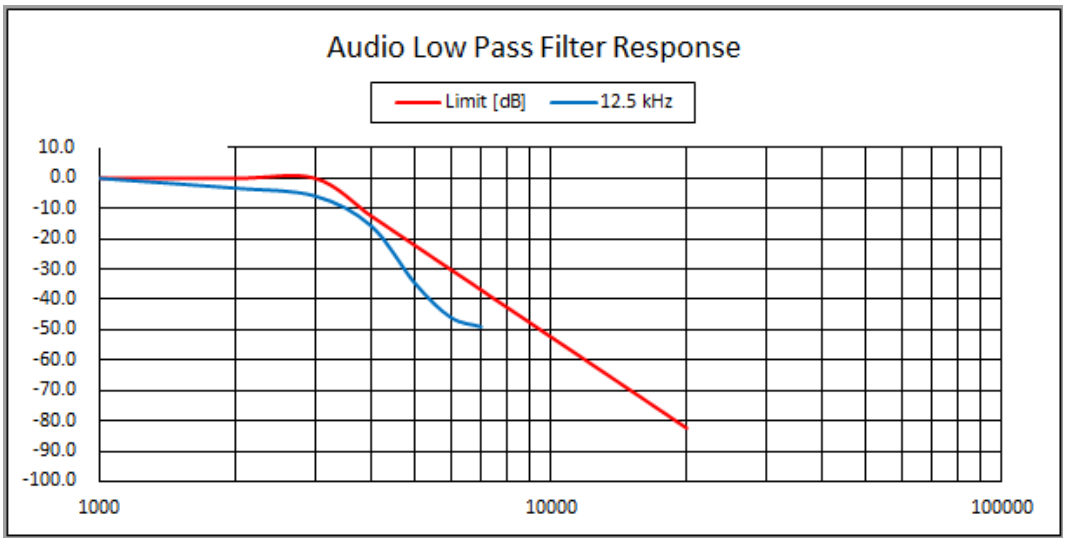
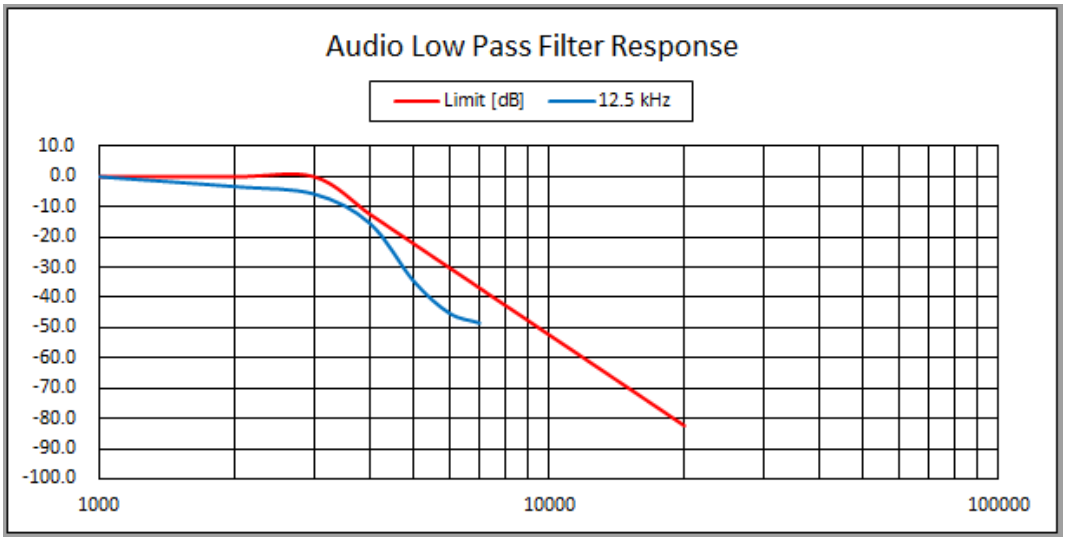
-Target Power_5W_162.00 ㎒



-Target Power_5W_173.40 ㎒



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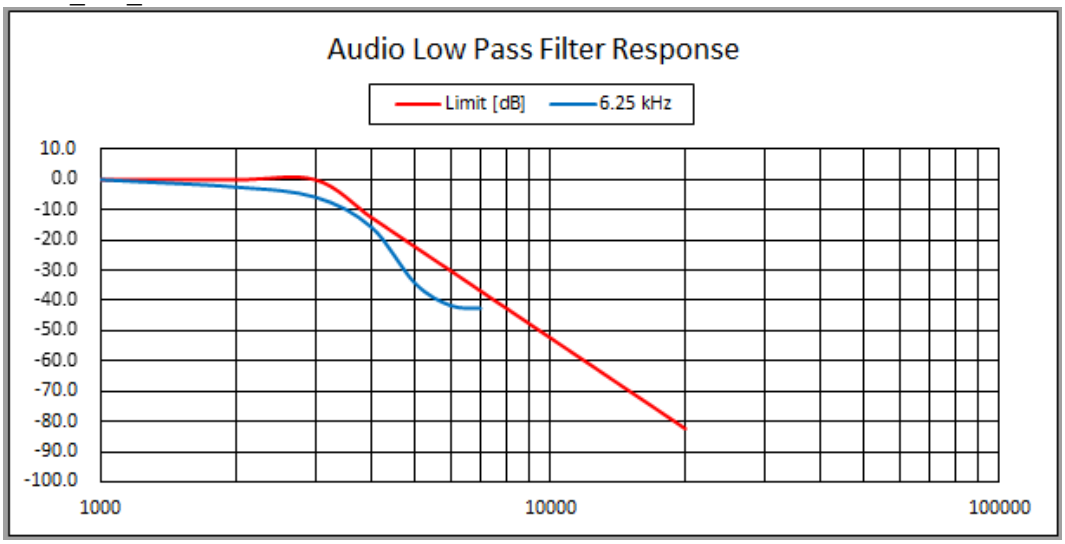
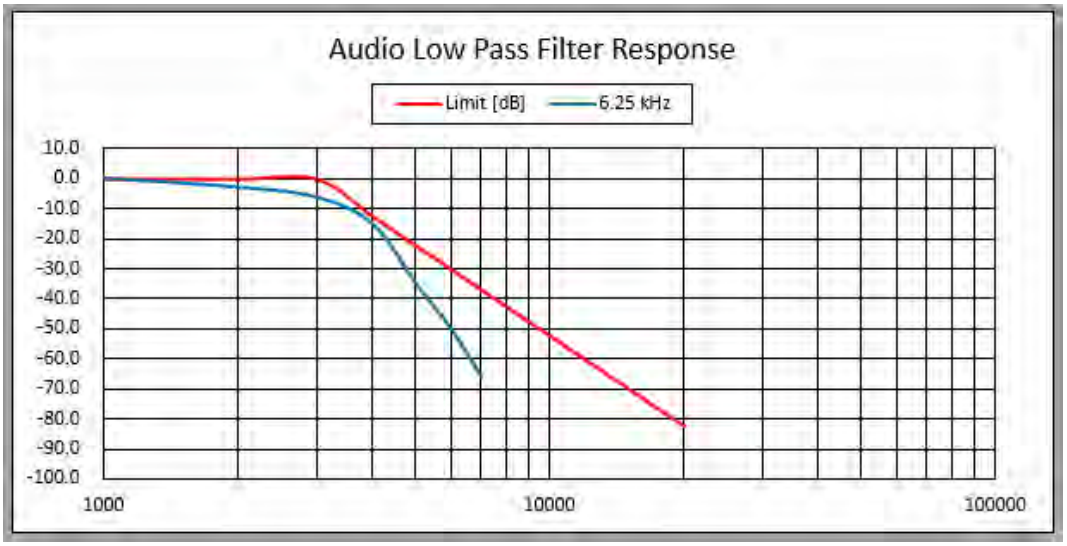
* 6.25BW

-Target Power_1W_150.05 ㎒



-Target Power_1W_155.7525 ㎒



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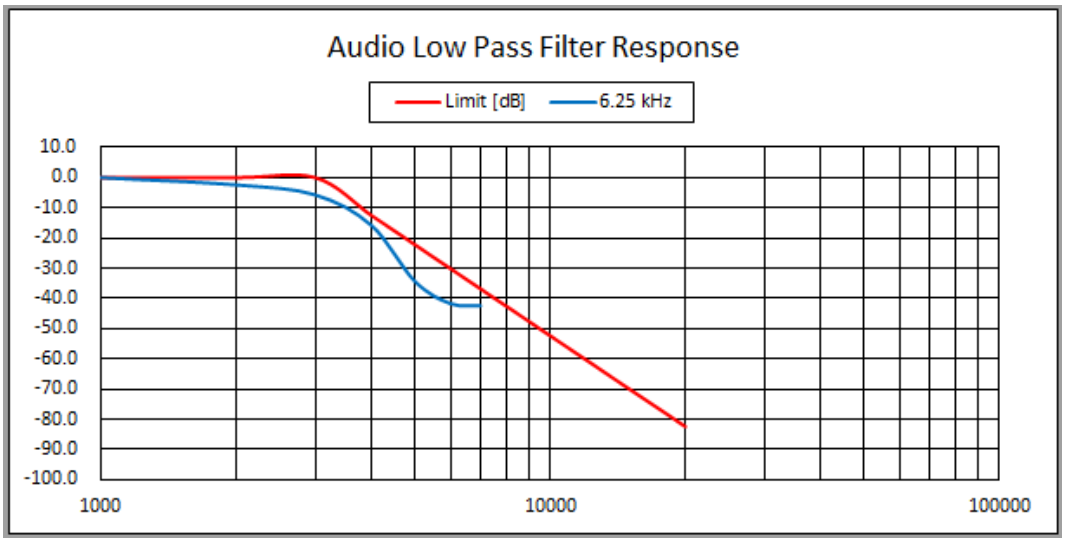
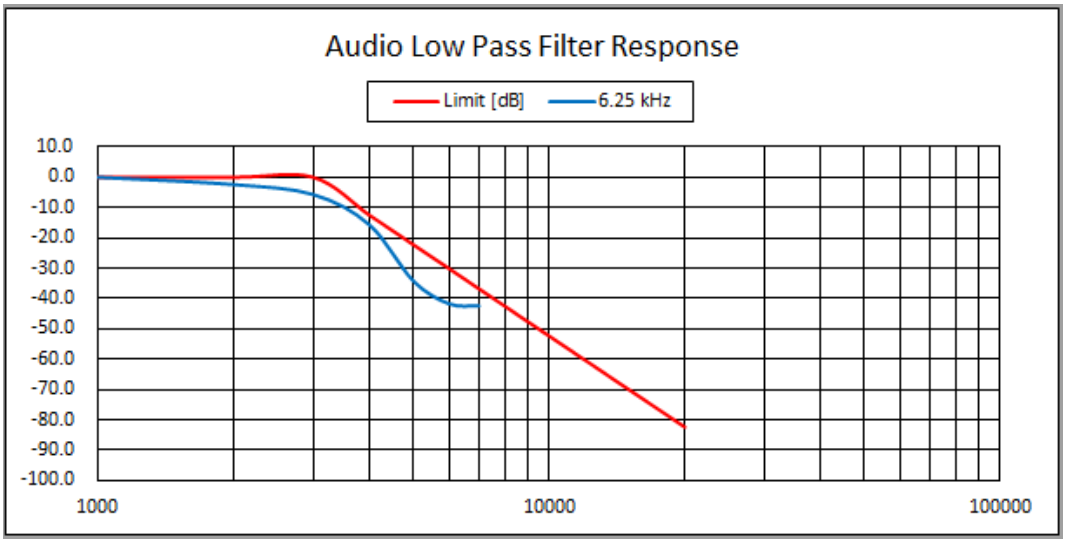
-Target Power_1W_162.00 ㎒

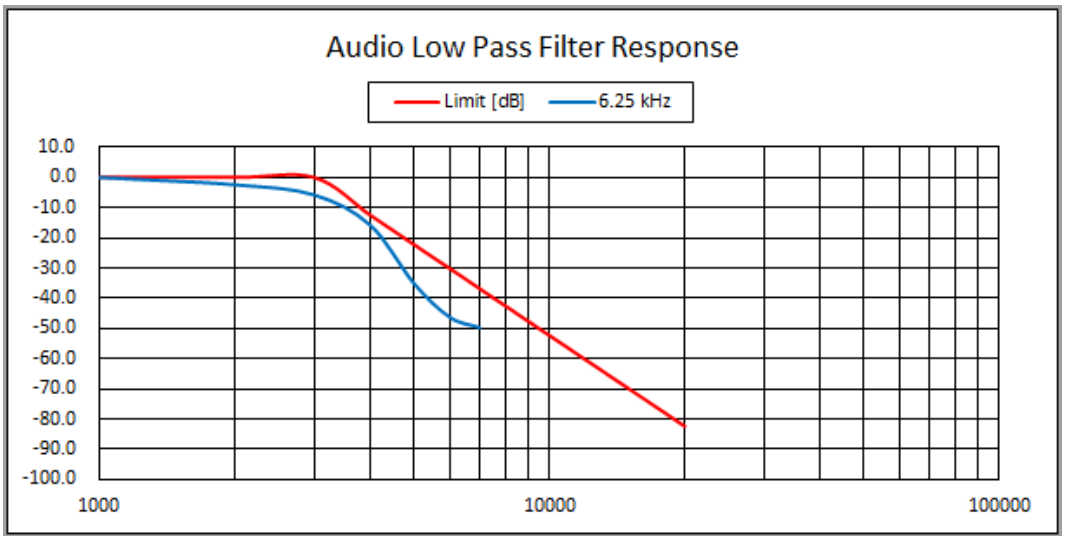


-Target Power_1W_173.40 ㎒

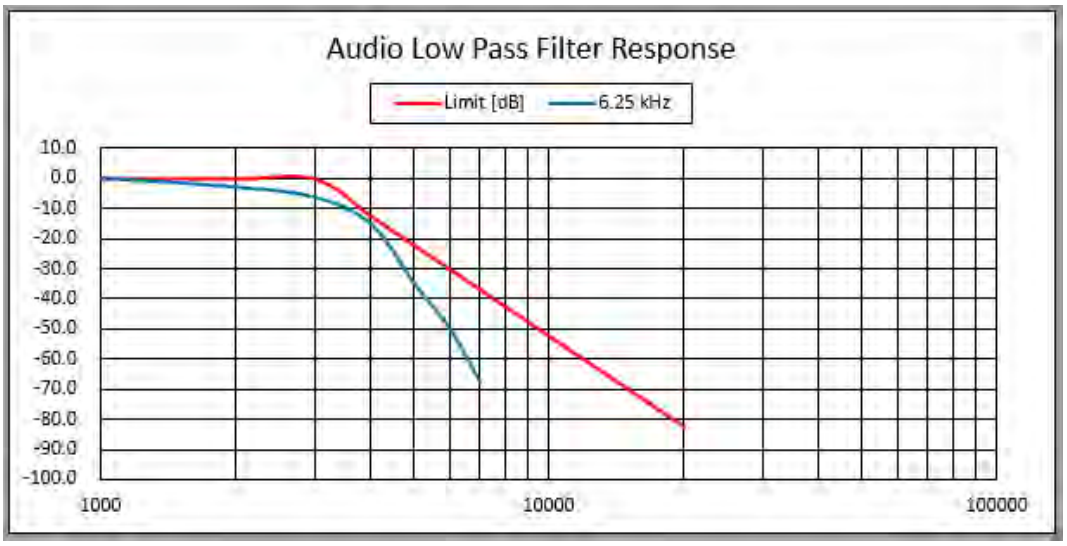


This test report shall not be reproduced, except in full, without the written approval

-Target Power_5W_150.05 ㎒



-Target Power_5W_155.7525 ㎒



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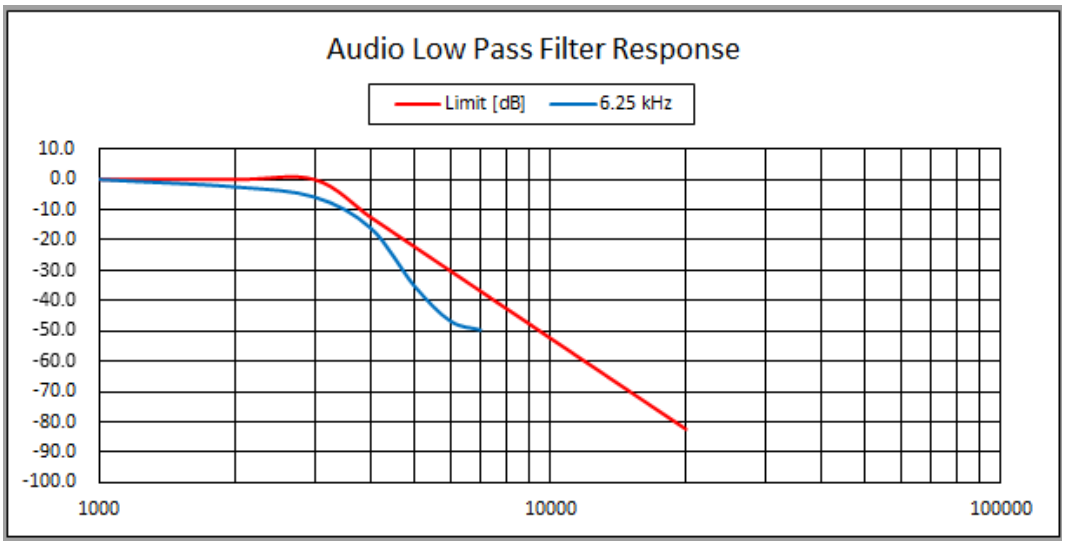
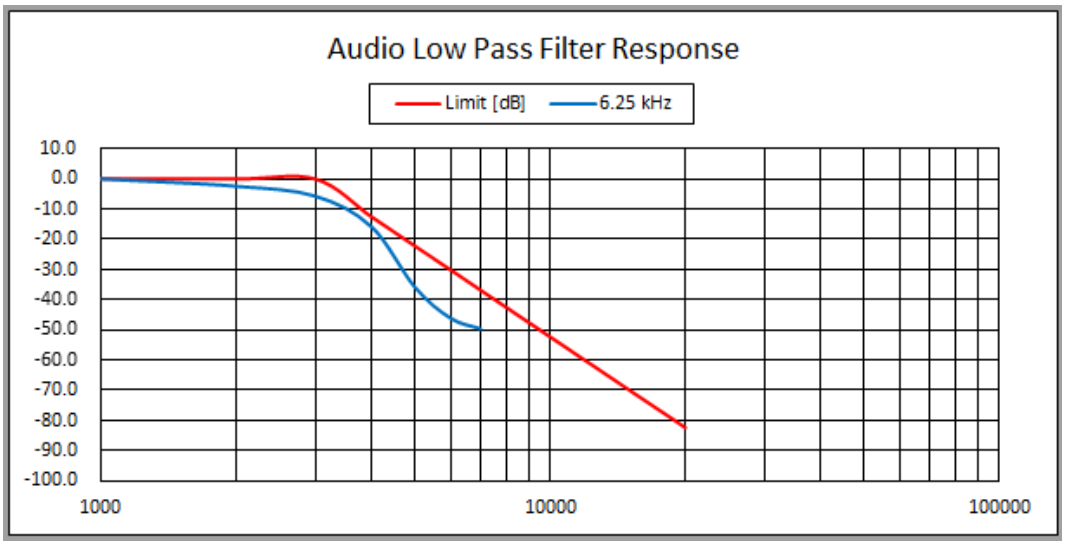
-Target Power_5W_162.00 ㎒



-Target Power_5W_173.40 ㎒



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5.6 Occupied Bandwidth and Emission Mask

5.6.1 Regulation

According to §90.210(d), Emission Mask D—12.5 ㎑ channel bandwidth equipment. For transmitters designed to operate with a 12.5 ㎑ channel bandwidth, any emission must be attenuated below the power (P) of the highest emission contained within the authorized bandwidth as follows:

(1) On any frequency from the center of the authorized bandwidth f0 to 5.625 ㎑ removed from f0: Zero ㏈.

(2) On any frequency removed from the center of the authorized bandwidth by a displacement frequency (fd in ㎑) of more than 5.625 ㎑ but no more than 12.5 ㎑: At least 7.27(fd−2.88 ㎑) ㏈.

(3) On any frequency removed from the center of the authorized bandwidth by a displacement frequency (fd in ㎑) of more than 12.5 ㎑: At least 50 + 10 log (P) ㏈ or 70 ㏈, whichever is the lesser attenuation.

(4) The reference level for showing compliance with the emission mask shall be established using a resolution bandwidth sufficiently wide (usually two or three times the channel bandwidth) to capture the true peak emission of the equipment under test. In order to show compliance with the emission mask up to and including 50 ㎑ removed from the edge of the authorized bandwidth, adjust the resolution bandwidth to 100 ㎐ with the measuring instrument in a peak hold mode. A sufficient number of sweeps must be measured to insure that the emission profile is developed. If video filtering is used, its bandwidth must not be less than the instrument resolution bandwidth. For emissions beyond 50 ㎑ from the edge of the authorized bandwidth, see paragraph (o) of this section. If it can be shown that use of the above instrumentation settings do not accurately represent the true interference potential of the equipment under test, an alternate procedure may be used provided prior Commission approval is obtained.

Emission Mask E—6.25 ㎑ channel bandwidth equipment. For transmitters designed to operate with a 6.25 ㎑ or less bandwidth, any emission must be attenuated below the power (P) of the highest emission contained within the authorized bandwidth as follows:

(1) On any frequency from the center of the authorized bandwidth f0 to 3.0 ㎑ removed from f0: Zero ㏈.

(2) On any frequency removed from the center of the authorized bandwidth by a displacement frequency (fd in ㎑) of more than 3.0 ㎑ but no more than 4.6 ㎑: At least 30 + 16.67(fd−3 ㎑) ㏈ or 55 + 10 log (P) or 65 ㏈, whichever is the lesser attenuation.

(3) On any frequency removed from the center of the authorized bandwidth by more than 4.6 ㎑: At least 55 + 10 log (P) ㏈ or 65 ㏈, whichever is the lesser attenuation.

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(4) The reference level for showing compliance with the emission mask shall be established using a resolution bandwidth sufficiently wide (usually two or three times the channel bandwidth) to capture the true peak emission of the equipment under test. In order to show compliance with the emission mask up to and including 50 ㎑ removed from the edge of the authorized bandwidth, adjust the resolution bandwidth to 100 ㎐ with the measuring instrument in a peak hold mode. A sufficient number of sweeps must be measured to insure that the emission profile is developed. If video filtering is used, its bandwidth must not be less than the instrument resolution bandwidth. For emissions beyond 50 ㎑ from the edge of the authorized bandwidth, see paragraph (o) of this section. If it can be shown that use of the above instrumentation settings do not accurately represent the true interference potential of the equipment under test, an alternate procedure may be used provided prior Commission approval is obtained.

5.6.2 Measurement Procedure

1. The occupied bandwidth, that is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power radiated by a given emission.
2. The transmitter is modulated by a 2500 ㎐ tone at an input level 16 ㏈ greater than that necessary to produce 50 percent modulation.
3. The input level shall be established at the frequency of maximum response of the audio modulating circuit.

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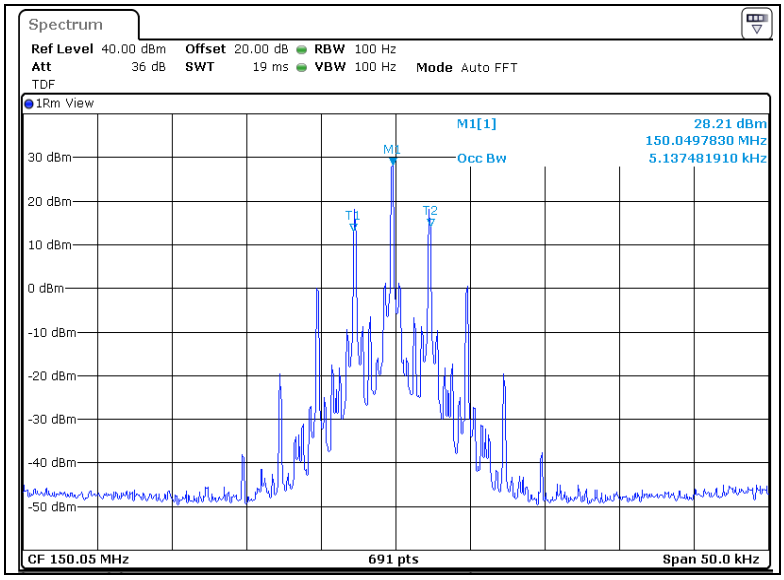
5.6.3 Test Result

- Complied

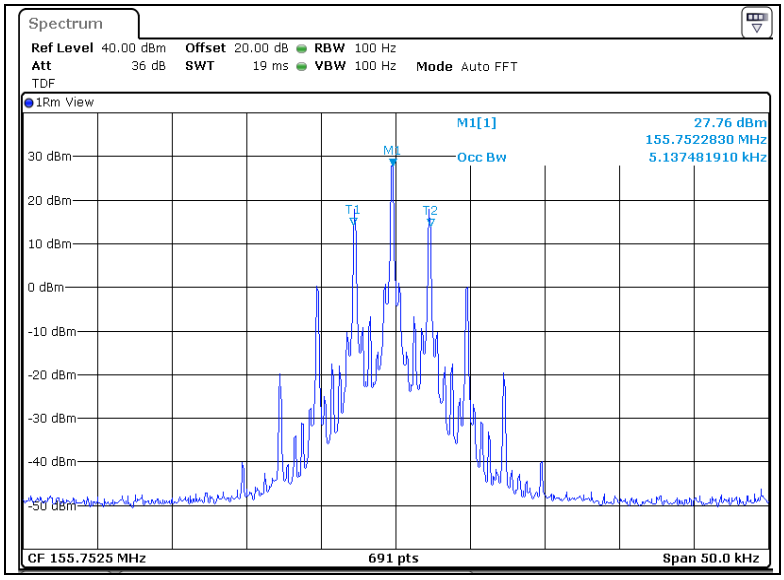
Figure 4. plot of Occupied Bandwidth and Emission Mask

* 99% Bandwidth_12.5BW

-Target Power_1W_150.05 ㎒



-Target Power_1W_155.7525 ㎒



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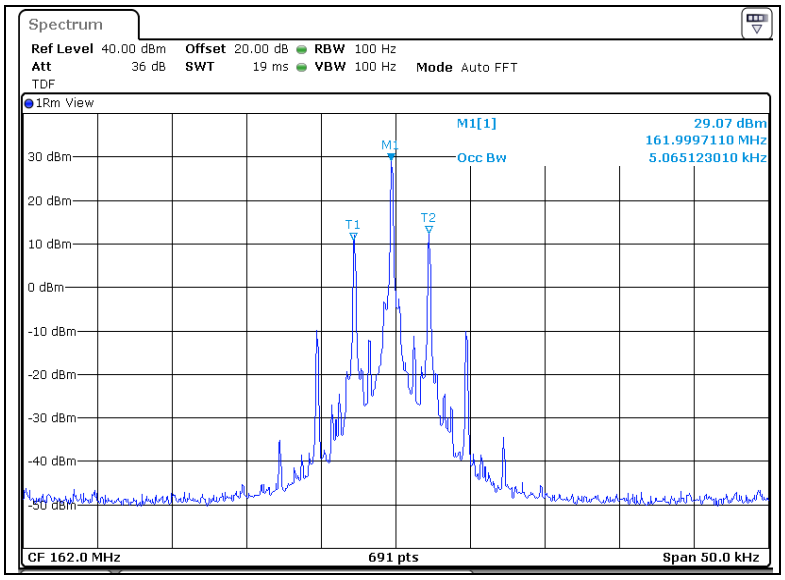
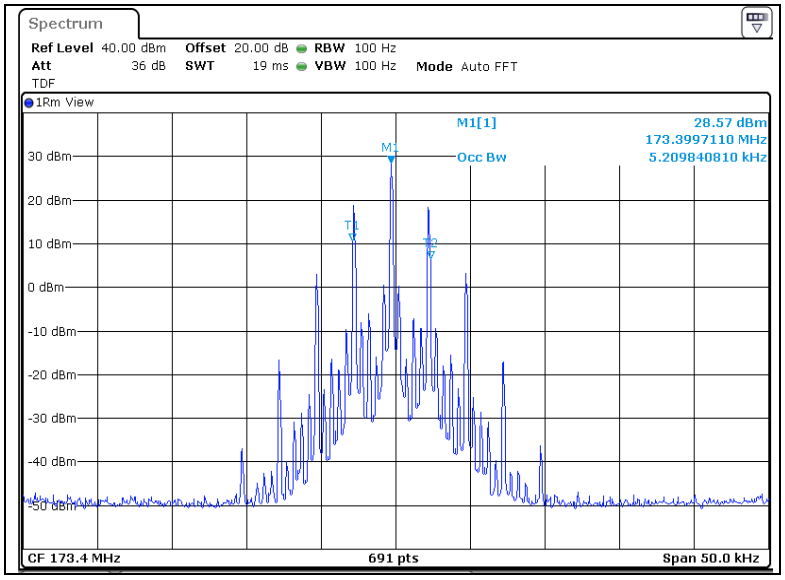
-Target Power_1W_162.00 ㎒



-Target Power_1W_173.40 ㎒



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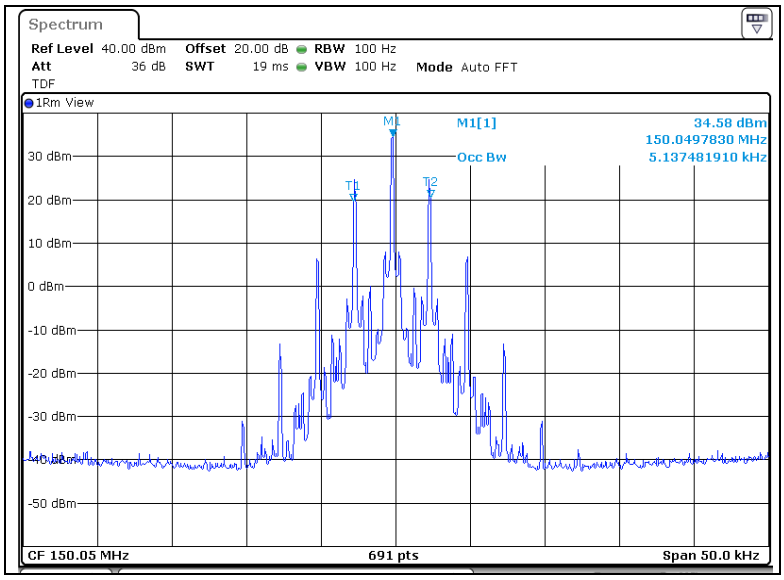
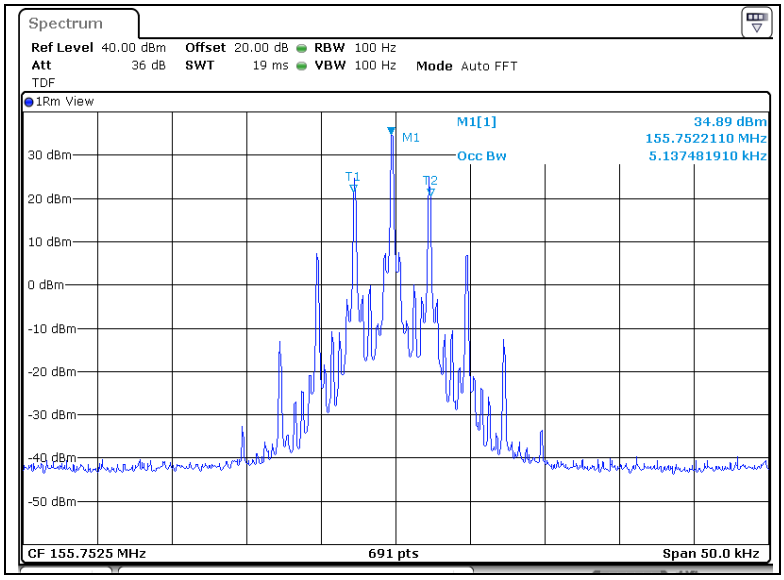
-Target Power_5W_150.05 ㎒



-Target Power_5W_155.7525 ㎒



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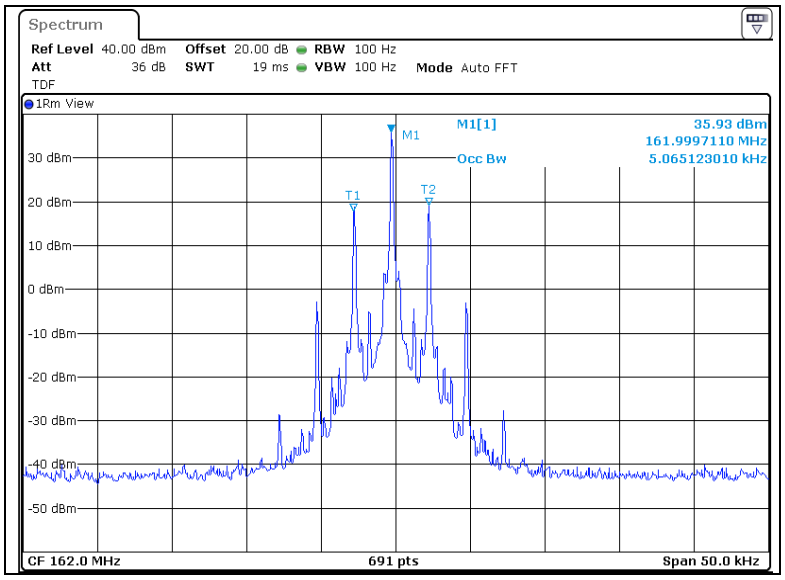
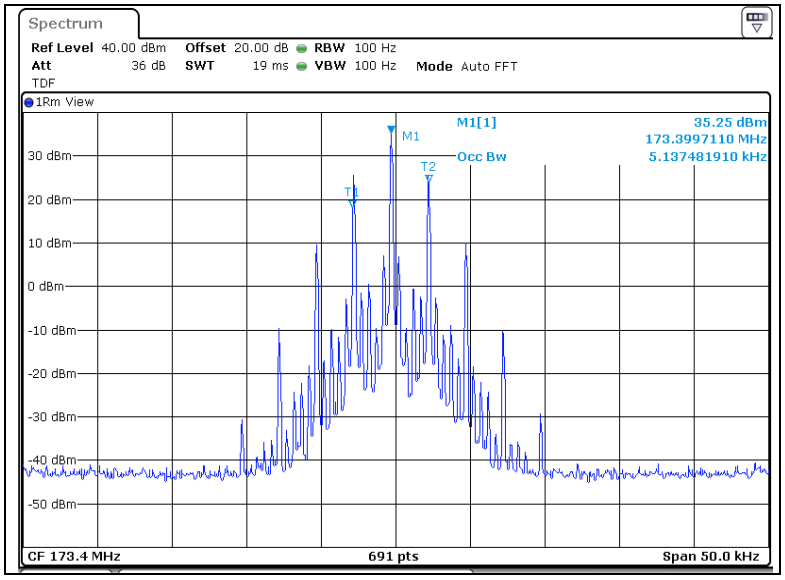
-Target Power_5W_162.00 ㎒



-Target Power_5W_173.40 ㎒



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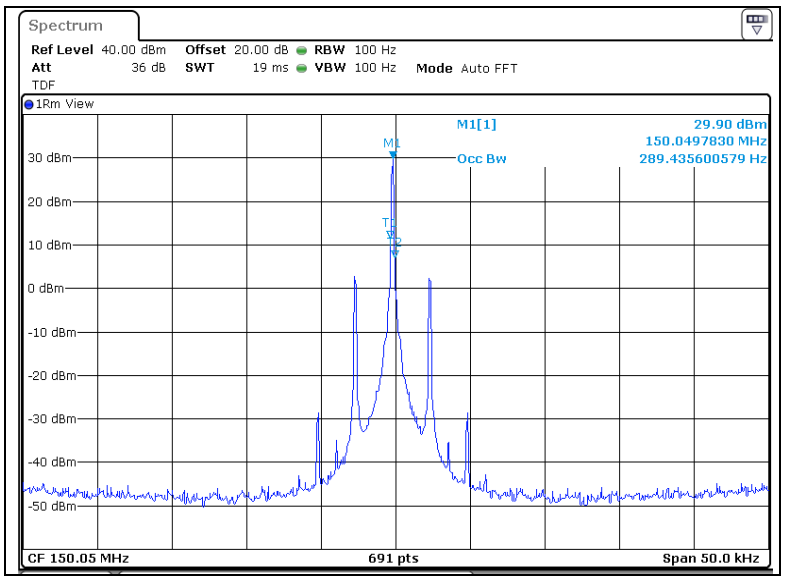
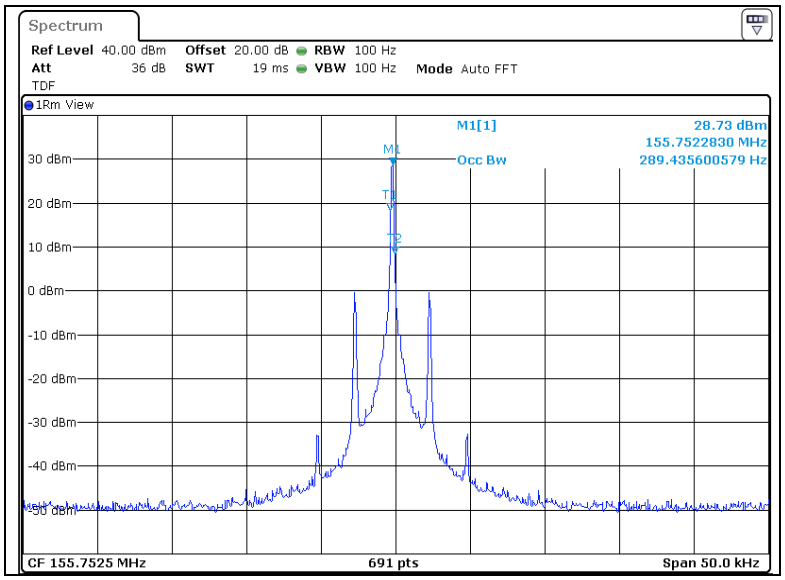
* 99% Bandwidth_6.25BW

-Target Power_1W_150.05 ㎒



-Target Power_1W_155.7525 ㎒



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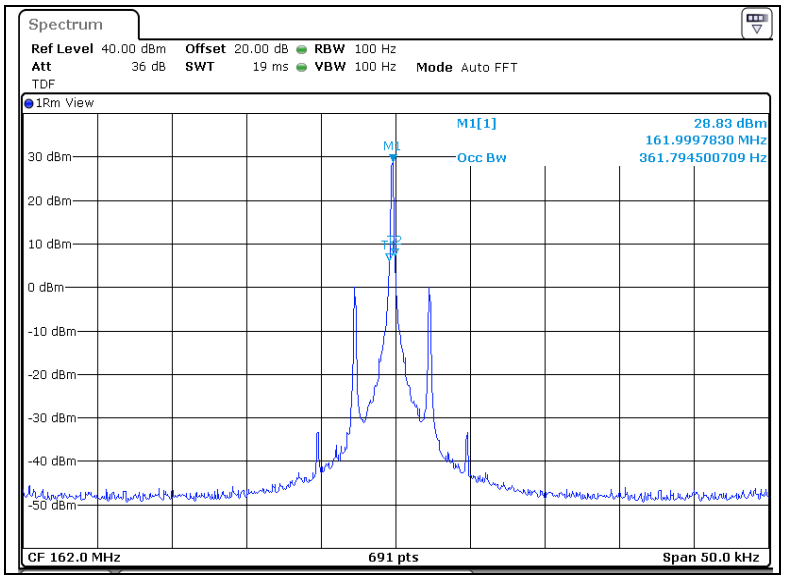
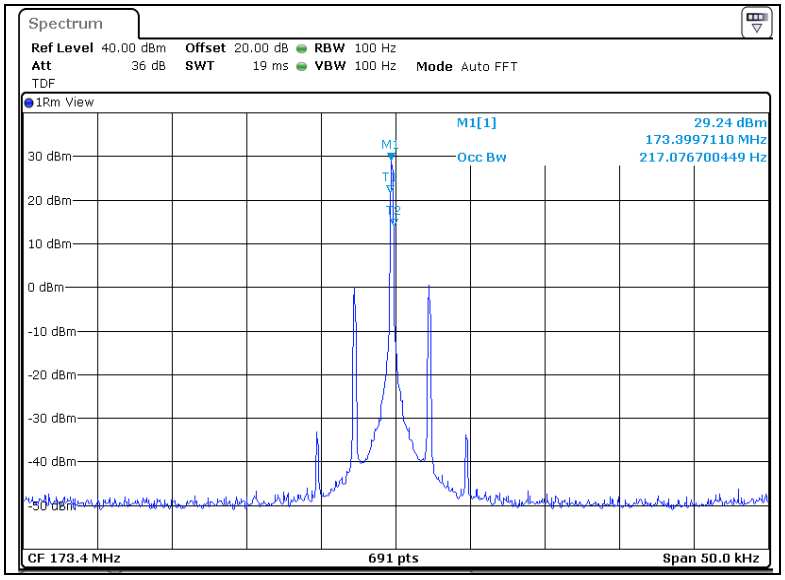
-Target Power_1W_162.00 ㎒



-Target Power_1W_173.40 ㎒



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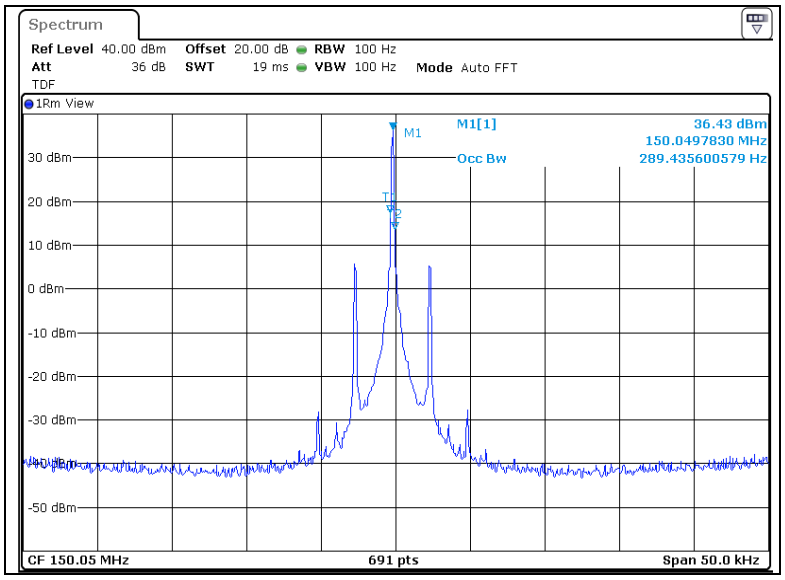
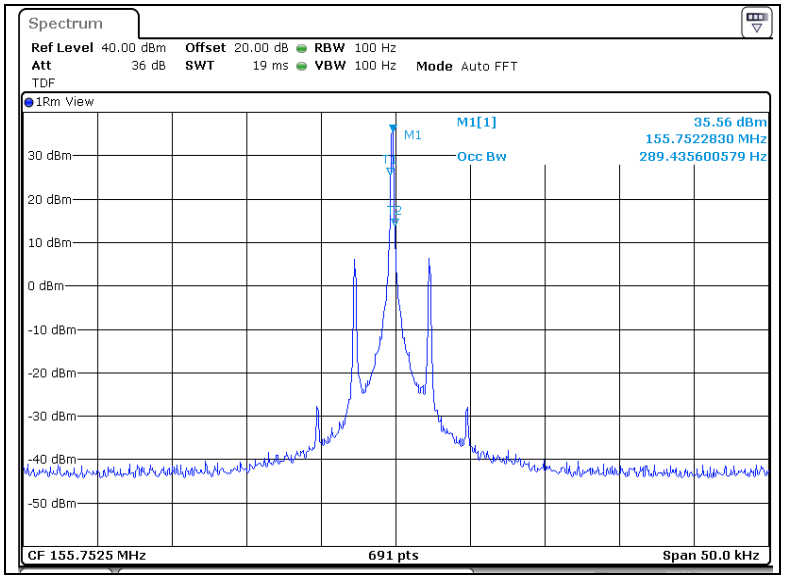
-Target Power_5W_150.05 ㎒



-Target Power_5W_155.7525 ㎒



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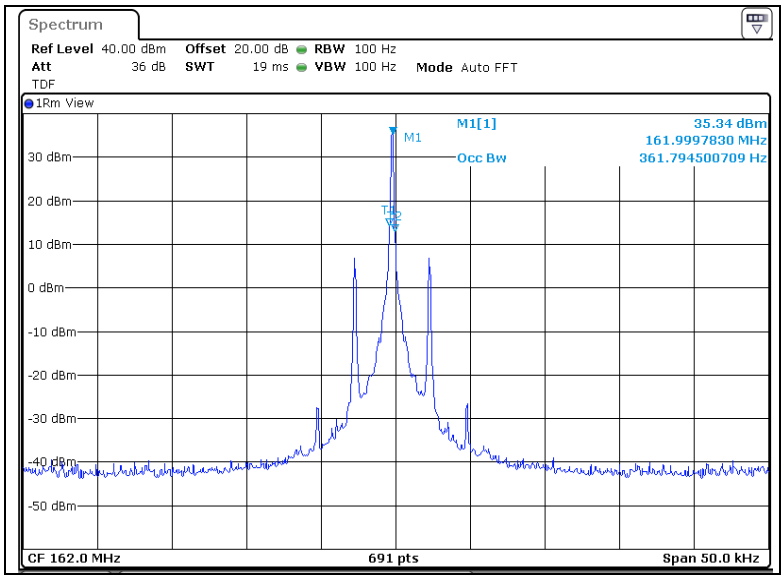
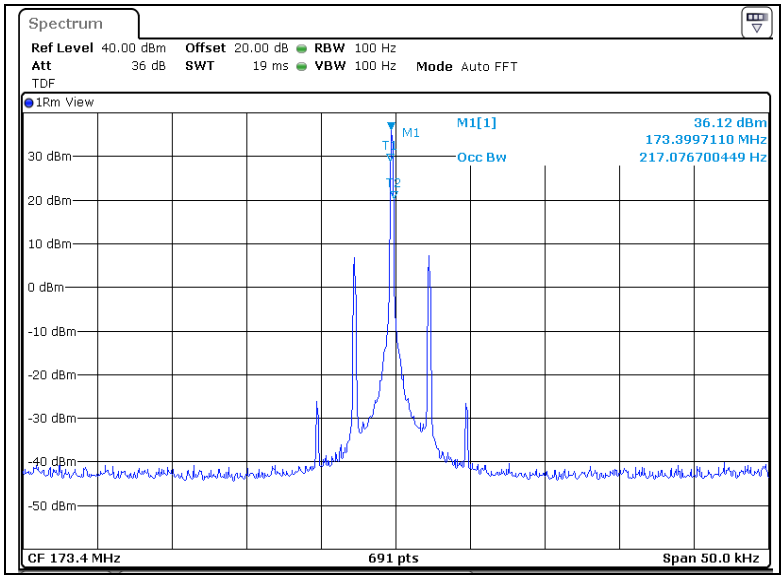
-Target Power_5W_162.00 ㎒



-Target Power_5W_173.40 ㎒



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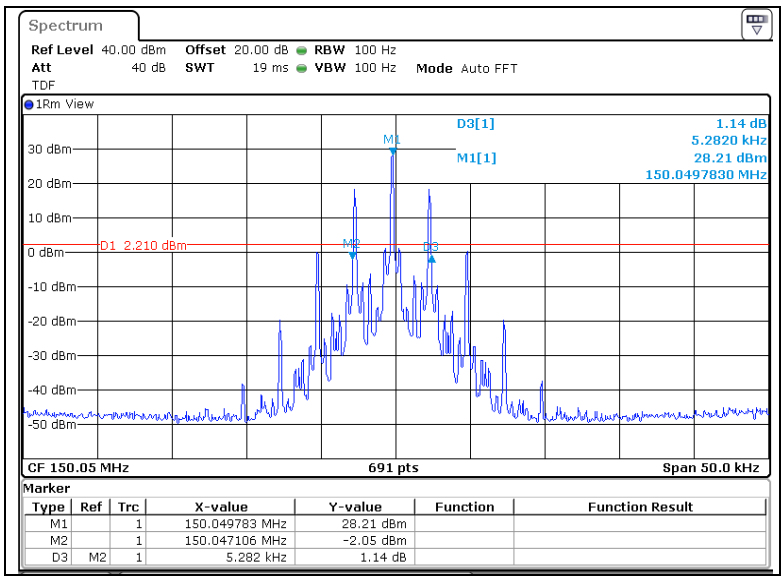
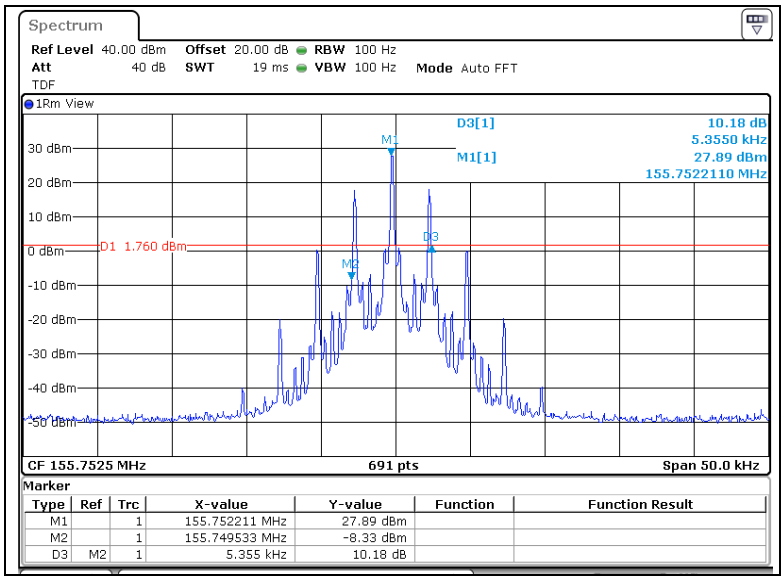
* 26dB Bandwidth_12.5BW

-Target Power_1W_150.05 MHz



-Target Power_1W_155.7525 MHz



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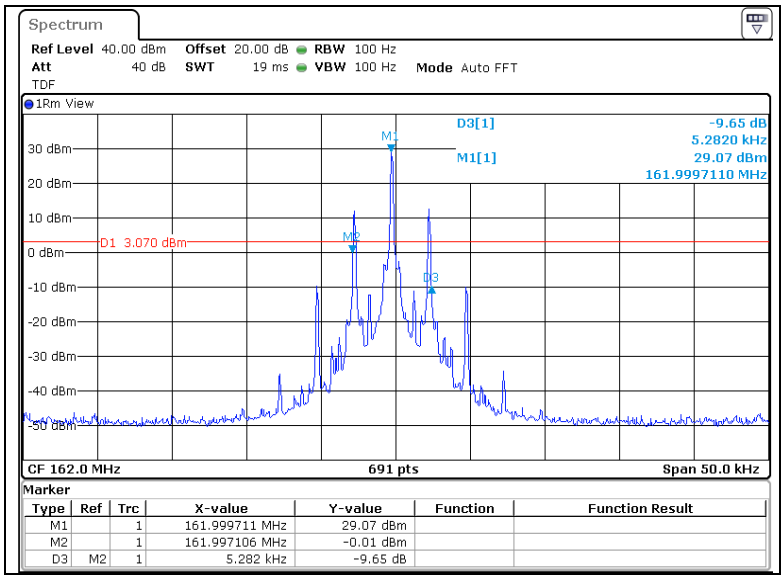
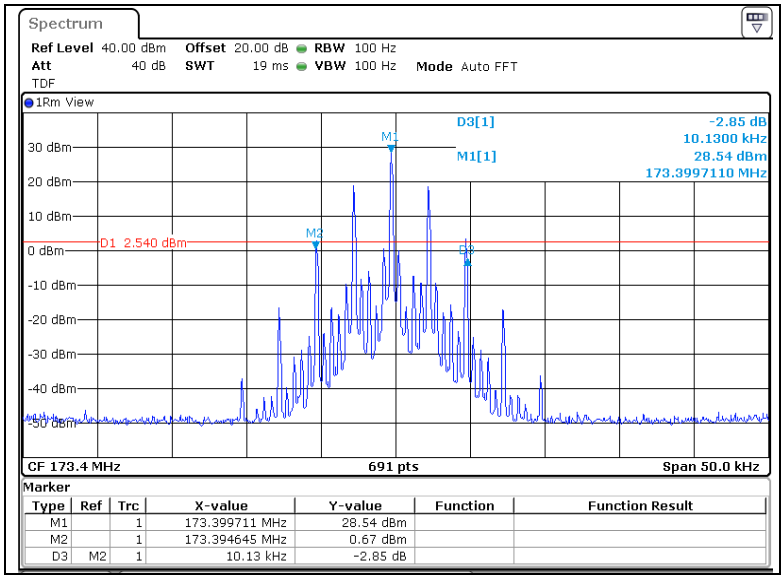
-Target Power_1W_162.00 ㎒



-Target Power_1W_173.40 ㎒



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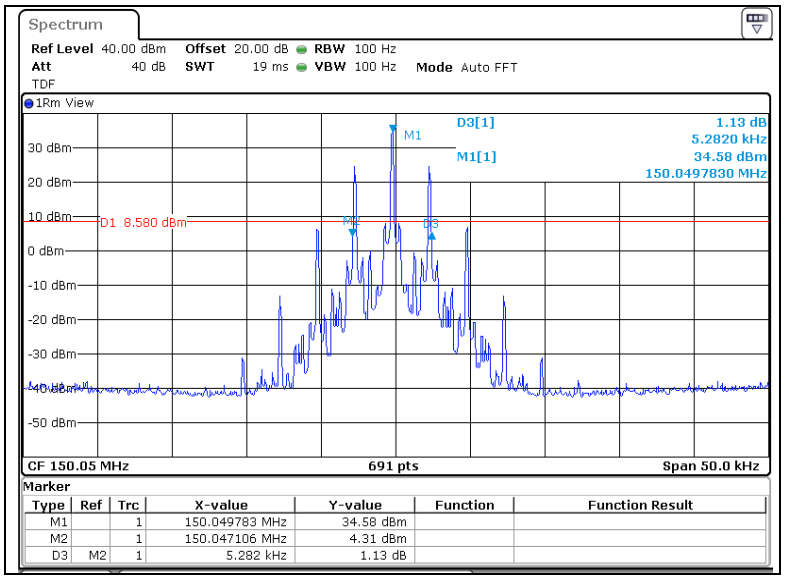
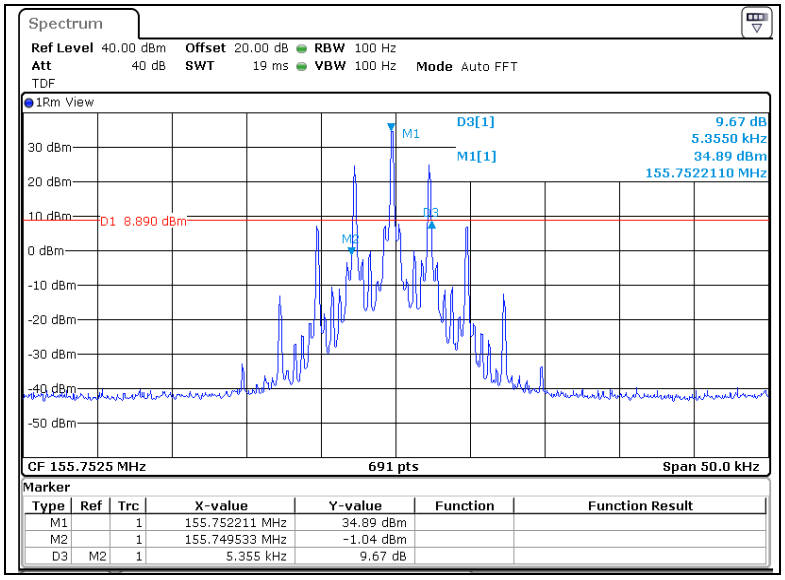
-Target Power_5W_150.05 ㎒



-Target Power_5W_155.7525 ㎒



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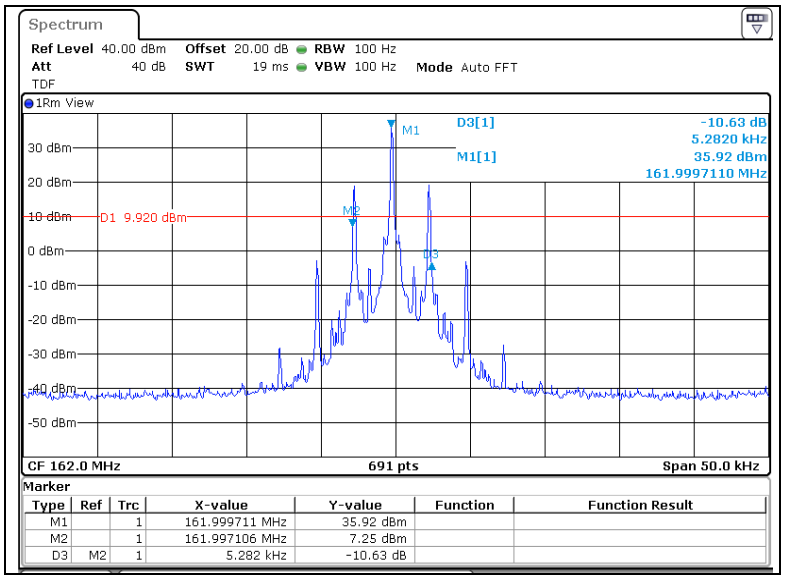
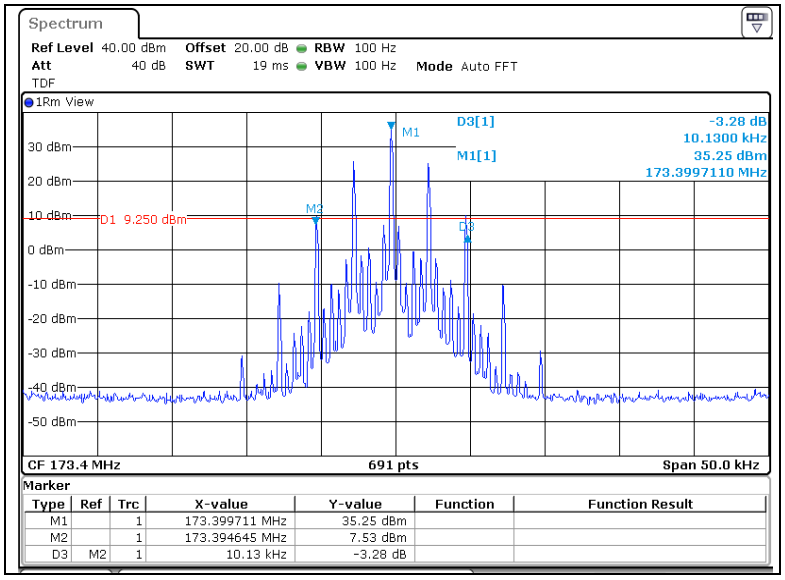
-Target Power_5W_162.00 ㎒



-Target Power_5W_173.40 ㎒



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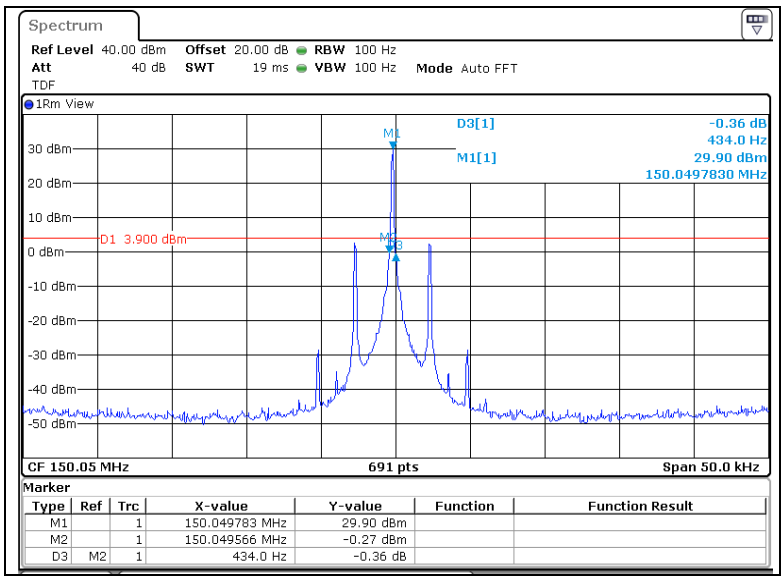
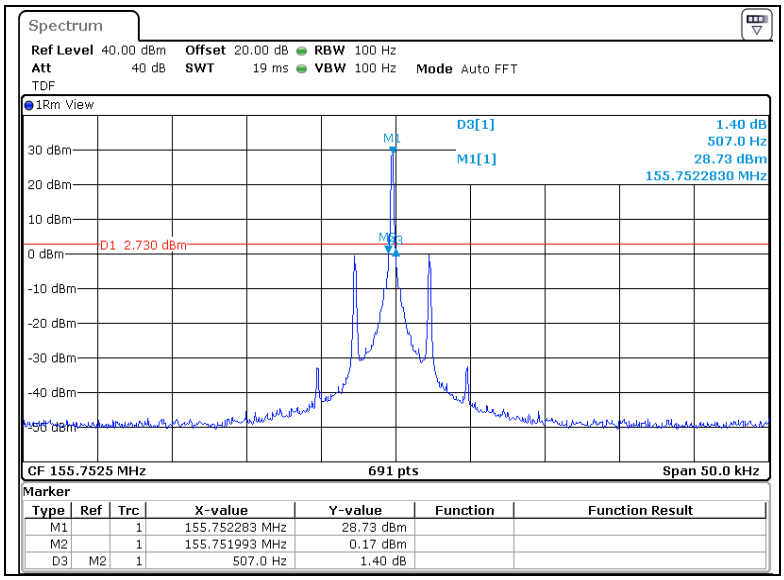
* 26dB Bandwidth_6.25BW

-Target Power_1W_150.05 ㎒



-Target Power_1W_155.7525 ㎒



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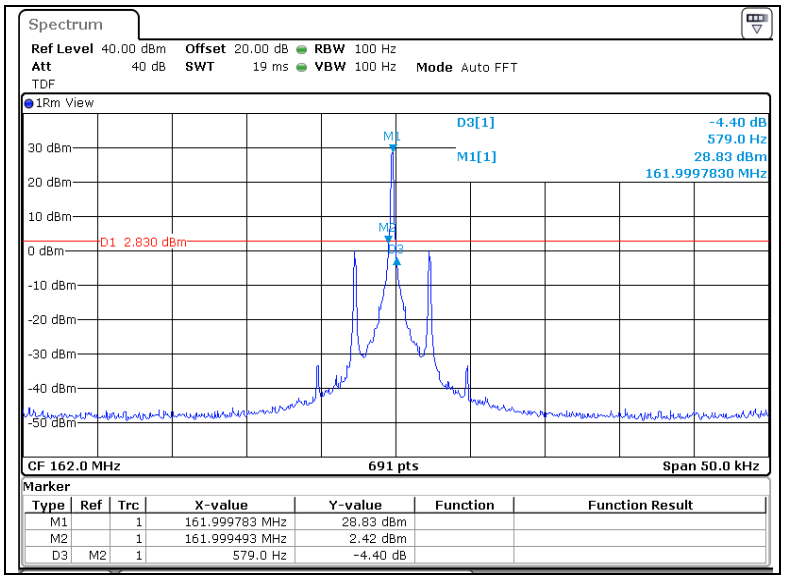
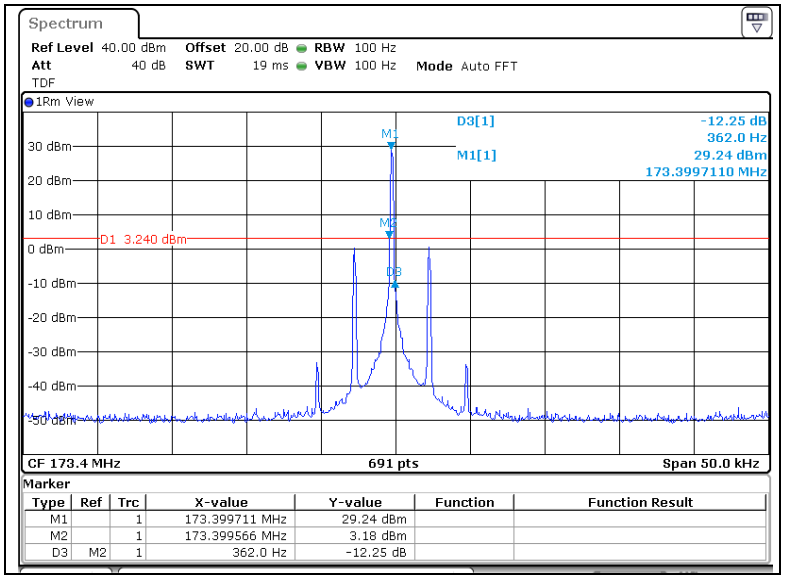
-Target Power_1W_162.00 ㎒



-Target Power_1W_173.40 ㎒



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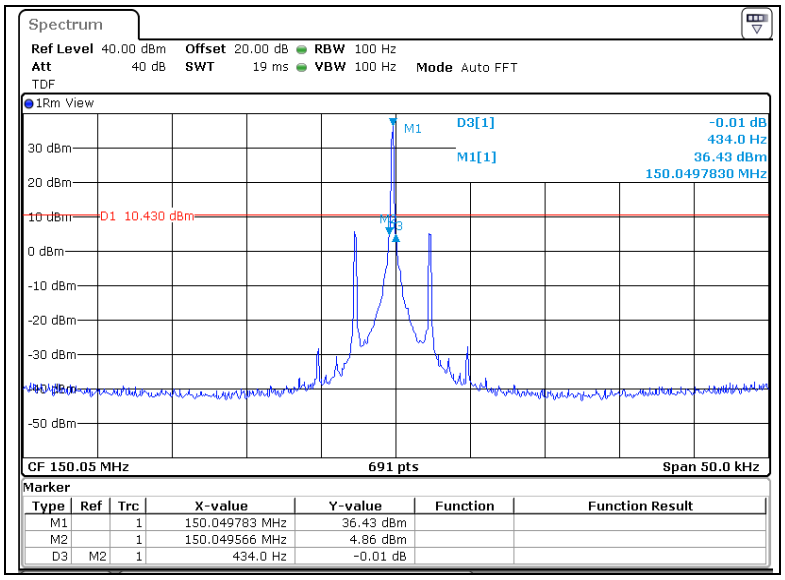
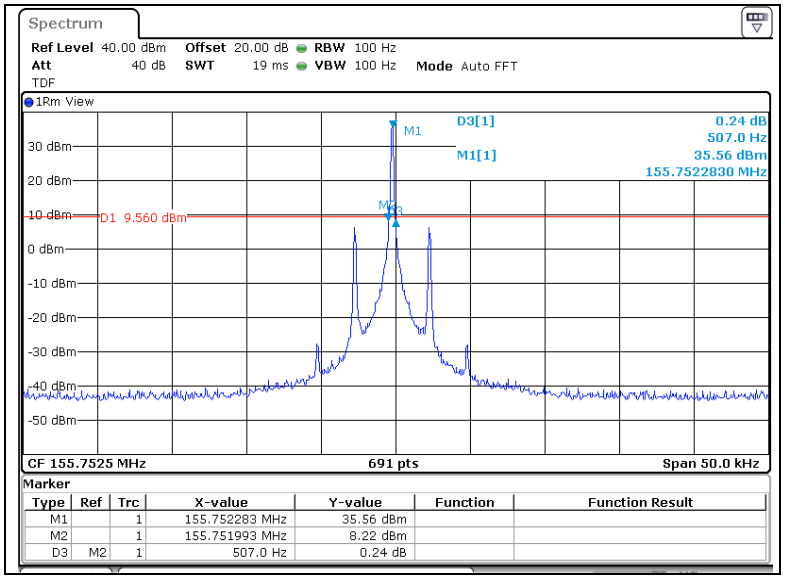
-Target Power_5W_150.05 ㎒



-Target Power_5W_155.7525 ㎒



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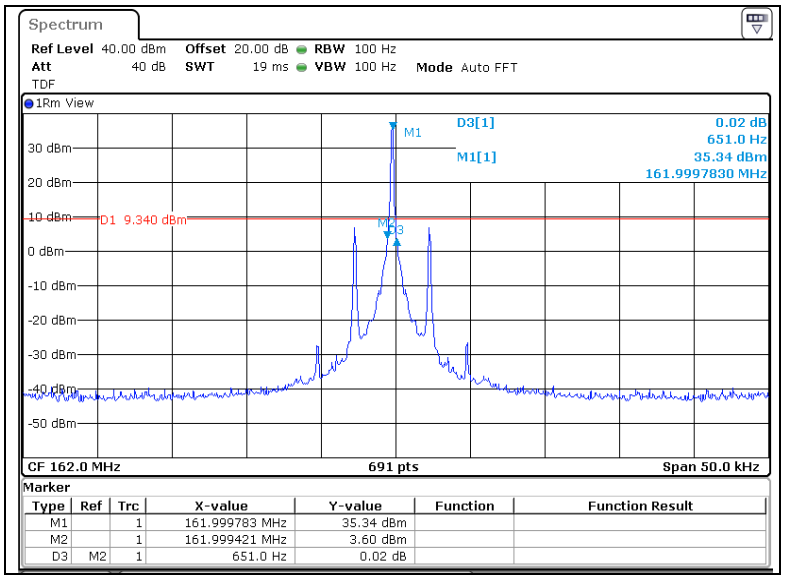
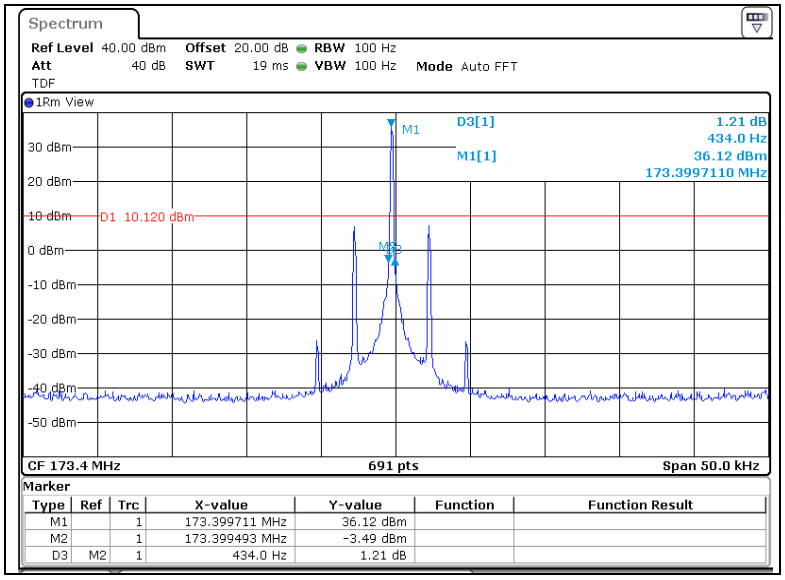
-Target Power_5W_162.00 ㎒



-Target Power_5W_173.40 ㎒



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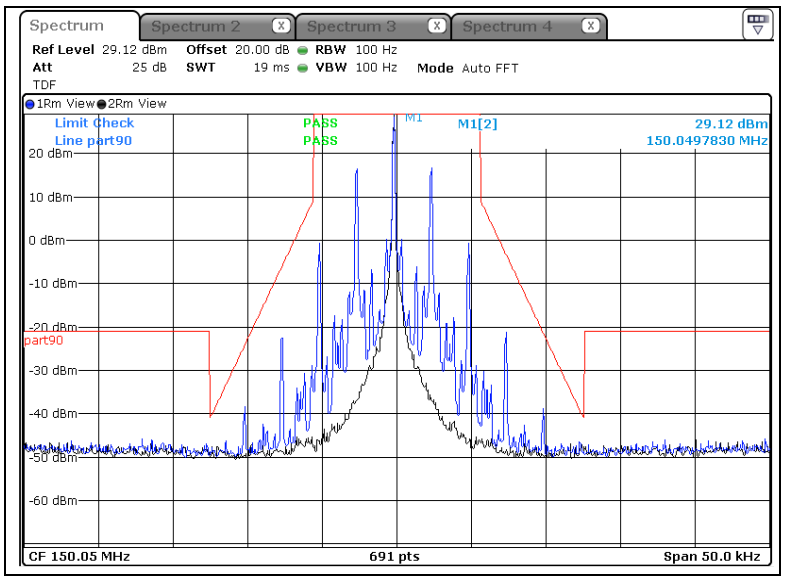
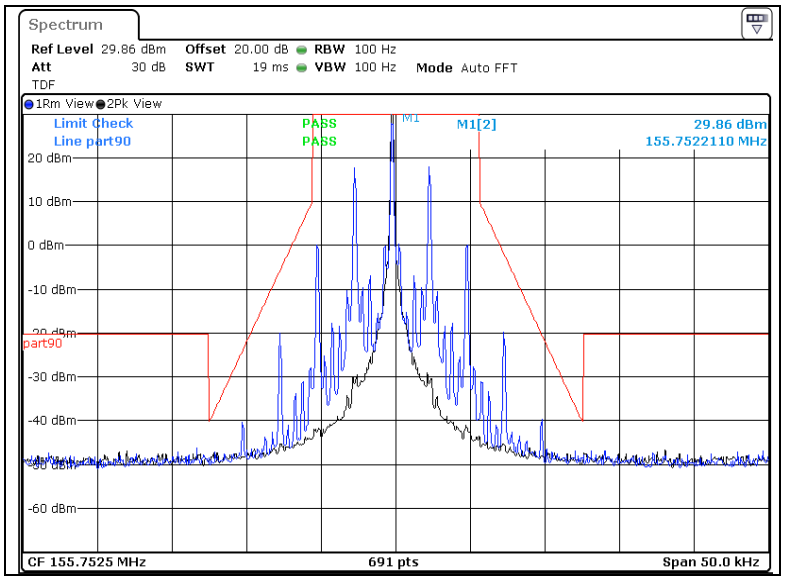
* Emission Mask_12.5BW

-Target Power_1W_150.05 ㎒



-Target Power_1W_155.7525 ㎒



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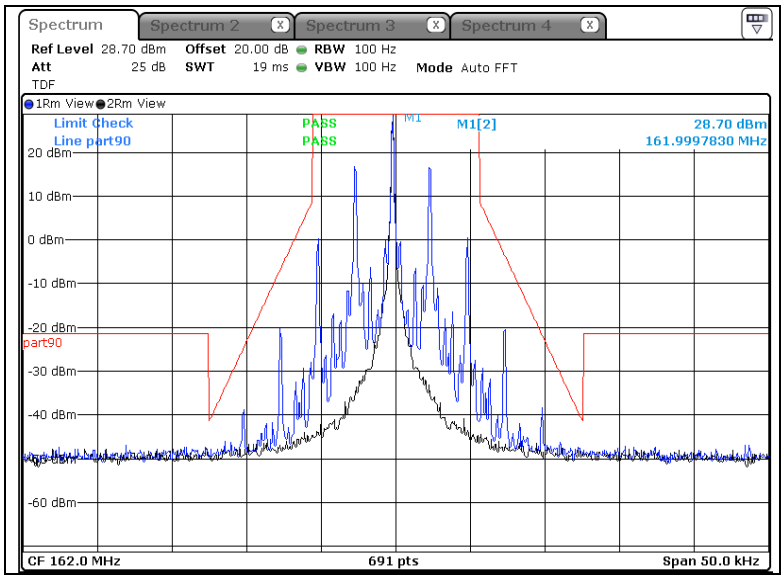
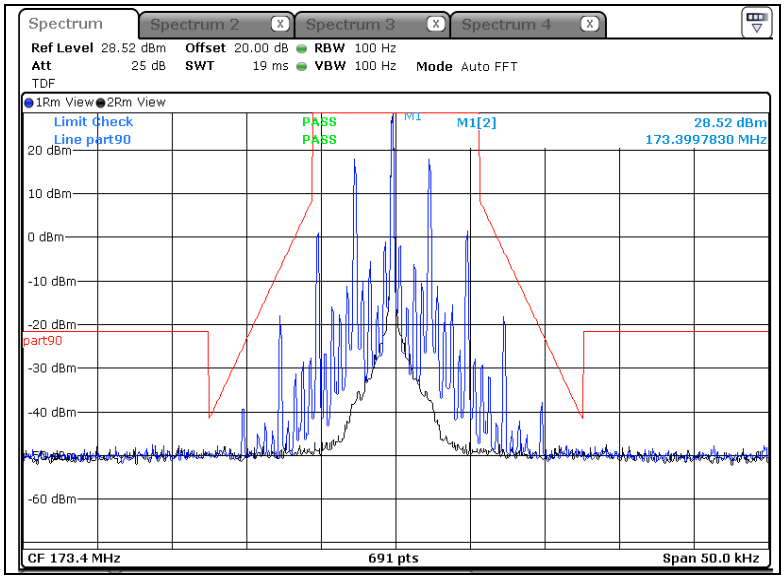
-Target Power_1W_162.00 ㎒



-Target Power_1W_173.40 ㎒



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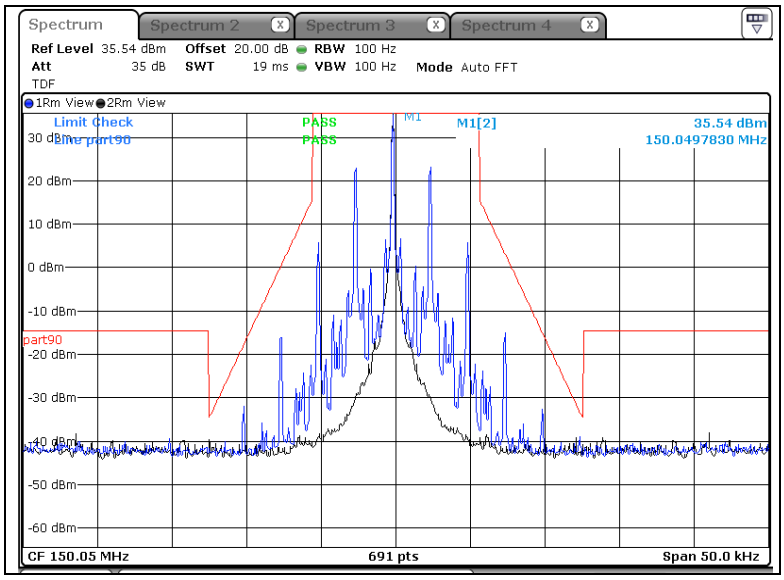
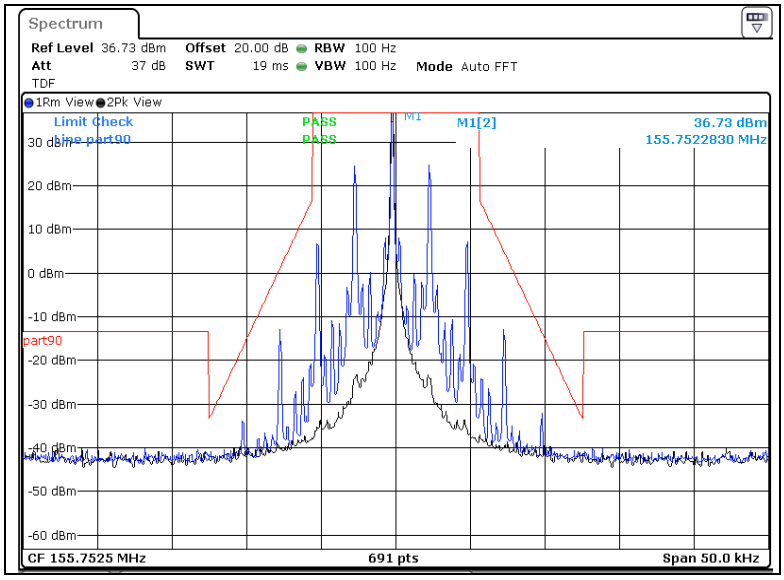
-Target Power_5W_150.05 ㎒



-Target Power_5W_155.7525 ㎒



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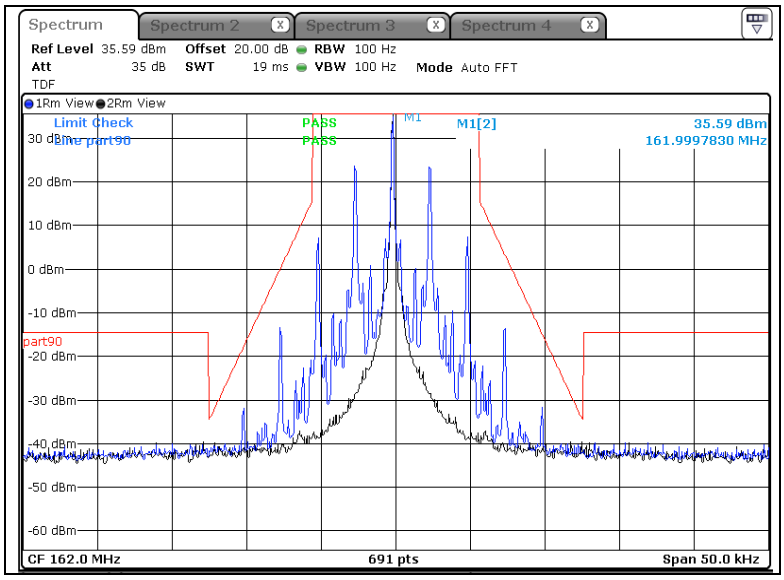
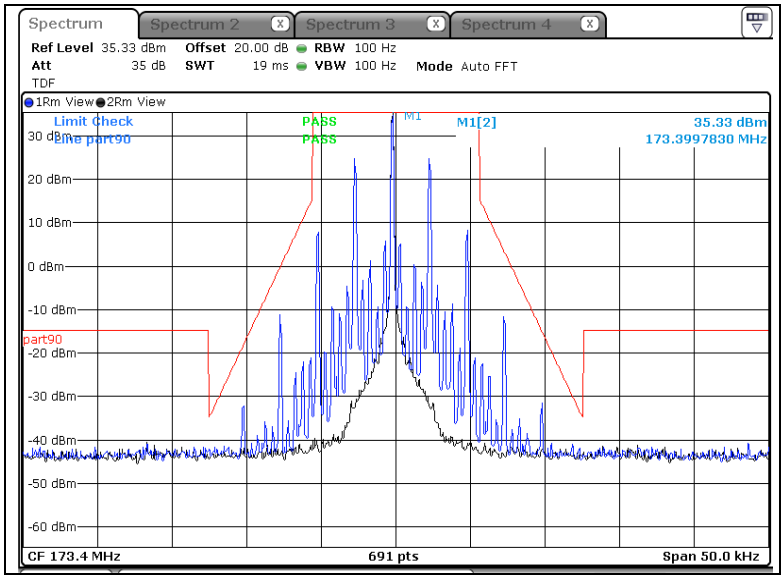
-Target Power_5W_162.00 ㎒



-Target Power_5W_173.40 ㎒



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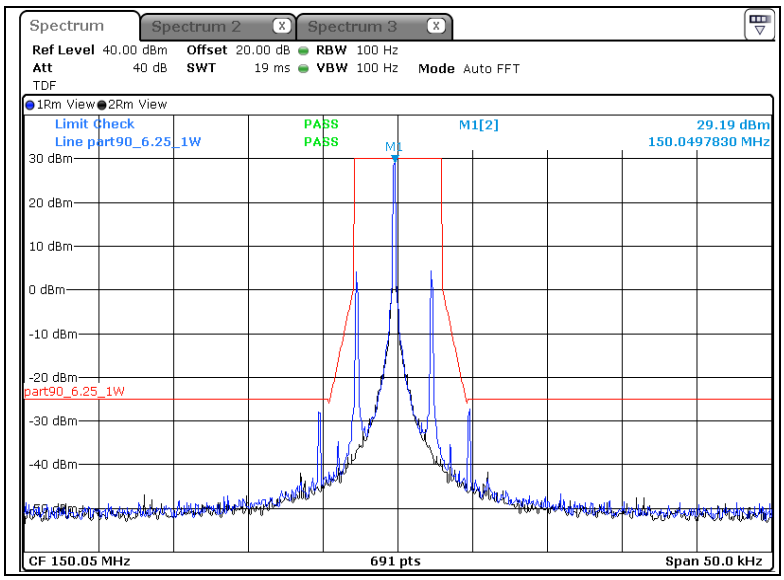
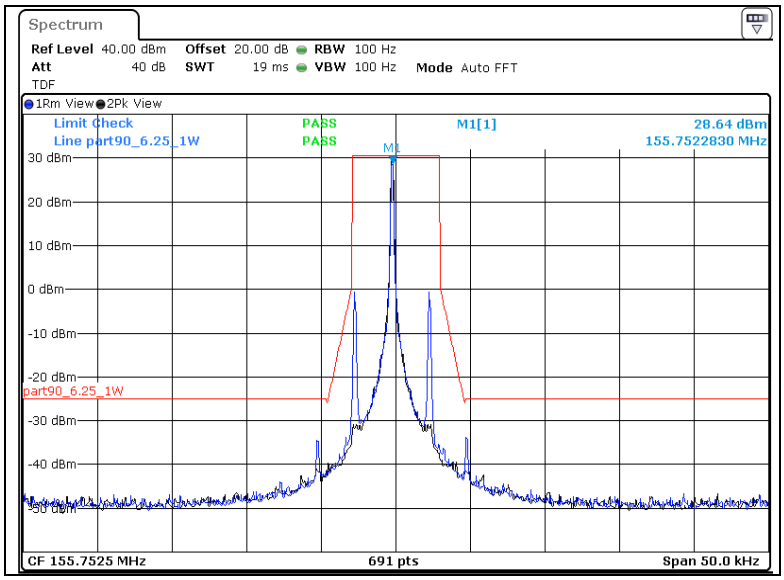
* Emission Mask_6.25BW

-Target Power_1W_150.05 ㎒

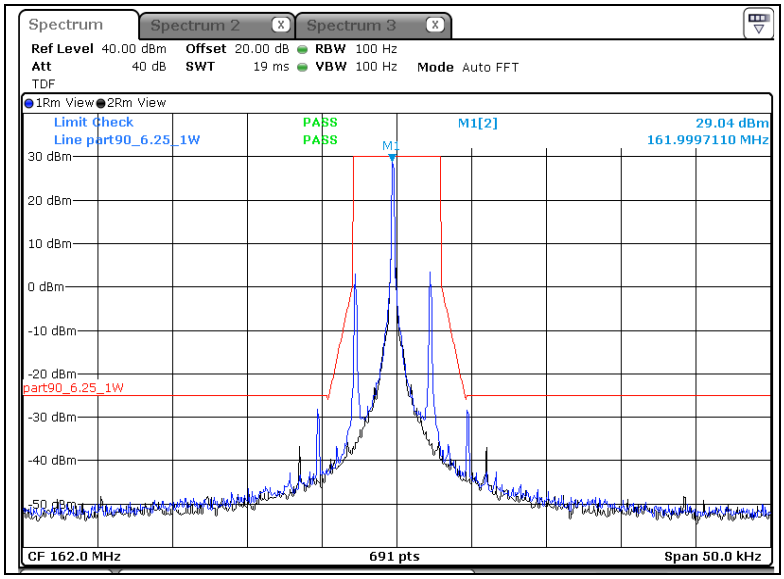


-Target Power_1W_155.7525 ㎒

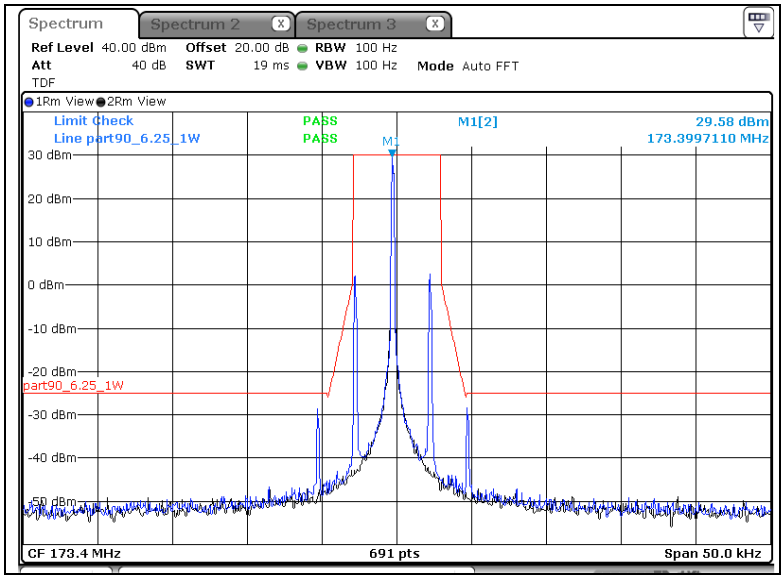


This test report shall not be reproduced, except in full, without the written approval

-Target Power_1W_162.00 ㎒



-Target Power_1W_173.40 ㎒



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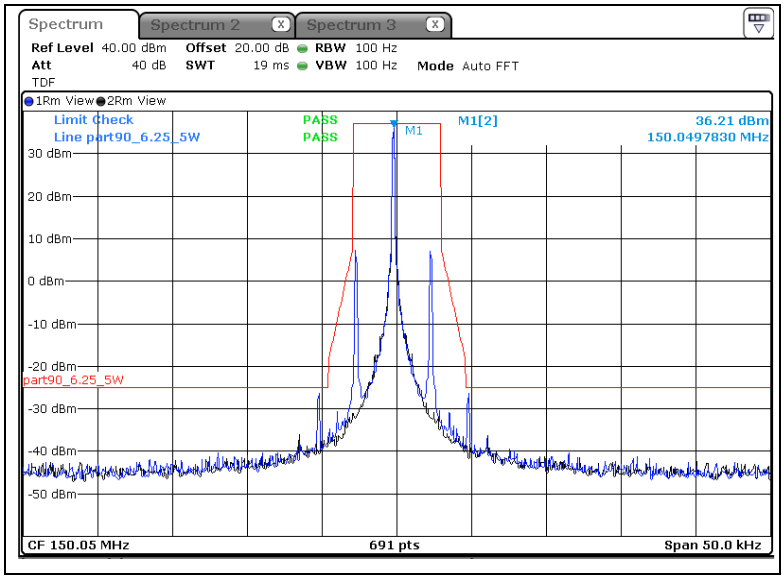
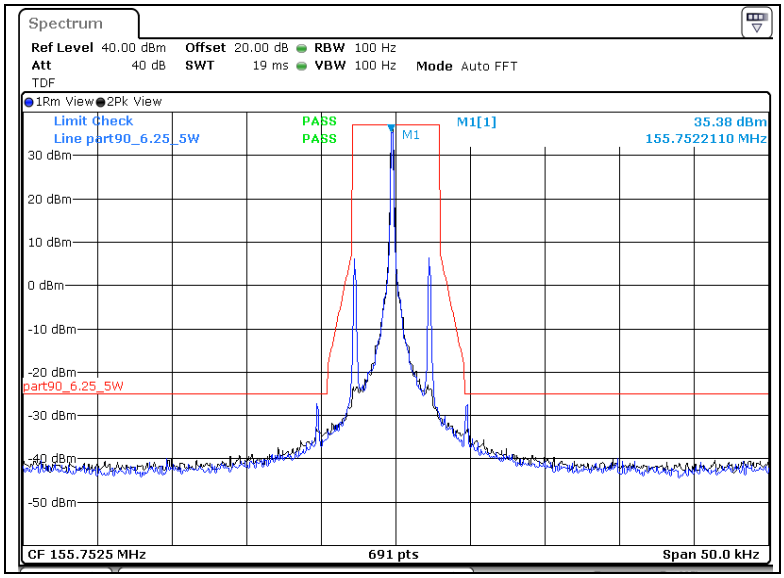
-Target Power_5W_150.05 ㎒

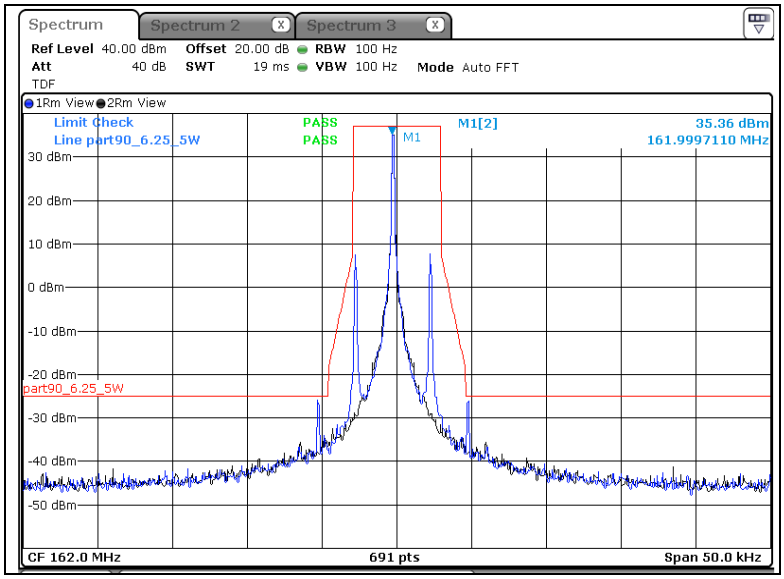


-Target Power_5W_155.7525 ㎒

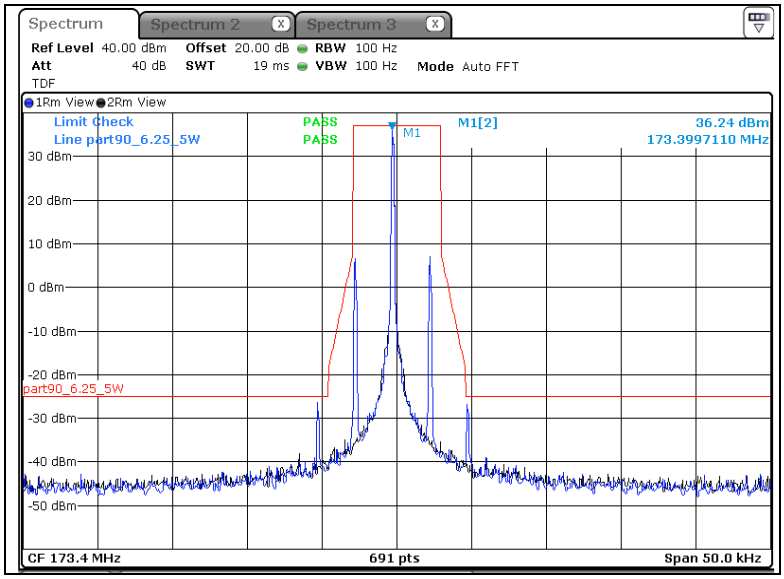


This test report shall not be reproduced, except in full, without the written approval

-Target Power_5W_162.00 ㎒



-Target Power_5W_173.40 ㎒



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5.7 Transient Frequency Behaviour of the Transmitter

5.7.1 Regulation

According to §90.214, Transmitters designed to operate in the 150-174 ㎒ and 421-512 ㎒ frequency bands must maintain transient frequencies within the maximum frequency difference limits during the time intervals indicated:

Time intervals[1 2]	Maximum frequency difference[3]	All equipment	
		150 to 174 MHz	421 to 512 MHz
Transient Frequency Behavior for Equipment Designed to Operate on 25 kHz Channels			
t_1[4]	±25.0 kHz	5.0 ms	10.0 ms
t_2	±12.5 kHz	20.0 ms	25.0 ms
t_3[4]	±25.0 kHz	5.0 ms	10.0 ms
Transient Frequency Behavior for Equipment Designed to Operate on 12.5 kHz Channels			
t_1[4]	±12.5 kHz	5.0 ms	10.0 ms
t_2	±6.25 kHz	20.0 ms	25.0 ms
t_3[4]	±12.5 kHz	5.0 ms	10.0 ms
Transient Frequency Behavior for Equipment Designed to Operate on 6.25 kHz Channels			
t_1[4]	±6.25 kHz	5.0 ms	10.0 ms
t_2	±3.125 kHz	20.0 ms	25.0 ms
t_3[4]	±6.25 kHz	5.0 ms	10.0 ms

[1] $_{on}$ is the instant when a 1 kHz test signal is completely suppressed, including any capture time due to phasing.
t_1 is the time period immediately following t_{on}.
t_2 is the time period immediately following t_1.
t_3 is the time period from the instant when the transmitter is turned off until t_{off}.
t_{off} is the instant when the 1 kHz test signal starts to rise.
[2] During the time from the end of t_2 to the beginning of t_3, the frequency difference must not exceed the limits specified in §90.213.
[3] Difference between the actual transmitter frequency and the assigned transmitter frequency.
[4] If the transmitter carrier output power rating is 6 watts or less, the frequency difference during this time period may exceed the maximum frequency difference for this time period.

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5.7.2 Measurement Procedure

1. Set the test receiver to measure FM deviation with the audio bandwidth set at ≤50 ㎐ to ≥15,000 ㎐, and tune the RF frequency to the transmitter assigned frequency.
2. Set the signal generator to the assigned transmitter frequency and modulate it with a 1 ㎑ tone at ±25㎑ deviation and set its output level to -100�dBm.
3. Key the transmitter.
4. Supply sufficient attenuation via the RF attenuator to provide an input level to the test receiver that is 40 ㎤ below the test receiver maximum allowed input power when the transmitter is operating at its rated power level.
5. Unkey the transmitter.
6. Adjust the RF level of the signal generator to provide RF power into the RF power meter equal to the level This signal generator RF level shall be maintained throughout the rest of the measurement.
7. Connect the output of the RF combiner network to the input of the Modulation analyzer.
8. Set the horizontal sweep rate on the storage oscilloscope to 10 milliseconds per division and adjust the display to continuously view the 1000 ㎐ tone. Adjust the vertical amplitude control of the oscilloscope to display the 1000 ㎐ at ±4 divisions vertically centered on the display.
9. Key the transmitter and observe the stored display. once the modulation Analyzer demodulator has been captured by the transmitter power, the display will show the frequency difference from the assigned frequency to the actual transmitter frequency versus time. The instant when the 1 ㎑ test signal is completely suppressed (including any capture time due to phasing) is considered to be ton . The trace should be maintained within the allowed divisions during the period t1 and t2 . See the figure in the appropriate standards section.
10. During the time from the end of t2 to the beginning of t3 the frequency difference should not exceed the limits set by the FCC in 47 CFR 90.214 and outlined in 3.2.2. The allowed limit is equal to the transmitter frequency times its FCC frequency tolerance times ±4 display divisions divided by 25 ㎑.
11. Key the transmitter and observe the stored display. The trace should be maintained within the allowed divisions after the end of t2 and remain within it until the end of the trace. See the figure in the appropriate standards sections.
12. To test the transient frequency behavior during the period t3 the transmitter shall be keyed.
13. Adjust the oscilloscope trigger controls so it will trigger on a decreasing magnitude from the Modulation analyzer, at 1 division from the right side of the display, when the transmitter is turned off. Set the controls to store the display. The moment when the 1 ㎑ test signal starts to rise is considered to provide to toff .
14. The transmitter shall be unkeyed.
15. Observe the display. The trace should remain within the allowed divisions during period t3. See the figures in the appropriate standards section.

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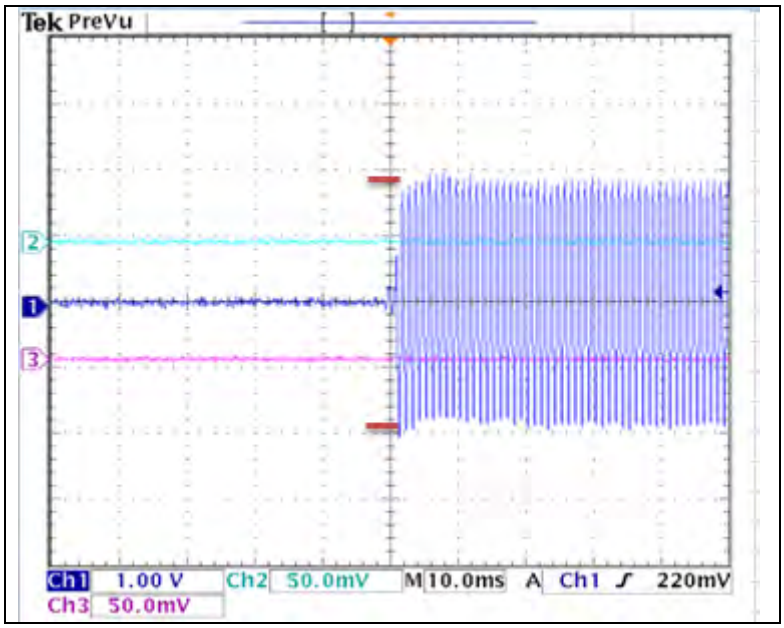
5.7.3 Test Result

- Complied

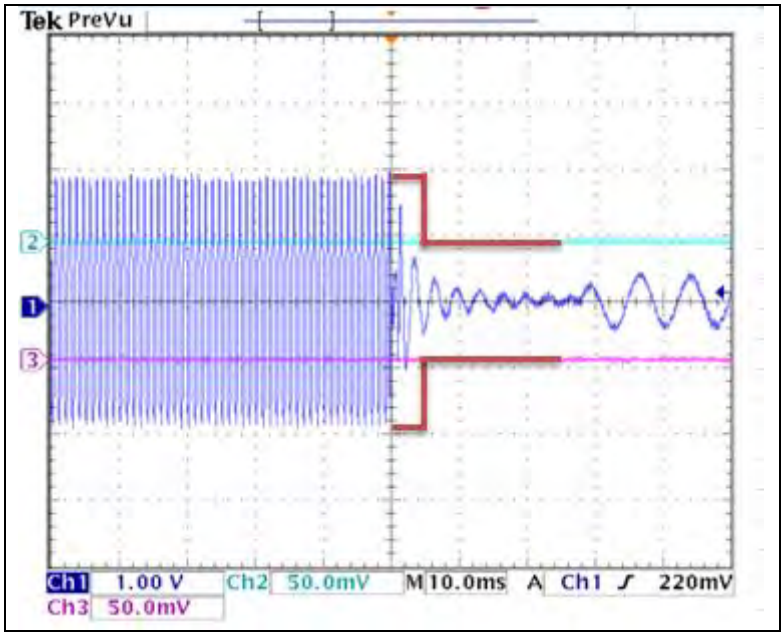
Figure 4. plot of Transient Frequency Behaviour of the Transmitter

* 12.5BW

-Target Power_1W_150.05 ㎒
-On to Off



-Off to On



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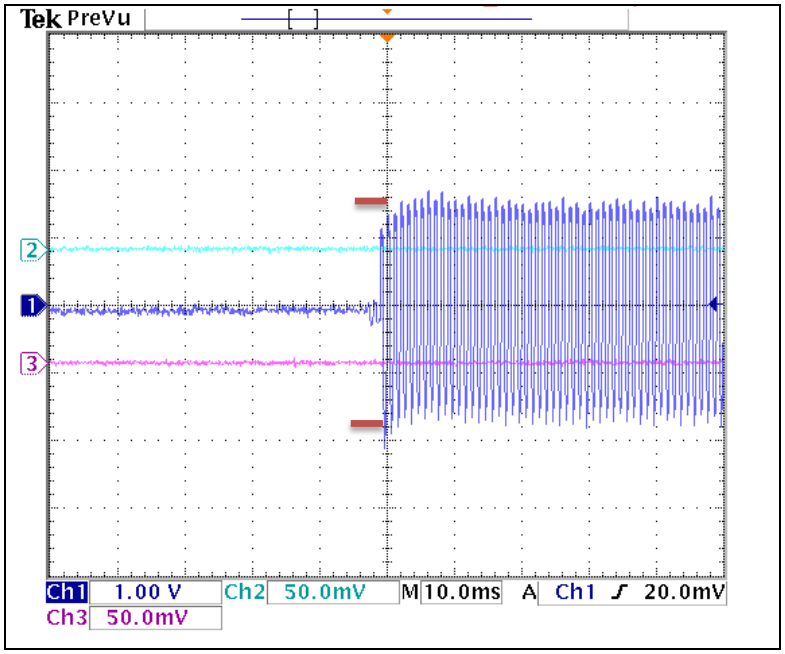
-Target Power_1W_155.7525 ㎒

-On to Off



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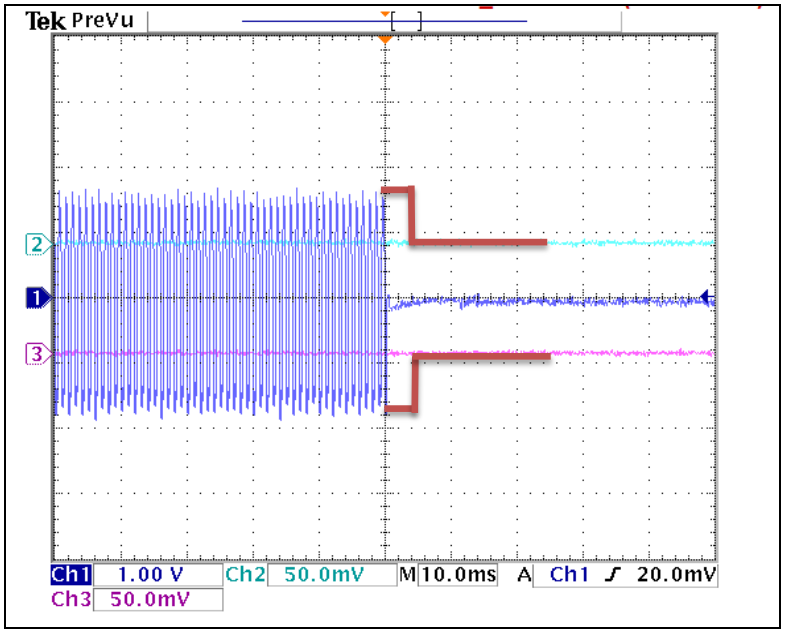

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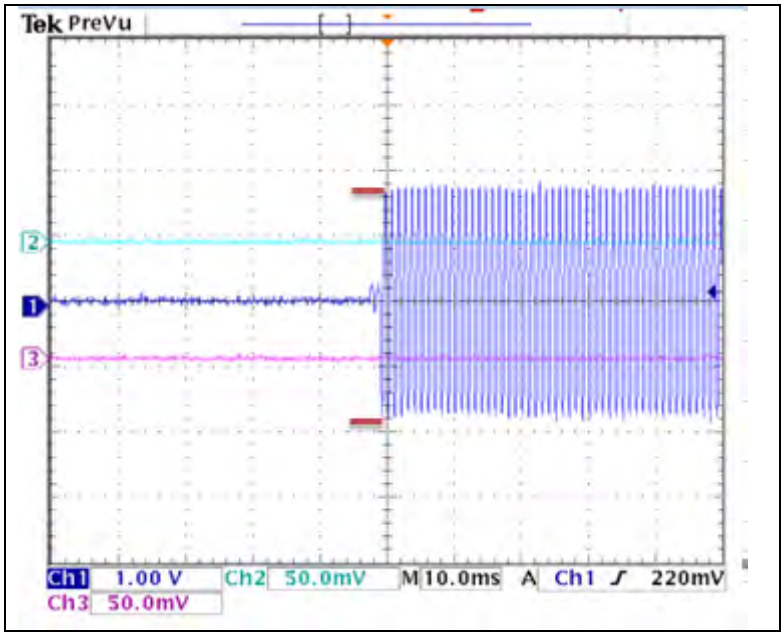
-Target Power_1W_162.00 ㎒

-On to Off



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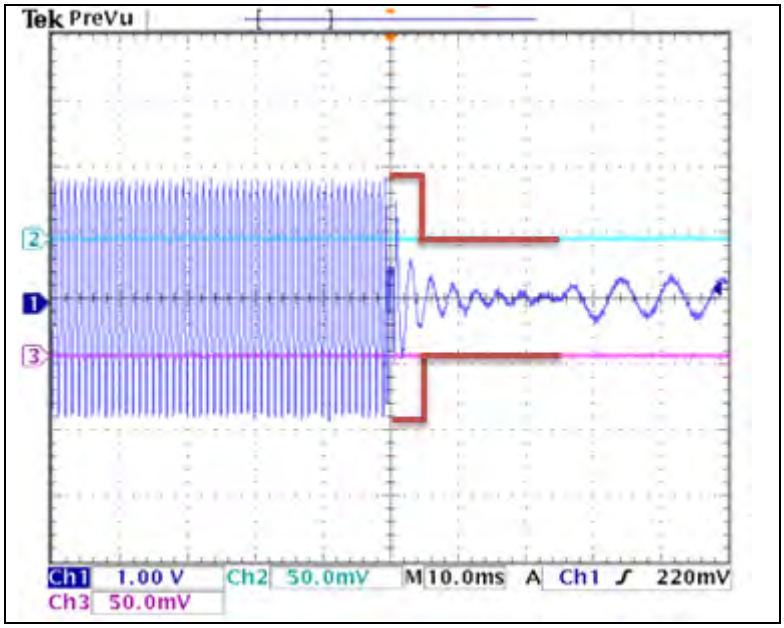

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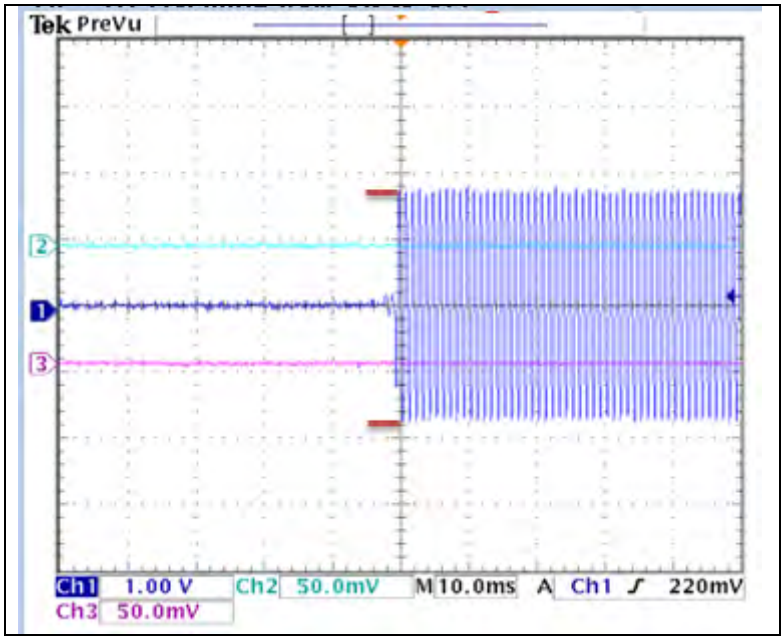
-Target Power_1W_173.40 ㎒

-On to Off



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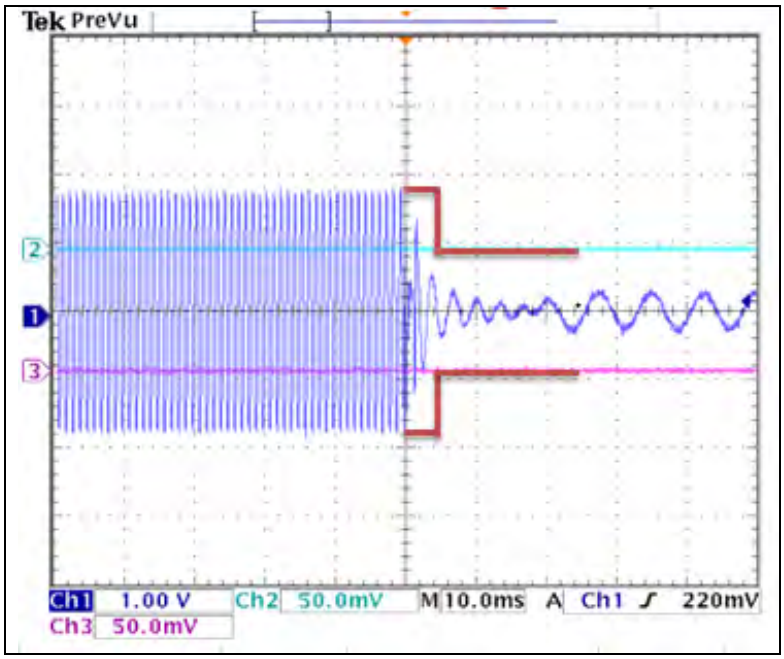

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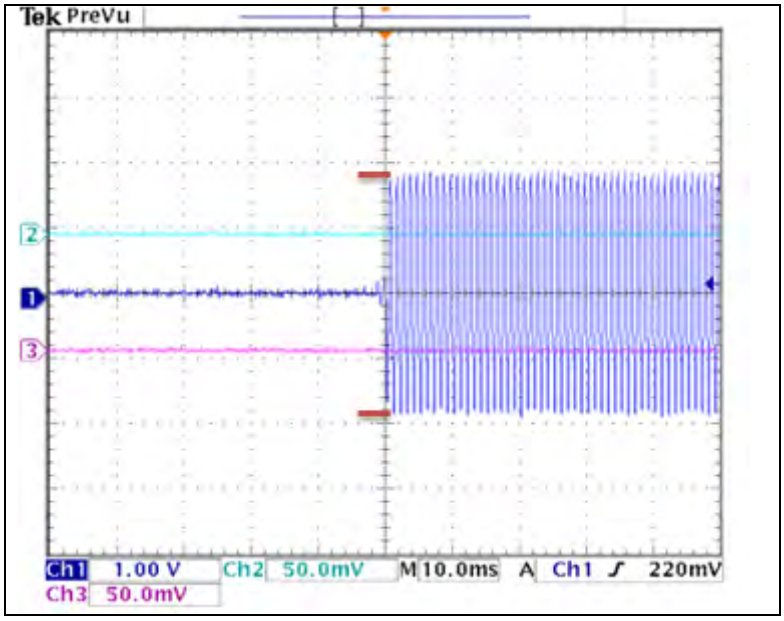
-Target Power_5W_150.05 ㎒

-On to Off



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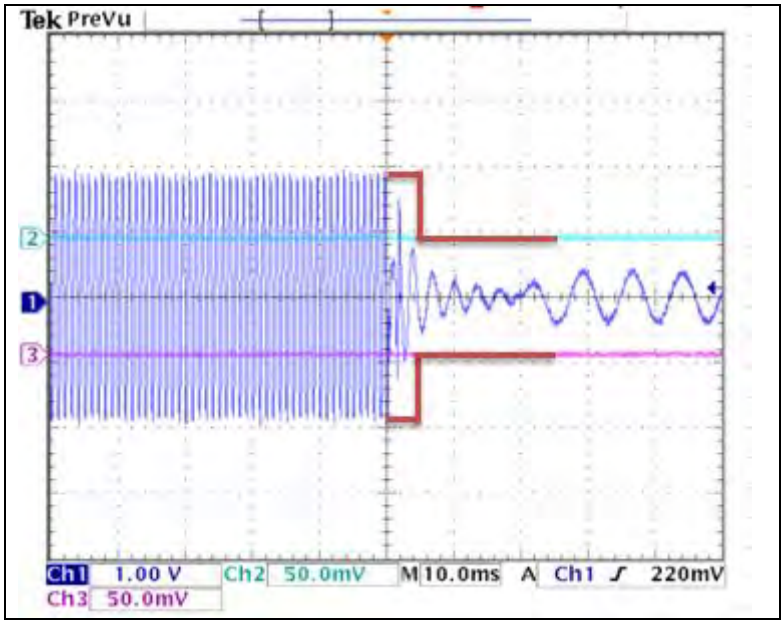

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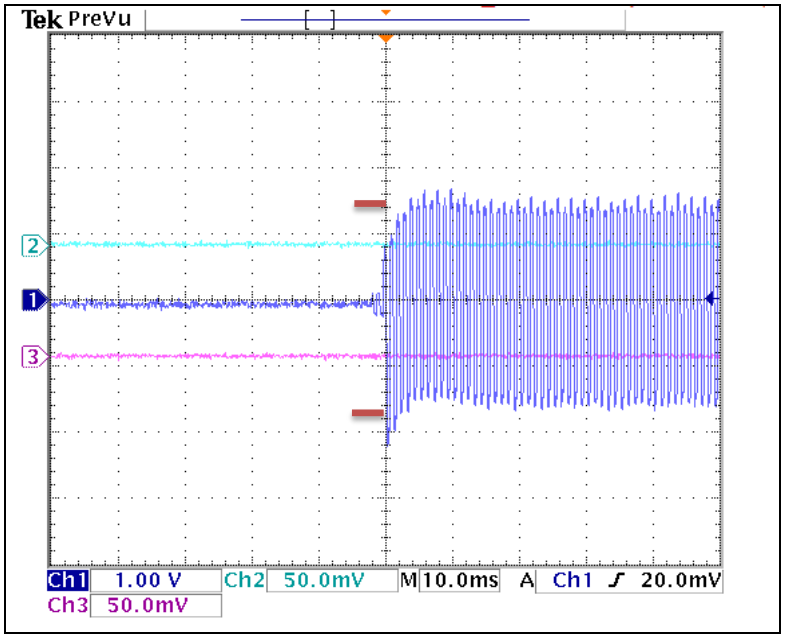
-Target Power_5W_155.7525 ㎒

-On to Off



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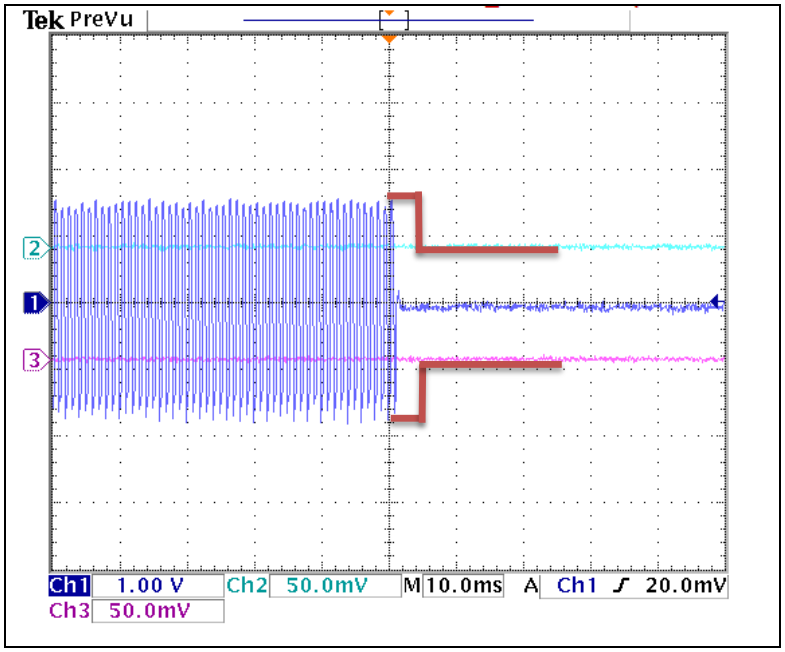

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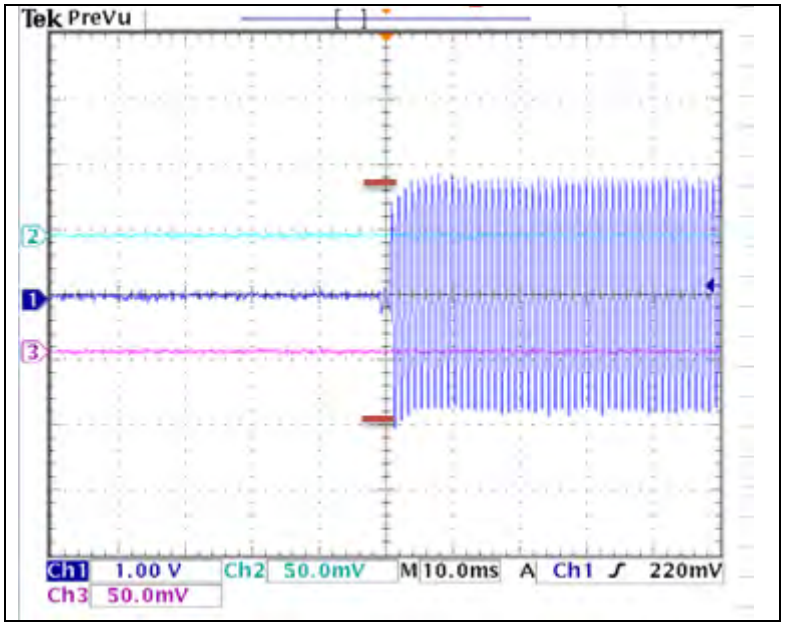
-Target Power_5W_162.00 ㎒

-On to Off



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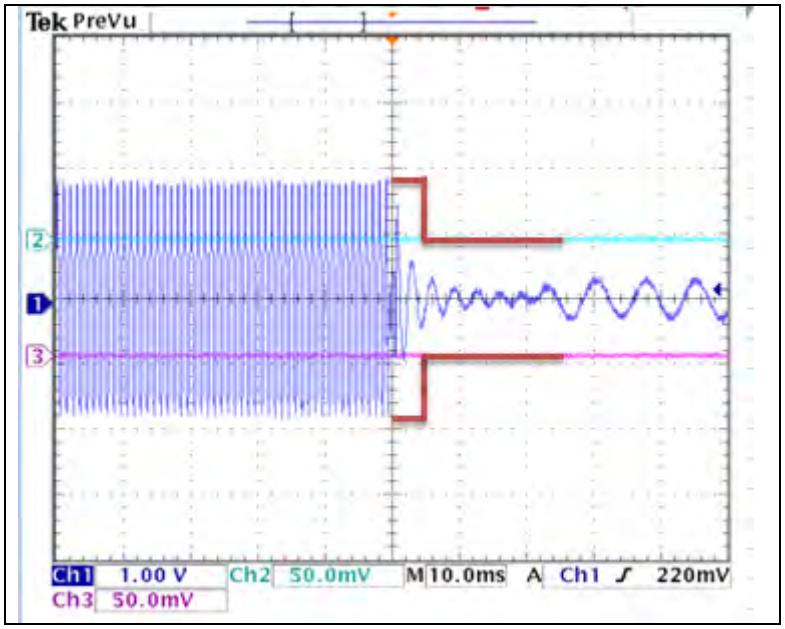

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-Target Power_5W_173.40 ㎒

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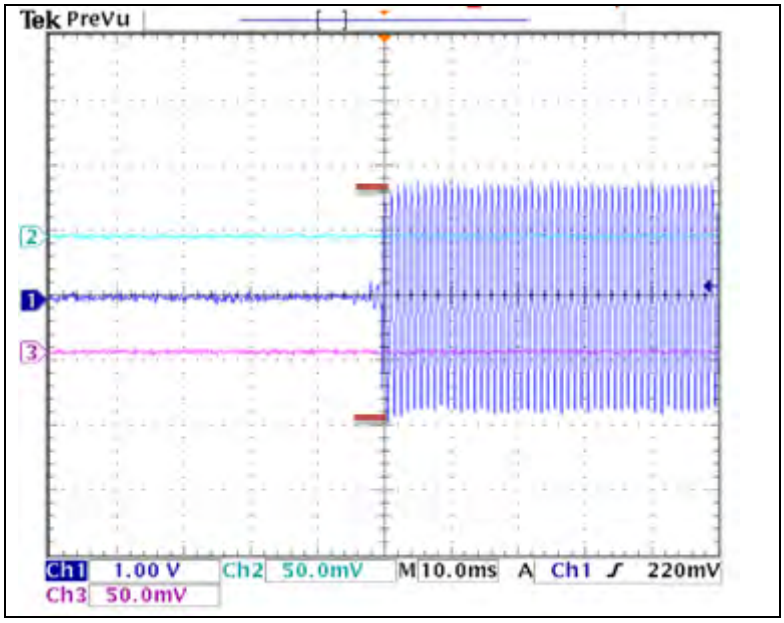

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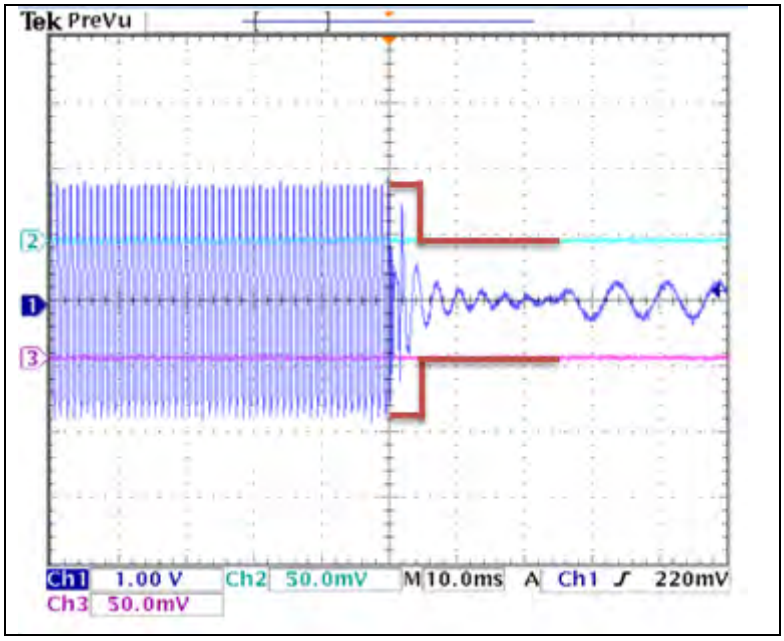
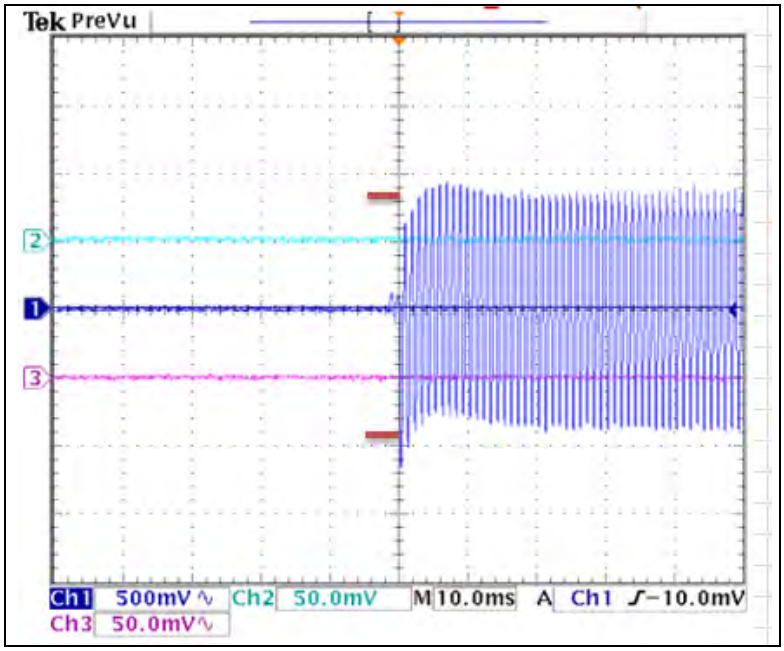


This test report shall not be reproduced, except in full, without the written approval

* 6.25BW

-Target Power_1W_150.05 ㎒

-On to Off



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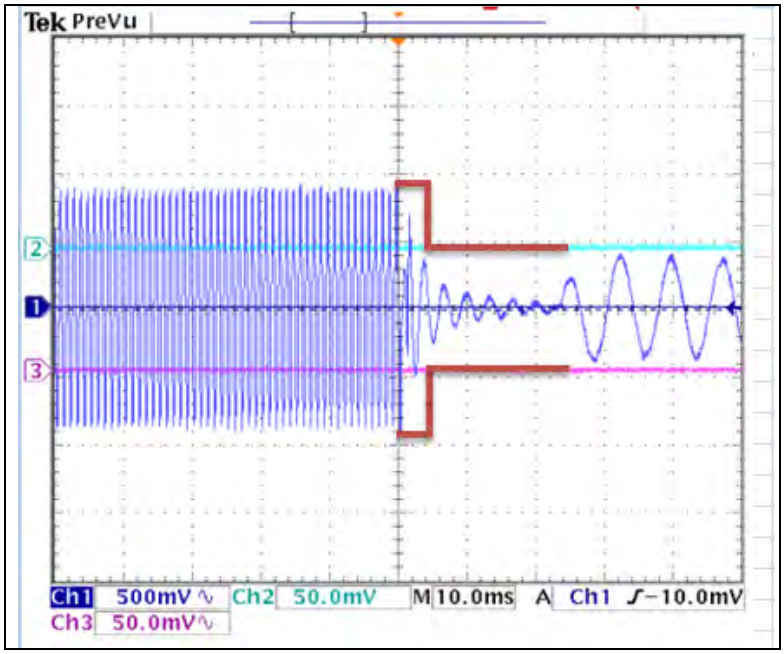

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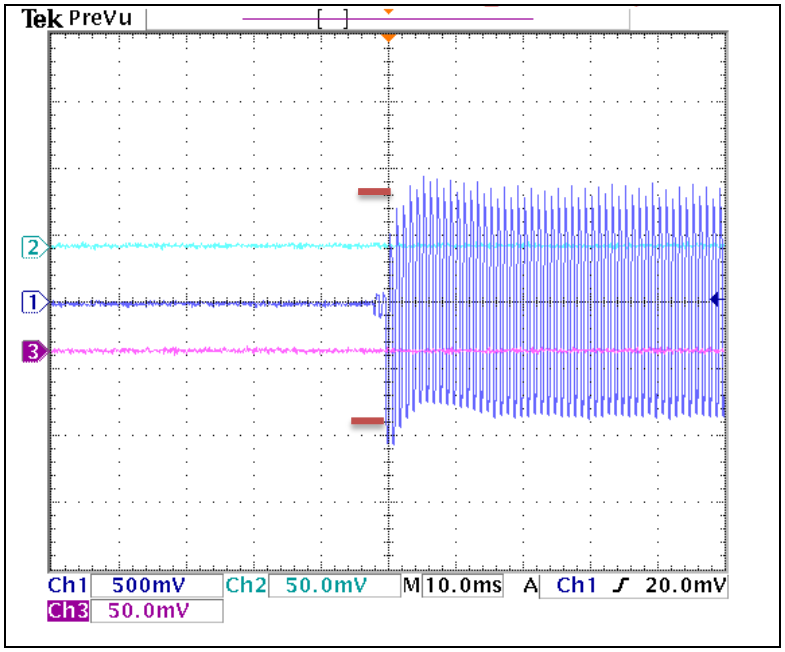
-Target Power_1W_155.7525 ㎒

-On to Off



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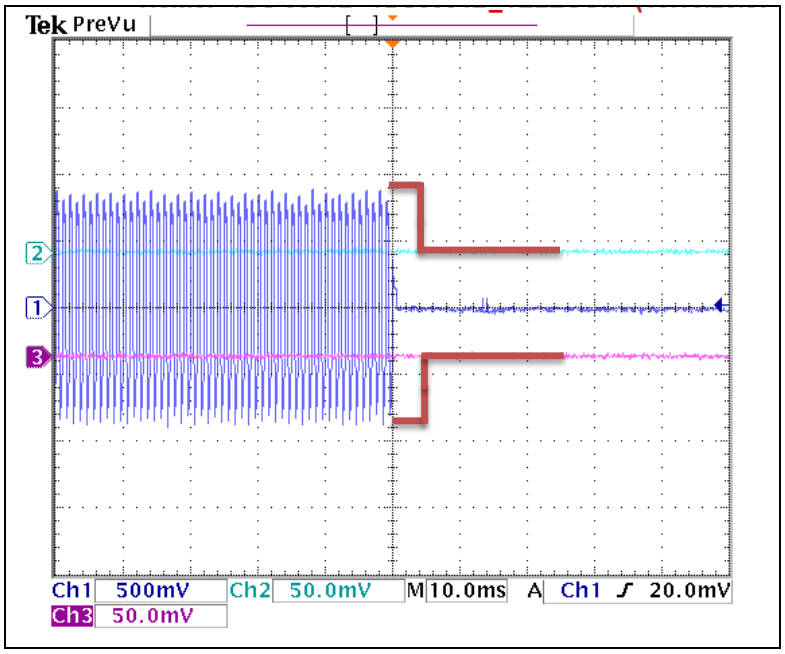

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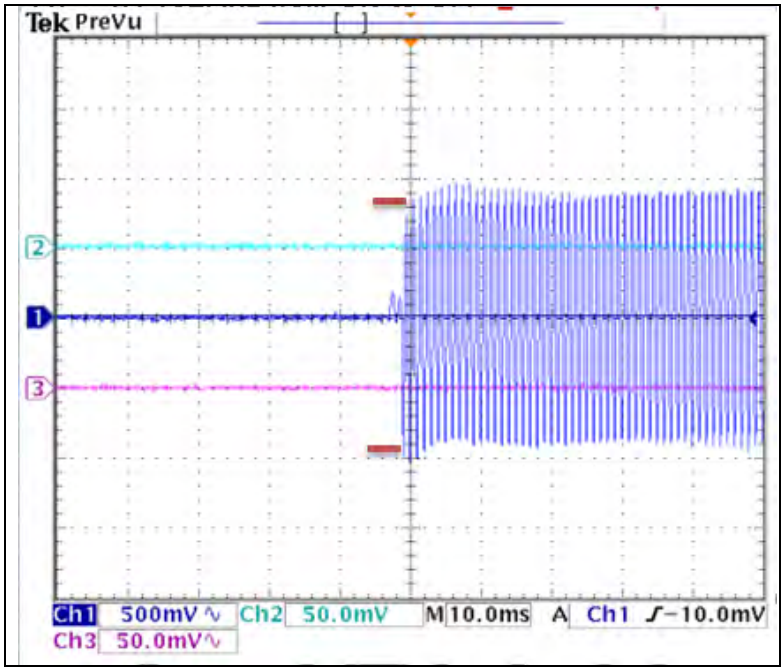
-Target Power_1W_162.00 ㎒

-On to Off



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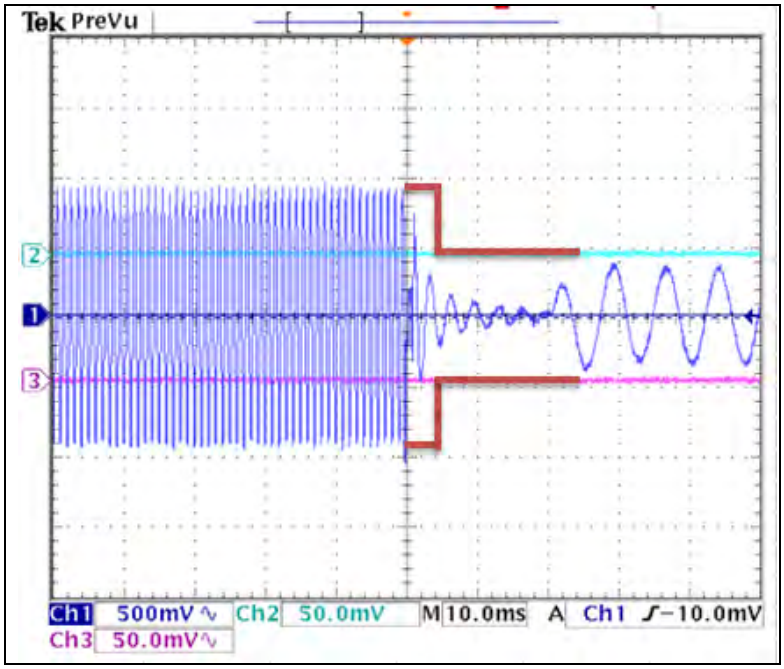

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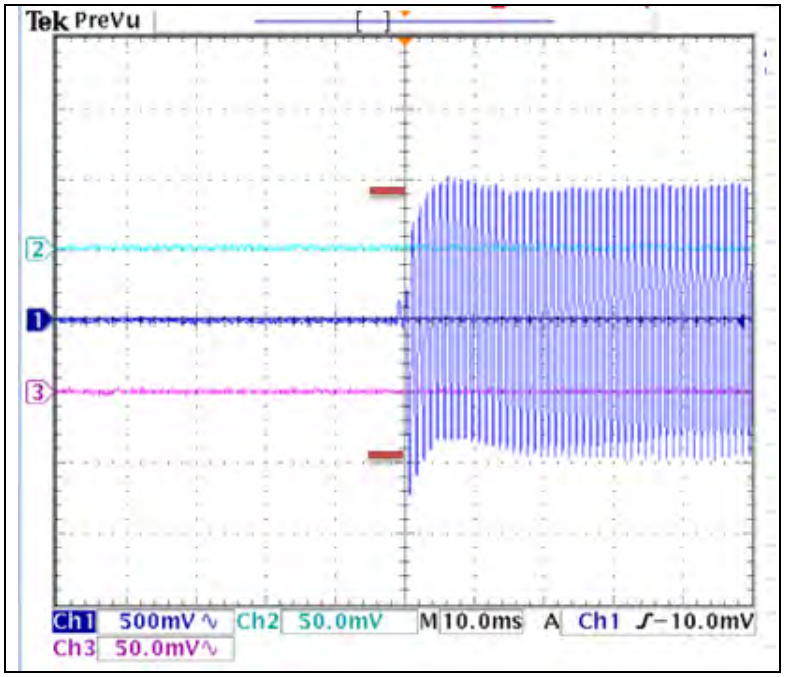
-Target Power_1W_173.40 ㎒

-On to Off



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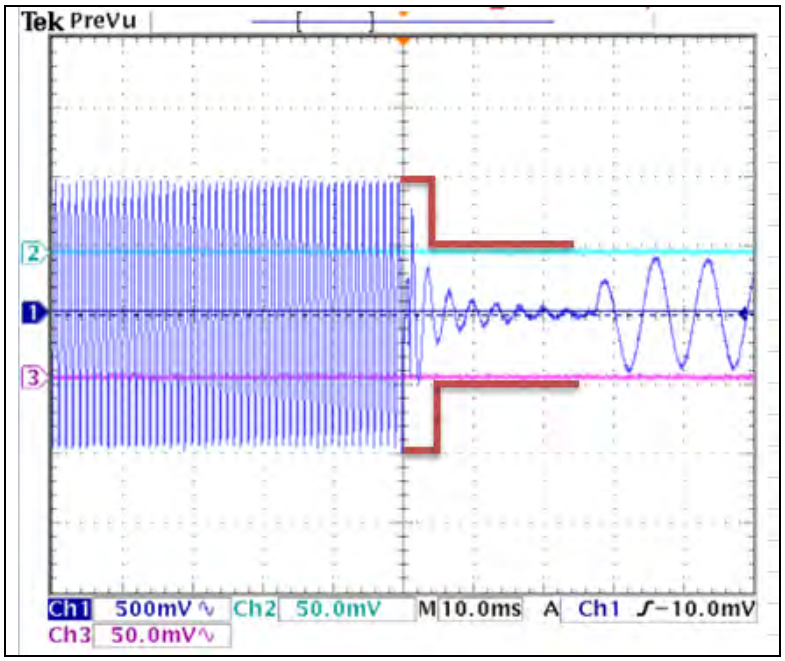

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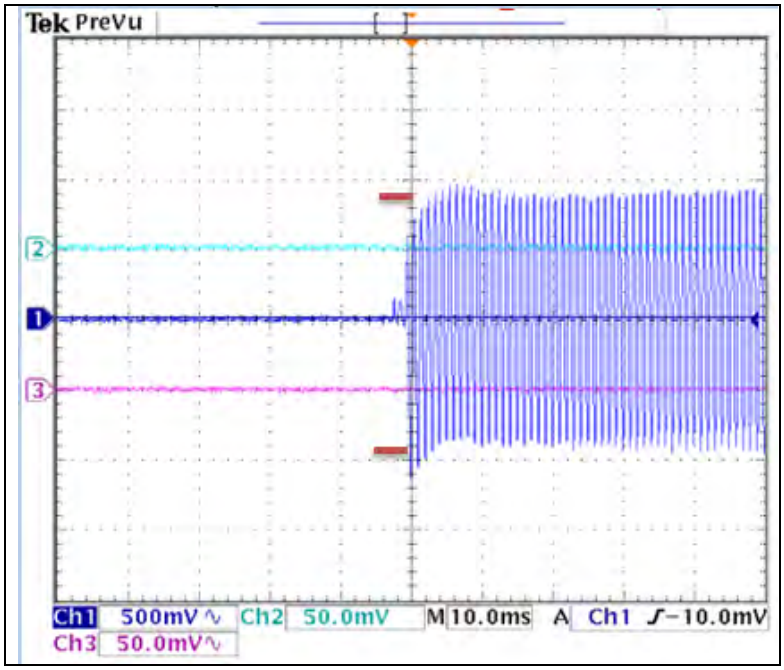
-Target Power_5W_150.05 ㎒

-On to Off



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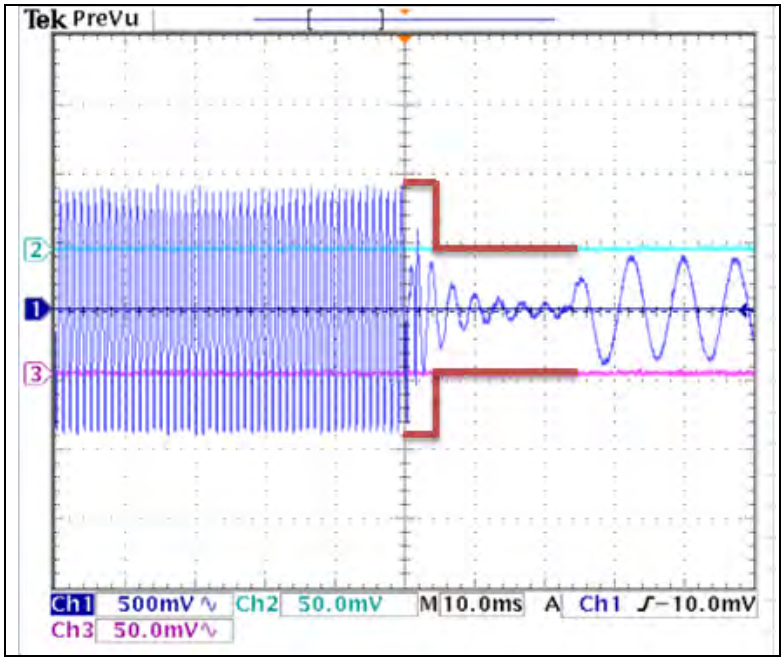
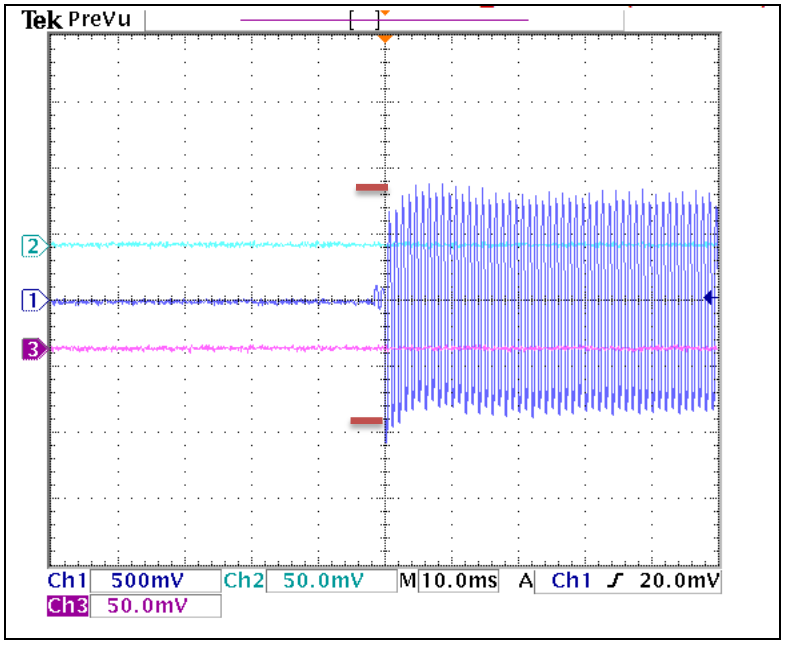


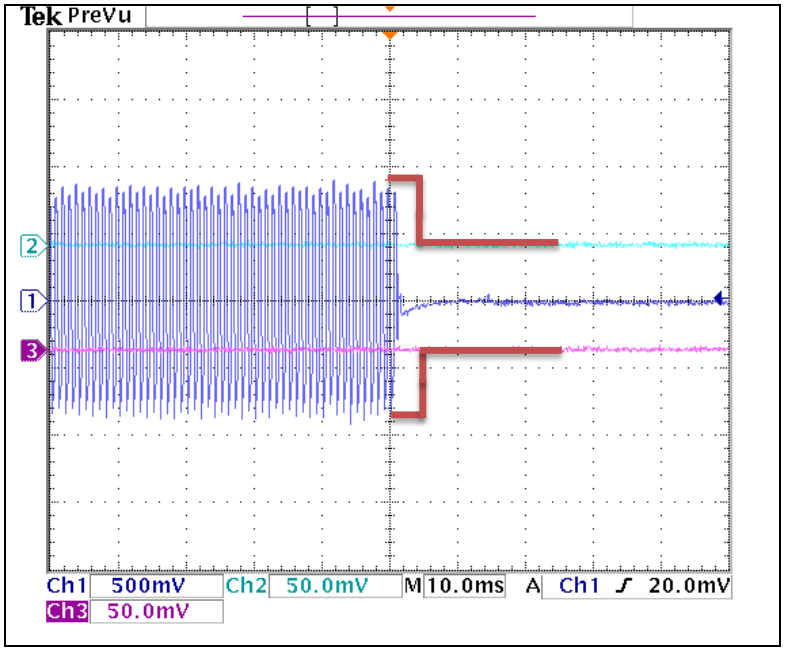
This test report shall not be reproduced, except in full, without the written approval

-Target Power_5W_155.7525 ㎒

-On to Off



-Off to On



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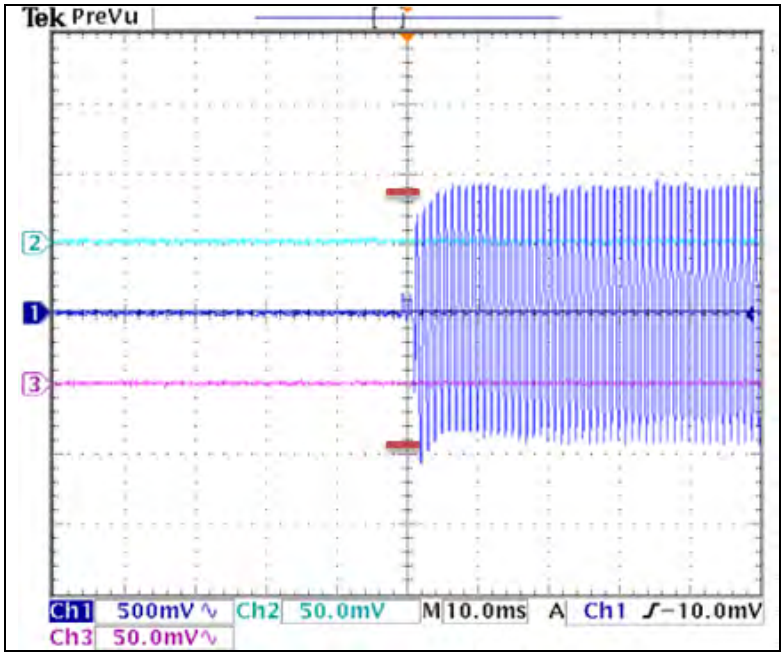
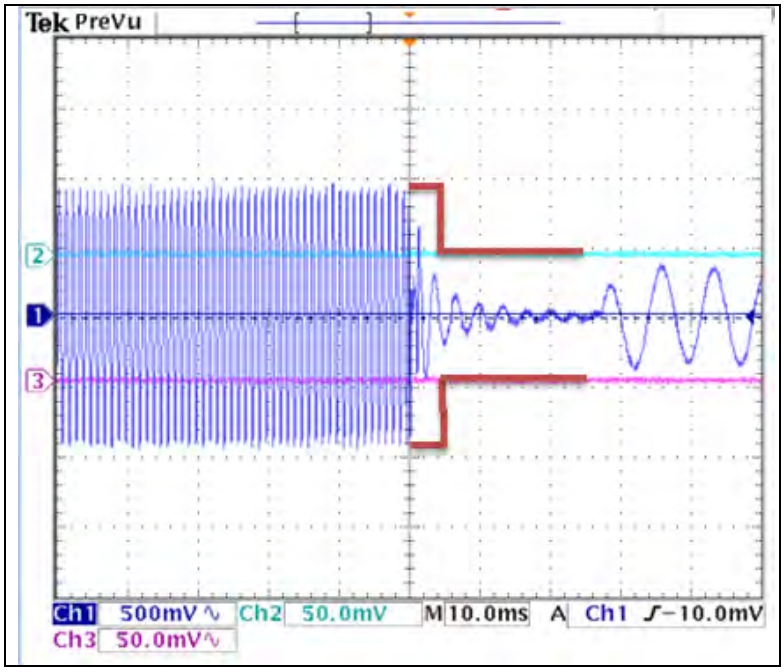
-Target Power_5W_162.00 ㎒

-On to Off



-Off to On



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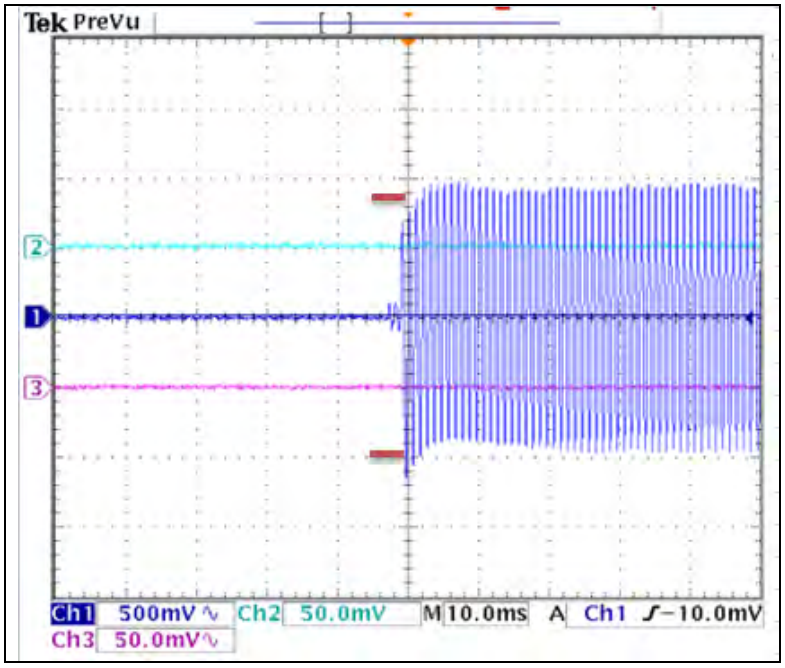
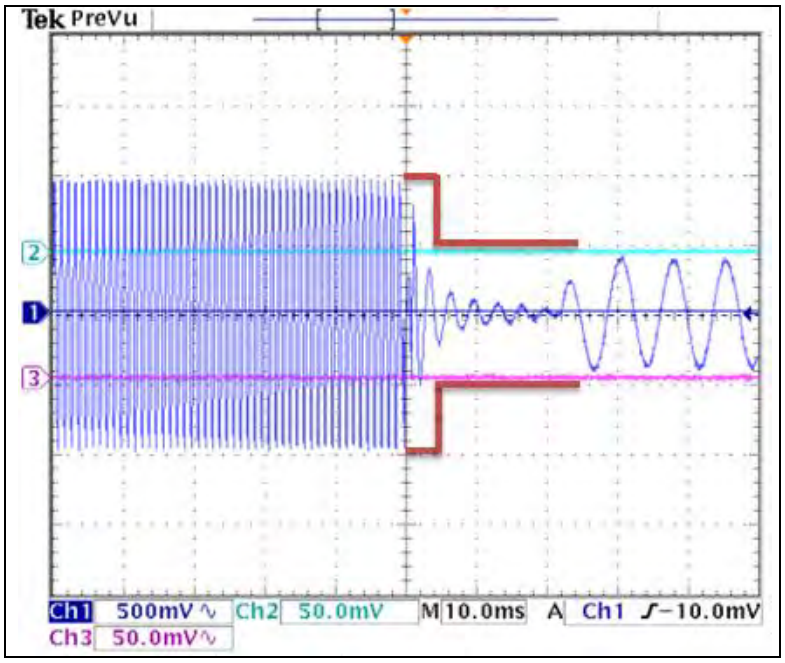
-Target Power_5W_173.40 ㎒

-On to Off



-Off to On



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5.8 Conducted Spurious Emission

5.8.1 Regulation

According to §90.210, For 12.5 ㎑ channel : Spurious attenuated in ㏈= 50+ 10log(Power output in watts) Alternatively, an equivalent absolute level of -20 ㏈㎥ is taken.

5.7.2 Measurement Procedure

1. Conducted spurious emissions are emissions at the antenna terminal on frequencies outside the operating band. The test is performed according the principle below using a computer controlled test set-up.
2. The transmitter is modulated with 2500 ㎐ sine wave at an input level 16 ㏈ greater than that necessary to produce 50% of rated system deviation.

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5.8.3 Test Result

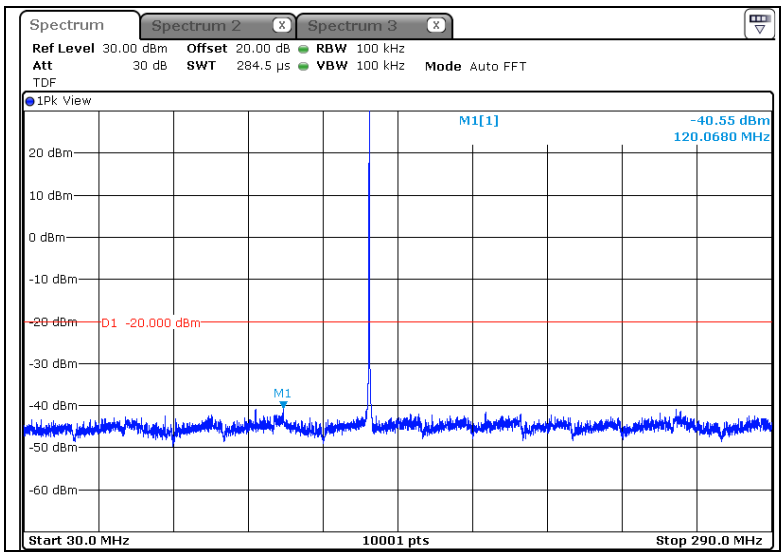
- Complied

Figure 4. plot of Conducted Spurious Emission

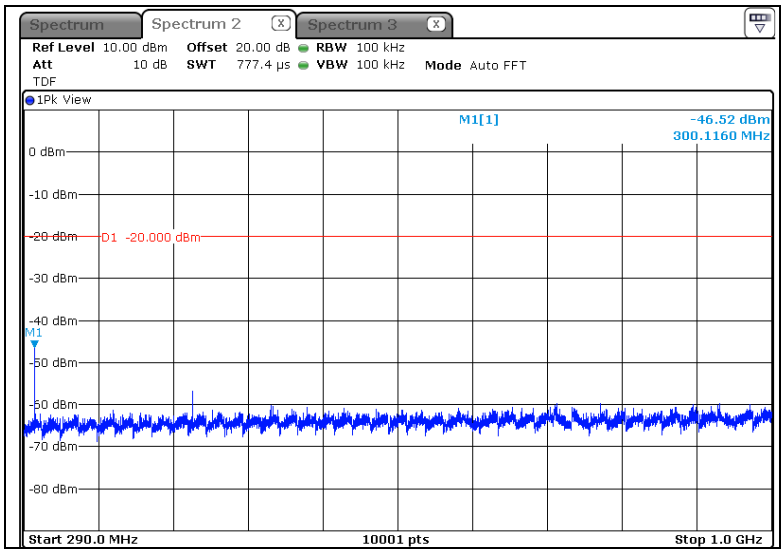
* 12.5BW

-Target Power_1W_150.05 ㎒

-30 ㎒ ~ 290 ㎒

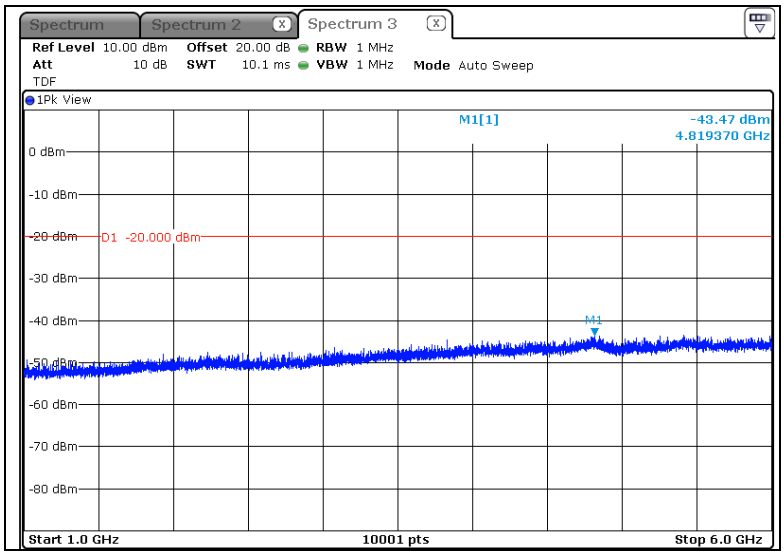


-290 ㎒ ~ 1 ㎓



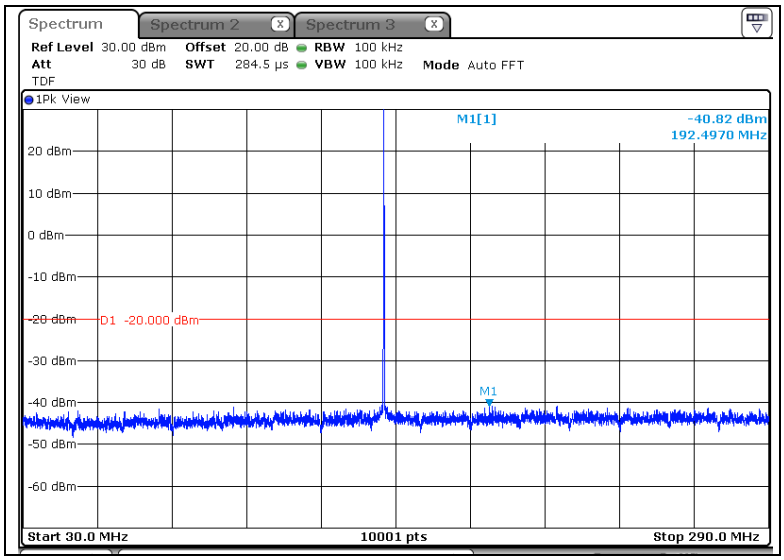
This test report shall not be reproduced, except in full, without the written approval

-1 GHz ~ 6 GHz



-Target Power_1W_155.7525 MHz

-30 MHz ~ 290 MHz



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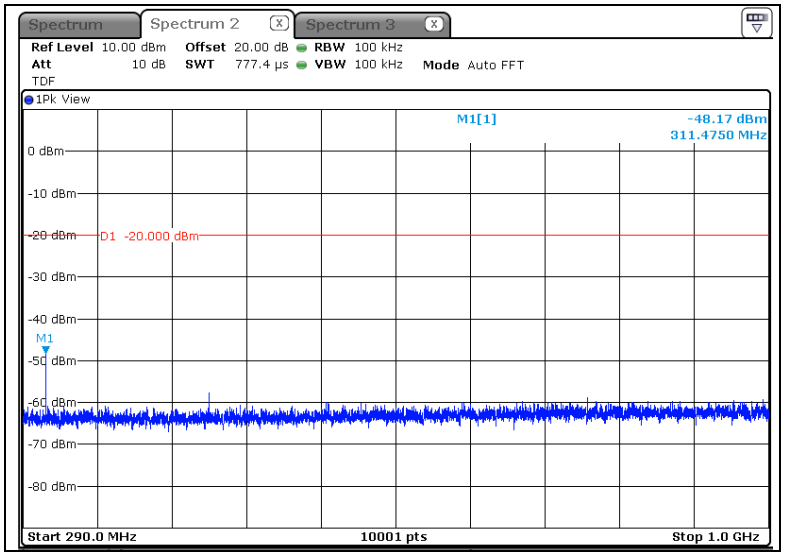
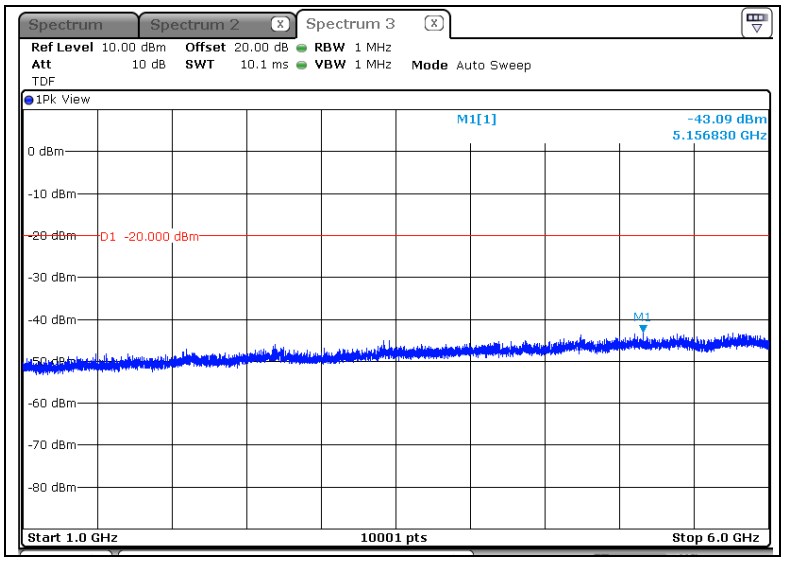
-290 MHz ~ 1 GHz



-1 GHz ~ 6 GHz



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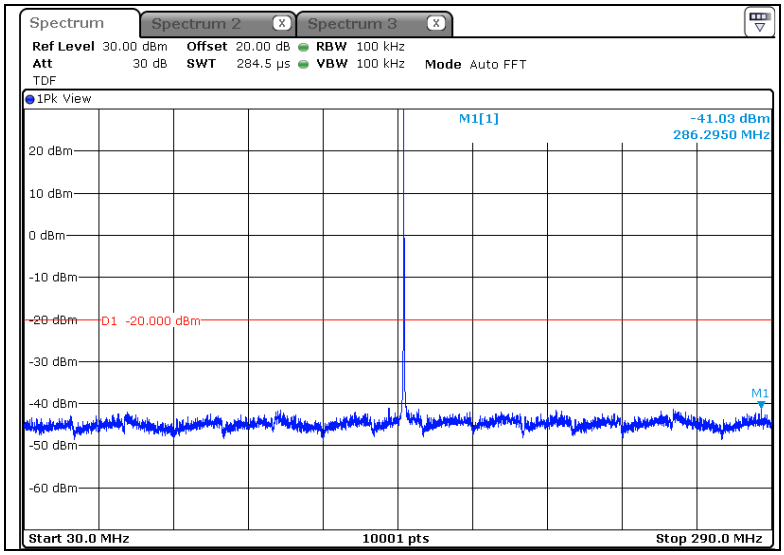
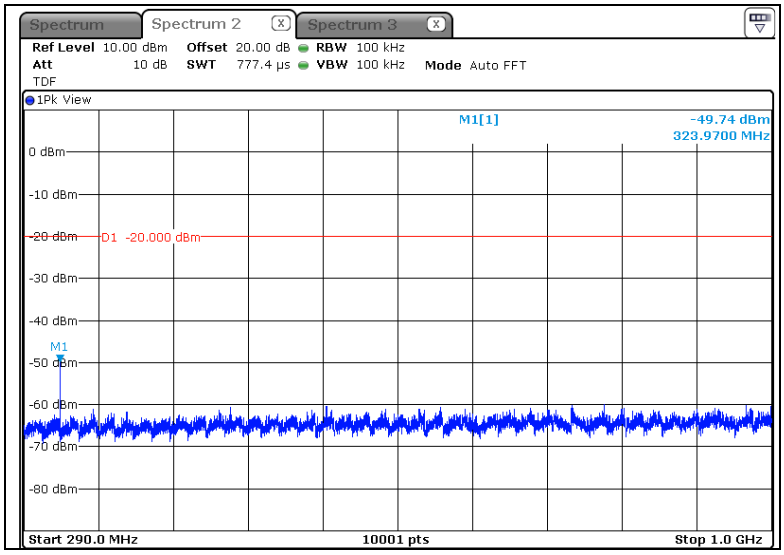
-Target Power_1W_162.00 ㎒

-30 ㎒ ~ 290 ㎒



-290 ㎒ ~ 1 ㎓



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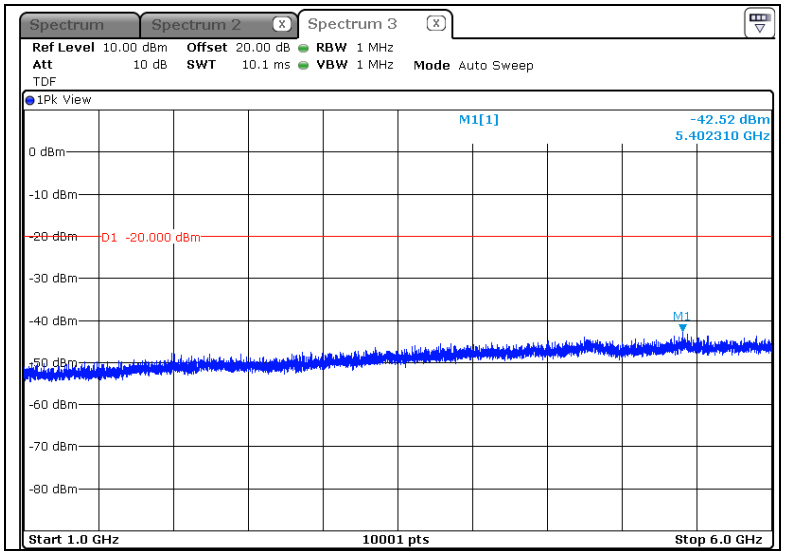
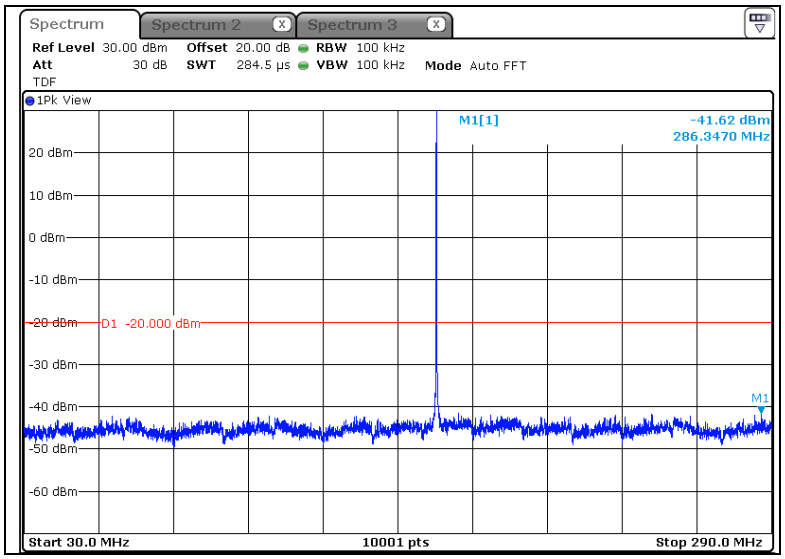
-1 GHz ~ 6 GHz



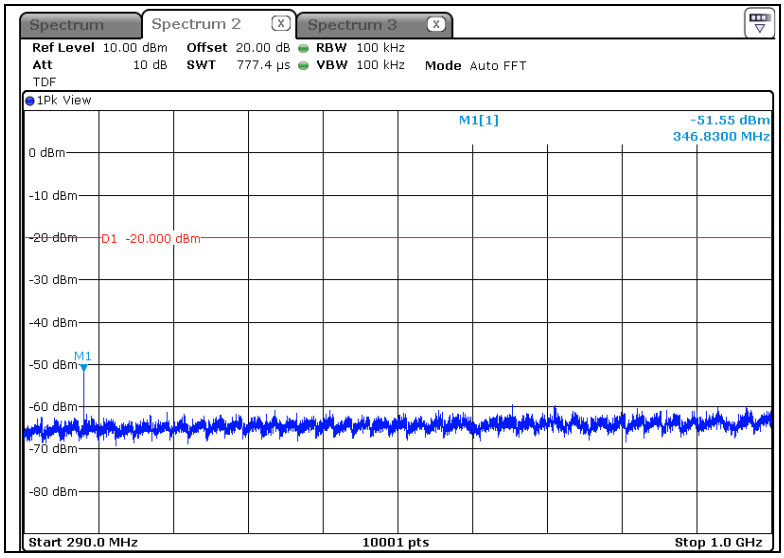
-Target Power_1W_173.40 MHz

-30 MHz ~ 290 MHz

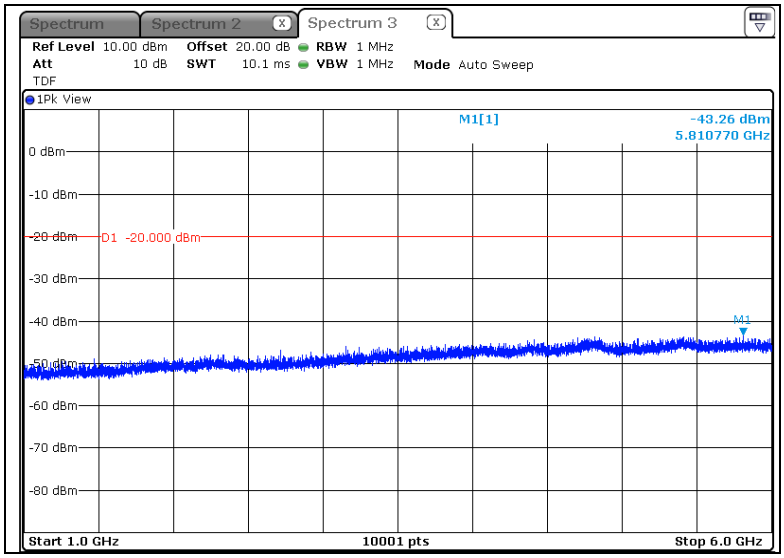


This test report shall not be reproduced, except in full, without the written approval

-290 MHz ~ 1 GHz



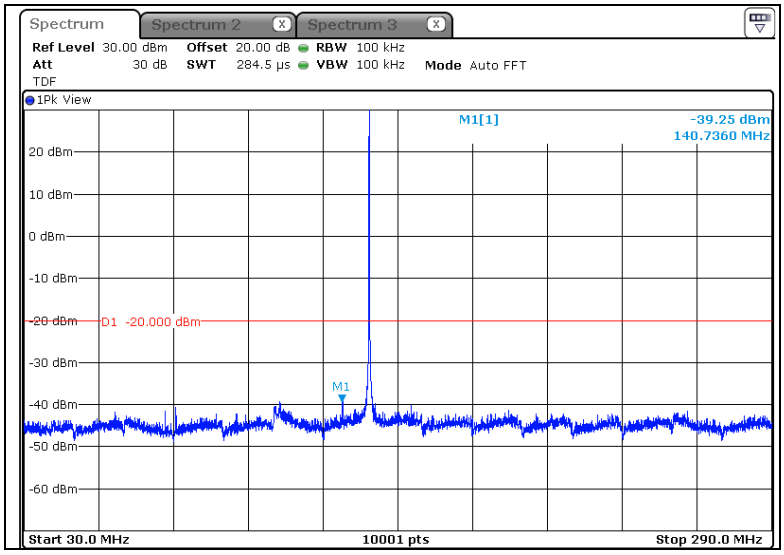
-1 GHz ~ 6 GHz



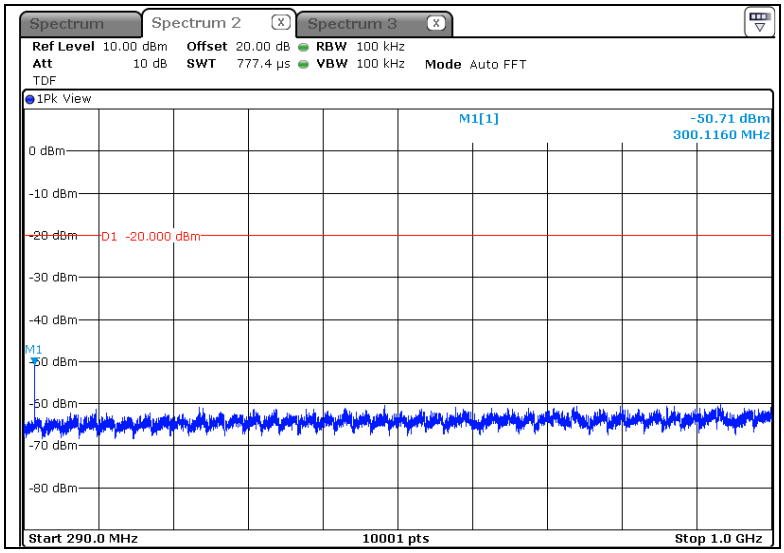
This test report shall not be reproduced, except in full, without the written approval

-Target Power_5W_150.05 MHz

-30 MHz ~ 290 MHz



-290 MHz ~ 1 GHz



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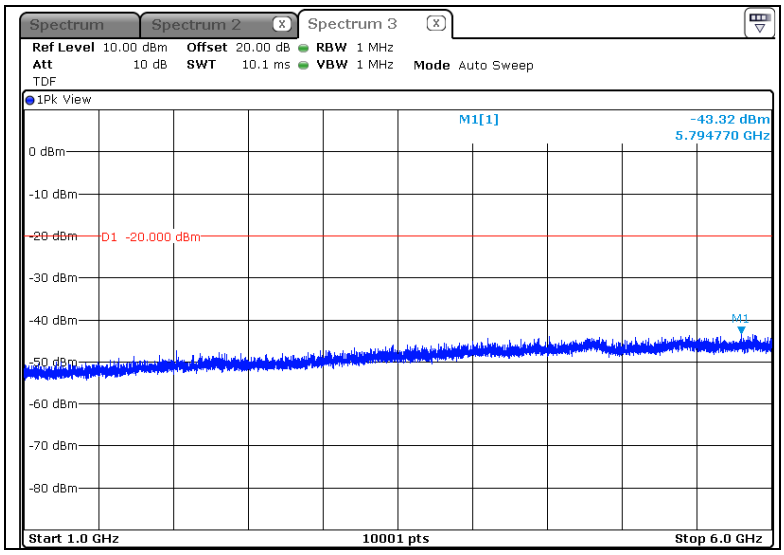
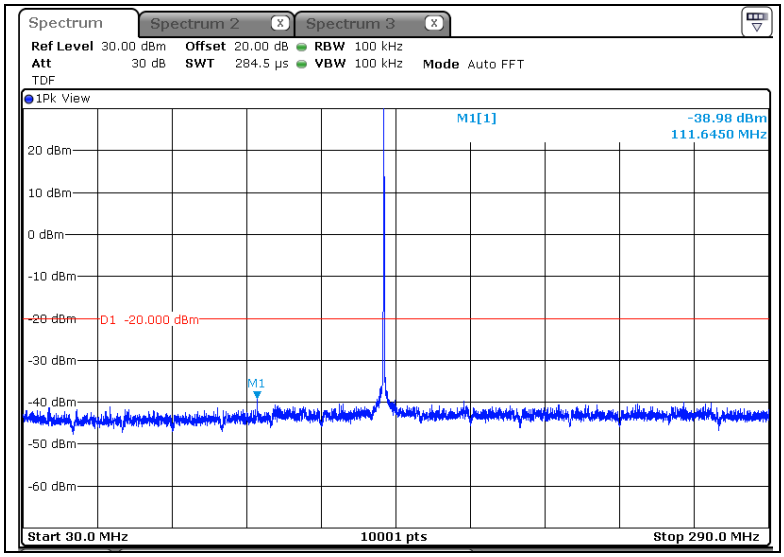
-1 GHz ~ 6 GHz



-Target Power_5W_155.7525 MHz

-30 MHz ~ 290 MHz



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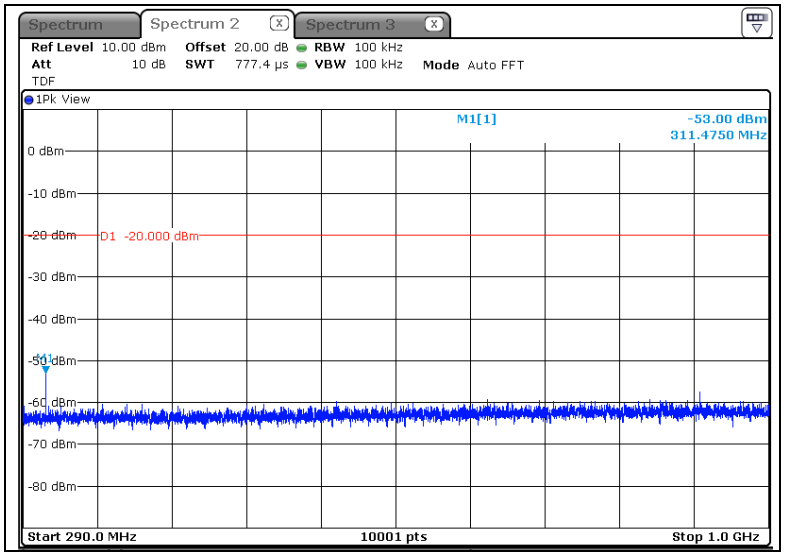
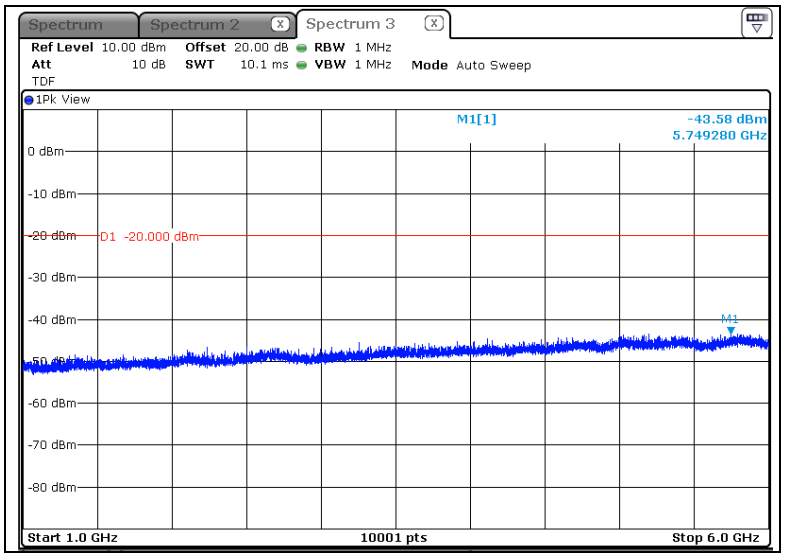
-290 MHz ~ 1 GHz



-1 GHz ~ 6 GHz



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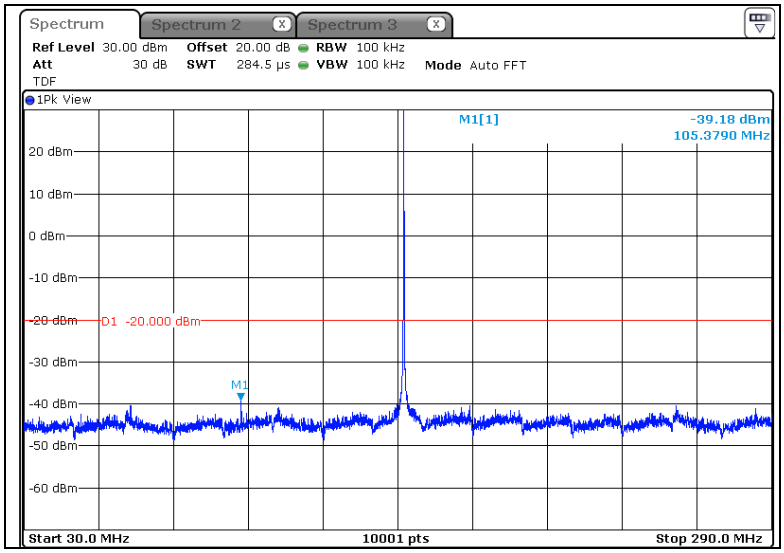
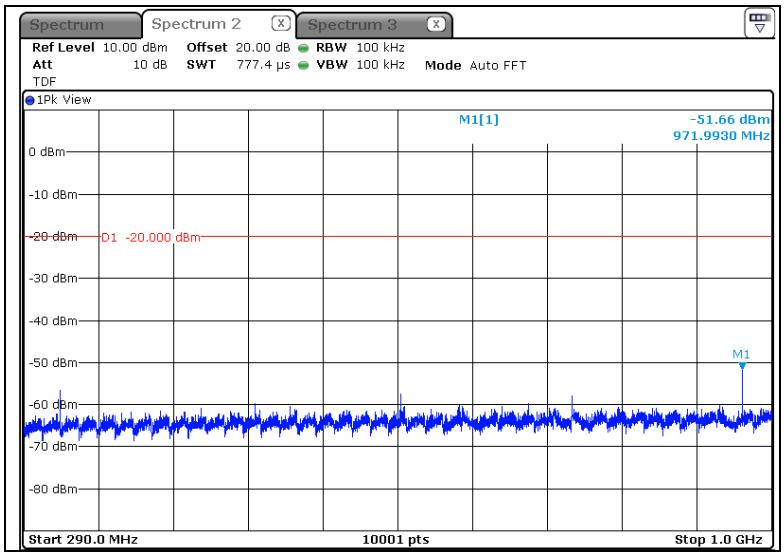
-Target Power_5W_162.00 ㎒

-30 ㎒ ~ 290 ㎒



-290 ㎒ ~ 1 ㎓



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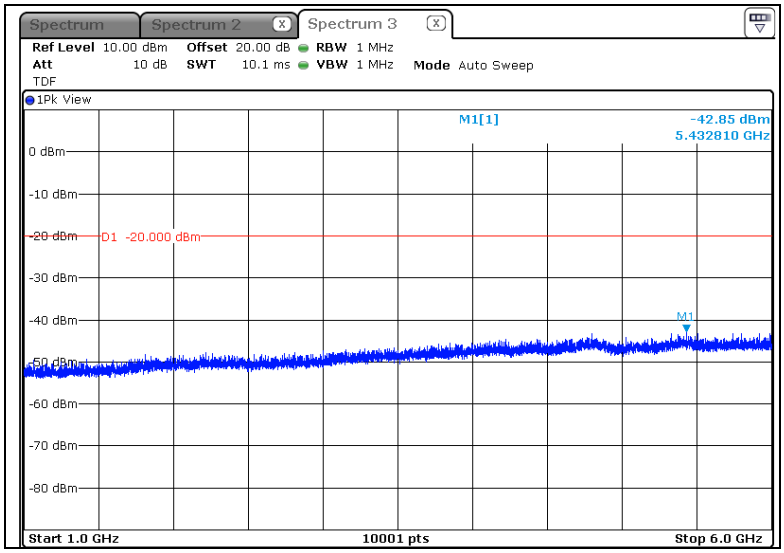
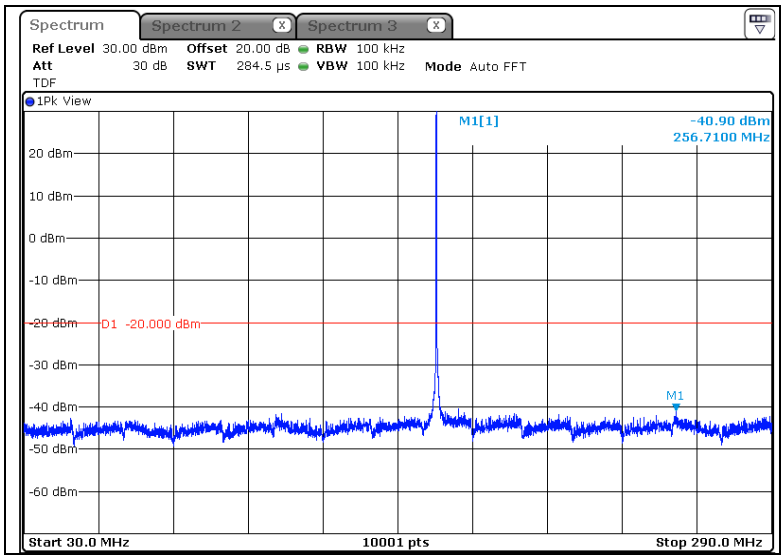
-1 GHz ~ 6 GHz



-Target Power_5W_173.40 MHz

-30 MHz ~ 290 MHz



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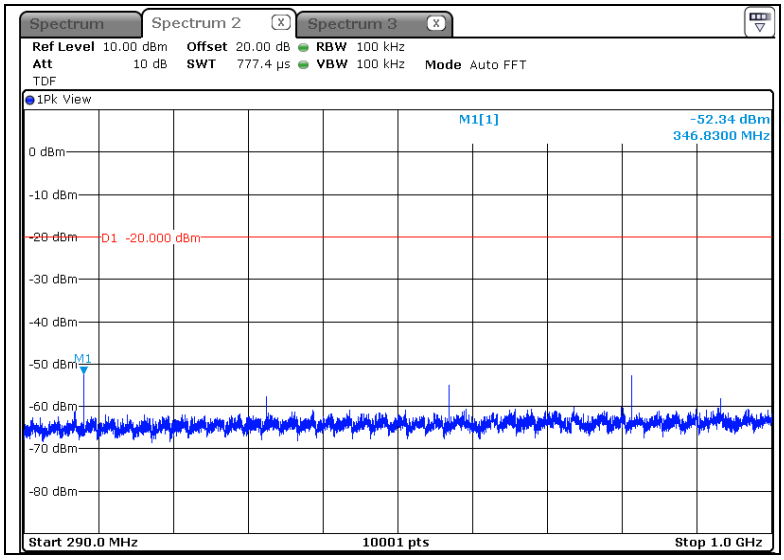
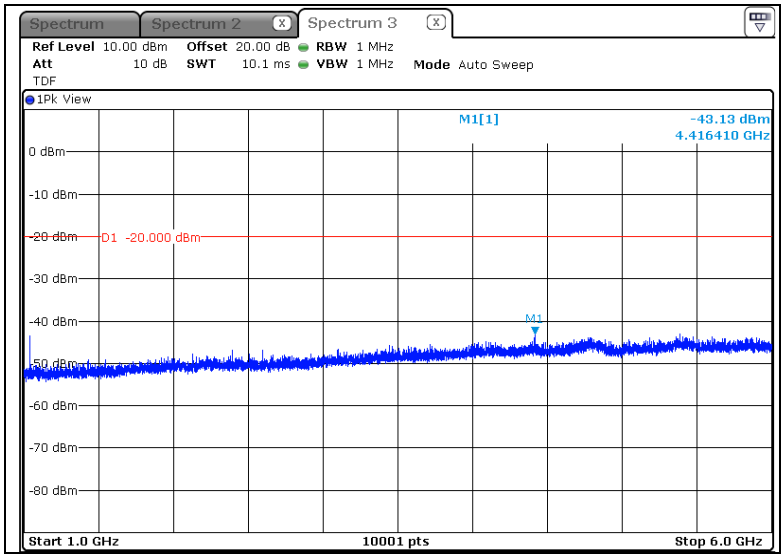
-290 MHz ~ 1 GHz



-1 GHz ~ 6 GHz



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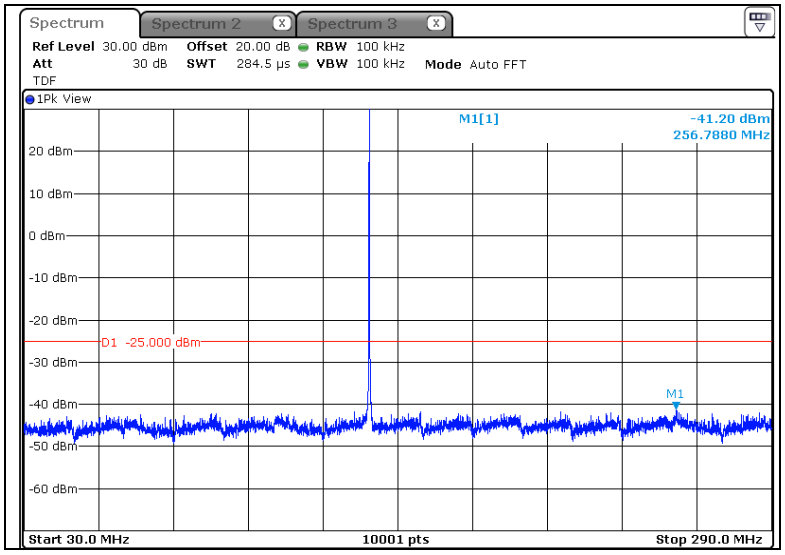
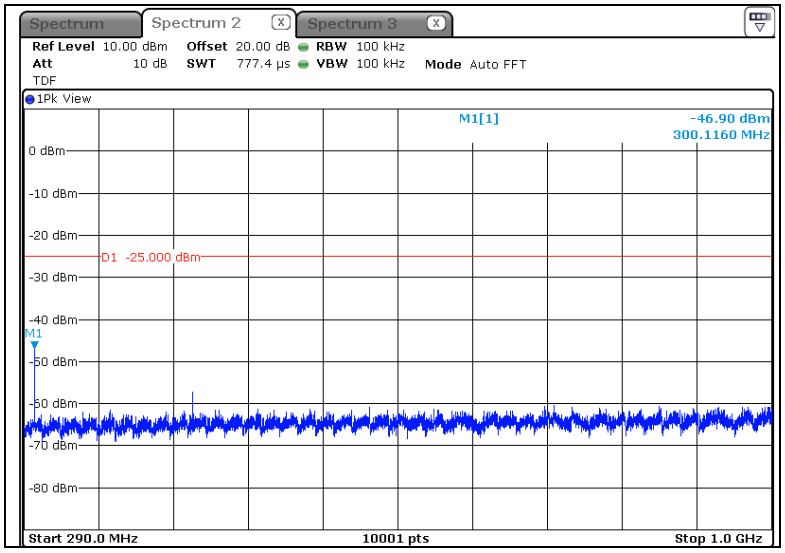
* 6.25BW

-Target Power_1W_150.05 ㎒

-30 ㎒ ~ 290 ㎒



-290 ㎒ ~ 1 ㎓



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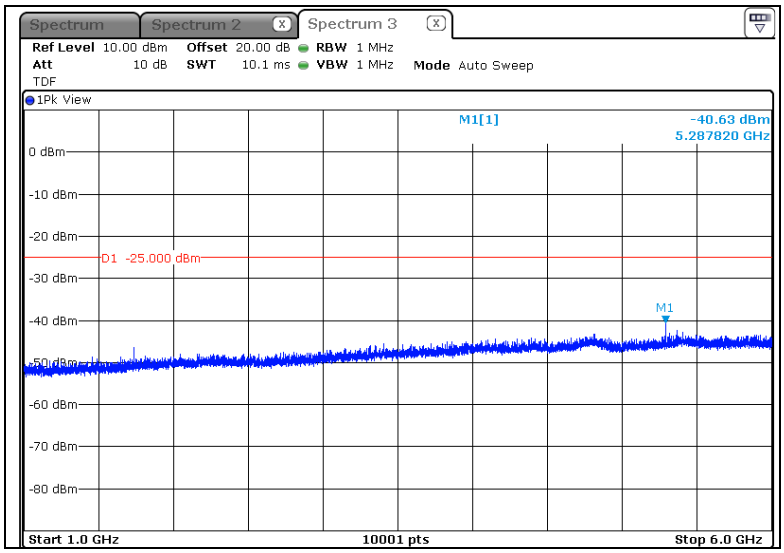
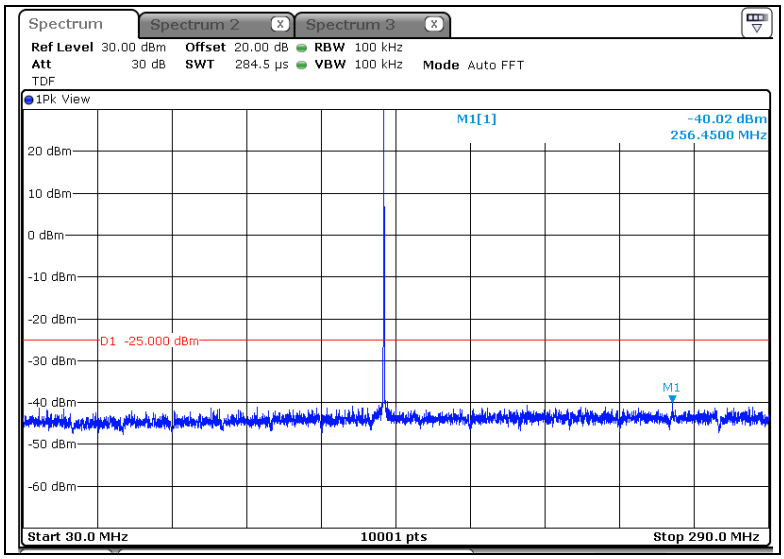
-1 GHz ~ 6 GHz



-Target Power_1W_155.7525 MHz

-30 MHz ~ 290 MHz



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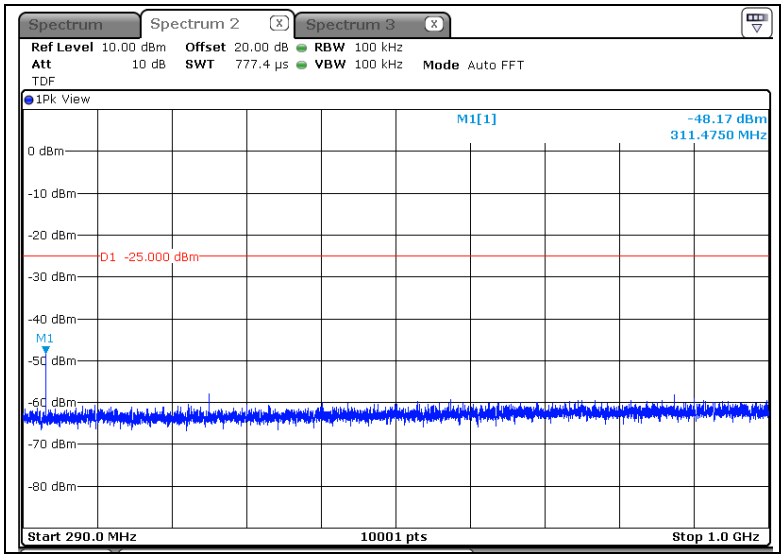
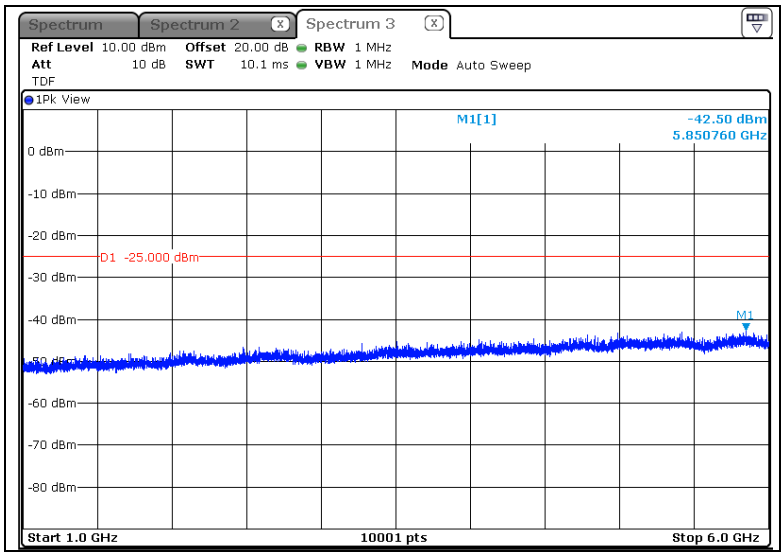
-290 MHz ~ 1 GHz



-1 GHz ~ 6 GHz



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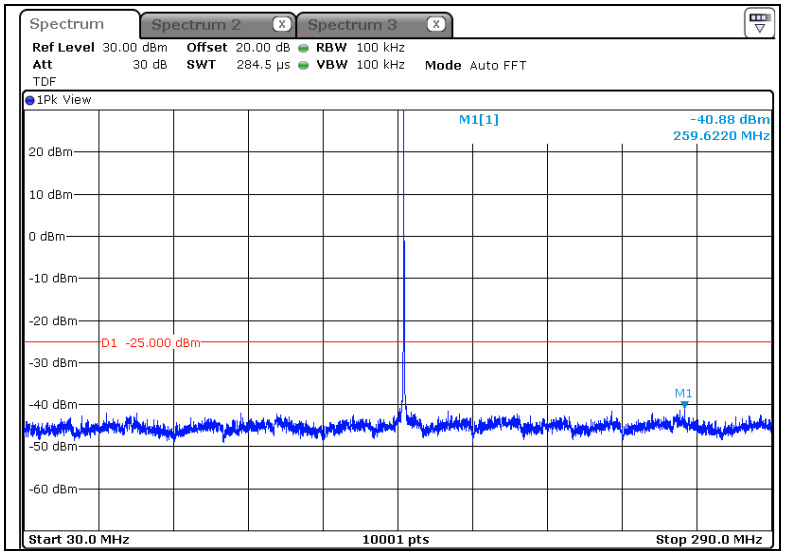
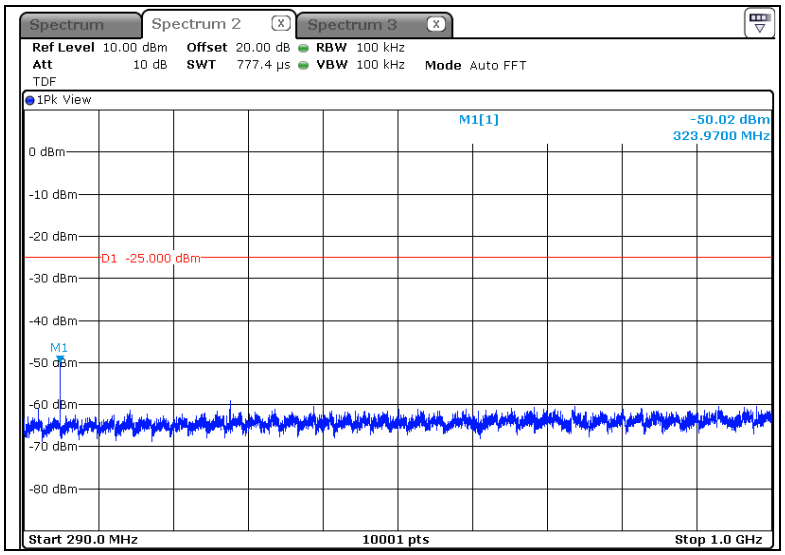
-Target Power_1W_162.00 ㎒

-30 ㎒ ~ 290 ㎒



-290 ㎒ ~ 1 ㎓



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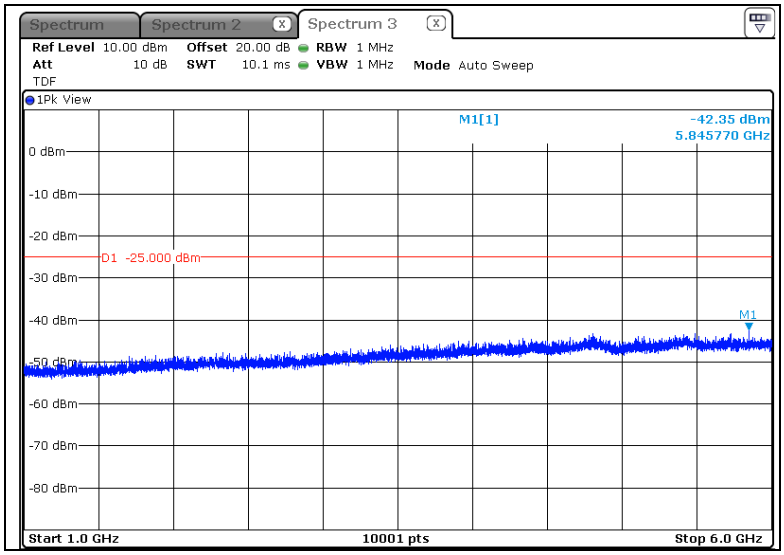
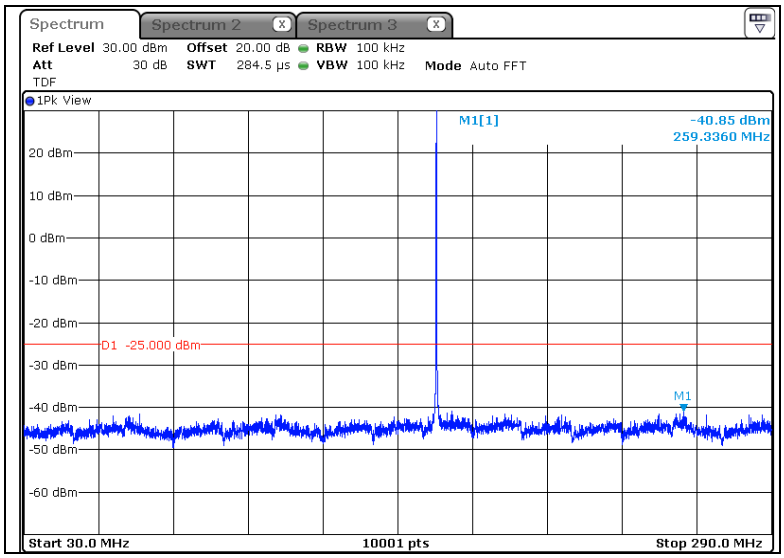
-1 GHz ~ 6 GHz



-Target Power_1W_173.40 MHz

-30 MHz ~ 290 MHz



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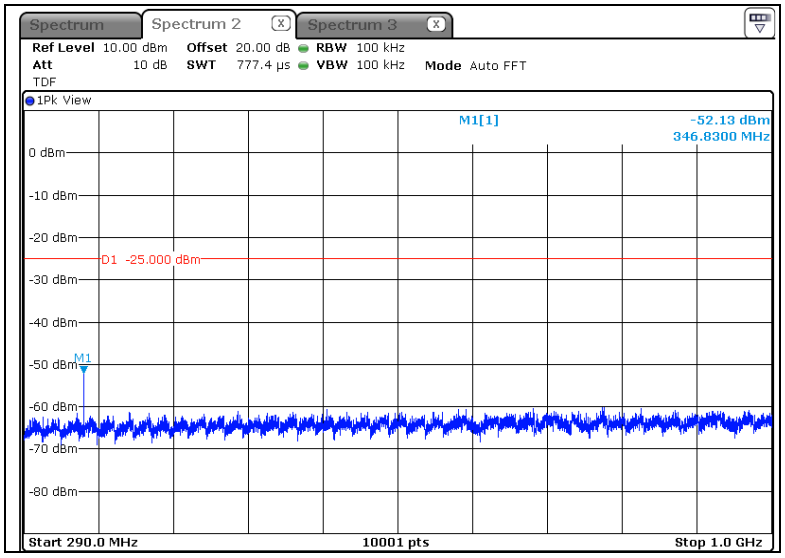
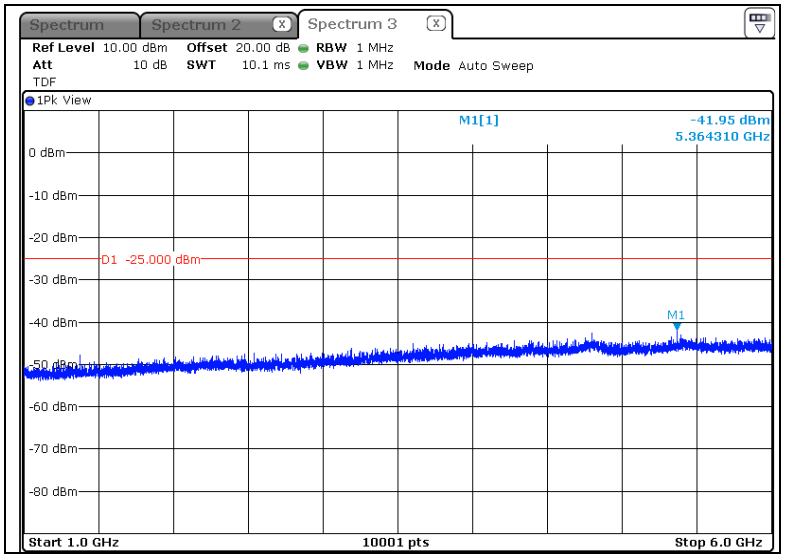
-290 MHz ~ 1 GHz



-1 GHz ~ 6 GHz



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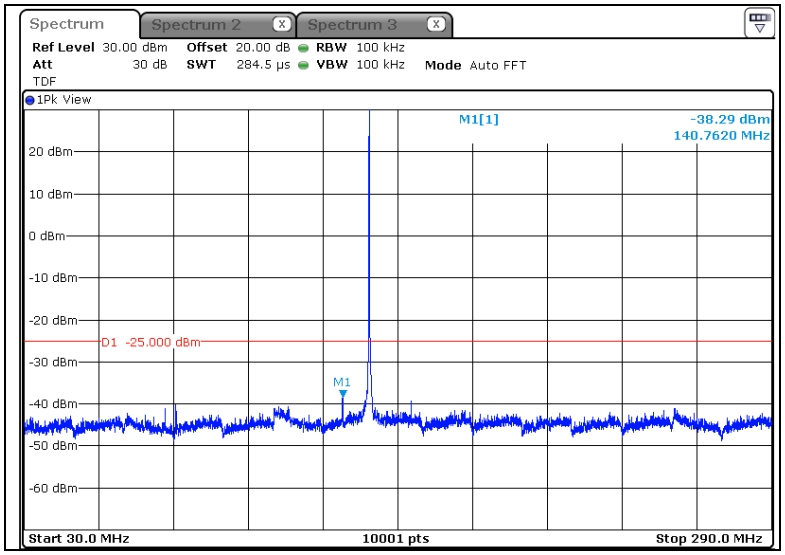
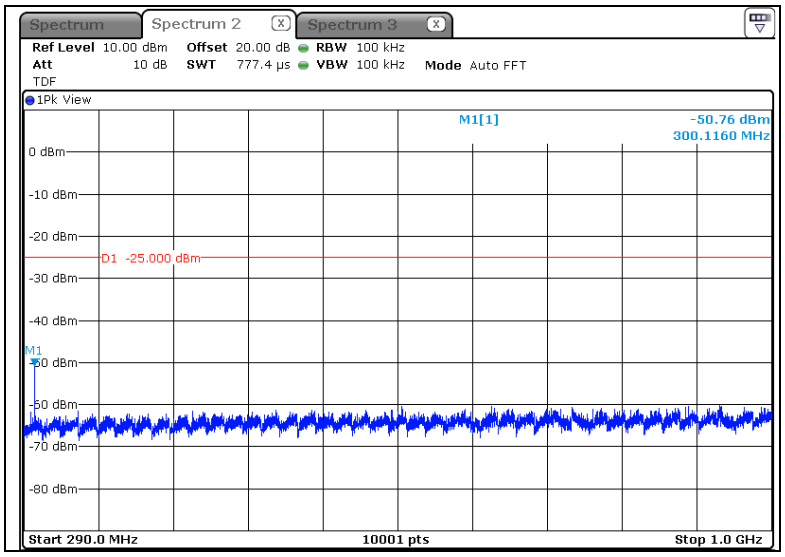
-Target Power_5W_150.05 MHz

-30 MHz ~ 290 MHz



-290 MHz ~ 1 GHz



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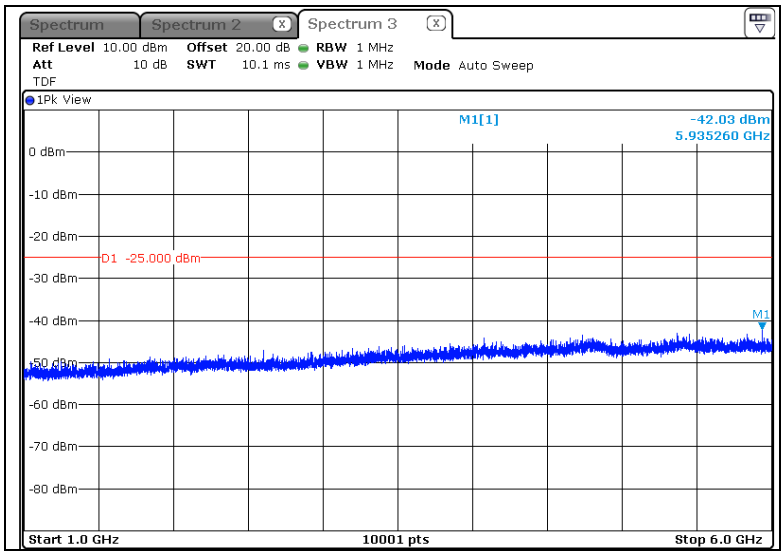
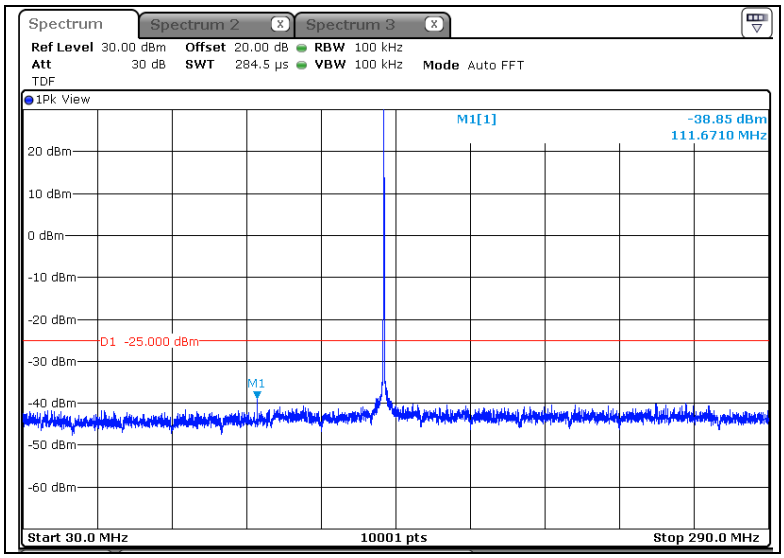
-1 GHz ~ 6 GHz



-Target Power_5W_155.7525 MHz

-30 MHz ~ 290 MHz



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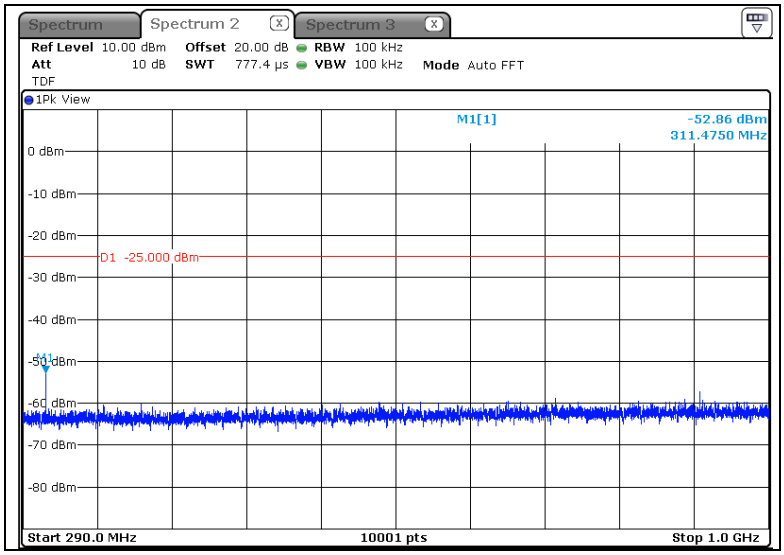
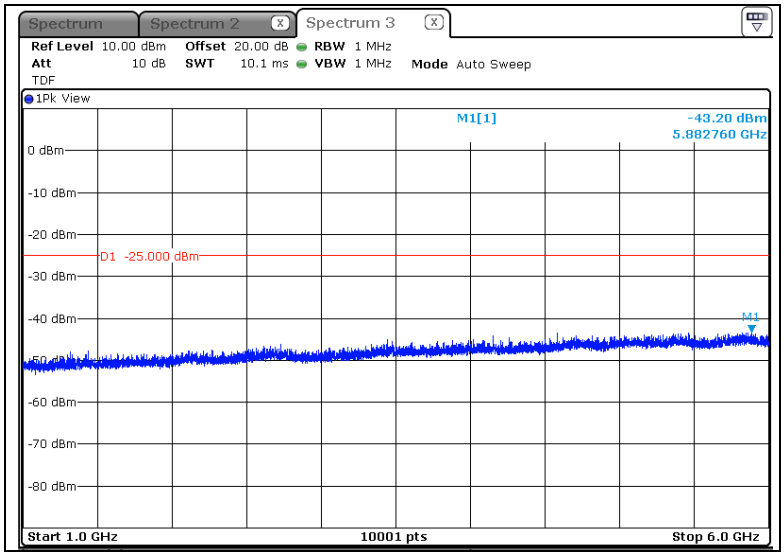
-290 MHz ~ 1 GHz



-1 GHz ~ 6 GHz



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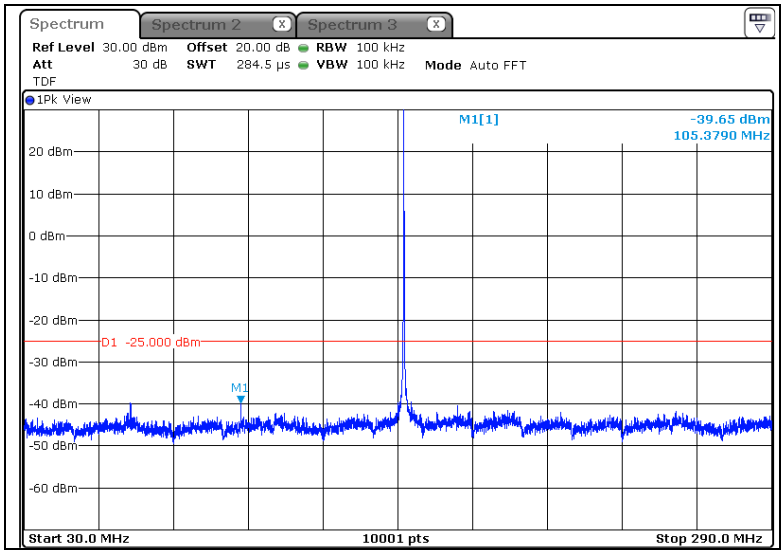
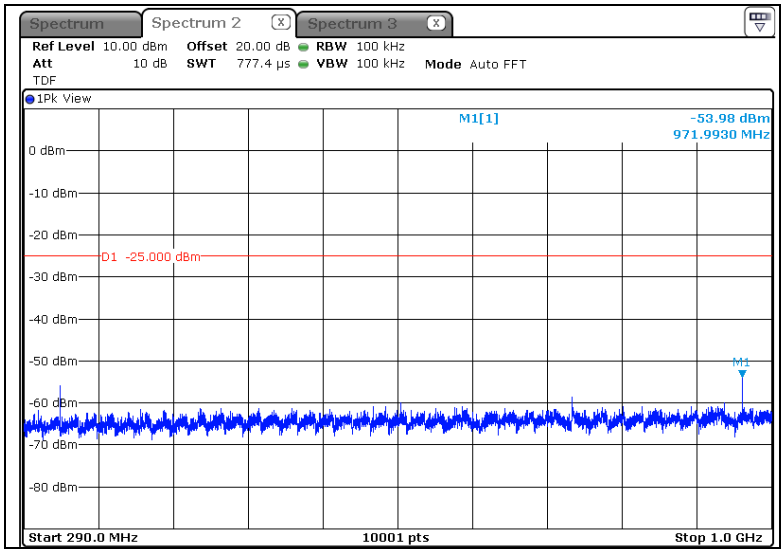
-Target Power_5W_162.00 ㎒

-30 ㎒ ~ 290 ㎒

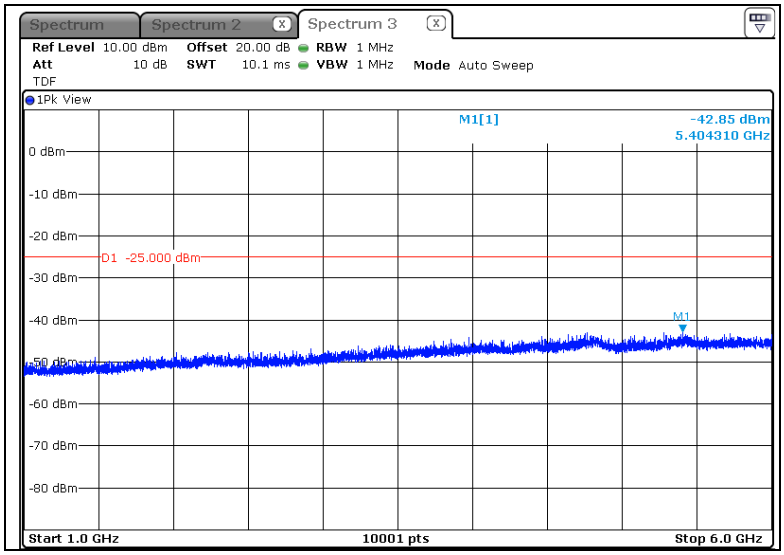


-290 ㎒ ~ 1 ㎓



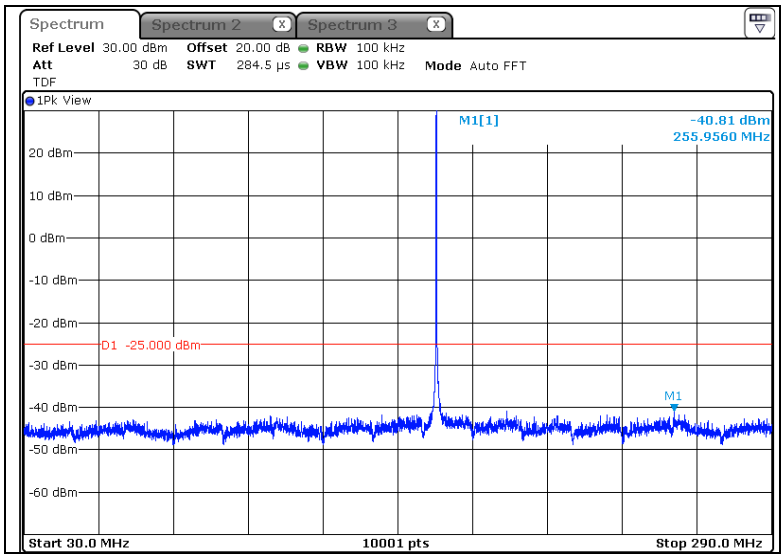
This test report shall not be reproduced, except in full, without the written approval

-1 GHz ~ 6 GHz



-Target Power_5W_173.40 MHz

-30 MHz ~ 290 MHz



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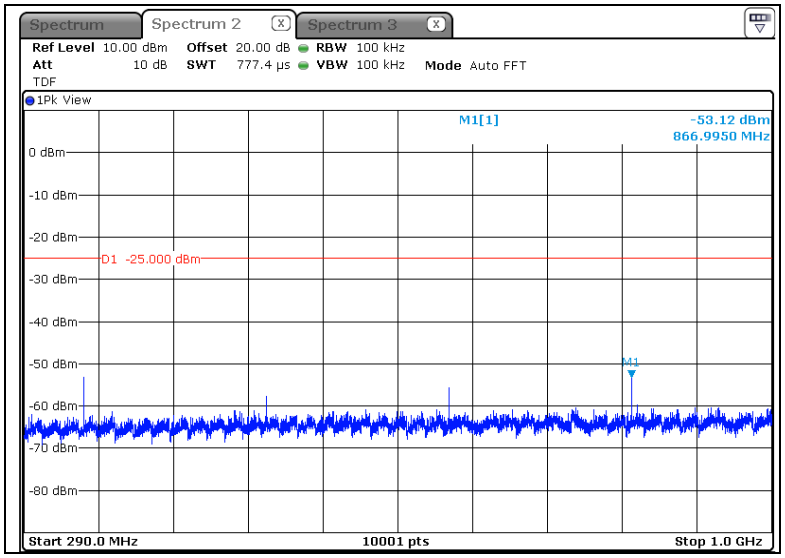
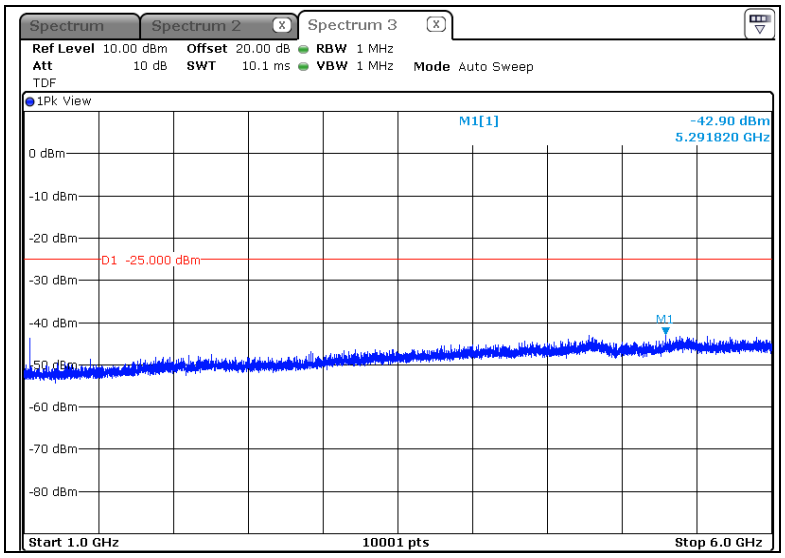
-290 MHz ~ 1 GHz



-1 GHz ~ 6 GHz



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5.9 Radiated Spurious Emission

5.9.1 Regulation

According to §90.210, For 12.5 ㎑ channel : Spurious attenuated in ㏈= 50+ 10log(Power output in watts) Alternatively, an equivalent absolute level of -20 ㏈ⓜ is taken.

5.9.2 Measurement Procedure

1. Radiated spurious emissions are emissions from the EUT when transmitting in non-radiating load on frequencies outside the operating band.
2. In order to suppress inter-modulation products in the spectrum analyzer a notch filter is used, if applicable.
3. The preliminary and final rdiated measurements were performed to determine the frequency producing the maximum emissions in at a 3 m anechoic chamber. The EUT was tested at a distance 3 meters.
4. The EUT was placed on the top of the 1.5-meter height. To find the maximum emission levels, the EUT was tested x,y and z – 3 axis each and the turntable was rotated 360 ˚.
5. The testing procedure is repeated for both horizontal and vertical polarization of the receiving antenna.
6. It mentioned only worst case data at this report.

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5.9.3 Test Result

- Complied

* 12.5BW

-Target Power_1W_150.05 ㎒

Frequency [㎒]	Pol [H/V]	Reading [dB(㎽)]	Space Loss [dB]	Level [dB(㎽)]	Limit [dB(㎽)]	Margin [dB]
300.14	V	-46.20	1.20	-45.00	-20.00	25.00
450.19	H	-66.20	4.60	-61.60	-20.00	41.60
750.27	V	-55.70	9.10	-46.60	-20.00	26.60
900.32	V	-64.50	9.50	-55.00	-20.00	35.00
1 050.06	H	-61.90	4.70	-57.20	-20.00	37.20
1 200.22	H	-61.90	6.10	-55.80	-20.00	35.80
1 350.39	H	-65.70	9.30	-56.40	-20.00	36.40
2 850.81	H	-66.90	13.40	-53.50	-20.00	33.50

-Target Power_1W_155.7525 ㎒

Frequency [㎒]	Pol [H/V]	Reading [dB(㎽)]	Space Loss [dB]	Level [dB(㎽)]	Limit [dB(㎽)]	Margin [dB]
311.50	V	-52.10	1.80	-50.30	-25.00	25.30
467.26	V	-68.10	3.80	-64.30	-25.00	39.30
623.03	H	-53.10	6.30	-46.80	-25.00	21.80
778.79	V	-51.60	8.00	-43.60	-25.00	18.60
934.56	V	-57.80	9.60	-48.20	-25.00	23.20
1 090.34	V	-74.80	28.20	-46.60	-25.00	21.60
1 246.00	V	-80.30	31.10	-49.20	-25.00	24.20
1 401.66	V	-76.90	31.10	-45.80	-25.00	20.80

-Target Power_1W_162.00 ㎒

Frequency [㎒]	Pol [H/V]	Reading [dB(㎽)]	Space Loss [dB]	Level [dB(㎽)]	Limit [dB(㎽)]	Margin [dB]
323.98	H	-60.00	2.50	-57.50	-20.00	37.50
485.99	H	-68.00	4.50	-63.50	-20.00	43.50
647.99	H	-63.00	6.40	-56.60	-20.00	36.60
810.00	V	-61.00	8.30	-52.70	-20.00	32.70
972.00	V	-65.70	10.50	-55.20	-20.00	35.20
1 134.29	H	-60.50	4.80	-55.70	-20.00	35.70
1 296.06	V	-65.10	8.70	-56.40	-20.00	36.40
2 429.62	H	-69.30	13.00	-56.30	-20.00	36.30
3 563.79	H	-70.10	16.50	-53.60	-20.00	33.60

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-Target Power_1W_173.40 ㎒

Frequency [㎒]	Pol [H/V]	Reading [dB(㎽)]	Space Loss [dB]	Level [dB(㎽)]	Limit [dB(㎽)]	Margin [dB]
346.78	V	-61.50	0.80	-60.70	-20.00	40.70
520.22	H	-66.60	4.30	-62.30	-20.00	42.30
693.58	V	-55.10	7.40	-47.70	-20.00	27.70
867.03	V	-61.70	10.00	-51.70	-20.00	31.70
1 040.29	V	-60.20	4.80	-55.40	-20.00	35.40
1 213.65	H	-62.00	6.40	-55.60	-20.00	35.60
2 080.45	H	-67.50	12.90	-54.60	-20.00	34.60
2 947.87	V	-67.70	13.60	-54.10	-20.00	34.10
3 294.59	H	-68.60	16.30	-52.30	-20.00	32.30

-Target Power_5W_150.05 ㎒

Frequency [㎒]	Pol [H/V]	Reading [dB(㎽)]	Space Loss [dB]	Level [dB(㎽)]	Limit [dB(㎽)]	Margin [dB]
300.14	V	-46.60	1.20	-45.40	-20.00	25.40
450.19	H	-67.20	4.60	-62.60	-20.00	42.60
750.27	V	-53.00	9.10	-43.90	-20.00	23.90
900.32	V	-66.60	9.50	-57.10	-20.00	37.10
1 350.39	H	-63.80	9.30	-54.50	-20.00	34.50
1 500.55	V	-61.70	8.30	-53.40	-20.00	33.40
1 650.10	V	-63.90	7.20	-56.70	-20.00	36.70
2 850.81	H	-63.30	13.40	-49.90	-20.00	29.90

-Target Power_5W_155.7525 ㎒

Frequency [㎒]	Pol [H/V]	Reading [dB(㎽)]	Space Loss [dB]	Level [dB(㎽)]	Limit [dB(㎽)]	Margin [dB]
311.50	H	-49.90	0.70	-49.20	-25.00	24.20
467.26	H	-71.40	4.10	-67.30	-25.00	42.30
623.03	V	-61.30	5.80	-55.50	-25.00	30.50
778.79	V	-55.60	8.00	-47.60	-25.00	22.60
934.56	V	-65.70	9.60	-56.10	-25.00	31.10
1 090.34	V	-76.20	28.20	-48.00	-25.00	23.00
1 246.00	V	-80.80	31.10	-49.70	-25.00	24.70
1 557.93	V	-79.70	30.70	-49.00	-25.00	24.00

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-Target Power_5W_162.00 ㎒

Frequency [㎒]	Pol [H/V]	Reading [dB(㎽)]	Space Loss [dB]	Level [dB(㎽)]	Limit [dB(㎽)]	Margin [dB]
323.98	V	-58.90	1.20	-57.70	-20.00	37.70
485.99	V	-63.70	3.90	-59.80	-20.00	39.80
647.99	H	-55.20	6.40	-48.80	-20.00	28.80
810.00	V	-52.20	8.30	-43.90	-20.00	23.90
972.00	V	-58.70	10.50	-48.20	-20.00	28.20
1 133.68	V	-57.90	4.80	-53.10	-20.00	33.10
1 296.06	H	-55.60	8.70	-46.90	-20.00	26.90
1 458.43	V	-61.80	8.80	-53.00	-20.00	33.00
1 620.19	V	-65.10	7.10	-58.00	-20.00	38.00
2 916.13	H	-64.90	13.30	-51.60	-20.00	31.60
3 887.93	H	-68.70	18.40	-50.30	-20.00	30.30

-Target Power_5W_173.40 ㎒

Frequency [㎒]	Pol [H/V]	Reading [dB(㎽)]	Space Loss [dB]	Level [dB(㎽)]	Limit [dB(㎽)]	Margin [dB]
346.78	H	-54.90	1.30	-53.60	-20.00	33.60
520.22	V	-67.40	4.60	-62.80	-20.00	42.80
693.58	V	-52.50	7.40	-45.10	-20.00	25.10
867.03	V	-55.80	10.00	-45.80	-20.00	25.80
1 387.01	V	-63.30	9.00	-54.30	-20.00	34.30
1 560.37	V	-59.60	7.30	-52.30	-20.00	32.30
2 947.87	H	-66.30	13.20	-53.10	-20.00	33.10
3 294.59	H	-67.80	16.30	-51.50	-20.00	31.50
3 814.68	H	-69.10	17.50	-51.60	-20.00	31.60

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* 6.25BW

-Target Power_1W_150.05 ㎒

Frequency [㎒]	Pol [H/V]	Reading [dB(㎽)]	Space Loss [dB]	Level [dB(㎽)]	Limit [dB(㎽)]	Margin [dB]
300.14	V	-45.00	1.20	-43.80	-25.00	18.80
450.19	V	-64.90	3.90	-61.00	-25.00	36.00
600.23	H	-68.50	7.60	-60.90	-25.00	35.90
750.27	V	-56.20	9.10	-47.10	-25.00	22.10
900.32	V	-63.10	9.50	-53.60	-25.00	28.60
1 050.06	V	-61.30	4.80	-56.50	-25.00	31.50
1 200.22	H	-62.40	6.10	-56.30	-25.00	31.30
1 350.39	H	-64.90	9.30	-55.60	-25.00	30.60
2 850.81	H	-67.70	13.40	-54.30	-25.00	29.30

-Target Power_1W_155.7525 ㎒

Frequency [㎒]	Pol [H/V]	Reading [dB(㎽)]	Space Loss [dB]	Level [dB(㎽)]	Limit [dB(㎽)]	Margin [dB]
311.50	V	-52.60	1.80	-50.80	-25.00	25.80
467.26	V	-68.40	3.80	-64.60	-25.00	39.60
623.03	H	-53.30	6.30	-47.00	-25.00	22.00
778.79	V	-51.50	8.00	-43.50	-25.00	18.50
934.56	V	-57.80	9.60	-48.20	-25.00	23.20
1 090.34	V	-75.60	28.20	-47.40	-25.00	22.40
1 246.00	V	-80.60	31.10	-49.50	-25.00	24.50
1 401.66	V	-78.30	31.10	-47.20	-25.00	22.20

-Target Power_1W_162.00 ㎒

Frequency [㎒]	Pol [H/V]	Reading [dB(㎽)]	Space Loss [dB]	Level [dB(㎽)]	Limit [dB(㎽)]	Margin [dB]
323.98	V	-57.30	1.20	-56.10	-25.00	31.10
485.99	H	-67.80	4.50	-63.30	-25.00	38.30
647.99	H	-63.10	6.40	-56.70	-25.00	31.70
810.00	V	-60.60	8.30	-52.30	-25.00	27.30
972.00	V	-65.50	10.50	-55.00	-25.00	30.00
1 134.29	H	-60.00	4.80	-55.20	-25.00	30.20
1 296.06	H	-65.00	8.70	-56.30	-25.00	31.30
1 620.19	V	-66.70	7.10	-59.60	-25.00	34.60
3 564.40	H	-69.90	16.50	-53.40	-25.00	28.40

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-Target Power_1W_173.40 ㎒

Frequency [㎒]	Pol [H/V]	Reading [dB(㎽)]	Space Loss [dB]	Level [dB(㎽)]	Limit [dB(㎽)]	Margin [dB]
346.78	V	-61.60	0.80	-60.80	-25.00	35.80
520.22	H	-65.60	4.30	-61.30	-25.00	36.30
693.58	V	-53.70	7.40	-46.30	-25.00	21.30
867.03	V	-61.50	10.00	-51.50	-25.00	26.50
1 040.29	V	-60.20	4.80	-55.40	-25.00	30.40
1 213.65	H	-61.30	6.40	-54.90	-25.00	29.90
1 387.01	H	-67.70	9.40	-58.30	-25.00	33.30
2 080.45	H	-67.20	12.90	-54.30	-25.00	29.30
2 427.79	H	-68.40	13.00	-55.40	-25.00	30.40
3 294.59	H	-68.70	16.30	-52.40	-25.00	27.40

-Target Power_5W_150.05 ㎒

Frequency [㎒]	Pol [H/V]	Reading [dB(㎽)]	Space Loss [dB]	Level [dB(㎽)]	Limit [dB(㎽)]	Margin [dB]
300.14	V	-46.50	1.20	-45.30	-25.00	20.30
450.19	H	-68.00	4.60	-63.40	-25.00	38.40
750.27	V	-53.30	9.10	-44.20	-25.00	19.20
900.32	H	-66.70	9.90	-56.80	-25.00	31.80
1 350.39	H	-63.80	9.30	-54.50	-25.00	29.50
1 500.55	V	-64.20	8.30	-55.90	-25.00	30.90
2 103.65	V	-69.80	14.20	-55.60	-25.00	30.60
2 850.81	H	-66.00	13.40	-52.60	-25.00	27.60

-Target Power_5W_155.7525 ㎒

Frequency [㎒]	Pol [H/V]	Reading [dB(㎽)]	Space Loss [dB]	Level [dB(㎽)]	Limit [dB(㎽)]	Margin [dB]
311.50	H	-50.20	0.70	-49.50	-25.00	24.50
467.26	H	-72.90	4.10	-68.80	-25.00	43.80
623.03	V	-60.90	5.80	-55.10	-25.00	30.10
778.79	V	-55.50	8.00	-47.50	-25.00	22.50
934.47	V	-63.60	9.60	-54.00	-25.00	29.00
1 090.34	V	-76.70	28.20	-48.50	-25.00	23.50
1 246.00	V	-80.50	31.10	-49.40	-25.00	24.40
1 557.93	V	-80.20	30.70	-49.50	-25.00	24.50

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-Target Power_5W_162.00 ㎒

Frequency [㎒]	Pol [H/V]	Reading [dB(㎽)]	Space Loss [dB]	Level [dB(㎽)]	Limit [dB(㎽)]	Margin [dB]
323.98	V	-58.40	1.20	-57.20	-25.00	32.20
485.99	V	-63.10	3.90	-59.20	-25.00	34.20
647.99	H	-55.50	6.40	-49.10	-25.00	24.10
810.00	V	-51.90	8.30	-43.60	-25.00	18.60
972.00	V	-59.50	10.50	-49.00	-25.00	24.00
1 133.68	H	-58.10	4.80	-53.30	-25.00	28.30
1 296.06	H	-55.60	8.70	-46.90	-25.00	21.90
1 458.43	V	-62.10	8.80	-53.30	-25.00	28.30
1 620.19	V	-63.10	7.10	-56.00	-25.00	31.00
2 916.13	H	-62.70	13.30	-49.40	-25.00	24.40

-Target Power_5W_173.40 ㎒

Frequency [㎒]	Pol [H/V]	Reading [dB(㎽)]	Space Loss [dB]	Level [dB(㎽)]	Limit [dB(㎽)]	Margin [dB]
346.78	H	-56.00	1.30	-54.70	-25.00	29.70
693.58	V	-52.30	7.40	-44.90	-25.00	19.90
867.03	V	-55.80	10.00	-45.80	-25.00	20.80
1 213.65	V	-63.40	6.60	-56.80	-25.00	31.80
1 387.01	V	-63.70	9.00	-54.70	-25.00	29.70
1 560.37	V	-58.70	7.30	-51.40	-25.00	26.40
2 427.79	H	-66.10	13.00	-53.10	-25.00	28.10
2 947.87	H	-64.50	13.20	-51.30	-25.00	26.30
3 294.59	V	-68.40	16.20	-52.20	-25.00	27.20

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6. Test equipment used for test

	Description	Manufacturer	Model No.	Serial No.	Next Cal Date.
■	DC power supply	AGILENT	E3632A	MY40004791	16.07.15
■	Temp & Humid chamber	ESPEC CORP.	SH-641	92004765	16.07.17
■	Attenuator	BIRD	50-A-MFN-20	403002	16.10.08
■	Signal generator	R&S	SMR40	100007	16.06.15
■	Spectrum Analyzer	R&S	FSV30	100732	16.07.21
■	Highpass Filter	Mini-Circuits	NHP-300+	v uu21101114	16.07.15
■	Audio analyzer	HP	8903B	3729A18248	16.10.13
■	Modulation analyzer	HP	8901B	3538A05527	16.10.13
■	Wideband power sensor	R&S	NRP-Z81	102398	17.02.11
■	Digital Phosphor Oscilloscope	Tektronix	TDS3012	B027160	16.01.06
■	Bilog Antenna	Teseq GmbH	CBL 6143A	35039	16.07.10
■	Horn antenna	ETS.lindgren	3115	62589	16.11.12
■	Amplifier	SONOMA INSTRUMENT	317	321041	17.03.05
■	Broadband Preamplifier	SCHWARZBECK	BBV9718	216	16.11.11
■	Attenuator	Weinschel ENGINEERING	10	AJ1239	16.07.15
■	RF Selector	TOYO Corporation	NS5800	1003-010	-
■	Band Selector	TOYO Corporation	NS5800	1003-135	-
■	Band Selector	TOYO Corporation	NS5800	1003-320	-
■	Antenna Master	MATURO	EAS 1.5	042/8941211	-
■	Antenna Master	MATURO	EAS 1.5	043/8941211	-
■	Turn Table	MATURO	TT 0.8 PF	041/8941211	-
■	Turn Devices	MATURO	TD 1.5-2 kg	039/8941211	-

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