TEST REPORT

KCTL Inc.
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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:	R72NEW100
Type of equipment:	FM Handheld Transceiver(VHF)
Basic Model:	NEW100

3. Date of Test:	October 15 ~ October 22, 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 107
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 30, 2015	KCTL15-FR0077	Issued the original test teport
April 18, 2016	KCTL15-FR0077(1)	Added and tested more test mode

[Contents]

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

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

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	NEW100
Serial number	N/A

3.2 General description

Frequency Range	150.05 ㎒ ~ 173.40 ㎒
Type of Modulation	12.5BW, 6.25BW
Number of Channels	32 ch
Type of Antenna	Helical Antenna
Transmit Power	1 W / 5 W
Power supply	DC 7.4 Ⅴ
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.

3.3 Test frequency

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

3.4 Test Voltage

Mode	Voltage
Norminal voltage	DC 7.4 Ⅴ

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, 90.210	Occupied Bandwidth	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 ㎒ ~ 300 ㎒:	+ 4.94 dB, - 5.06 dB
		+ 4.93 dB, - 5.05 dB
	300 ㎒ ~ 1 000 ㎒:	+ 4.97 dB, - 5.08 dB
		+ 4.84 dB, - 4.96 dB
	1 ㎓ ~ 25 ㎓:	+ 6.03 dB, - 6.05 dB
Conducted Emissions	9 ㎑ ~ 150 ㎑:	3.75 dB
	150 ㎑ ~ 30 ㎒:	3.36 dB

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.

5.1.3 Test Result

- Complied

* 12.5BW

-Target Power_1W

Channel	Frequency [㎒]	Result [dBm]	Result [W]	Limit [W]	Margin [W]	Current [A]
Lowest	150.05	30.78	1.20	1.20	0.00	0.69
Middle	162.00	30.35	1.08	1.20	0.12	0.62
Highest	173.40	30.14	1.03	1.20	0.17	0.61

-Target Power_5W

Channel	Frequency [㎒]	Result [dBm]	Result [W]	Limit [W]	Margin [W]	Current [A]
Lowest	150.05	37.33	5.40	6.00	0.60	1.44
Middle	162.00	37.02	5.04	6.00	0.96	1.36
Highest	173.40	37.04	5.06	6.00	0.94	1.44

* 6.25BW

-Target Power_1W

Channel	Frequency [㎒]	Result [dBm]	Result [W]	Limit [W]	Margin [W]	Current [A]
Lowest	150.05	30.30	1.07	1.20	0.13	0.69
Middle	162.00	30.19	1.04	1.20	0.16	0.62
Highest	173.40	30.29	1.07	1.20	0.13	0.61

-Target Power_5W

Channel	Frequency [㎒]	Result [dBm]	Result [W]	Limit [W]	Margin [W]	Current [A]
Lowest	150.05	37.05	5.07	6.00	0.93	1.44
Middle	162.00	36.64	4.61	6.00	1.39	1.36
Highest	173.40	36.62	4.59	6.00	1.41	1.45

-NOTE:

1. We took the insertion loss of the cable loss into consideration within the measuring instrument.

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℃.

5.2.3 Test Result

- Complied

* 12.5BW

-Target Power_1W_150.05 ㎒

Voltage [%]	Power [V_{DC}]	Temp. [°C]	Reading Frequency [㎐]	Frequency Error [㎐]	Frequency Error [ppm]
100	7.4	-30	150 049 939	-61	-0.407
		-20	150 049 940	-60	-0.400
		-10	150 050 003	3	0.020
		0	150 049 977	-23	-0.153
		10	150 050 019	19	0.127
		20	150 050 034	34	0.227
		30	150 050 051	51	0.340
		40	150 050 044	44	0.293
		50	150 050 026	26	0.173
		60	150 050 013	13	0.087
		Normal	150 050 037	37	0.247
85	6.29	Normal	150 050 039	39	0.260
115	8.51	Normal	150 050 044	44	0.293

-Target Power_1W_162.00 ㎒

Voltage [%]	Power [V_{DC}]	Temp. [°C]	Reading Frequency [㎐]	Frequency Error [㎐]	Frequency Error [ppm]
100	7.4	-30	161 999 935	-65	-0.401
		-20	161 999 989	-11	-0.068
		-10	161 999 999	-1	-0.006
		0	161 999 969	-31	-0.191
		10	162 000 018	18	0.111
		20	162 000 043	43	0.265
		30	162 000 055	55	0.340
		40	162 000 047	47	0.290
		50	162 000 029	29	0.179
		60	162 000 014	14	0.086
		Normal	162 000 057	57	0.352
85	6.29	Normal	162 000 057	57	0.352
115	8.51	Normal	162 000 060	60	0.370

-Target Power_1W_173.40 ㎒

Voltage [%]	Power [V_{DC}]	Temp. [°C]	Reading Frequency [㎐]	Frequency Error [㎐]	Frequency Error [ppm]
100	7.4	-30	173 399 945	-55	-0.317
		-20	173 399 952	-48	-0.277
		-10	173 400 005	5	0.029
		0	173 399 969	-31	-0.179
		10	173 400 017	17	0.098
		20	173 400 048	48	0.277
		30	173 400 059	59	0.340
		40	173 400 050	50	0.288
		50	173 400 032	32	0.185
		60	173 400 016	16	0.092
		Normal	173 400 069	69	0.398
85	6.29	Normal	173 400 068	68	0.392
115	8.51	Normal	173 400 070	70	0.404

-Target Power_5W_150.05 ㎒

Voltage [%]	Power [V_{DC}]	Temp. [°C]	Reading Frequency [㎐]	Frequency Error [㎐]	Frequency Error [ppm]
100	7.4	-30	150 049 933	-67	-0.447
		-20	150 049 981	-19	-0.127
		-10	150 050 003	3	0.020
		0	150 049 978	-22	-0.147
		10	150 050 000	0	0.000
		20	150 050 046	46	0.307
		30	150 050 050	50	0.333
		40	150 050 040	40	0.267
		50	150 050 029	29	0.193
		60	150 050 015	15	0.100
		Normal	150 050 046	46	0.307
85	6.29	Normal	150 050 047	47	0.313
115	8.51	Normal	150 050 050	50	0.333

-Target Power_5W_162.00 ㎒

Voltage [%]	Power [V_{DC}]	Temp. [°C]	Reading Frequency [㎐]	Frequency Error [㎐]	Frequency Error [ppm]
100	7.4	-30	161 999 936	-64	-0.395
		-20	161 999 937	-63	-0.389
		-10	162 000 002	2	0.012
		0	161 999 974	-26	-0.160
		10	162 000 005	5	0.031
		20	162 000 048	48	0.296
		30	162 000 055	55	0.340
		40	162 000 044	44	0.272
		50	162 000 031	31	0.191
		60	162 000 016	16	0.099
		Normal	162 000 061	61	0.377
85	6.29	Normal	162 000 061	61	0.377
115	8.51	Normal	162 000 063	63	0.389

-Target Power_5W_173.40 ㎒

Voltage [%]	Power [V_{DC}]	Temp. [°C]	Reading Frequency [㎐]	Frequency Error [㎐]	Frequency Error [ppm]
100	7.4	-30	173 399 943	-57	-0.329
		-20	173 399 958	-42	-0.242
		-10	173 400 005	5	0.029
		0	173 399 970	-30	-0.173
		10	173 400 012	12	0.069
		20	173 400 050	50	0.288
		30	173 400 059	59	0.340
		40	173 400 049	49	0.283
		50	173 400 032	32	0.185
		60	173 400 017	17	0.098
		Normal	173 400 069	69	0.398
85	6.29	Normal	173 400 070	70	0.404
115	8.51	Normal	173 400 071	71	0.409

* 6.25BW

-Target Power_1W_150.05 ㎒

Voltage [%]	Power [V_{DC}]	Temp. [°C]	Reading Frequency [㎐]	Frequency Error [㎐]	Frequency Error [ppm]
100	7.4	-30	150 049 963	-37	-0.247
		-20	150 050 000	0	0.000
		-10	150 049 991	-9	-0.060
		0	150 050 036	36	0.240
		10	150 050 018	18	0.120
		20	150 050 053	53	0.353
		30	150 050 048	48	0.320
		40	150 050 034	34	0.227
		50	150 050 023	23	0.153
		60	150 050 018	18	0.120
		Normal	150 050 029	29	0.193
85	6.29	Normal	150 050 031	31	0.207
115	8.51	Normal	150 050 033	33	0.220

-Target Power_1W_162.00 ㎒

Voltage [%]	Power [V_{DC}]	Temp. [°C]	Reading Frequency [㎐]	Frequency Error [㎐]	Frequency Error [ppm]
100	7.4	-30	161 999 985	-15	-0.093
		-20	162 000 001	1	0.006
		-10	161 999 979	-21	-0.130
		0	162 000 027	27	0.167
		10	162 000 042	42	0.259
		20	162 000 058	58	0.358
		30	162 000 057	57	0.352
		40	162 000 041	41	0.253
		50	162 000 025	25	0.154
		60	162 000 013	13	0.080
		Normal	162 000 037	37	0.228
85	6.29	Normal	162 000 037	37	0.228
115	8.51	Normal	162 000 038	38	0.235

-Target Power_1W_173.40 ㎒

Voltage [%]	Power [V_{DC}]	Temp. [°C]	Reading Frequency [㎐]	Frequency Error [㎐]	Frequency Error [ppm]
100	7.4	-30	1733 99 983	-17	-0.098
		-20	1733 99 987	-13	-0.075
		-10	1733 99 988	-12	-0.069
		0	1734 00 017	17	0.098
		10	1734 00 057	57	0.329
		20	173 400 060	60	0.346
		30	173 400 060	60	0.346
		40	173 400 051	51	0.294
		50	173 400 014	14	0.081
		60	173 400 002	2	0.012
		Normal	173 400 039	39	0.225
85	6.29	Normal	173 400 038	38	0.219
115	8.51	Normal	173 400 039	39	0.225

-Target Power_5W_150.05 ㎒

Voltage [%]	Power [V_{DC}]	Temp. [°C]	Reading Frequency [㎐]	Frequency Error [㎐]	Frequency Error [ppm]
100	7.4	-30	150 049 974	-26	-0.173
		-20	150 050 000	0	0.000
		-10	150 049 999	-1	-0.007
		0	150 050 030	30	0.200
		10	150 050 029	29	0.193
		20	150 050 053	53	0.353
		30	150 050 051	51	0.340
		40	150 050 036	36	0.240
		50	150 050 025	25	0.167
		60	150 050 015	15	0.100
		Normal	150 050 034	34	0.227
85	6.29	Normal	150 050 034	34	0.227
115	8.51	Normal	150 050 035	35	0.233

-Target Power_5W_162.00 ㎒

Voltage [%]	Power [V_{DC}]	Temp. [°C]	Reading Frequency [㎐]	Frequency Error [㎐]	Frequency Error [ppm]
100	7.4	-30	161 999 976	-24	-0.148
		-20	161 999 996	-4	-0.025
		-10	161 999 982	-18	-0.111
		0	162 000 021	21	0.130
		10	162 000 047	47	0.290
		20	162 000 057	57	0.352
		30	162 000 056	56	0.346
		40	162 000 040	40	0.247
		50	162 000 022	22	0.136
		60	162 000 008	8	0.049
		Normal	162 000 037	37	0.228
85	6.29	Normal	162 000 037	37	0.228
115	8.51	Normal	162 000 038	38	0.235

-Target Power_5W_173.40 ㎒

Voltage [%]	Power [V_{DC}]	Temp. [°C]	Reading Frequency [㎐]	Frequency Error [㎐]	Frequency Error [ppm]
100	7.4	-30	173 399 988	-12	-0.069
		-20	173 399 965	-35	-0.202
		-10	173 399 994	-6	-0.035
		0	173 400 009	9	0.052
		10	173 400 058	58	0.334
		20	173 400 057	57	0.329
		30	173 400 059	59	0.340
		40	173 400 051	51	0.294
		50	173 400 015	15	0.087
		60	173 399 995	-5	-0.029
		Normal	173 400 037	37	0.213
85	6.29	Normal	173 400 037	37	0.213
115	8.51	Normal	173 400 037	37	0.213

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.

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	0.054	0.180	0.260	0.058	0.190	0.252	2.5
-15	0.083	0.303	0.431	0.072	0.296	0.429	
-10	0.109	0.493	0.738	0.113	0.495	0.732	
-5	0.181	0.876	1.312	0.171	0.875	1.288	
0	0.292	1.536	1.336	0.292	1.514	1.317	
5	0.485	1.921	1.332	0.483	1.911	1.318	
10	0.838	1.839	1.324	0.832	1.835	1.307	
15	1.465	1.811	1.328	1.464	1.809	1.315	
20	2.168	1.812	1.334	2.165	1.808	1.320	

-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	0.060	0.186	0.264	0.057	0.178	0.260	2.5
-15	0.080	0.298	0.454	0.076	0.307	0.450	
-10	0.119	0.521	0.776	0.112	0.507	0.771	
-5	0.172	0.873	1.315	0.166	0.874	1.298	
0	0.270	1.535	1.316	0.275	1.507	1.302	
5	0.461	1.813	1.317	0.461	1.801	1.302	
10	0.795	1.742	1.315	0.786	1.728	1.296	
15	1.381	1.717	1.312	1.366	1.723	1.298	
20	2.082	1.711	1.320	2.077	1.702	1.305	

-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	0.057	0.187	0.275	0.054	0.179	0.271	2.5
-15	0.074	0.296	0.461	0.070	0.294	0.459	
-10	0.101	0.522	0.819	0.101	0.508	0.811	
-5	0.152	0.887	1.345	0.148	0.885	1.336	
0	0.244	1.546	1.344	0.243	1.529	1.331	
5	0.412	1.763	1.347	0.405	1.758	1.333	
10	0.711	1.689	1.340	0.709	1.678	1.321	
15	1.249	1.667	1.344	1.234	1.674	1.329	
20	1.879	1.668	1.342	1.875	1.656	1.330	

-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	0.052	0.185	0.255	0.059	0.182	0.258	2.5
-15	0.091	0.296	0.428	0.078	0.301	0.422	
-10	0.113	0.499	0.729	0.111	0.502	0.723	
-5	0.875	0.882	1.295	0.864	0.863	1.278	
0	0.288	1.553	1.334	0.297	1.525	1.323	
5	0.483	1.924	1.329	0.495	1.903	1.316	
10	0.841	1.835	1.334	0.833	1.842	1.312	
15	1.467	1.819	1.330	1.469	1.807	1.314	
20	2.162	1.810	1.323	2.162	1.811	1.308	

-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	0.071	0.200	0.271	0.067	0.199	0.276	2.5
-15	0.094	0.320	0.467	0.088	0.312	0.457	
-10	0.126	0.515	0.787	0.120	0.522	0.778	
-5	0.181	0.880	1.316	0.169	0.877	1.302	
0	0.281	1.535	1.320	0.280	1.518	1.304	
5	0.459	1.814	1.314	0.457	1.804	1.304	
10	0.790	1.729	1.315	0.785	1.735	1.299	
15	1.383	1.717	1.311	1.373	1.708	1.293	
20	2.075	1.707	1.308	2.071	1.713	1.296	

-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	0.049	0.183	0.275	0.046	0.176	0.274	2.5
-15	0.064	0.295	0.452	0.065	0.300	0.450	
-10	0.099	0.524	0.813	0.092	0.511	0.806	
-5	0.153	0.884	1.345	0.149	0.887	1.332	
0	0.244	1.552	1.345	0.241	1.535	1.333	
5	0.411	1.758	1.337	0.407	1.762	1.323	
10	0.714	1.687	1.349	0.708	1.676	1.328	
15	1.254	1.667	1.339	1.244	1.662	1.328	
20	1.872	1.661	1.343	1.873	1.655	1.328	

* 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	0.071	0.118	0.160	0.069	0.125	0.158	1.25
-15	0.070	0.177	0.236	0.080	0.179	0.237	
-10	0.121	0.279	0.386	0.093	0.278	0.392	
-5	0.119	0.458	0.633	0.114	0.456	0.621	
0	0.169	0.769	0.621	0.169	0.762	0.617	
5	0.262	0.910	0.625	0.262	0.911	0.619	
10	0.427	0.870	0.639	0.434	0.869	0.625	
15	0.732	0.862	0.627	0.724	0.860	0.617	
20	1.010	0.857	0.625	1.010	0.858	0.624	

-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	0.041	0.102	0.141	0.045	0.104	0.136	1.25
-15	0.050	0.156	0.224	0.052	0.162	0.224	
-10	0.065	0.256	0.376	0.070	0.253	0.375	
-5	0.094	0.434	0.601	0.094	0.432	0.601	
0	0.146	0.754	0.602	0.141	0.751	0.601	
5	0.232	0.843	0.600	0.238	0.842	0.596	
10	0.393	0.805	0.604	0.391	0.805	0.597	
15	0.665	0.801	0.605	0.664	0.803	0.602	
20	0.967	0.797	0.604	0.970	0.793	0.597	

-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	0.034	0.094	0.138	0.038	0.095	0.136	1.25
-15	0.043	0.148	0.224	0.040	0.151	0.224	
-10	0.059	0.254	0.382	0.058	0.249	0.381	
-5	0.080	0.429	0.611	0.079	0.425	0.606	
0	0.125	0.748	0.615	0.124	0.742	0.608	
5	0.202	0.816	0.606	0.203	0.817	0.605	
10	0.345	0.779	0.611	0.346	0.779	0.606	
15	0.601	0.775	0.611	0.606	0.774	0.606	
20	0.870	0.768	0.609	0.877	0.774	0.609	

-Target Power_5W_150.05 ㎒

Audio input level relative [dB]	Positive peak deviation [㎑]			Negative peak deviation [㎑]			Limit [㎑]
	300 [㎐]	1 000 [㎐]	3 000 [㎐]	300 [㎐]	1 000 [㎐]	3 000 [㎐]	
-20	0.065	0.118	0.155	0.062	0.121	0.153	1.25
-15	0.070	0.178	0.233	0.074	0.175	0.233	
-10	0.088	0.270	0.381	0.085	0.274	0.383	
-5	0.109	0.446	0.621	0.111	0.443	0.618	
0	0.170	0.769	0.624	0.169	0.765	0.621	
5	0.269	0.914	0.627	0.259	0.918	0.624	
10	0.426	0.868	0.625	0.427	0.877	0.623	
15	0.728	0.860	0.622	0.726	0.863	0.621	
20	1.012	0.853	0.622	1.024	0.864	0.619	

-Target Power_5W_162.00 ㎒

Audio input level relative [dB]	Positive peak deviation [㎑]			Negative peak deviation [㎑]			Limit [㎑]
	300 [㎐]	1 000 [㎐]	3 000 [㎐]	300 [㎐]	1 000 [㎐]	3 000 [㎐]	
-20	0.042	0.103	0.138	0.041	0.100	0.135	1.25
-15	0.052	0.158	0.224	0.051	0.156	0.226	
-10	0.067	0.255	0.380	0.070	0.257	0.375	
-5	0.095	0.442	0.607	0.095	0.431	0.597	
0	0.145	0.755	0.600	0.145	0.748	0.598	
5	0.232	0.844	0.601	0.233	0.839	0.600	
10	0.394	0.808	0.610	0.393	0.808	0.601	
15	0.681	0.803	0.603	0.675	0.801	0.604	
20	0.969	0.799	0.604	0.977	0.792	0.598	

-Target Power_5W_173.40 ㎒

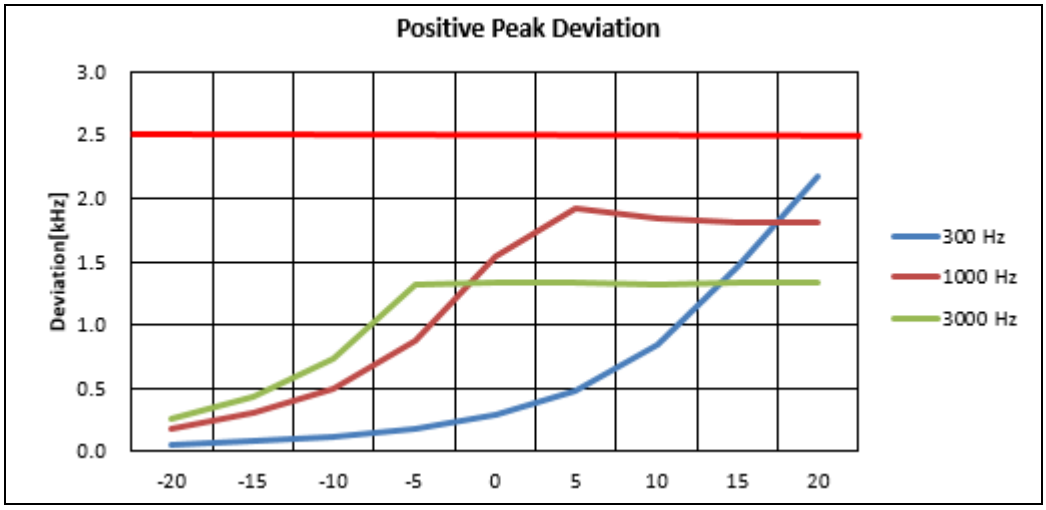
Audio input level relative [dB]	Positive peak deviation [㎑]			Negative peak deviation [㎑]			Limit [㎑]
	300 [㎐]	1 000 [㎐]	3 000 [㎐]	300 [㎐]	1 000 [㎐]	3 000 [㎐]	
-20	0.038	0.097	0.141	0.038	0.099	0.138	1.25
-15	0.045	0.154	0.229	0.047	0.153	0.227	
-10	0.059	0.254	0.387	0.060	0.252	0.386	
-5	0.084	0.432	0.613	0.083	0.432	0.606	
0	0.128	0.745	0.621	0.128	0.745	0.615	
5	0.207	0.821	0.617	0.205	0.820	0.611	
10	0.349	0.783	0.612	0.346	0.783	0.609	
15	0.601	0.779	0.614	0.604	0.778	0.606	
20	0.875	0.775	0.612	0.878	0.775	0.609	

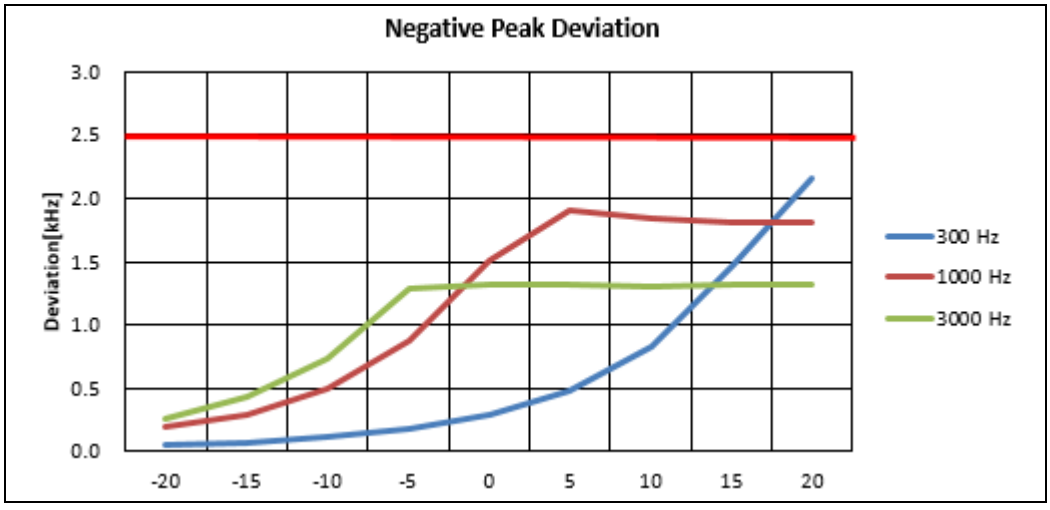
5.3.4 Test Plot

Figure 1. Plot of the Modulation Limiting

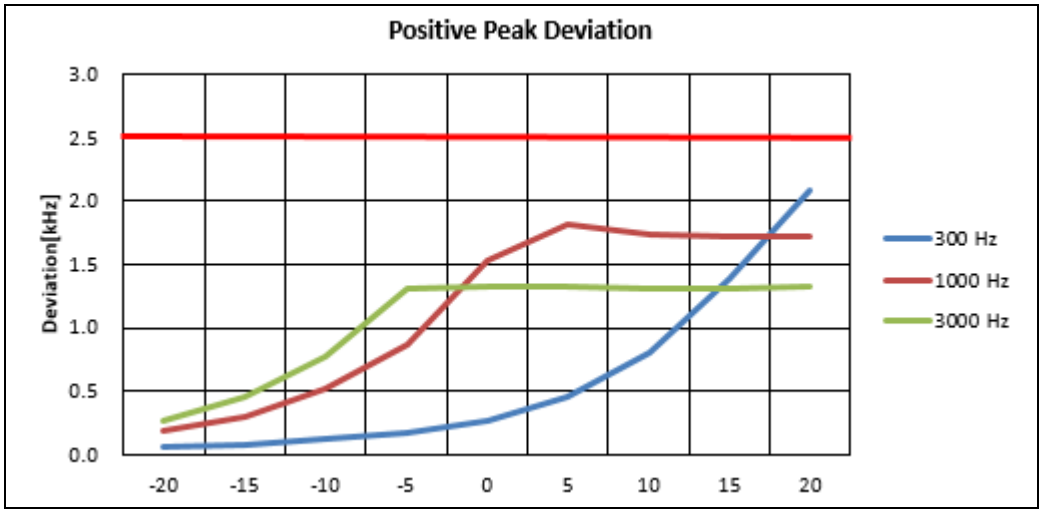
* 12.5BW

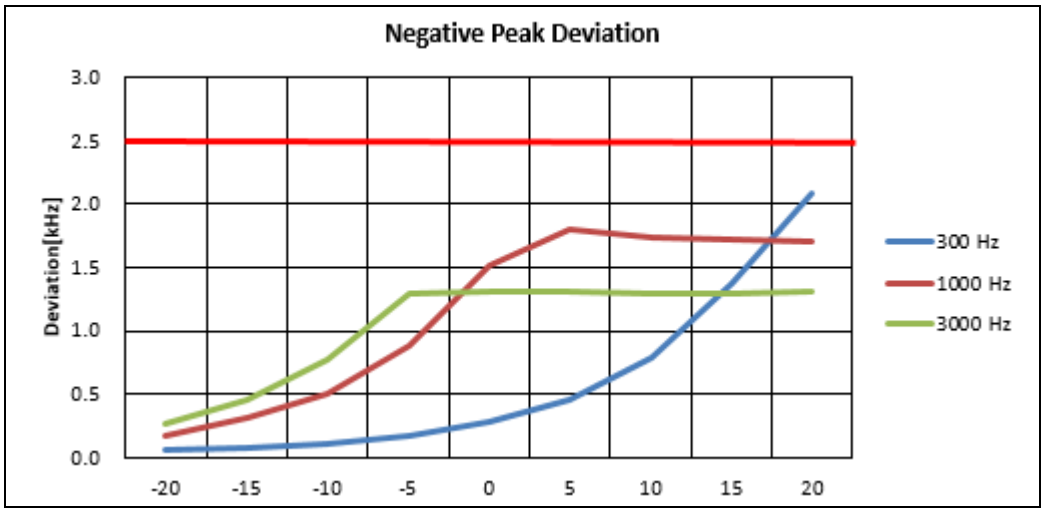
-Target Power_1W_150.05 ㎒



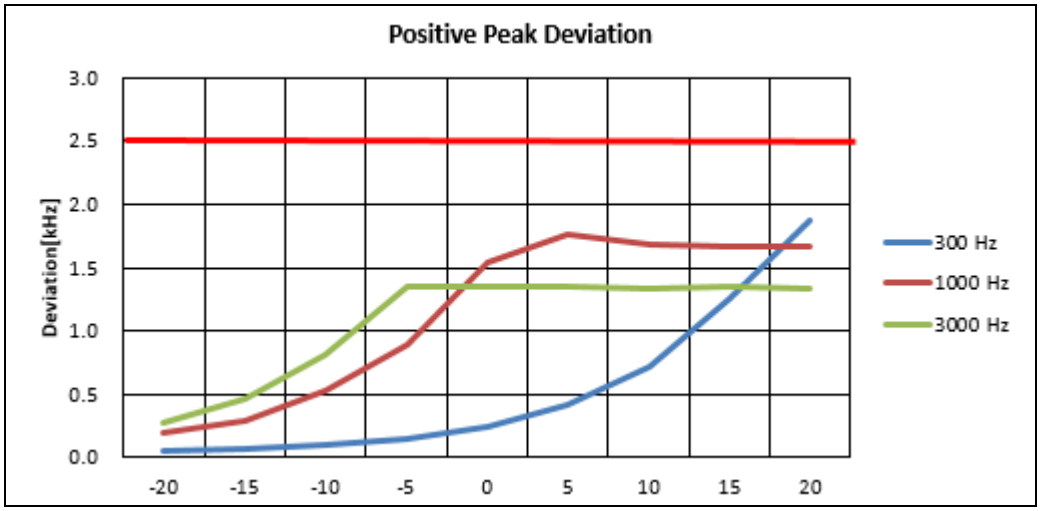


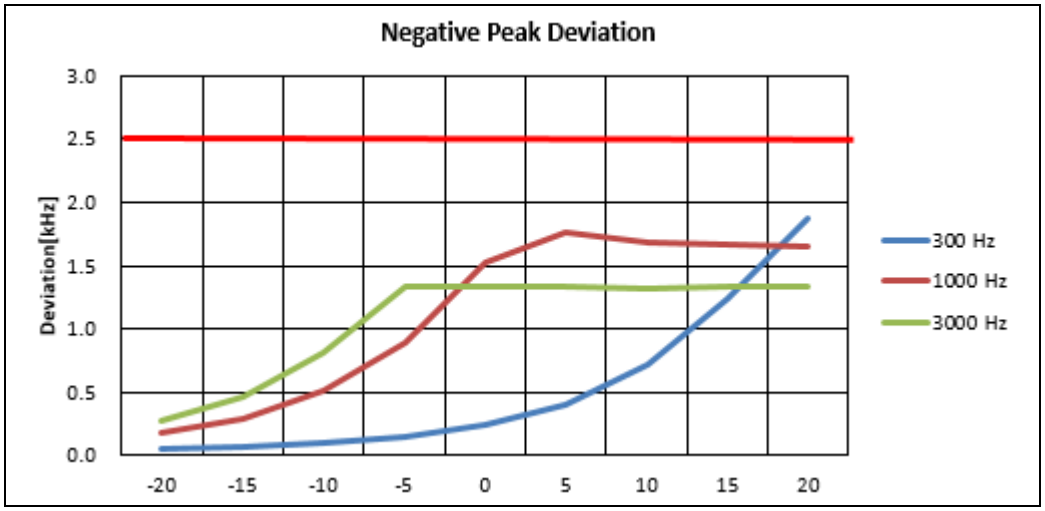
-Target Power_1W_162.00 ㎒



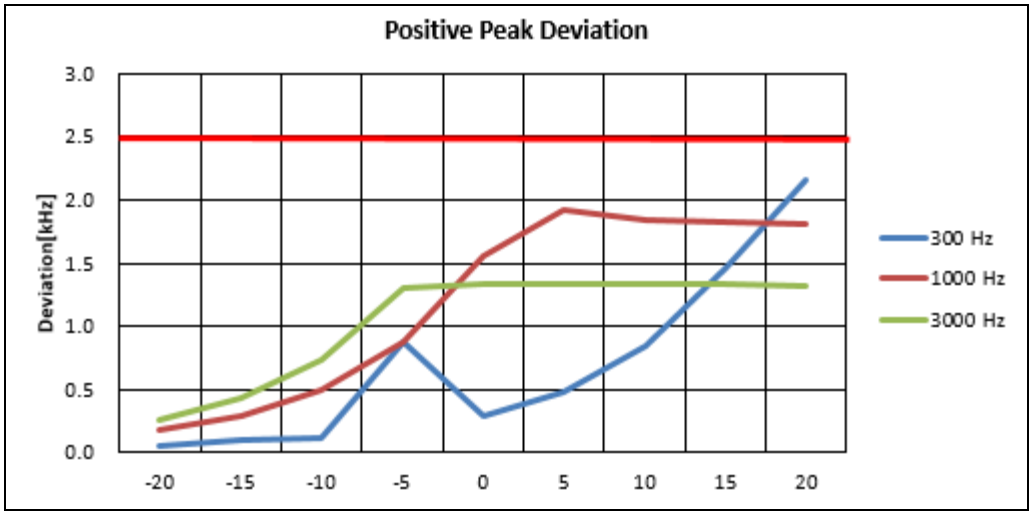


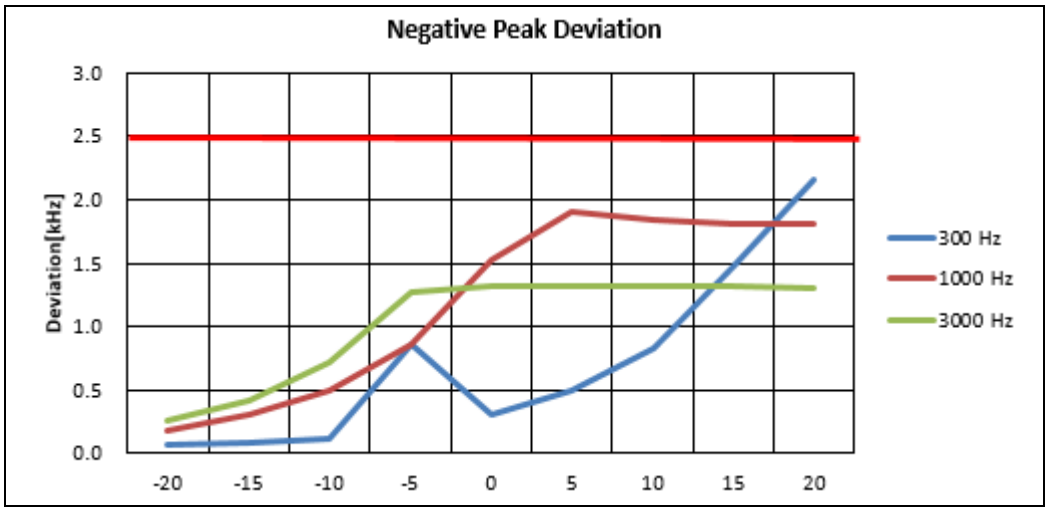
-Target Power_1W_173.40 ㎒



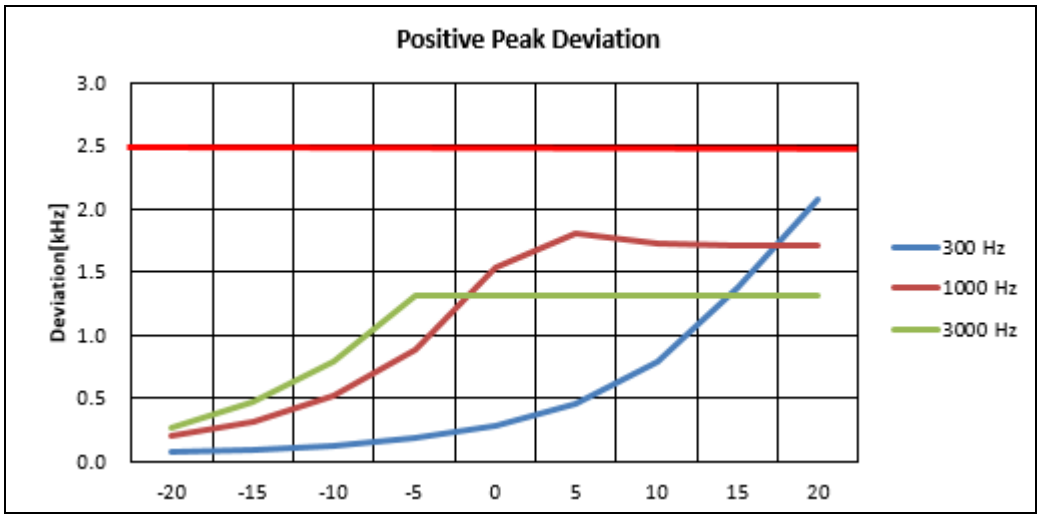


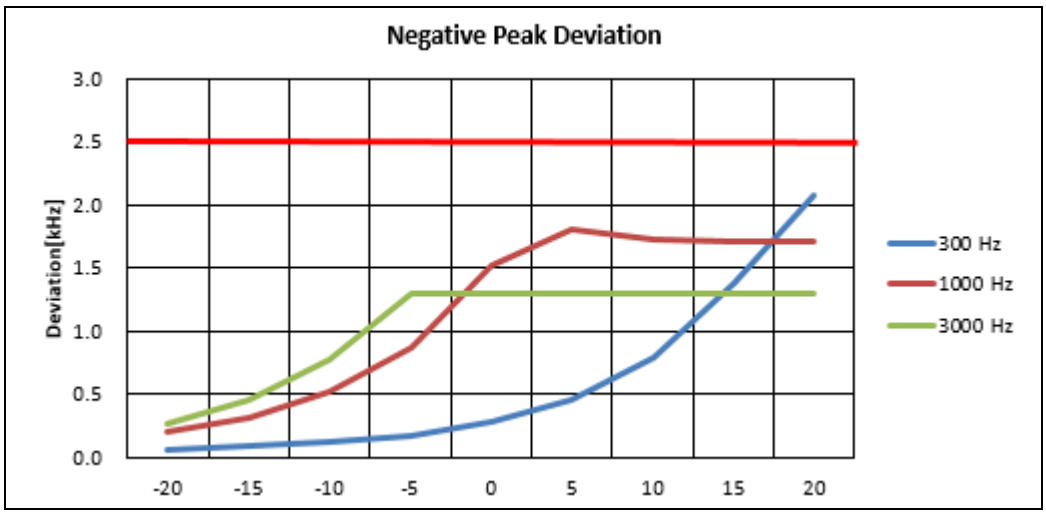
-Target Power_5W_150.05 ㎒



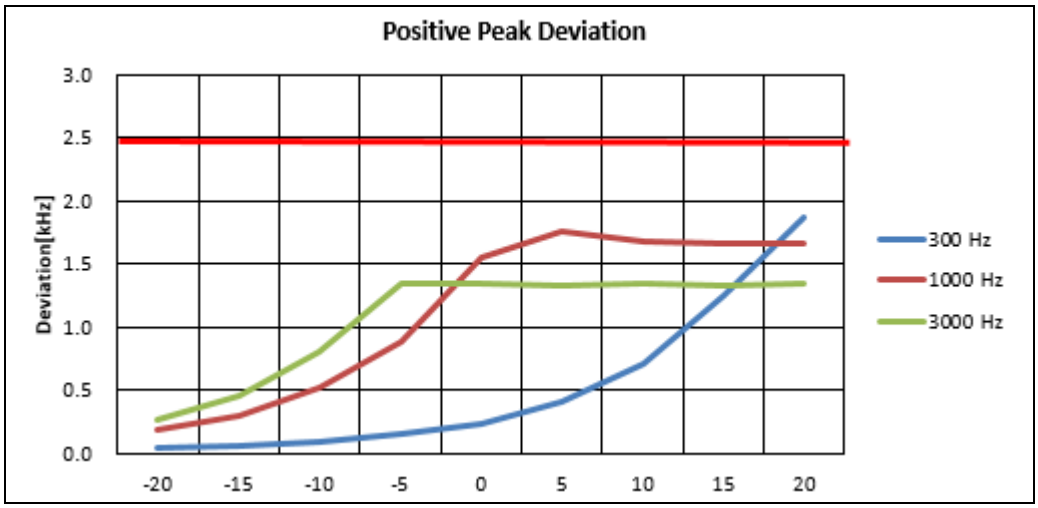


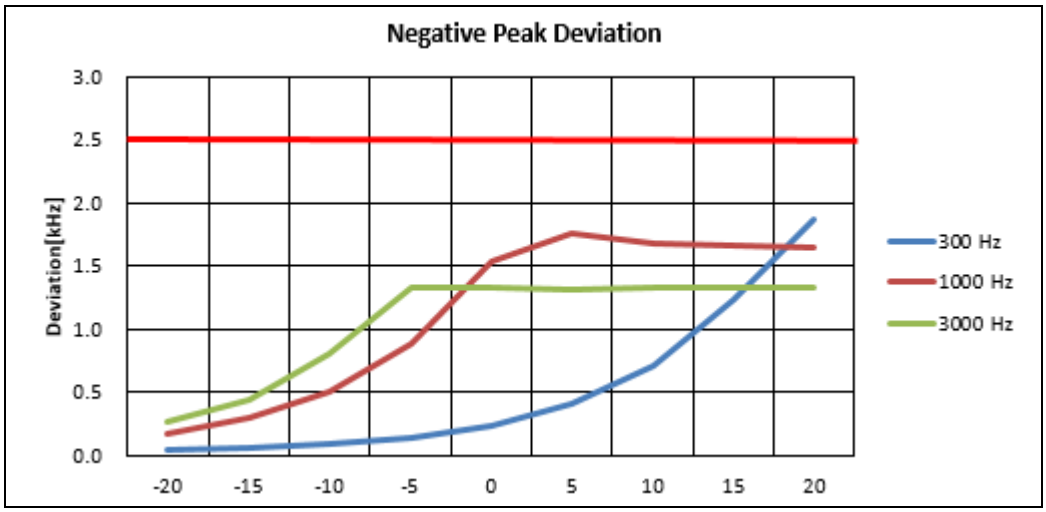
-Target Power_5W_162.00 ㎒





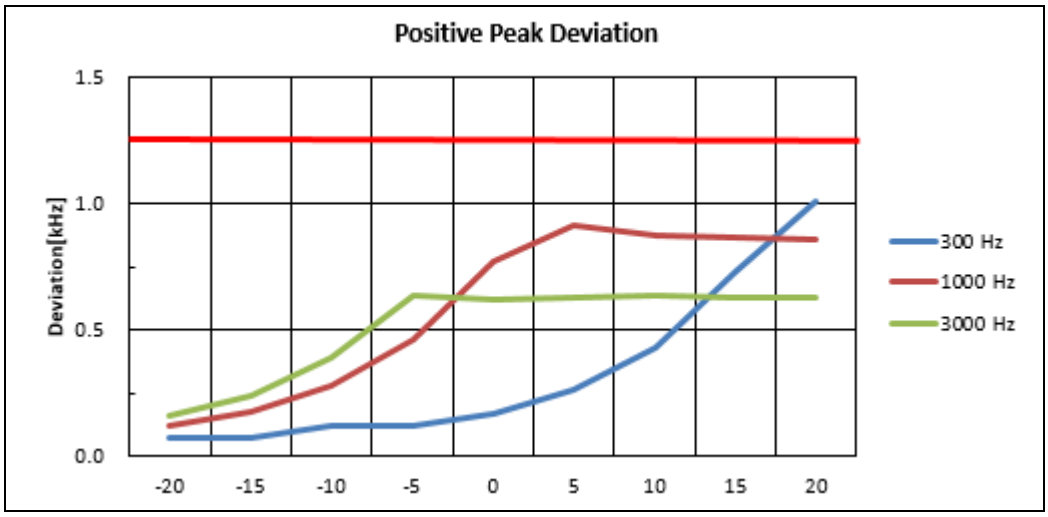
-Target Power_5W_173.40 ㎒

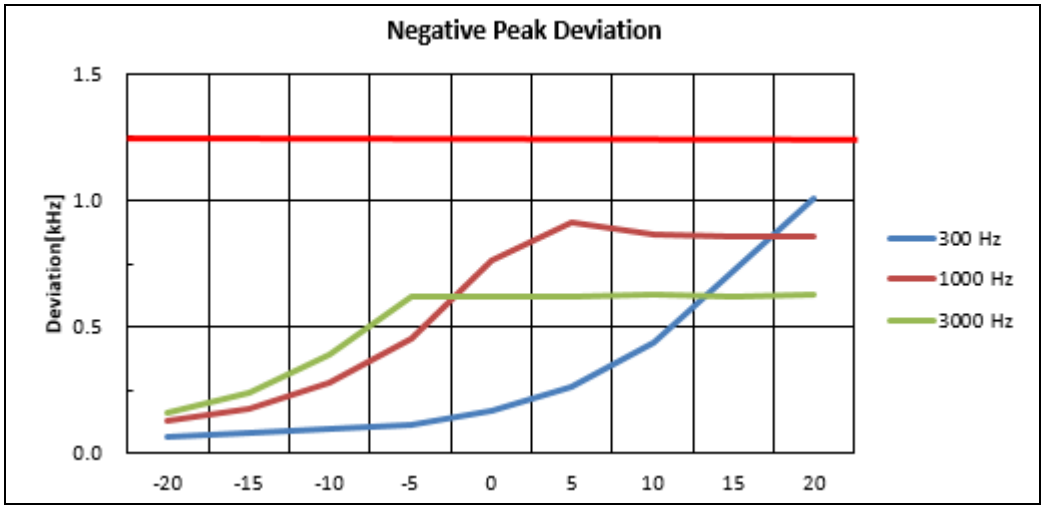




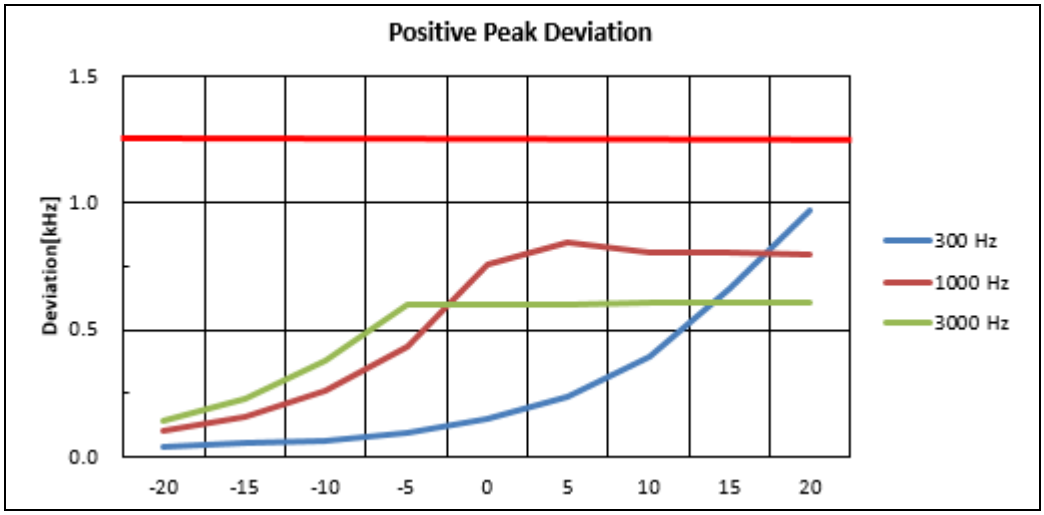
* 6.25BW

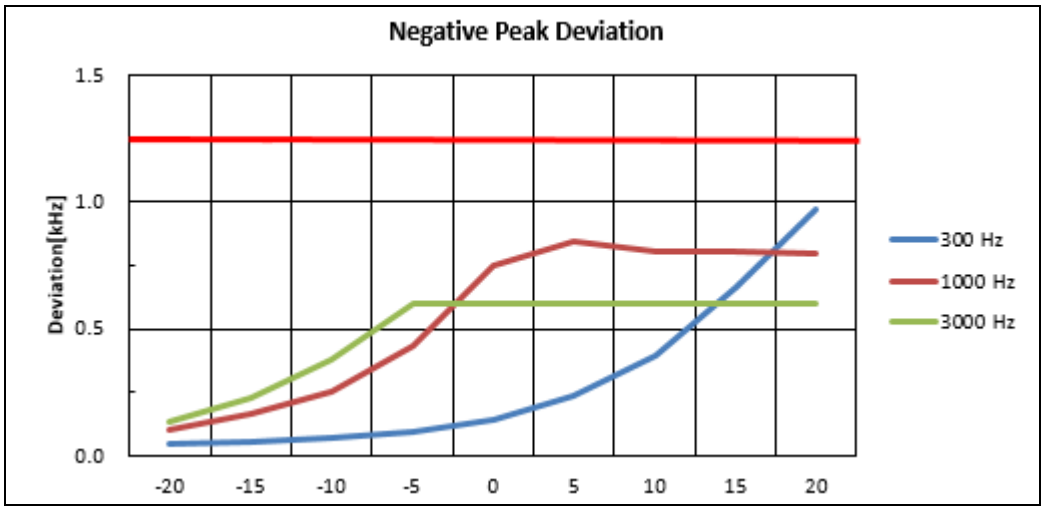
-Target Power_1W_150.05 ㎒



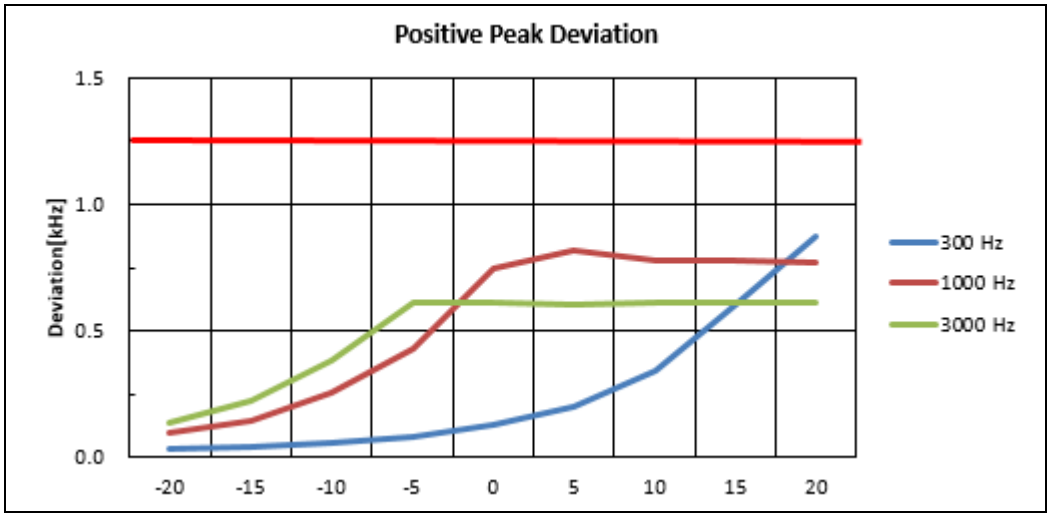


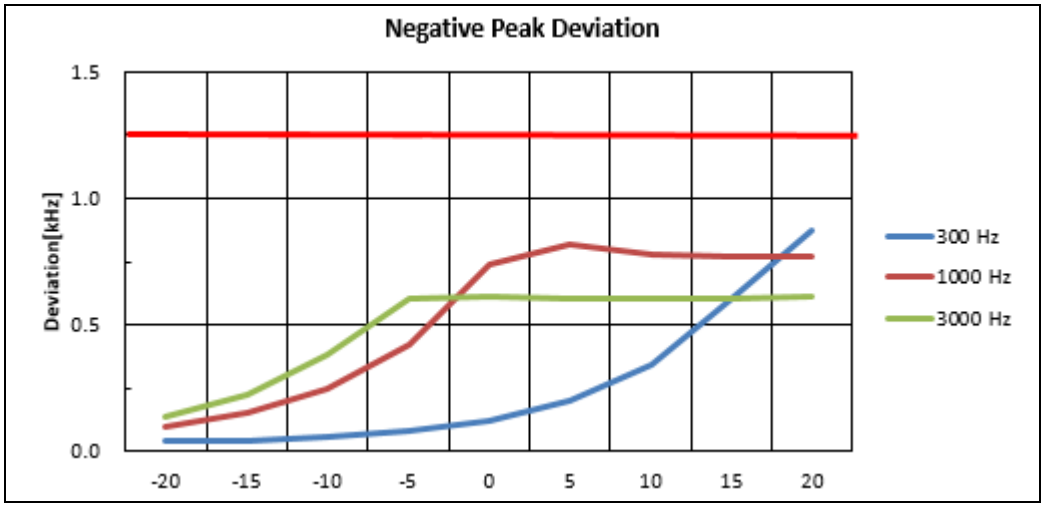
-Target Power_1W_162.00 ㎒



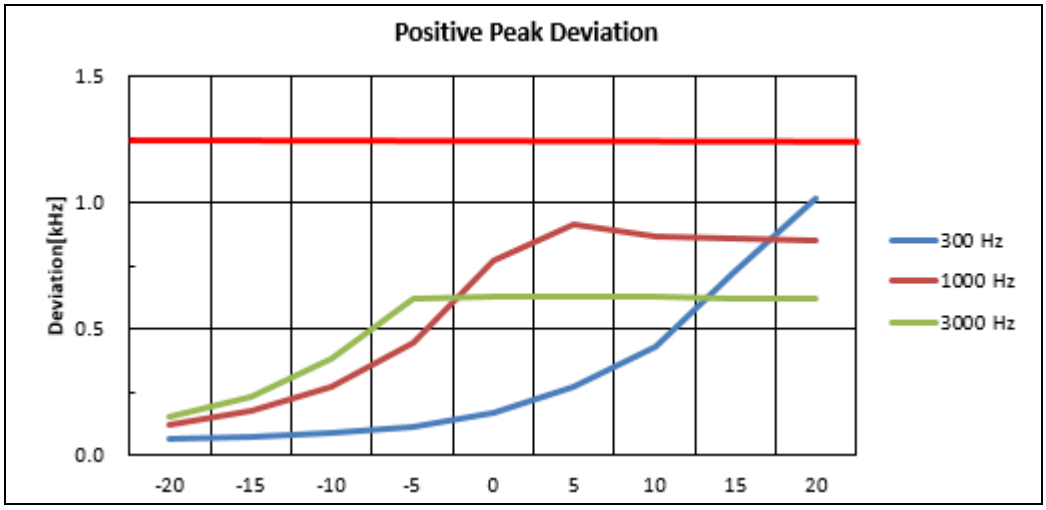


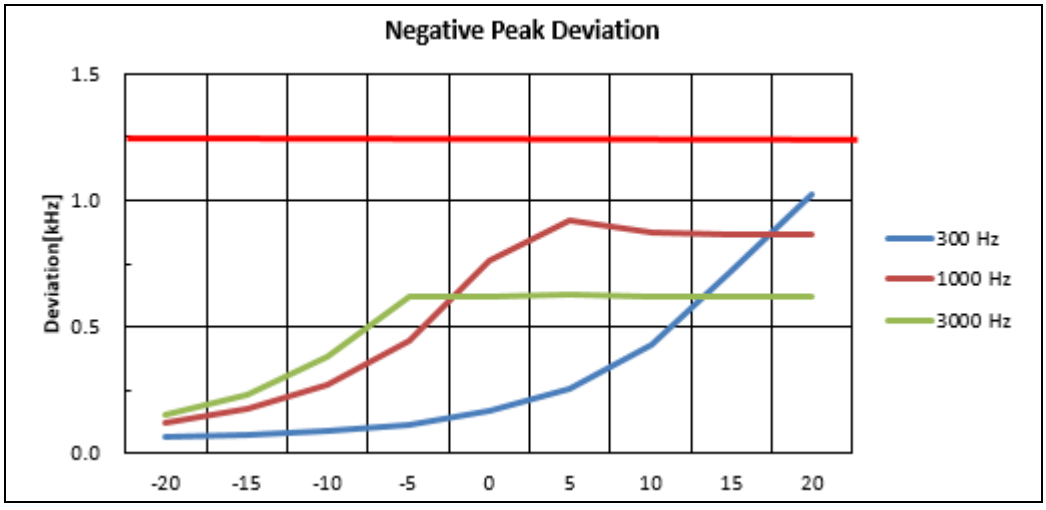
-Target Power_1W_173.40 ㎒



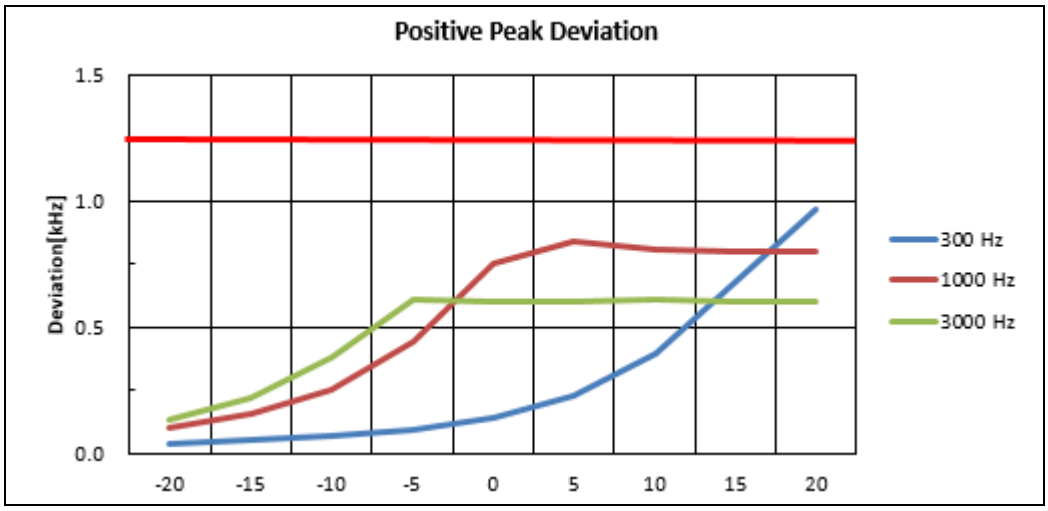


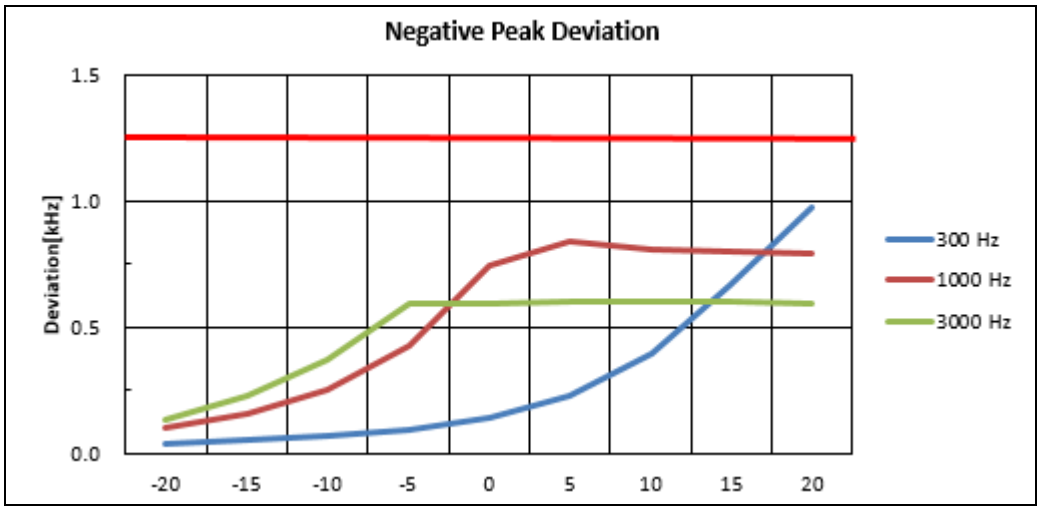
-Target Power_5W_150.05 ㎒



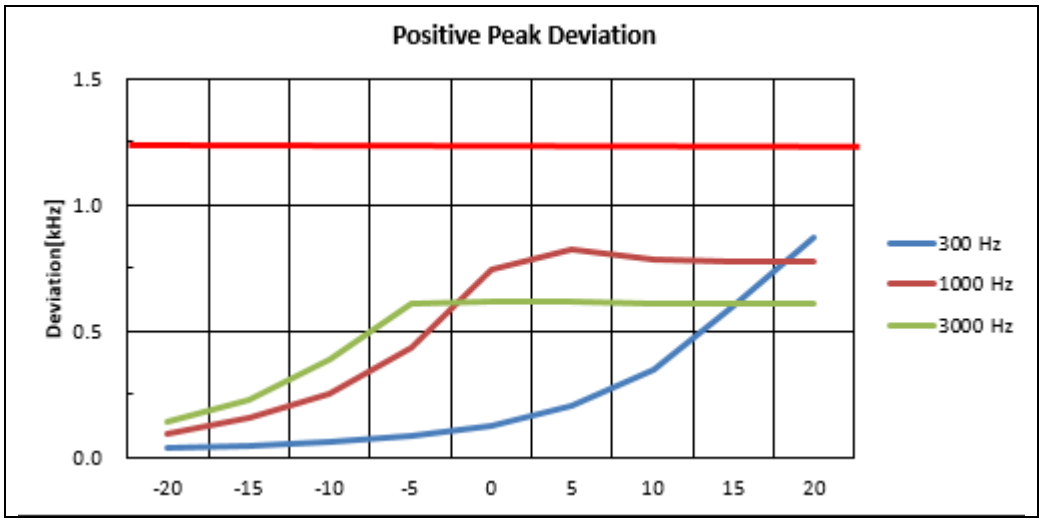


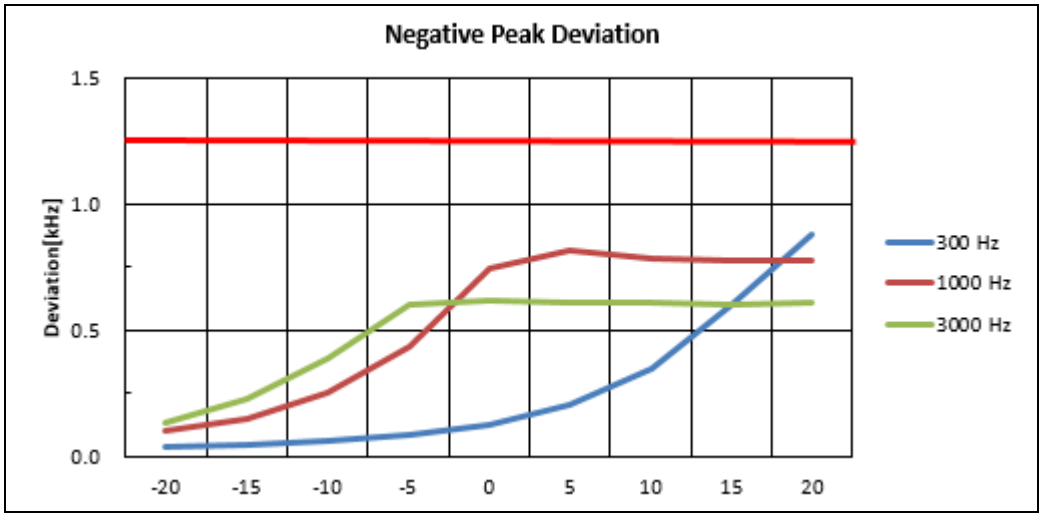
-Target Power_5W_162.00 ㎒





-Target Power_5W_173.40 ㎒





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:

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

5.4.3 Test Result

- Complied

* 12.5BW

-Target Power_1W_150.05 ㎒

Audio Frequency [Hz]	Measured Deviation [㎑]	Calculated Response [dB]
100	0.05	-20.85
200	0.05	-20.30
300	0.12	-12.59
400	0.18	-9.14
500	0.23	-6.94
600	0.29	-4.94
700	0.33	-3.70
800	0.39	-2.21
900	0.45	-1.13
1 000	**0.51**	**0.00**
1 500	0.75	3.44
2 000	0.98	5.73
2 500	1.05	6.29
3 000	0.73	3.19
4 000	0.06	-19.14
5 000	0.05	-19.45

-Target Power_1W_162.00 ㎒

Audio Frequency [Hz]	Measured Deviation [㎑]	Calculated Response [dB]
100	0.04	-21.50
200	0.05	-21.10
300	0.11	-13.26
400	0.17	-9.51
500	0.22	-7.28
600	0.27	-5.41
700	0.33	-3.72
800	0.41	-1.89
900	0.46	-1.01
1 000	**0.51**	**0.00**
1 500	0.78	3.71
2 000	1.03	6.12
2 500	1.10	6.68
3 000	0.77	3.57
4 000	0.05	-19.52
5 000	0.04	-21.30

-Target Power_1W_173.40 ㎒

Audio Frequency [㎐]	Measured Deviation [㎑]	Calculated Response [dB]
100	0.04	-22.77
200	0.05	-20.88
300	0.10	-14.31
400	0.15	-10.55
500	0.20	-7.94
600	0.27	-5.60
700	0.32	-4.09
800	0.38	-2.45
900	0.44	-1.27
1 000	**0.51**	**0.00**
1 500	0.79	3.76
2 000	1.05	6.26
2 500	1.12	6.85
3 000	0.81	4.04
4 000	0.04	-21.27
5 000	0.04	-22.31

-Target Power_5W_150.05 ㎒

Audio Frequency [㎐]	Measured Deviation [㎑]	Calculated Response [dB]
100	0.05	-20.52
200	0.05	-20.34
300	0.12	-12.09
400	0.17	-9.15
500	0.23	-6.73
600	0.29	-4.87
700	0.33	-3.49
800	0.40	-1.92
900	0.44	-1.03
1 000	**0.50**	**0.00**
1 500	0.76	3.60
2 000	0.99	5.92
2 500	1.05	6.42
3 000	0.73	3.34
4 000	0.05	-20.71
5 000	0.04	-21.09

-Target Power_5W_162.00 ㎒

Audio Frequency [㎐]	Measured Deviation [㎑]	Calculated Response [dB]
100	0.06	-18.92
200	0.04	-21.32
300	0.12	-12.90
400	0.17	-9.37
500	0.22	-7.38
600	0.28	-5.24
700	0.33	-3.84
800	0.40	-2.21
900	0.46	-0.95
1 000	**0.51**	**0.00**
1 500	0.79	3.81
2 000	1.03	6.09
2 500	1.10	6.63
3 000	0.78	3.62
4 000	0.06	-19.22
5 000	0.04	-21.32

-Target Power_5W_173.40 ㎒

Audio Frequency [㎐]	Measured Deviation [㎑]	Calculated Response [dB]
100	0.05	-21.10
200	0.05	-20.73
300	0.10	-14.52
400	0.15	-10.47
500	0.21	-7.72
600	0.26	-5.80
700	0.33	-3.85
800	0.38	-2.50
900	0.44	-1.28
1 000	**0.51**	**0.00**
1 500	0.79	3.77
2 000	1.04	6.21
2 500	1.12	6.84
3 000	0.79	3.81
4 000	0.04	-22.13
5 000	0.05	-20.19

* 6.25BW

-Target Power_1W_150.05 ㎒

Audio Frequency [Hz]	Measured Deviation [㎑]	Calculated Response [dB]
100	0.05	-14.08
200	0.06	-13.43
300	0.08	-10.39
400	0.11	-7.73
500	0.14	-5.50
600	0.16	-4.26
700	0.18	-3.18
800	0.21	-1.83
900	0.23	-1.00
1 000	**0.26**	**0.00**
1 500	0.36	2.92
2 000	0.47	5.15
2 500	0.48	5.39
3 000	0.36	2.99
4 000	0.05	-14.08
5 000	0.05	-14.61

-Target Power_1W_162.00 ㎒

Audio Frequency [Hz]	Measured Deviation [㎑]	Calculated Response [dB]
100	0.04	-16.94
200	0.04	-16.48
300	0.06	-12.31
400	0.10	-8.56
500	0.12	-7.09
600	0.14	-5.25
700	0.17	-3.49
800	0.20	-2.41
900	0.22	-1.33
1 000	**0.26**	**0.00**
1 500	0.39	3.43
2 000	0.50	5.63
2 500	0.53	6.24
3 000	0.38	3.23
4 000	0.03	-17.93
5 000	0.03	-18.20

-Target Power_1W_173.40 ㎒

Audio Frequency [㎐]	Measured Deviation [㎑]	Calculated Response [dB]
100	0.03	-18.71
200	0.03	-17.33
300	0.06	-12.54
400	0.08	-9.58
500	0.11	-7.05
600	0.13	-5.61
700	0.16	-4.04
800	0.19	-2.29
900	0.22	-1.27
1 000	**0.25**	**0.00**
1 500	0.38	3.54
2 000	0.50	6.04
2 500	0.53	6.54
3 000	0.38	3.57
4 000	0.03	-18.42
5 000	0.03	-19.66

-Target Power_5W_150.05 ㎒

Audio Frequency [㎐]	Measured Deviation [㎑]	Calculated Response [dB]
100	0.05	-14.91
200	0.05	-14.36
300	0.08	-10.66
400	0.10	-8.34
500	0.12	-6.37
600	0.15	-4.47
700	0.19	-2.64
800	0.21	-1.80
900	0.23	-0.89
1 000	**0.26**	**0.00**
1 500	0.38	3.48
2 000	0.48	5.42
2 500	0.51	5.95
3 000	0.37	3.08
4 000	0.05	-14.72
5 000	0.04	-15.50

-Target Power_5W_162.00 ㎒

Audio Frequency [㎐]	Measured Deviation [㎑]	Calculated Response [dB]
100	0.03	-17.76
200	0.04	-17.00
300	0.07	-11.11
400	0.09	-8.95
500	0.12	-6.92
600	0.14	-5.09
700	0.17	-3.52
800	0.20	-2.15
900	0.23	-0.90
1 000	**0.26**	**0.00**
1 500	0.39	3.58
2 000	0.50	5.88
2 500	0.53	6.37
3 000	0.38	3.35
4 000	0.04	-17.00
5 000	0.03	-17.76

-Target Power_5W_173.40 ㎒

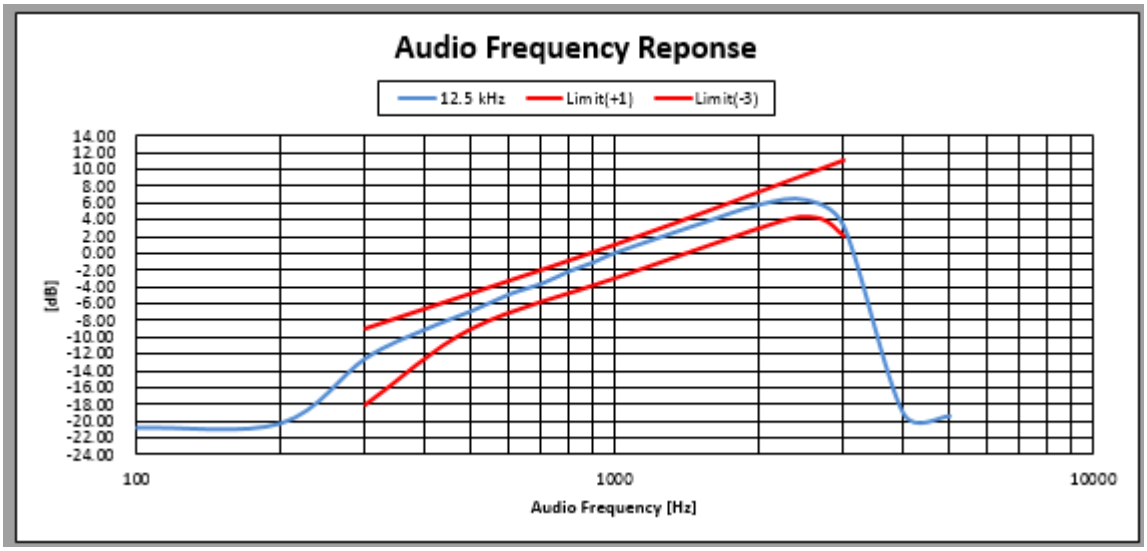
Audio Frequency [㎐]	Measured Deviation [㎑]	Calculated Response [dB]
100	0.03	-19.33
200	0.03	-18.71
300	0.06	-12.25
400	0.08	-9.90
500	0.11	-7.37
600	0.13	-5.61
700	0.16	-3.72
800	0.19	-2.43
900	0.22	-1.31
1 000	**0.25**	**0.00**
1 500	0.38	3.68
2 000	0.50	5.99
2 500	0.53	6.56
3 000	0.38	3.57
4 000	0.03	-18.13
5 000	0.03	-19.02

5.4.4 Test Plot

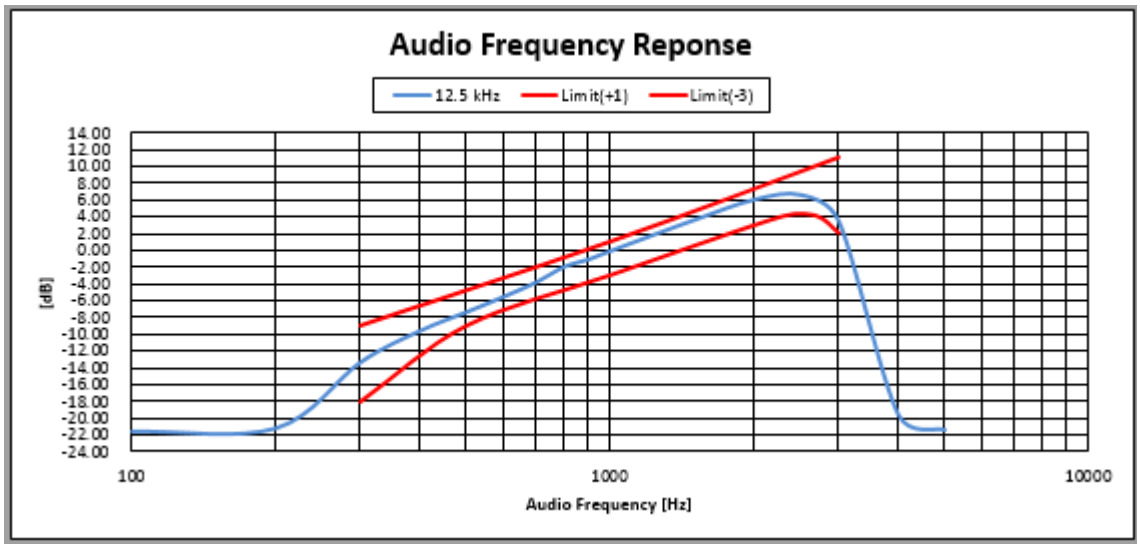
- Complied

* 12.5BW

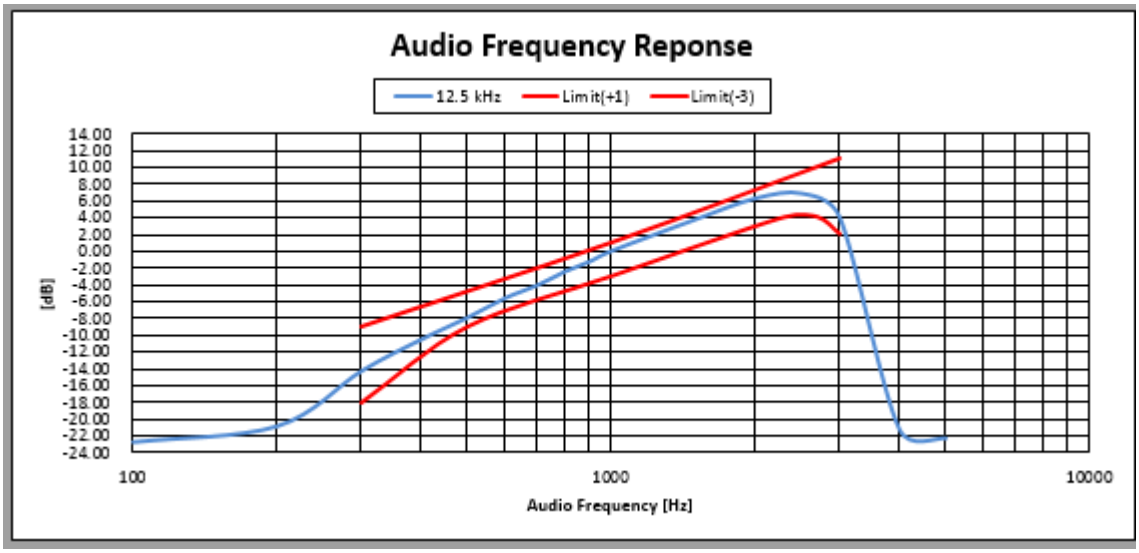
-Target Power_1W_150.05 ㎒



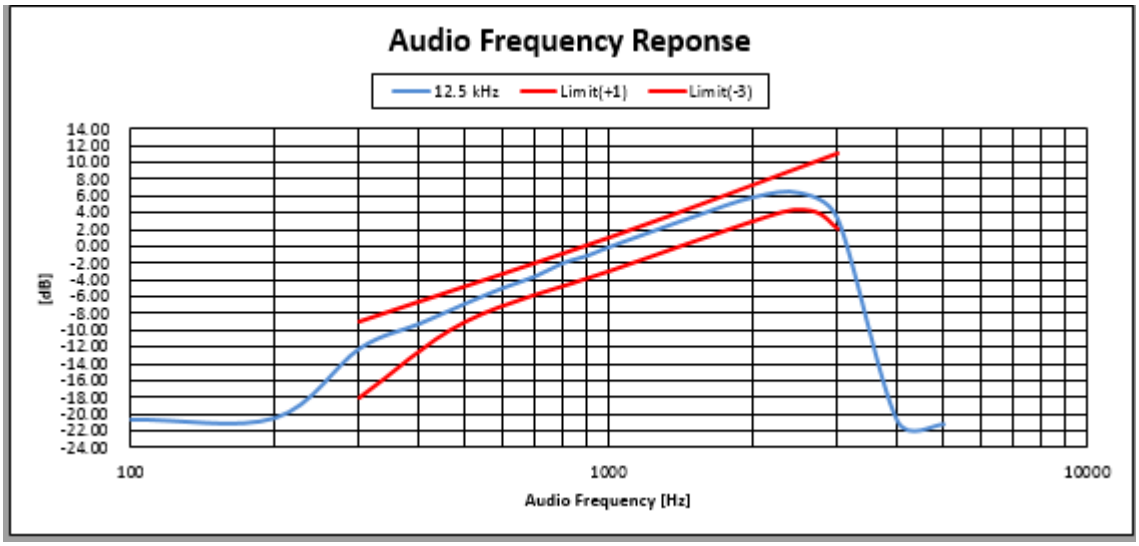
-Target Power_1W_162.00 ㎒



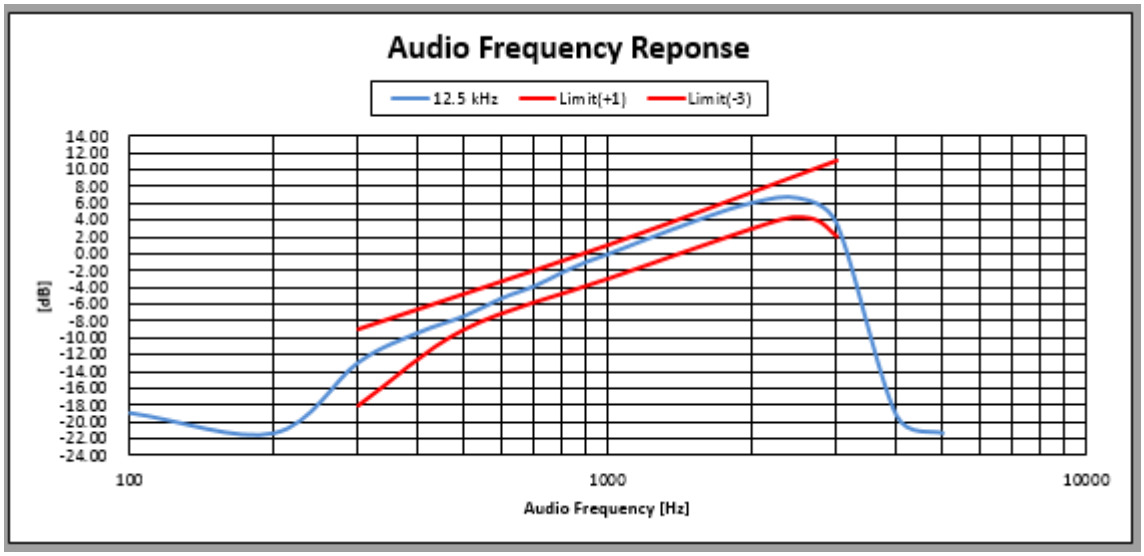
-Target Power_1W_173.40 ㎒



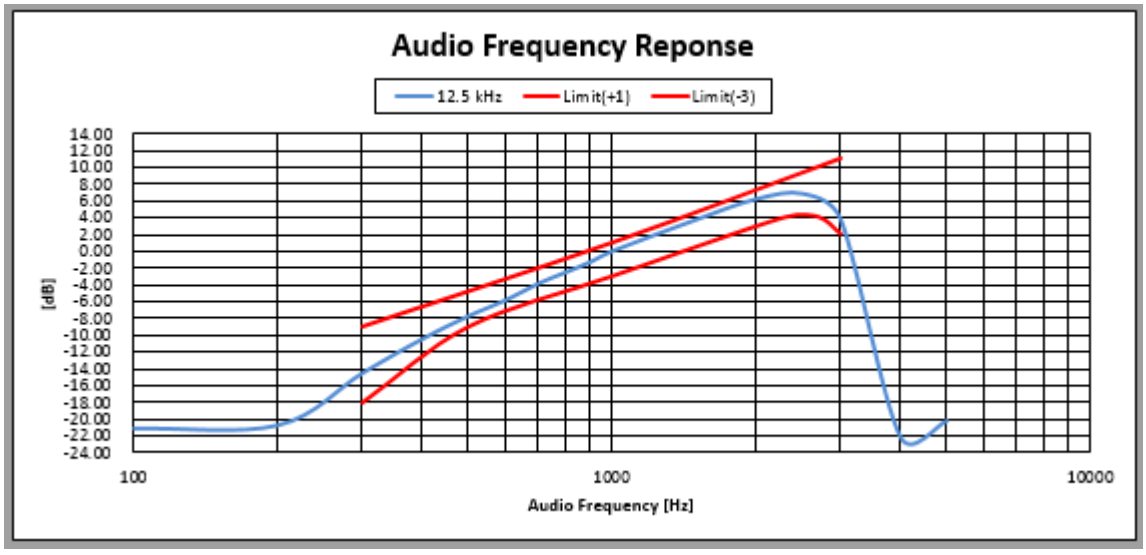
-Target Power_5W_150.05 ㎒



-Target Power_5W_162.00 ㎒

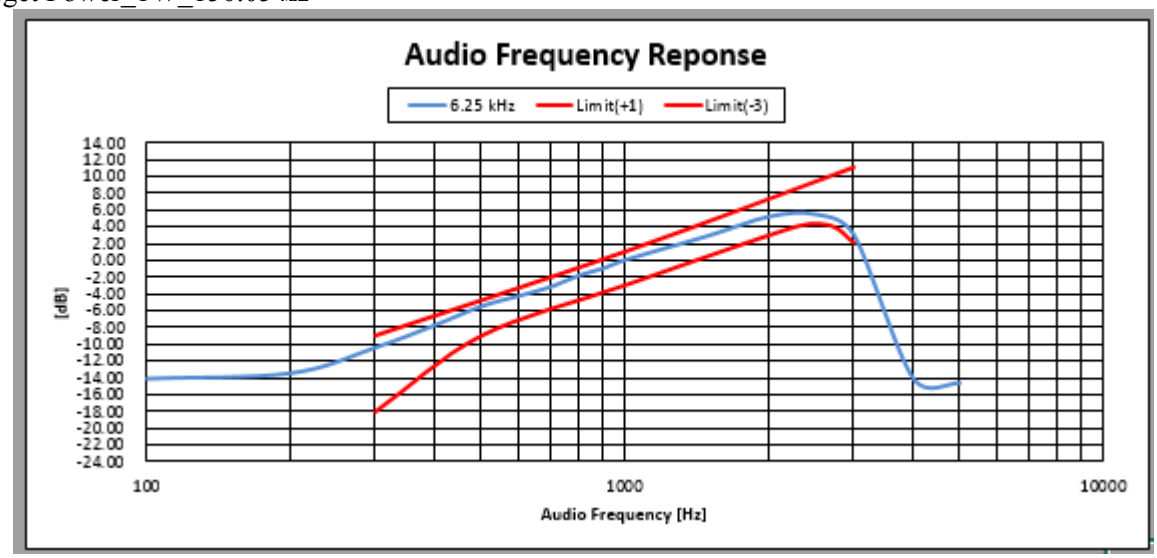


-Target Power_5W_173.40 ㎒

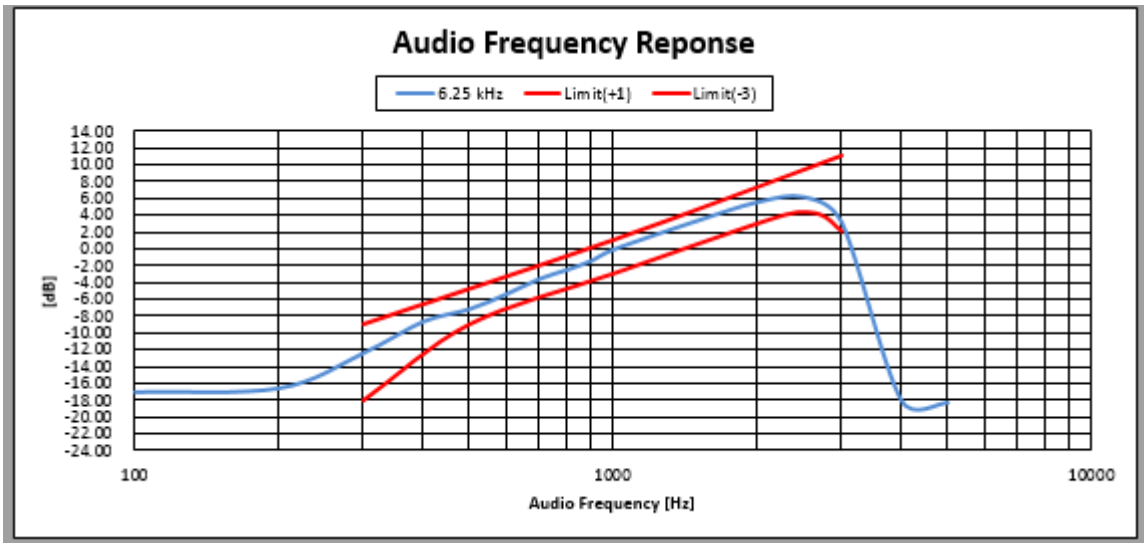


* 6.25BW

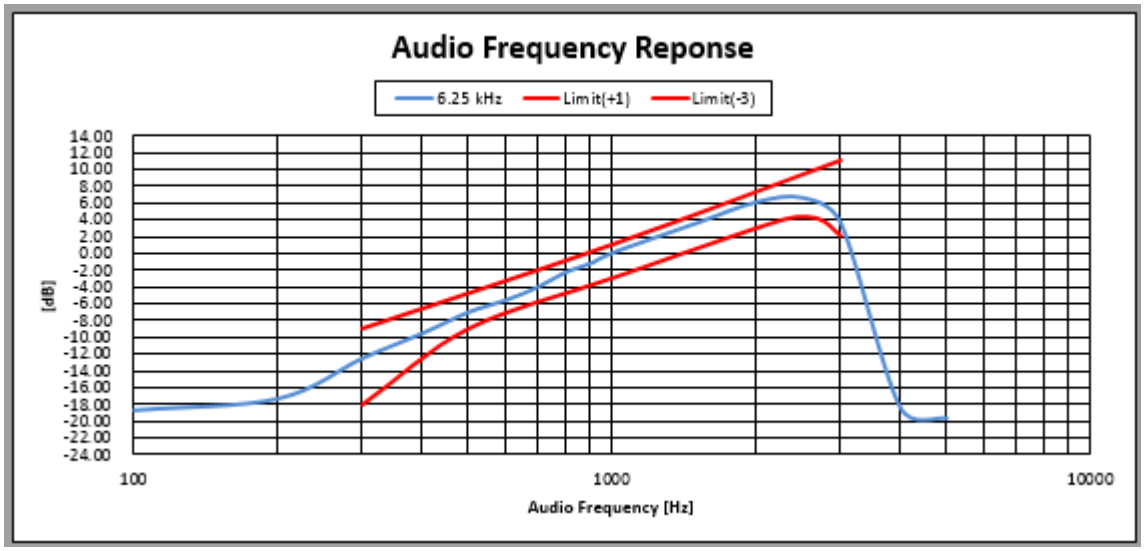
-Target Power_1W_150.05 ㎒



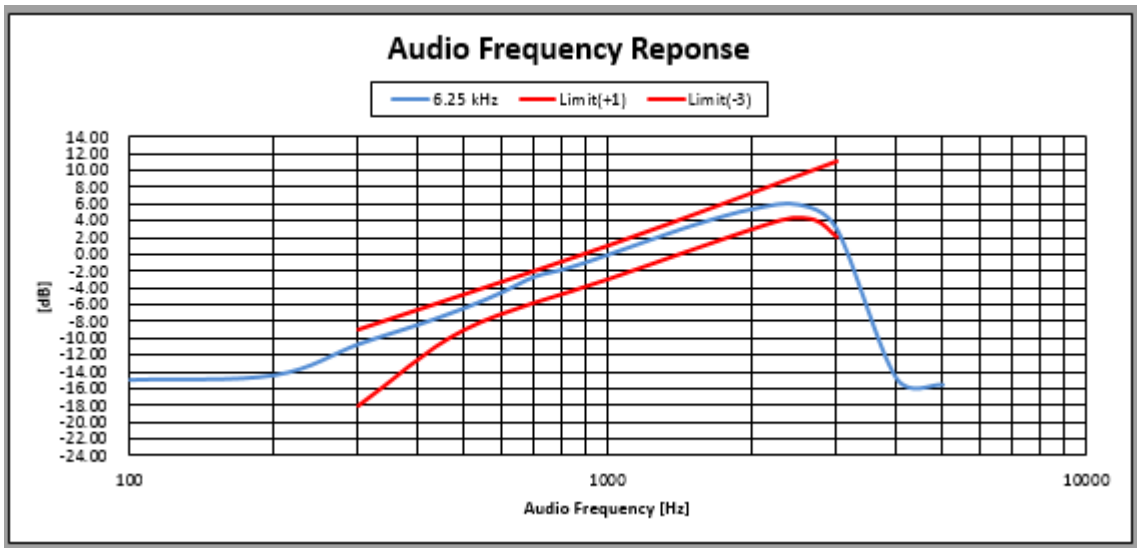
-Target Power_1W_162.00 ㎒



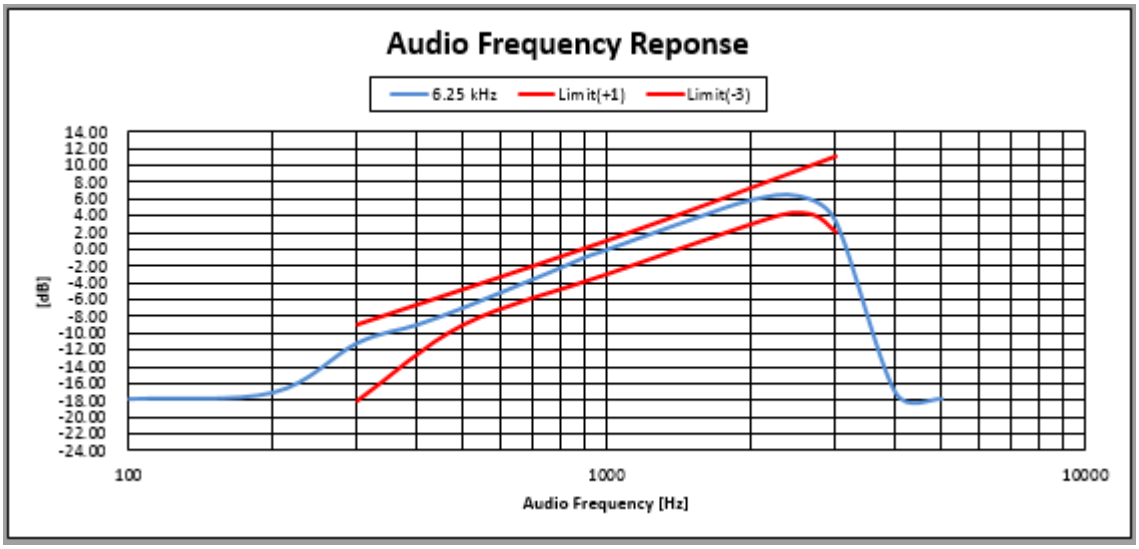
-Target Power_1W_173.40 ㎒



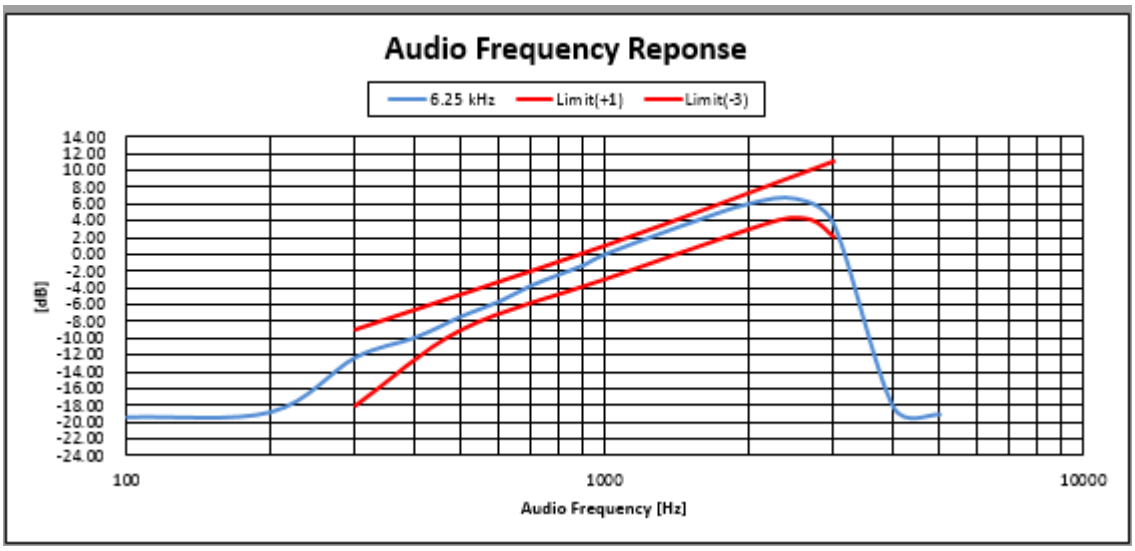
-Target Power_5W_150.05 ㎒



-Target Power_5W_162.00 ㎒



-Target Power_5W_173.40 ㎒



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.

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	-3.3	0.0
3	-6.0	0.0
4	-15.8	-12.5
5	-34.4	-22.2
6	-41.5	-30.1
7	-41.7	-36.8
8	<-50	-42.6
9	<-50	-47.7
10	<-55	-52.3
20	<-85	-82.4

-Target Power_1W_162.00 ㎒

Audio Frequency [㎑]	Calculated Response [dB]	Limit [dB]
1	0.0	0.0
2	-3.3	0.0
3	-6.1	0.0
4	-16.0	-12.5
5	-34.3	-22.2
6	-41.2	-30.1
7	-41.9	-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	-6.1	0.0
4	-16.0	-12.5
5	-34.3	-22.2
6	-40.7	-30.1
7	-41.6	-36.8
8	<-50	-42.6
9	<-50	-47.7
10	<-55	-52.3
20	<-85	-82.4

-Target Power_5W_150.05 ㎒

Audio Frequency [㎑]	Calculated Response [dB]	Limit [dB]
1	0.0	0.0
2	-3.3	0.0
3	-6.1	0.0
4	-15.9	-12.5
5	-35.1	-22.2
6	-46.4	-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_162.00 ㎒

Audio Frequency [㎑]	Calculated Response [dB]	Limit [dB]
1	0.0	0.0
2	-3.3	0.0
3	-6.1	0.0
4	-16.0	-12.5
5	-35.0	-22.2
6	-45.8	-30.1
7	-48.1	-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	-6.1	0.0
4	-16.0	-12.5
5	-34.9	-22.2
6	-35.2	-30.1
7	-48.0	-36.8
8	<-50	-42.6
9	<-50	-47.7
10	<-55	-52.3
20	<-85	-82.4

* 6.25BW

-Target Power_1W_150.05 ㎒

Audio Frequency [㎑]	Calculated Response [dB]	Limit [dB]
1	0.0	0.0
2	-2.3	0.0
3	-5.7	0.0
4	-15.8	-12.5
5	-34.2	-22.2
6	-35.9	-30.1
7	-42.2	-36.8
8	<-50	-42.6
9	<-50	-47.7
10	<-55	-52.3
20	<-85	-82.4

-Target Power_1W_162.00 ㎒

Audio Frequency [㎑]	Calculated Response [dB]	Limit [dB]
1	0.0	0.0
2	-3.3	0.0
3	-6.7	0.0
4	-16.7	-12.5
5	-35.0	-22.2
6	-42.3	-30.1
7	-43.0	-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	-2.6	0.0
3	-5.7	0.0
4	-15.8	-12.5
5	-34.2	-22.2
6	-40.7	-30.1
7	-41.3	-36.8
8	<-50	-42.6
9	<-50	-47.7
10	<-55	-52.3
20	<-85	-82.4

-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	-16.0	-12.5
5	-35.0	-22.2
6	-46.4	-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_162.00 ㎒

Audio Frequency [㎑]	Calculated Response [dB]	Limit [dB]
1	0.0	0.0
2	-2.3	0.0
3	-5.7	0.0
4	-15.8	-12.5
5	-34.7	-22.2
6	-45.5	-30.1
7	-48.4	-36.8
8	<-50	-42.6
9	<-50	-47.7
10	<-55	-52.3
20	<-85	-82.4

-Target Power_5W_173.40 ㎒

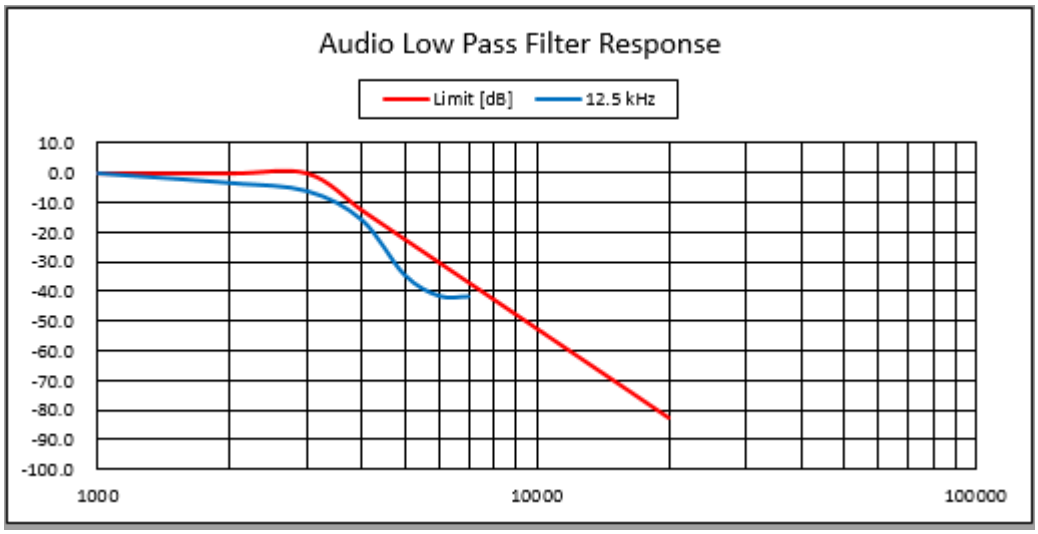
Audio Frequency [㎑]	Calculated Response [dB]	Limit [dB]
1	0.0	0.0
2	-2.4	0.0
3	-5.7	0.0
4	-15.9	-12.5
5	-34.8	-22.2
6	-45.2	-30.1
7	-48.0	-36.8
8	<-50	-42.6
9	<-50	-47.7
10	<-55	-52.3
20	<-85	-82.4

5.5.4 Test Plots

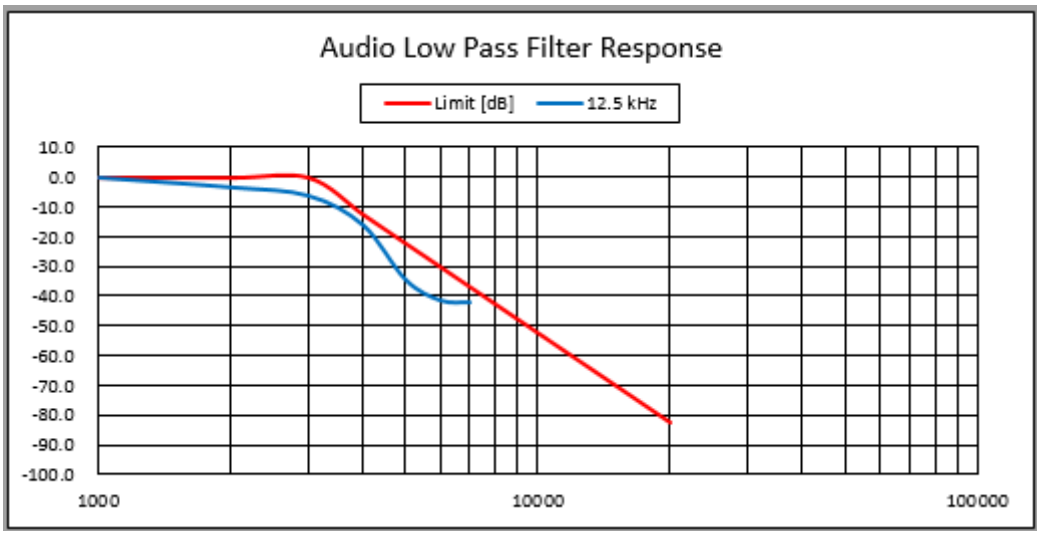
- Complied

* 12.5BW

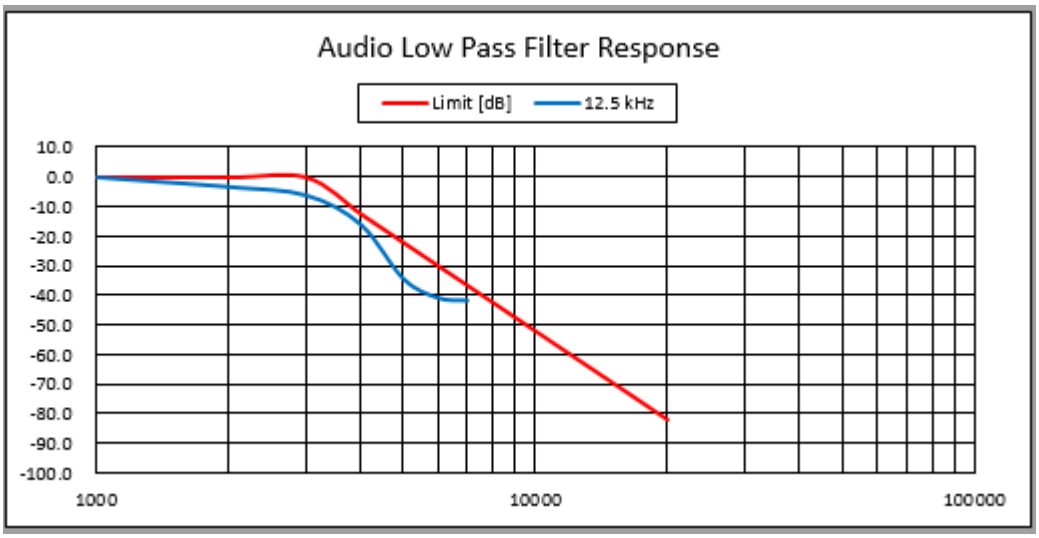
-Target Power_1W_150.05 ㎒



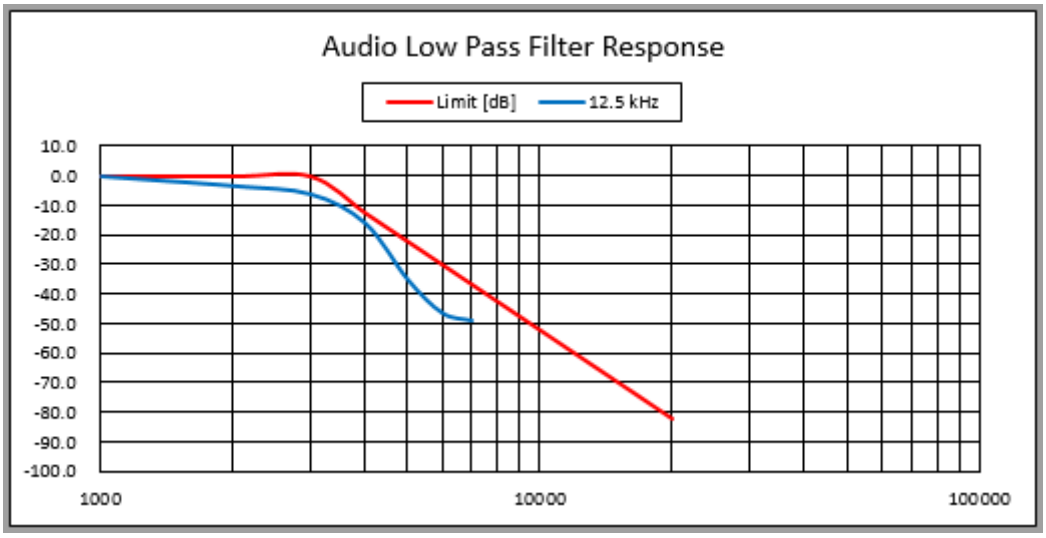
-Target Power_1W_162.00 ㎒



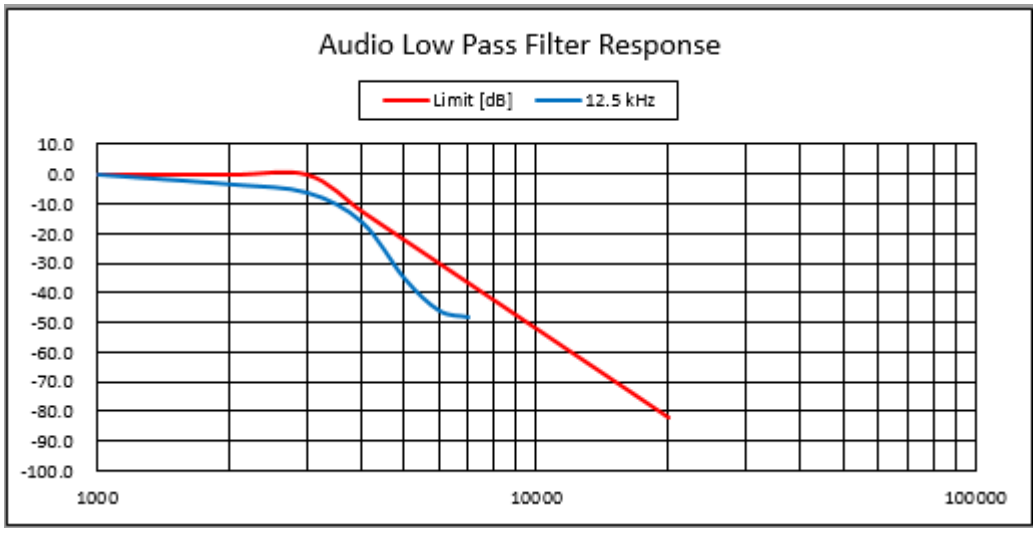
-Target Power_1W_173.40 ㎒



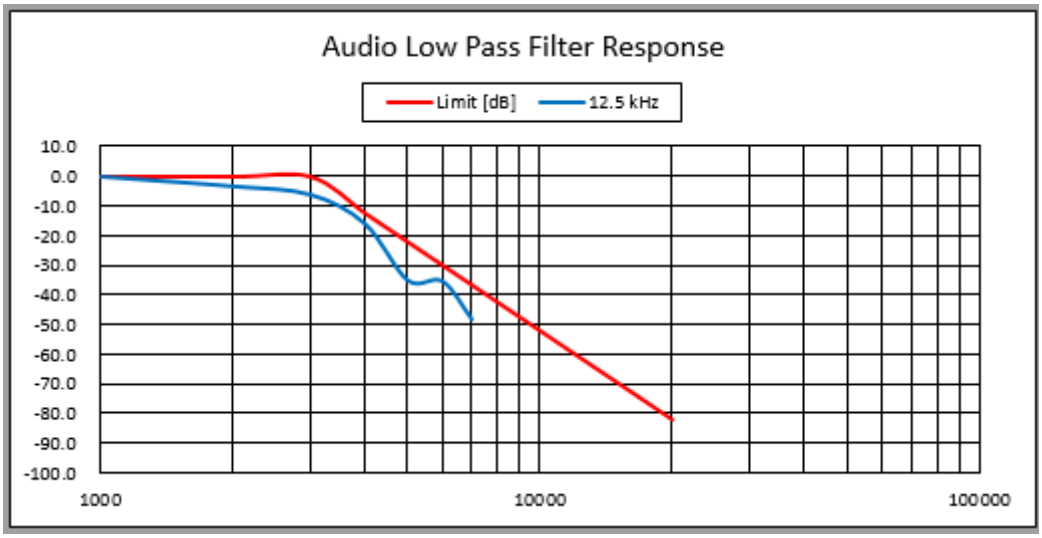
-Target Power_5W_150.05 ㎒



-Target Power_5W_162.00 ㎒

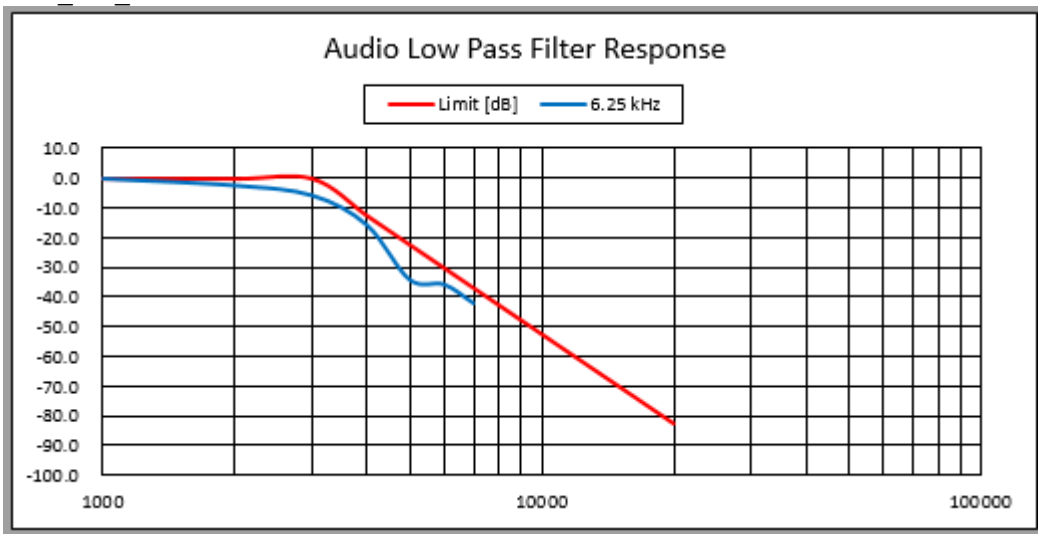


-Target Power_5W_173.40 ㎒

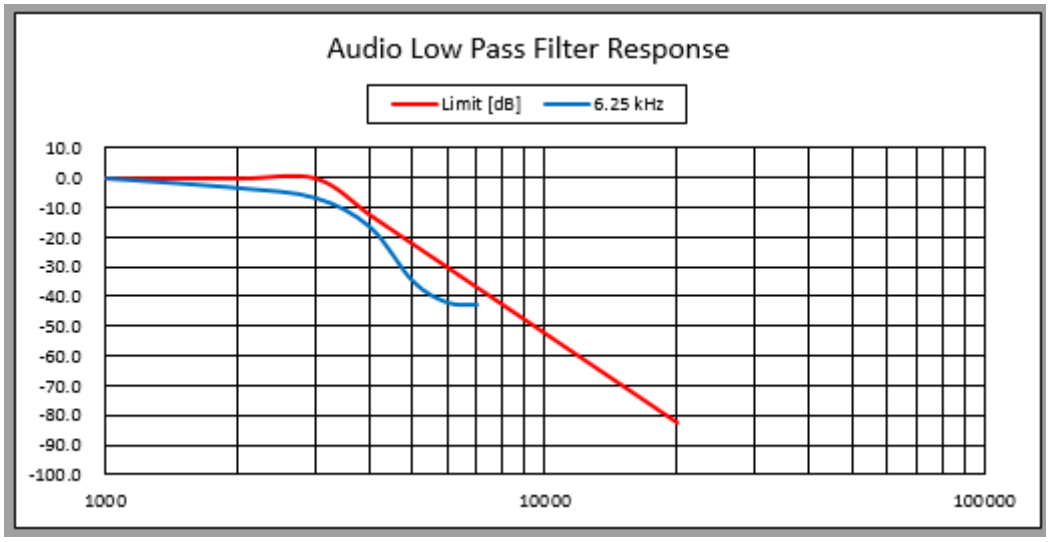


* 6.25BW

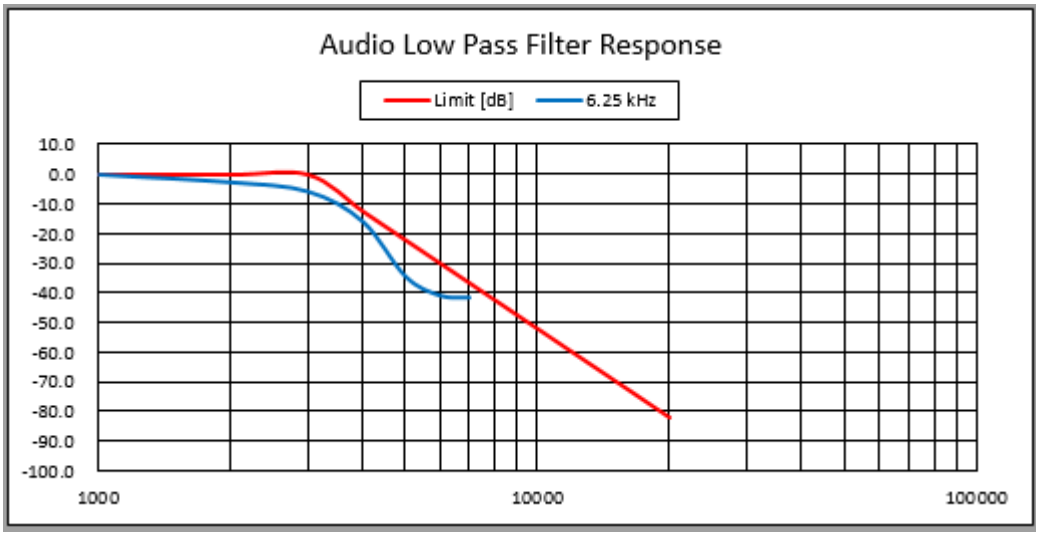
-Target Power_1W_150.05 ㎒



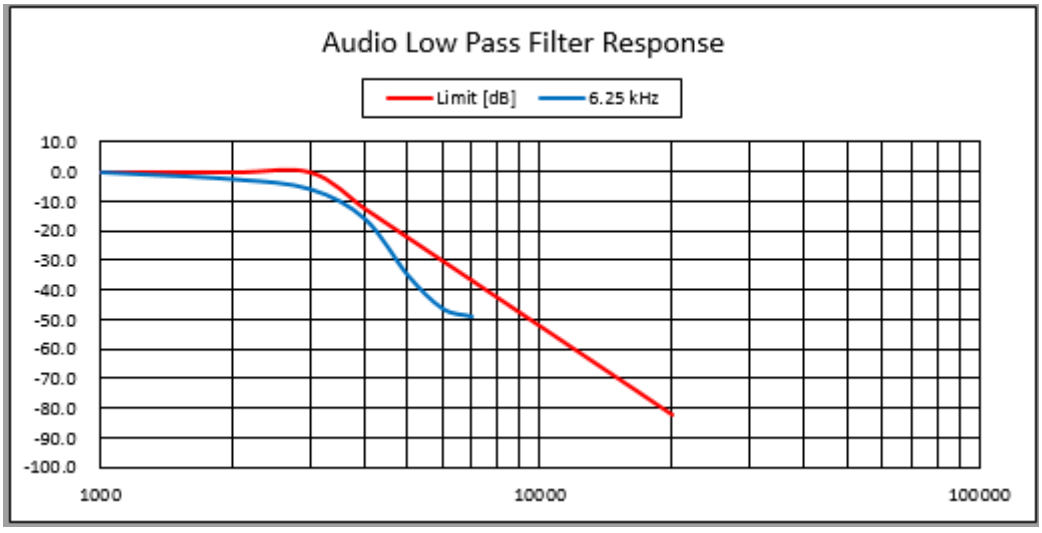
-Target Power_1W_162.00 ㎒



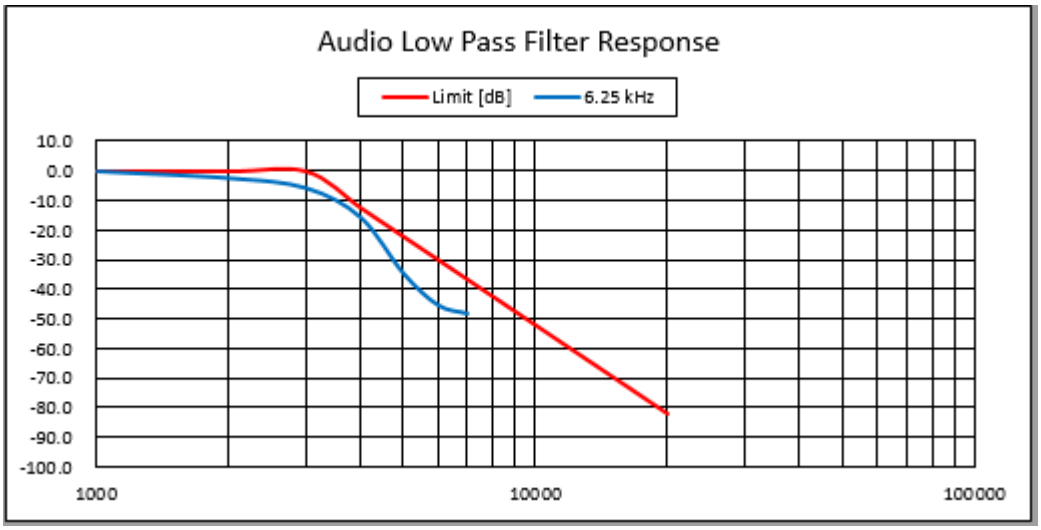
-Target Power_1W_173.40 ㎒



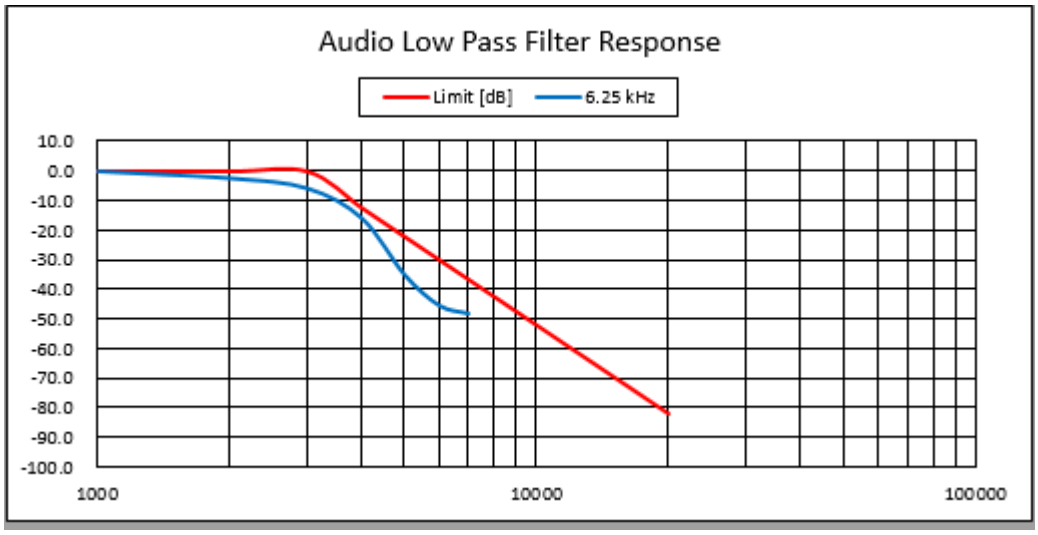
-Target Power_5W_150.05 ㎒



-Target Power_5W_162.00 ㎒



-Target Power_5W_173.40 ㎒



5.6 Occupied Bandwidth

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.

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.

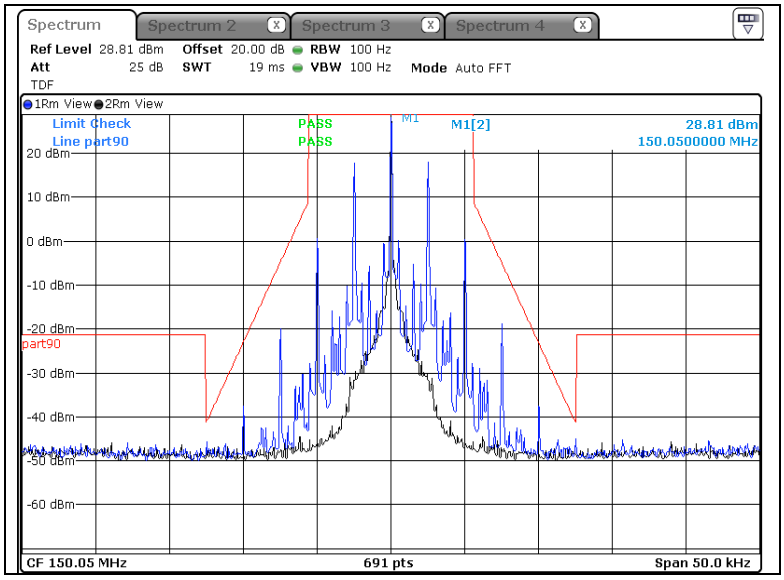
5.6.3 Test Result

- Complied

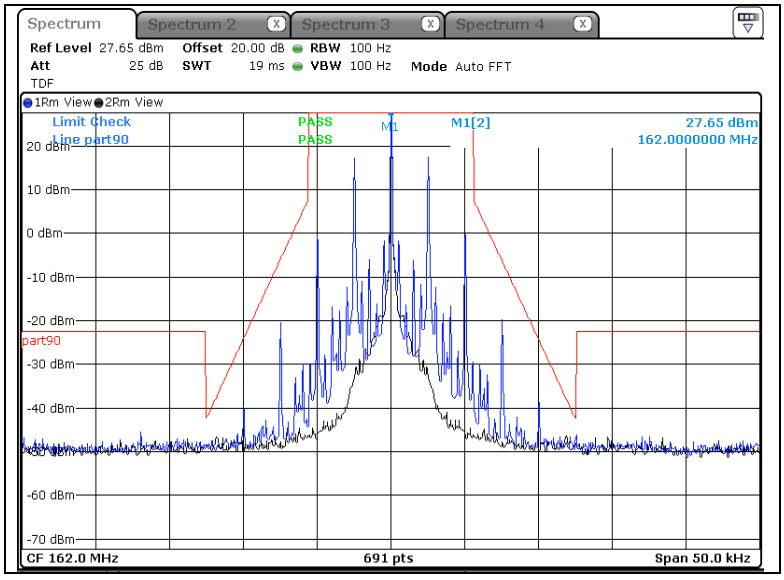
Figure 4. plot of Occupied Bandwidth

* 12.5BW

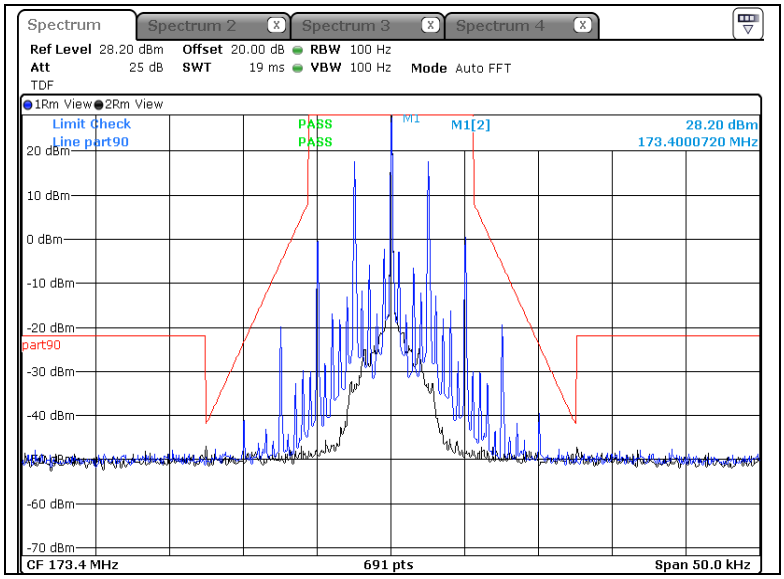
-Target Power_1W_150.05 ㎒



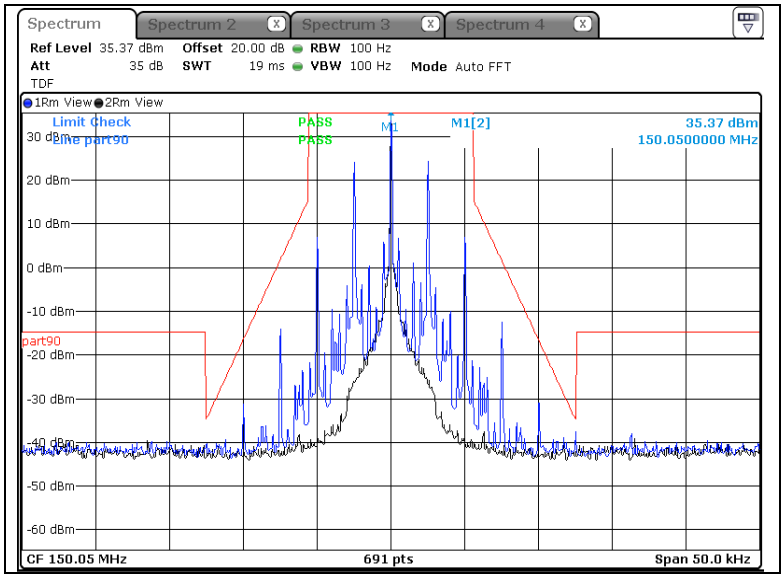
-Target Power_1W_162.00 ㎒



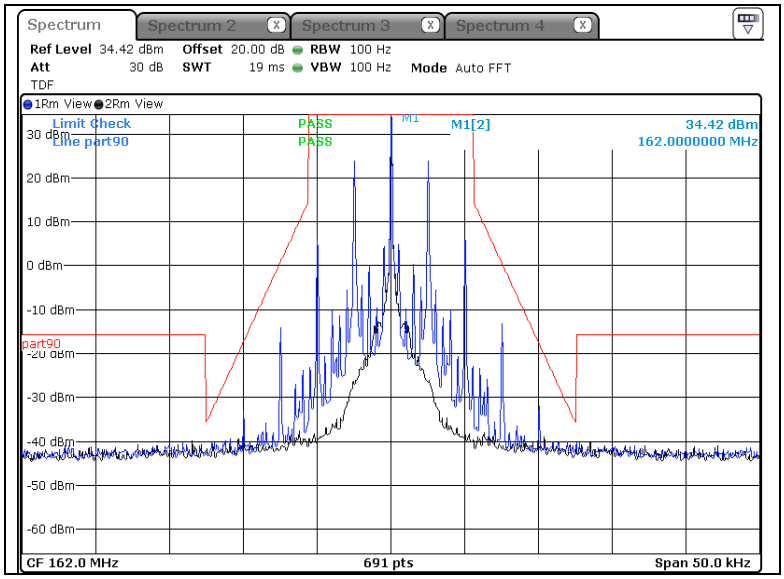
-Target Power_1W_173.40 ㎒



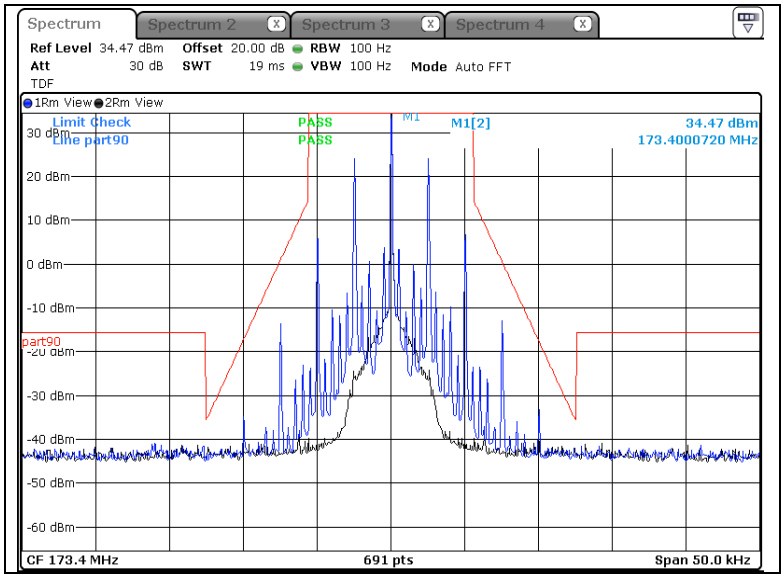
-Target Power_5W_150.05 ㎒



-Target Power_5W_162.00 ㎒

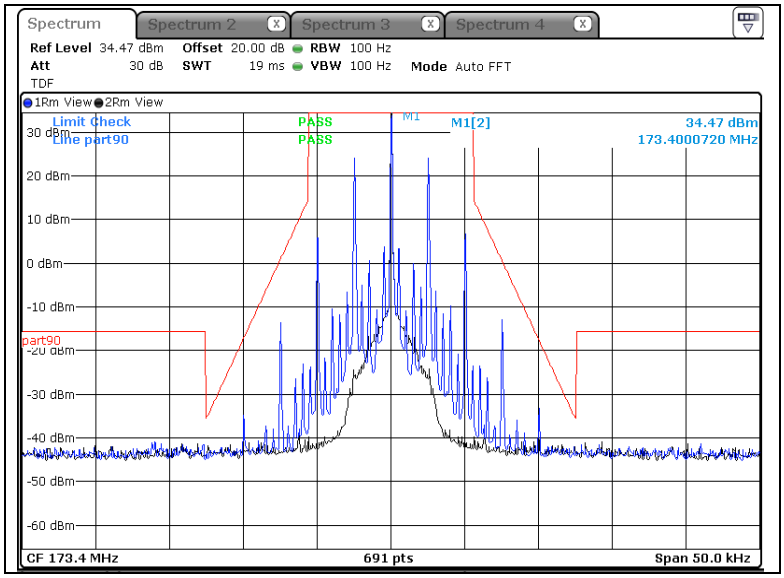


-Target Power_5W_173.40 ㎒

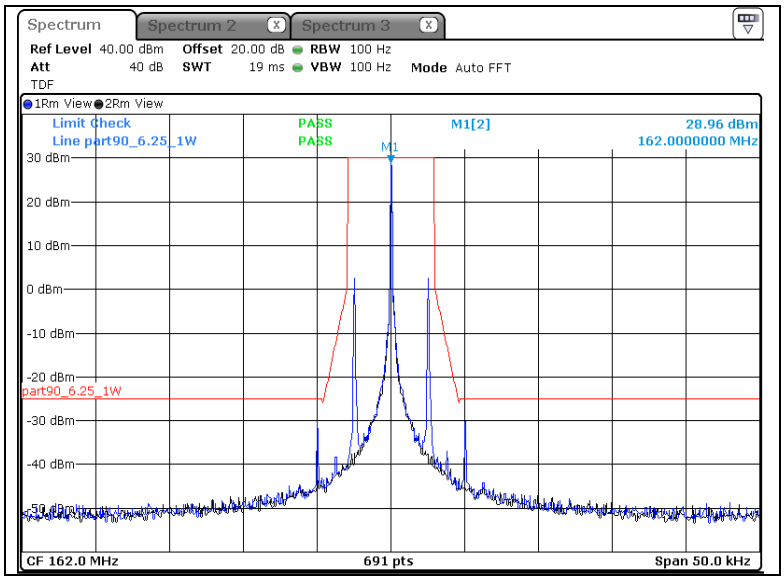


* 6.25BW

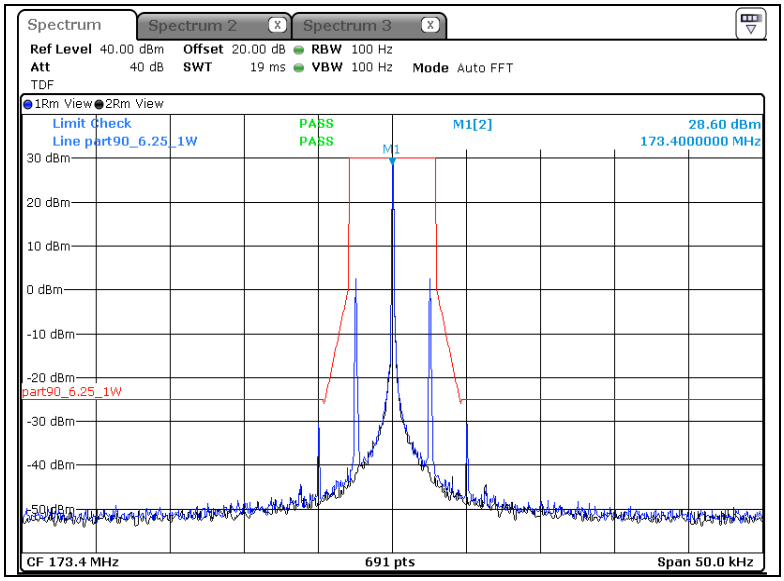
-Target Power_1W_150.05 ㎒



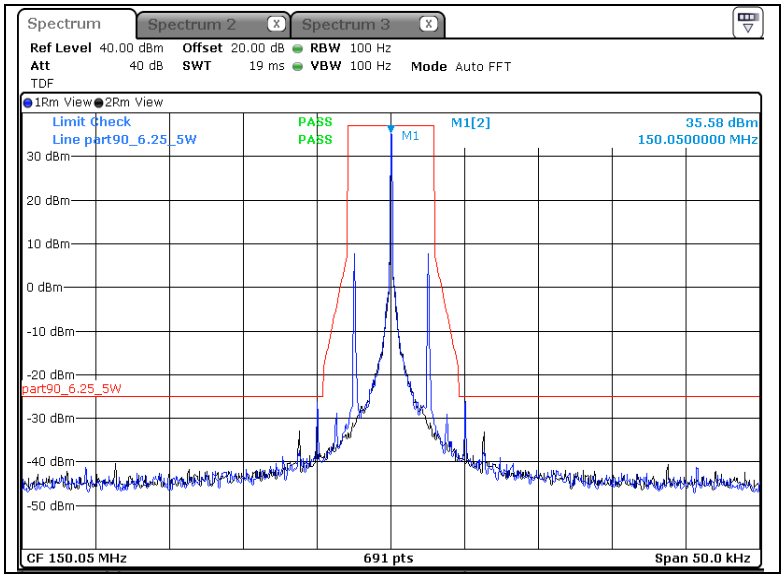
-Target Power_1W_162.00 ㎒



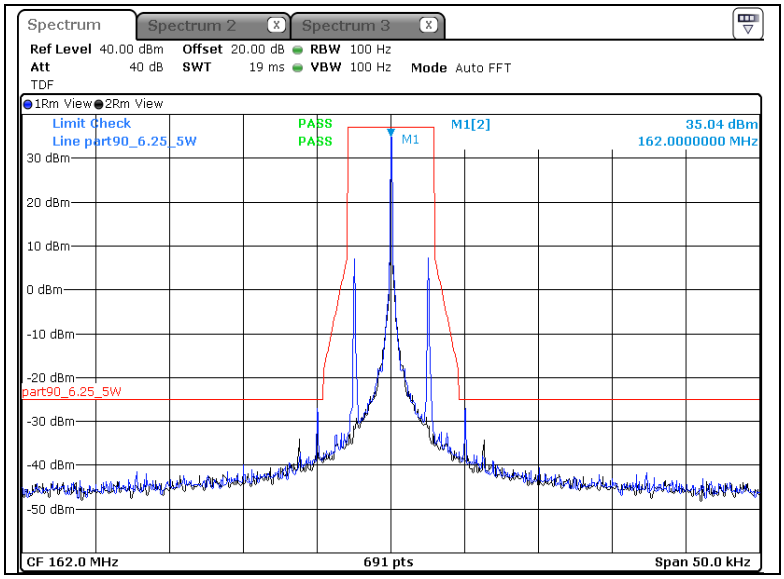
-Target Power_1W_173.40 ㎒



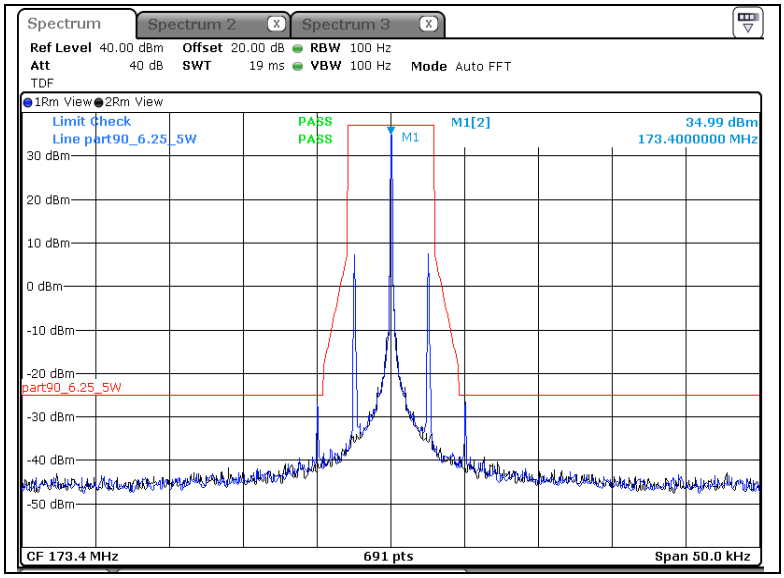
-Target Power_5W_150.05 ㎒



-Target Power_5W_162.00 ㎒



-Target Power_5W_173.40 ㎒



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] t_{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.

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㏈m.
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.

5.7.3 Test Result

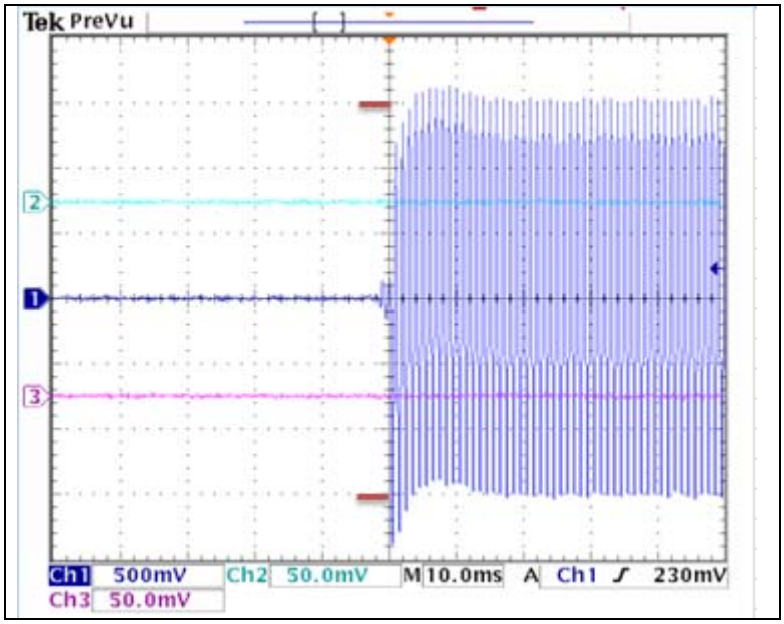
- Complied

Figure 4. plot of Transient Frequency Behaviour of the Transmitter

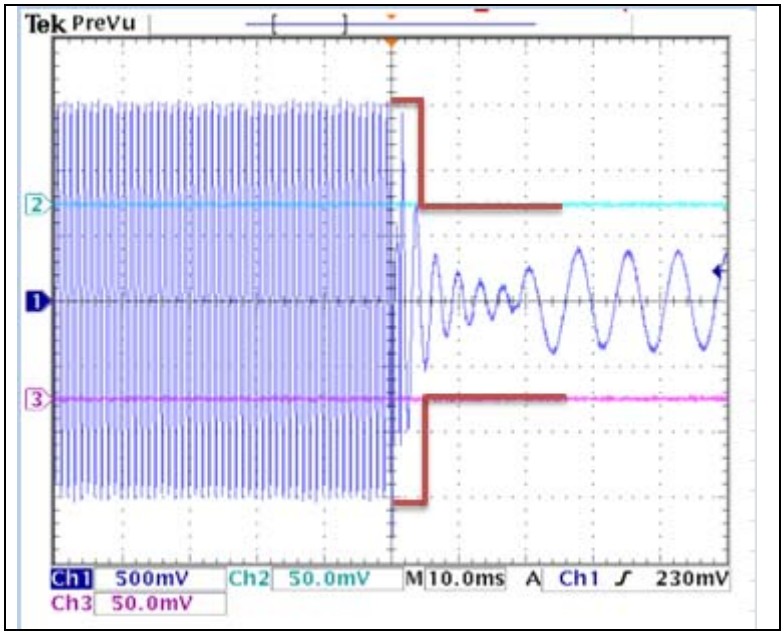
* 12.5BW

-Target Power_1W_150.05 ㎒

-On to Off

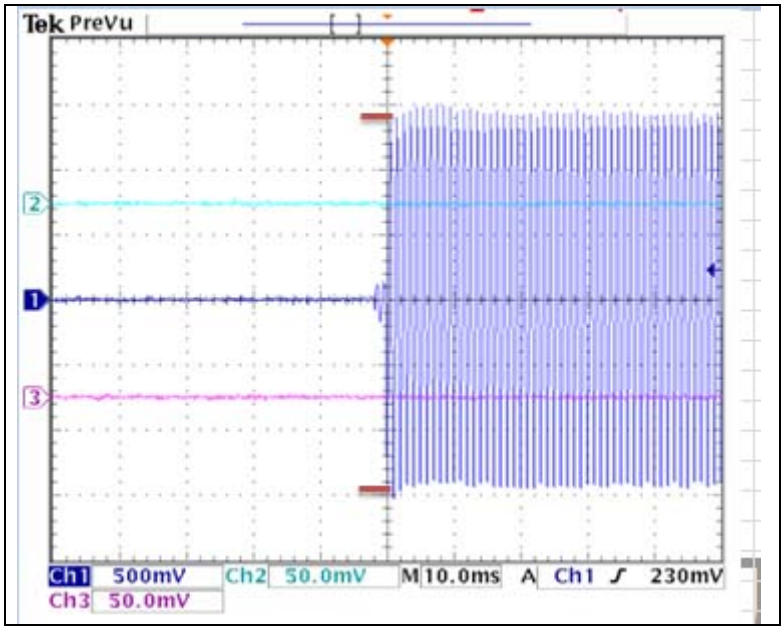


-Off to On

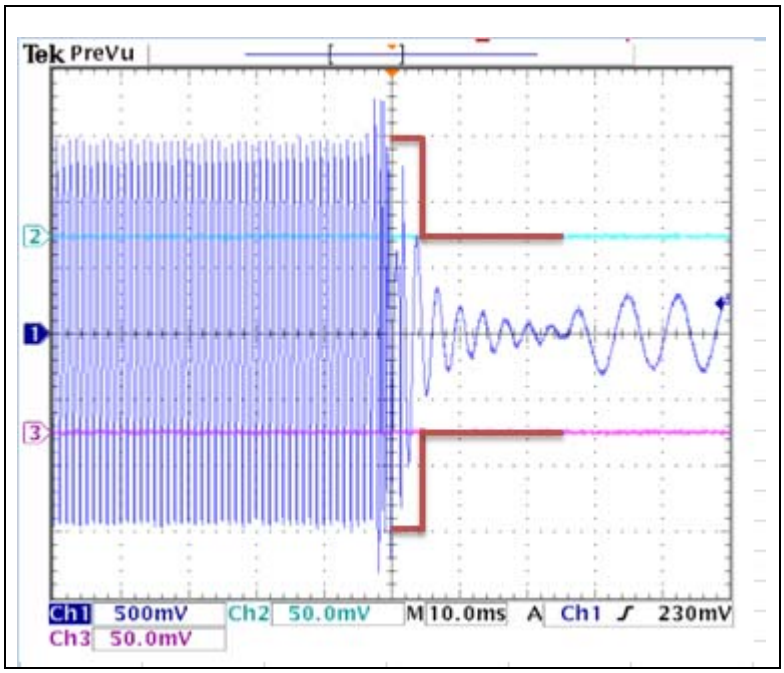


-Target Power_1W_162.00 ㎒

-On to Off

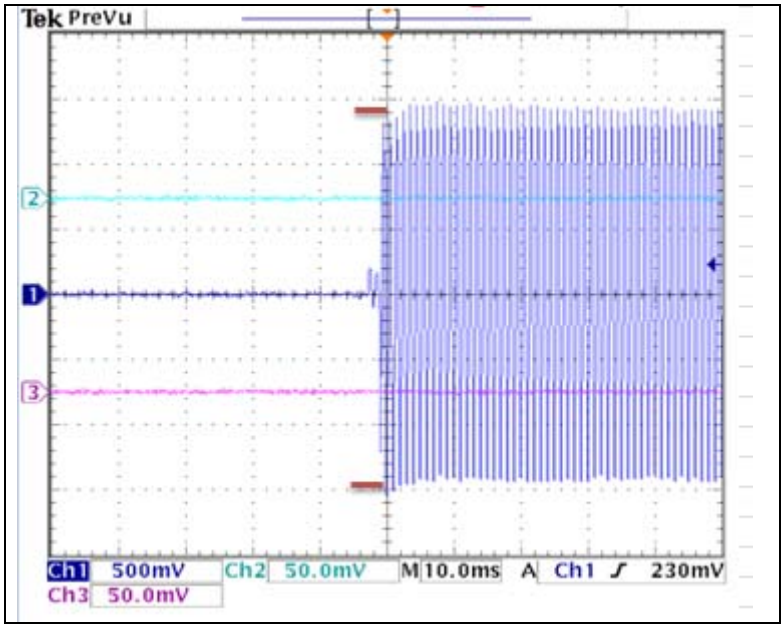


-Off to On

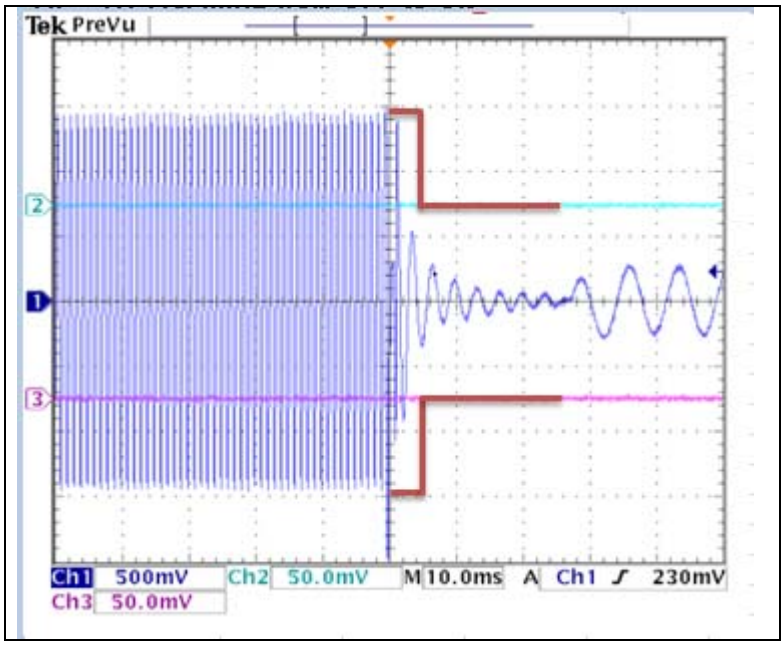


-Target Power_1W_173.40 ㎒

-On to Off

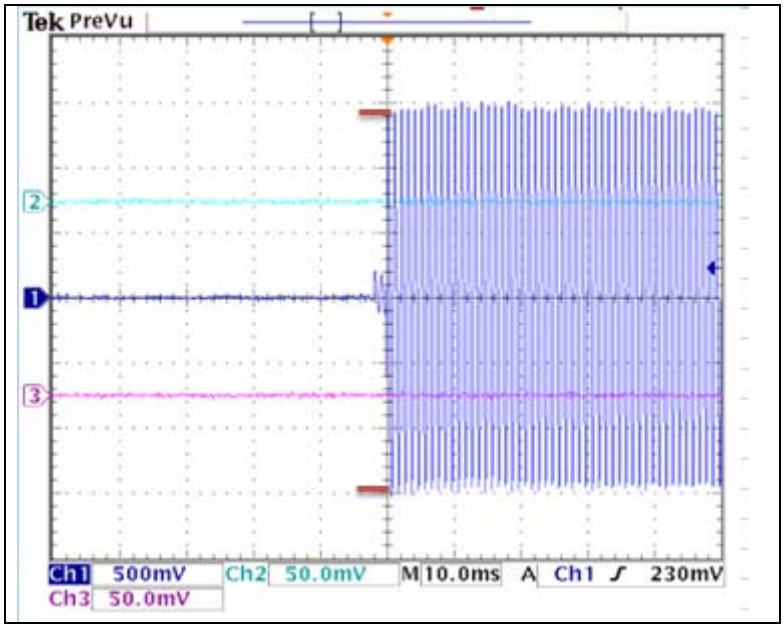


-Off to On

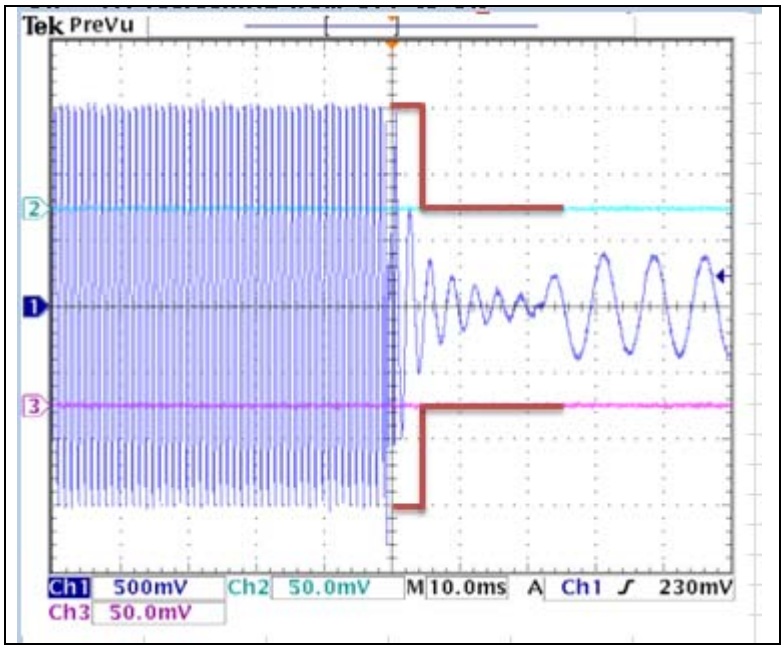


-Target Power_5W_150.05 ㎒

-On to Off

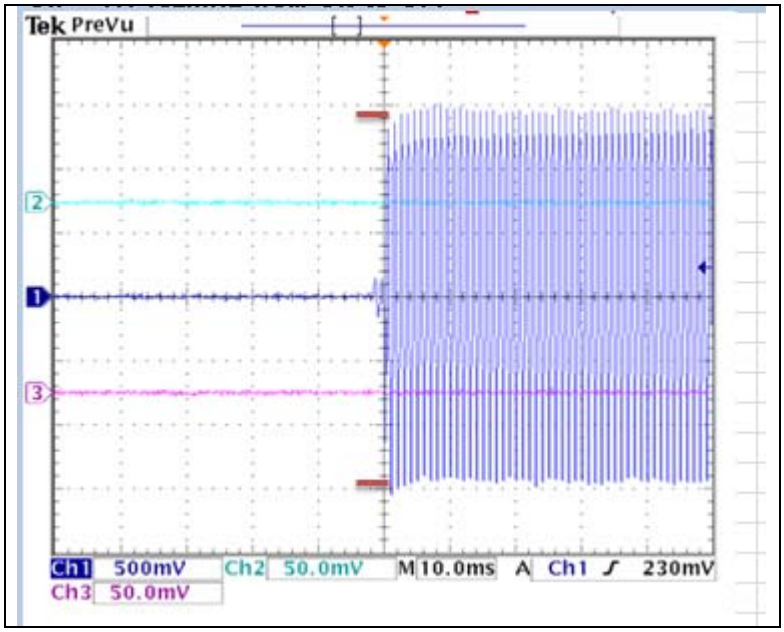


-Off to On

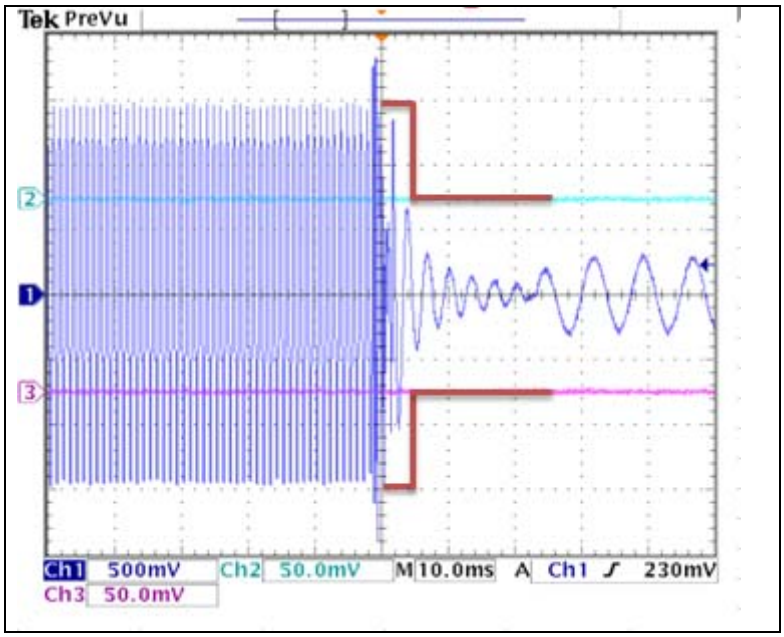


-Target Power_5W_162.00 ㎒

-On to Off

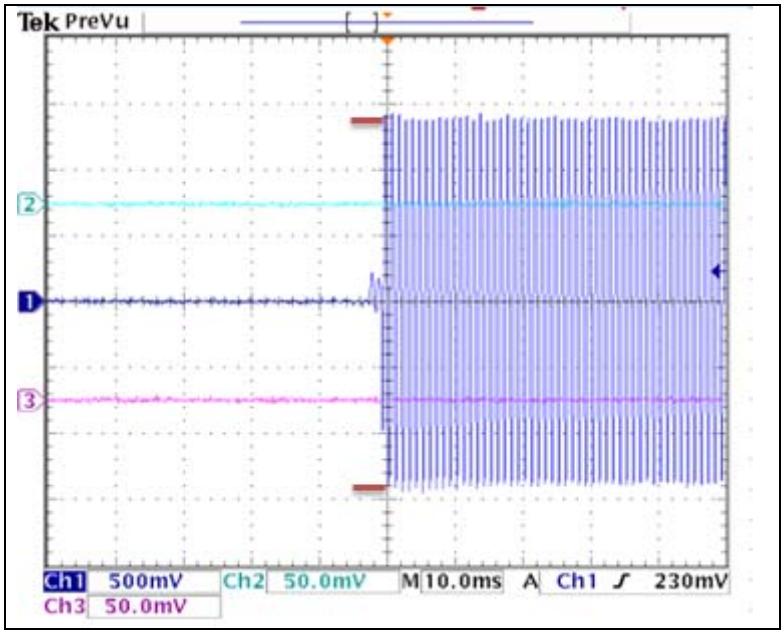


-Off to On

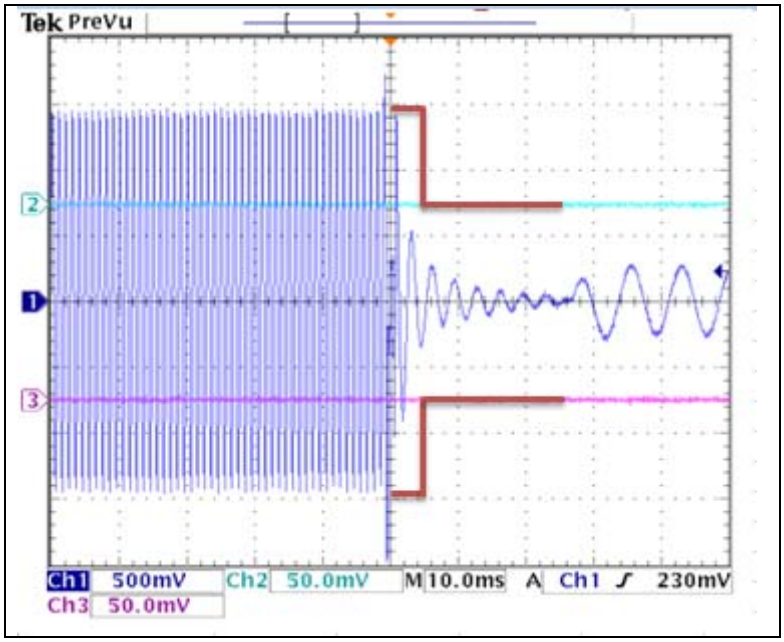


-Target Power_5W_173.40 ㎒

-On to Off



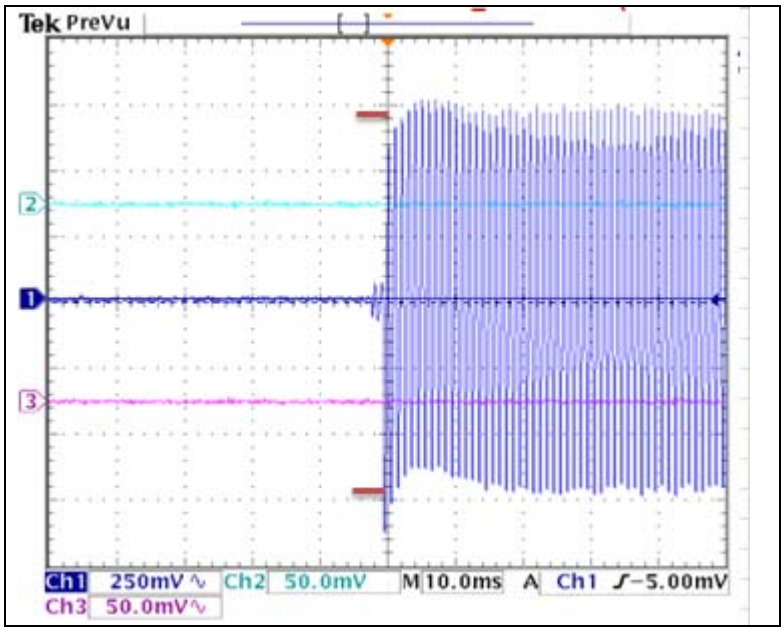
-Off to On



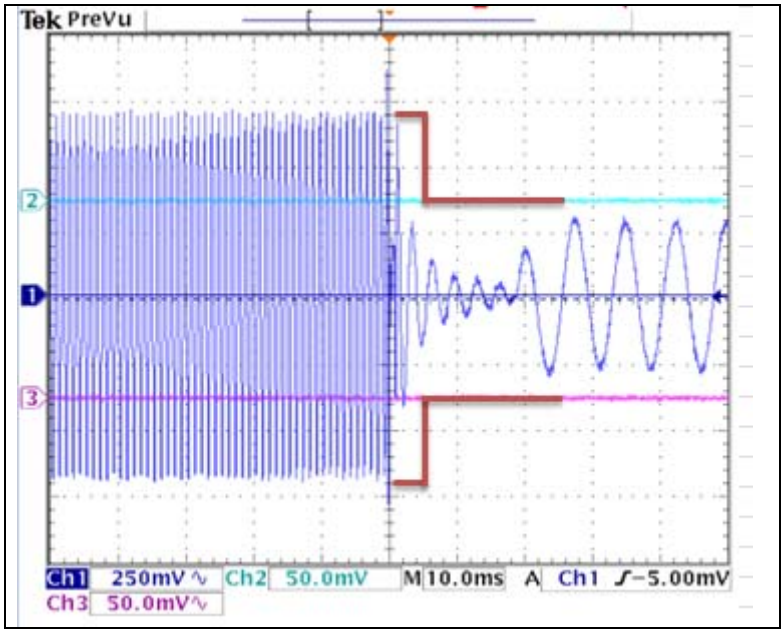
* 6.25BW

-Target Power_1W_150.05 ㎒

-On to Off

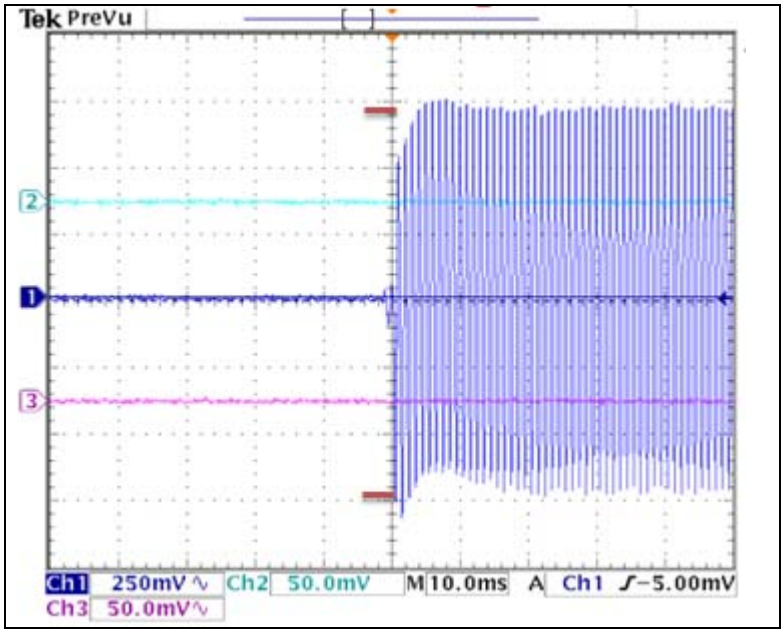


-Off to On

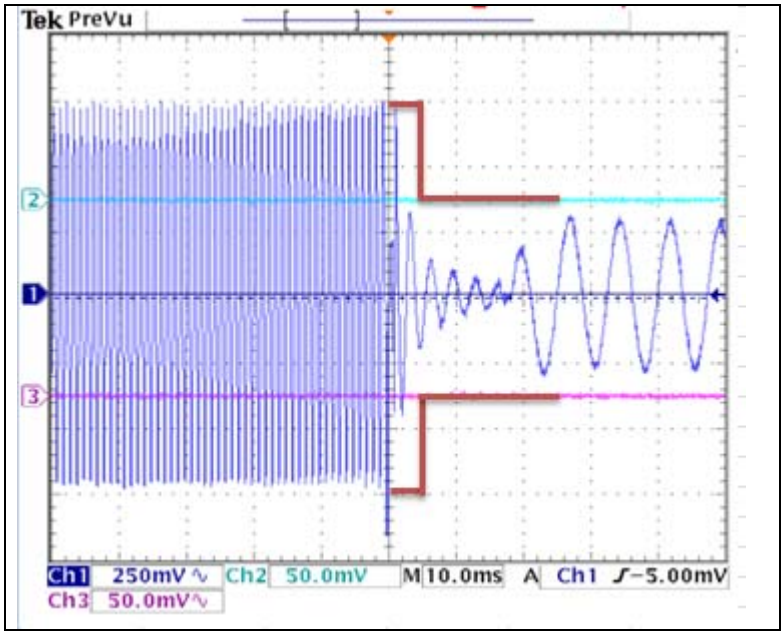


-Target Power_1W_162.00 ㎒

-On to Off

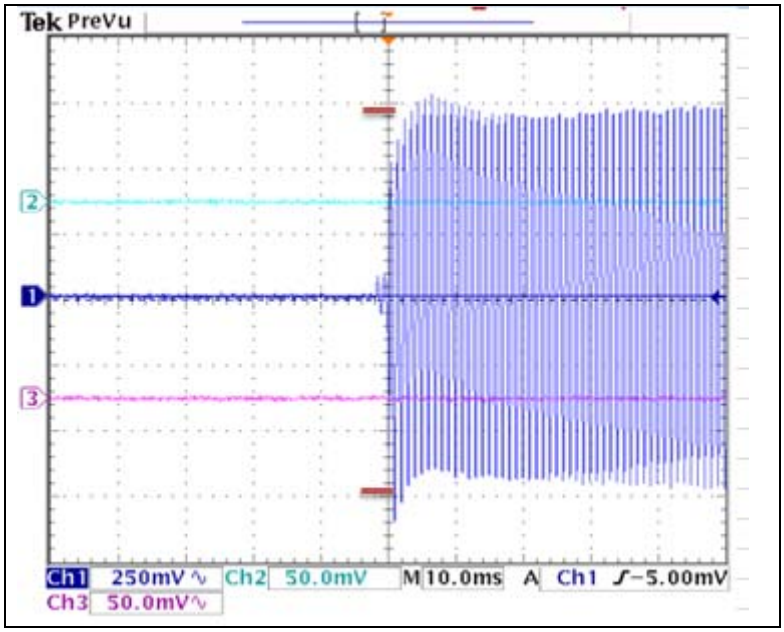


-Off to On

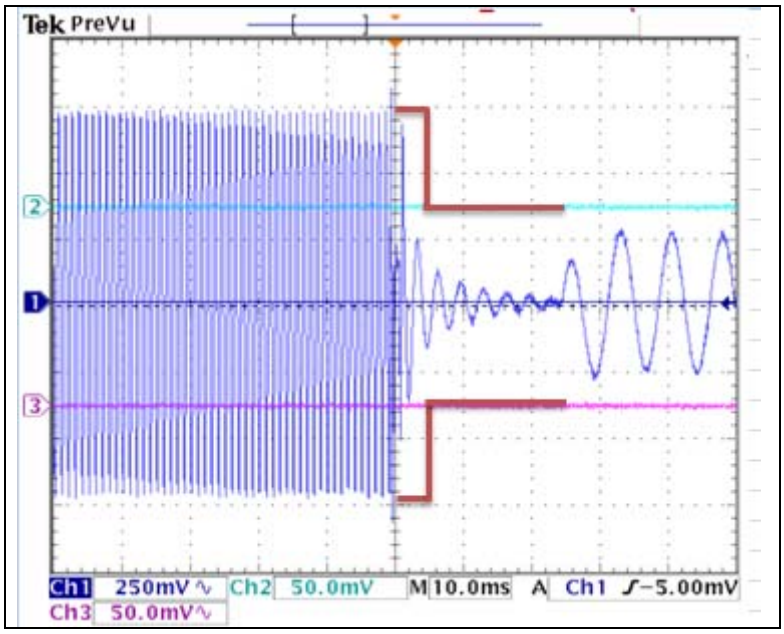


-Target Power_1W_173.40 ㎒

-On to Off

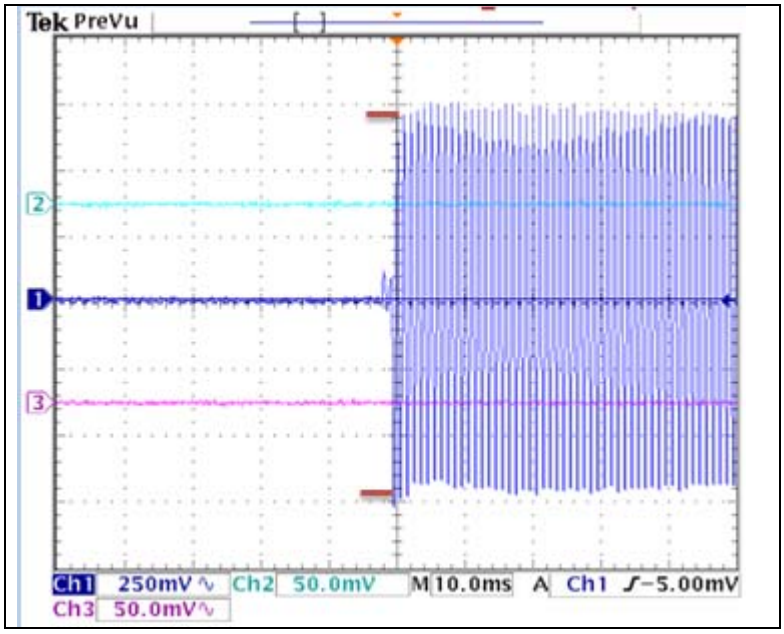


-Off to On

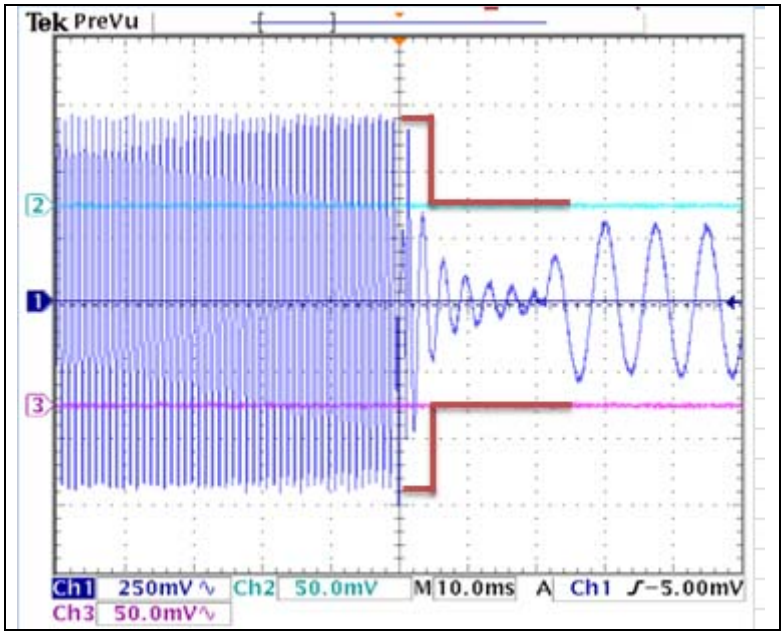


-Target Power_5W_150.05 ㎒

-On to Off

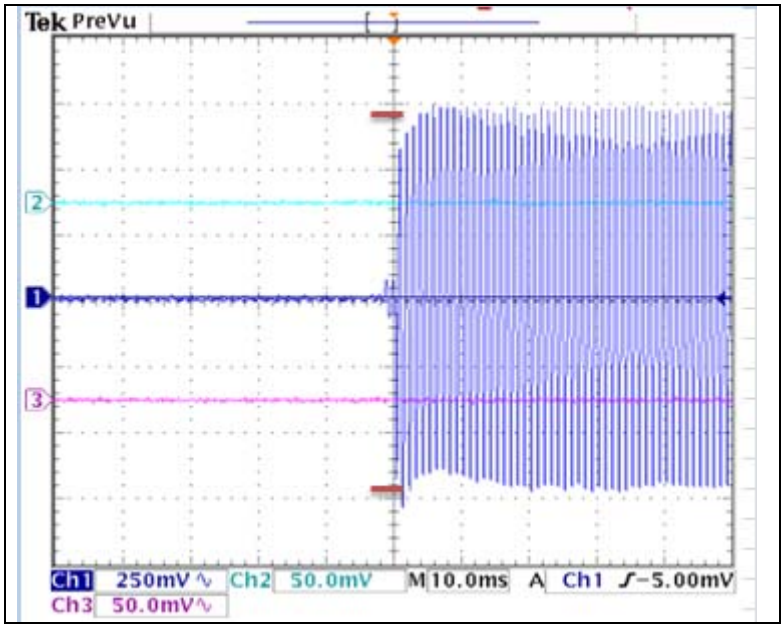


-Off to On

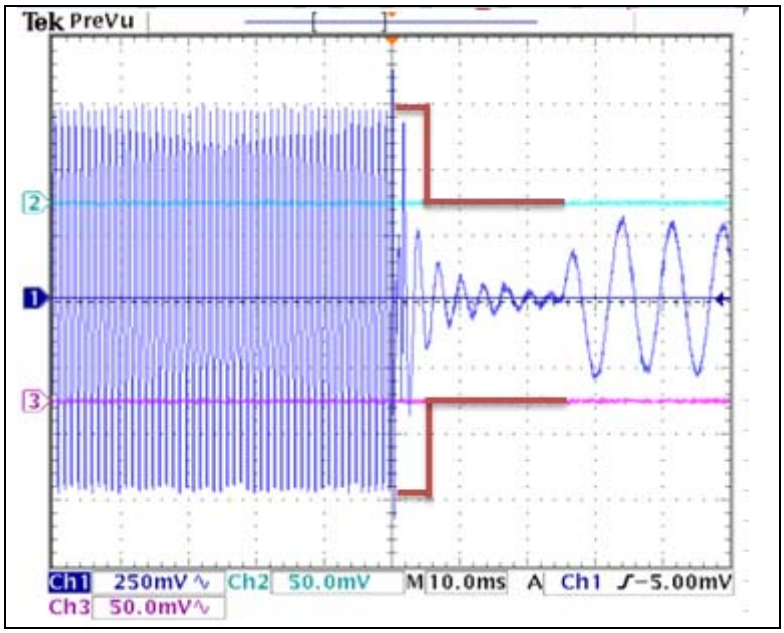


-Target Power_5W_162.00 ㎒

-On to Off

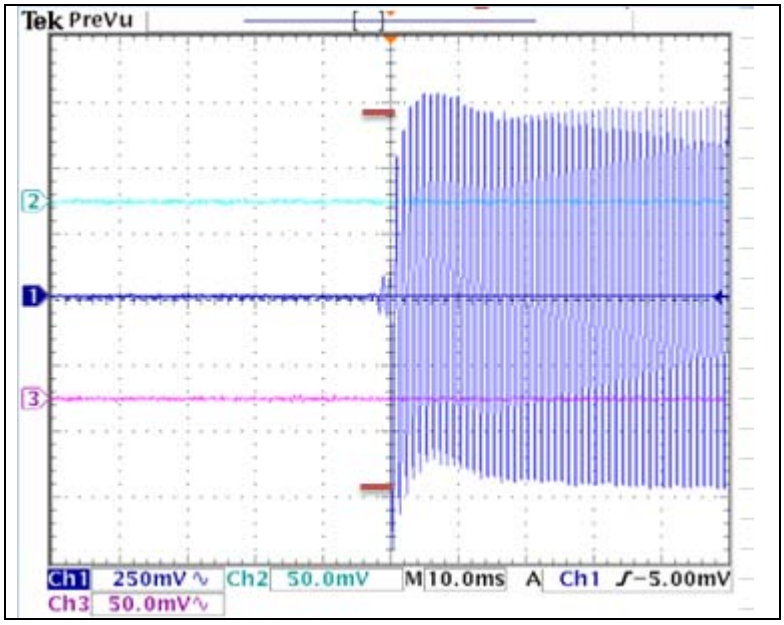


-Off to On

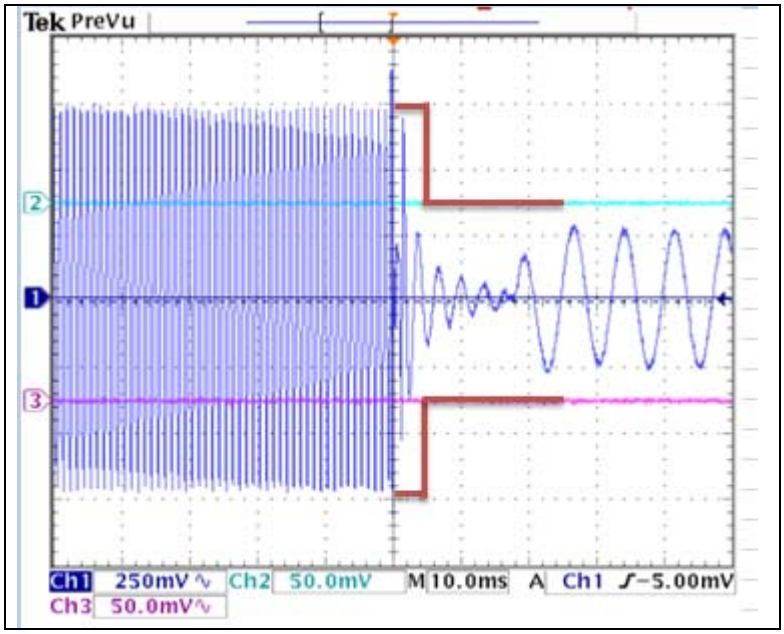


-Target Power_5W_173.40 ㎒

-On to Off



-Off to On



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 ㏈m 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.

5.8.3 Test Result

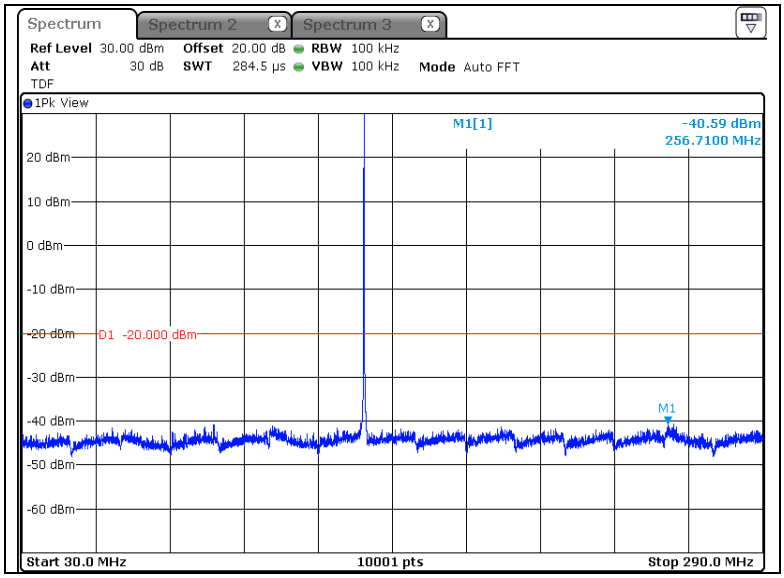
- Complied

Figure 4. plot of Conducted Spurious Emission

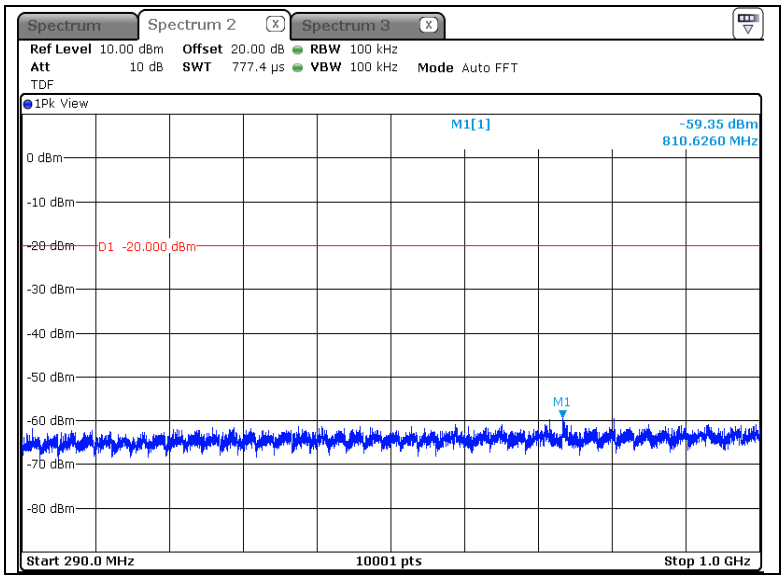
* 12.5BW

-Target Power_1W_150.05 ㎒

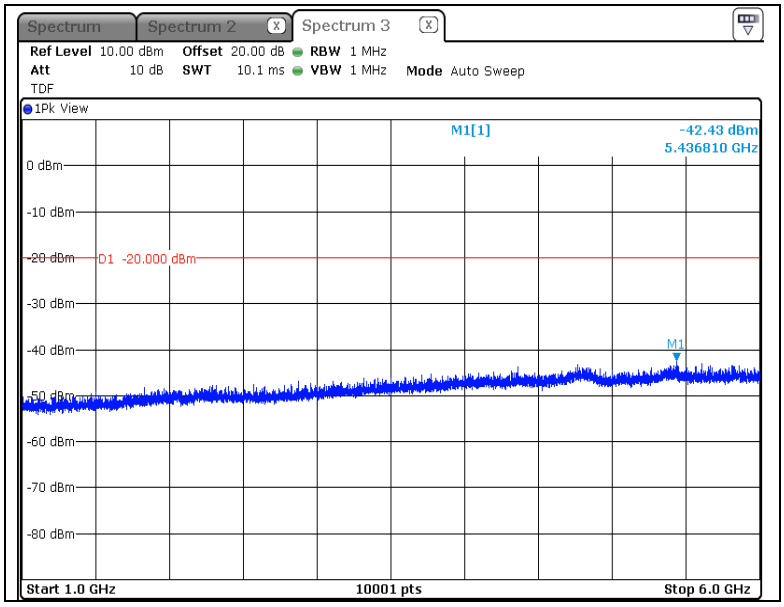
-30 ㎒ ~ 290 ㎒



-290 ㎒ ~ 1 ㎓

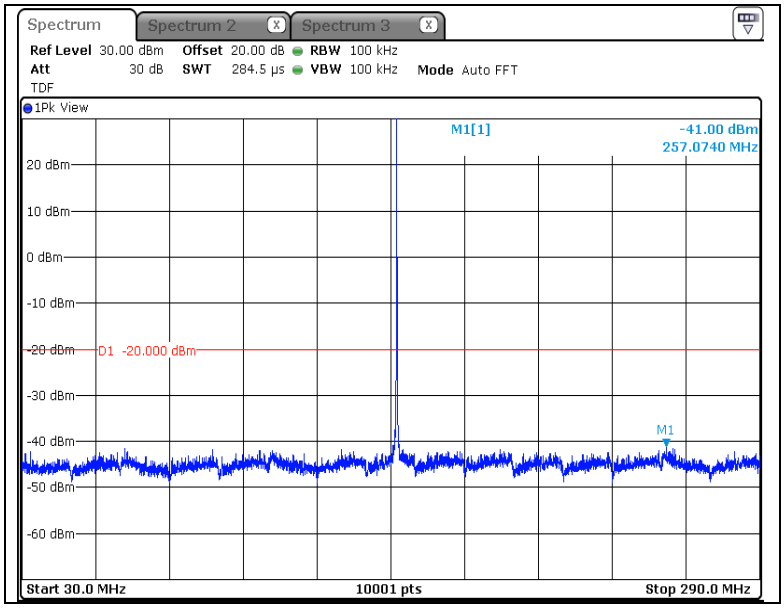


-1 ㎓ ~ 6 ㎓

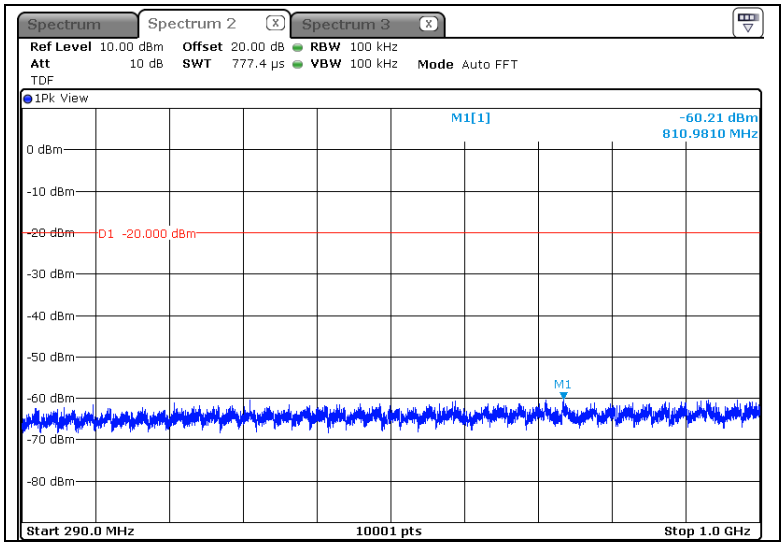


-Target Power_1W_162.00 ㎒

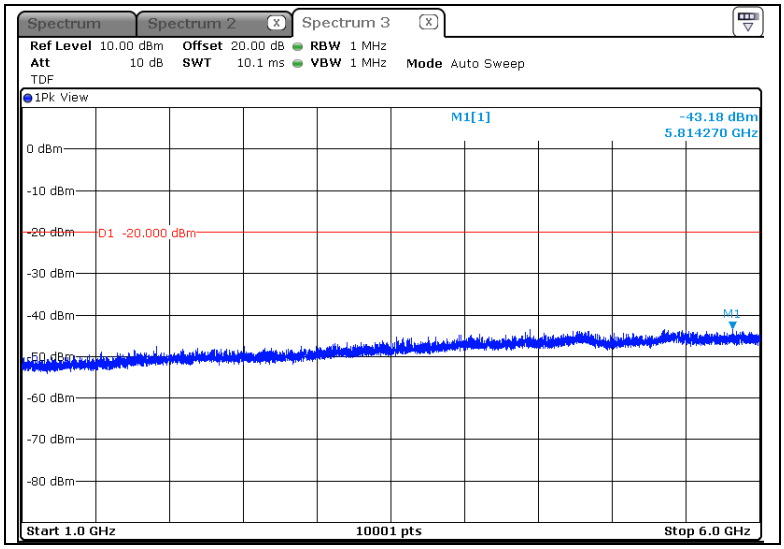
-30 ㎒ ~ 290 ㎒



-290 ㎒ ~ 1 ㎓

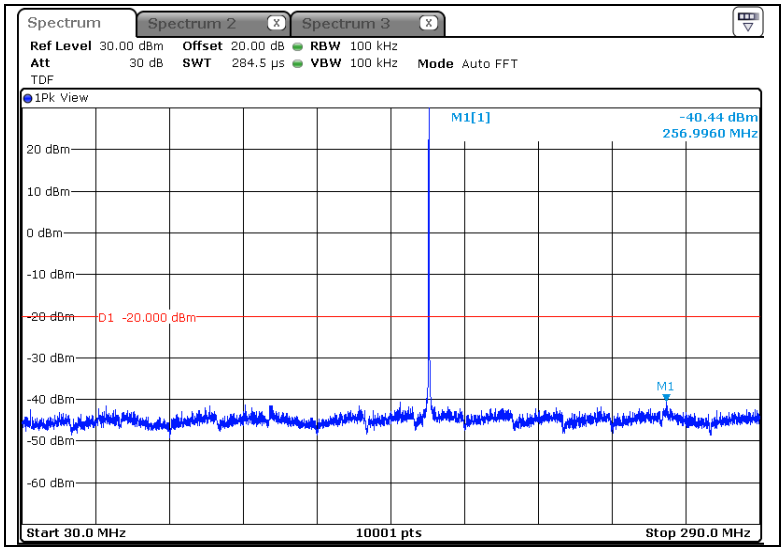


-1 ㎓ ~ 6 ㎓

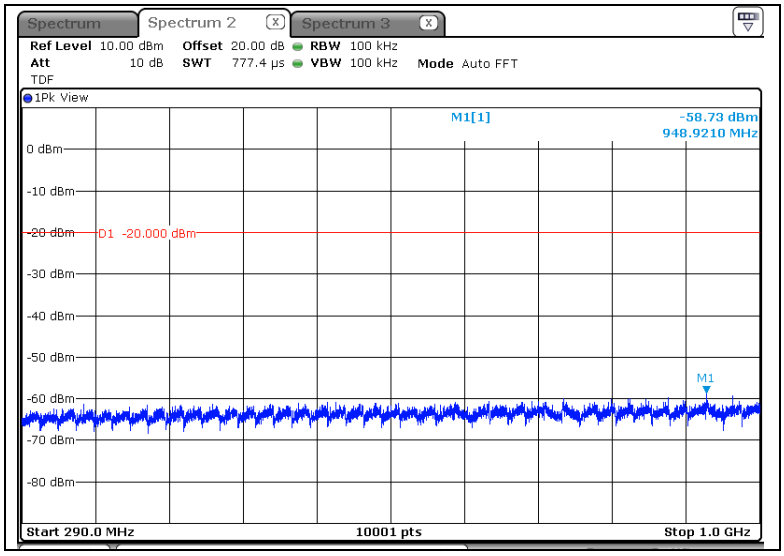


-Target Power_1W_173.40 ㎒

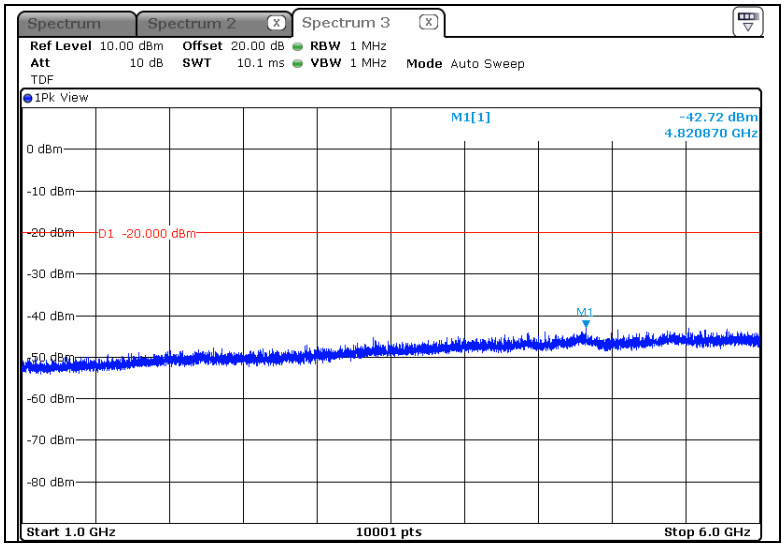
-30 ㎒ ~ 290 ㎒



-290 ㎒ ~ 1 ㎓

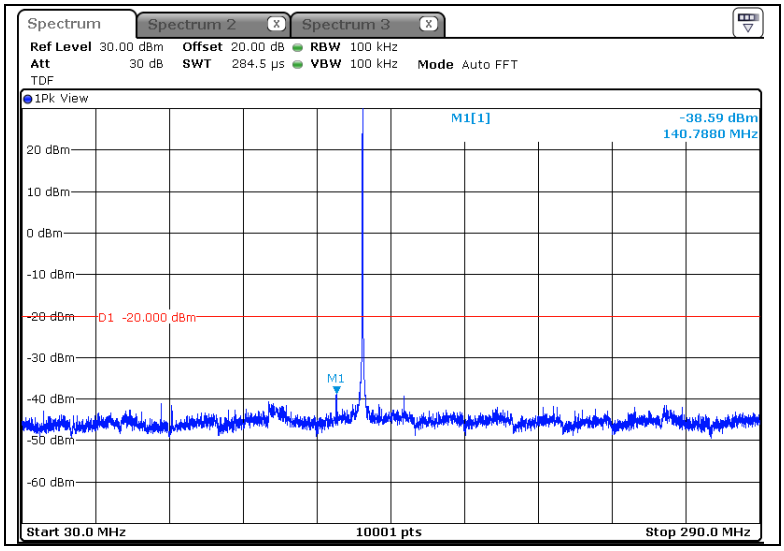


-1 ㎓ ~ 6 ㎓

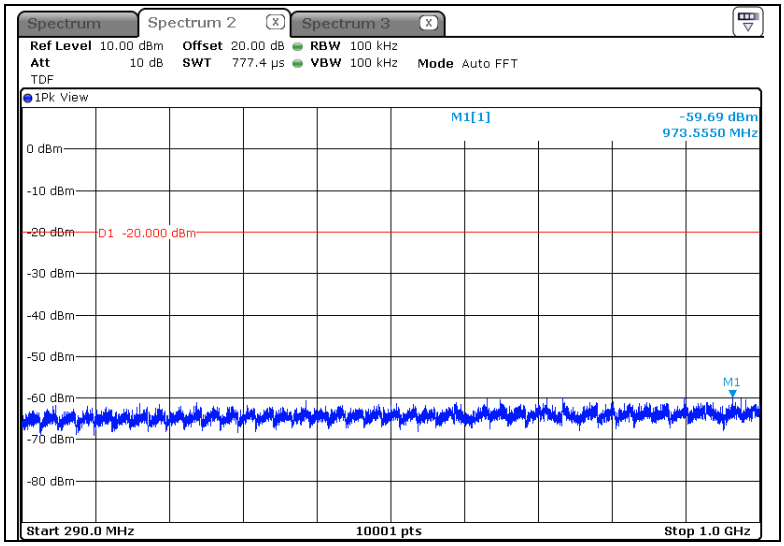


-Target Power_5W_150.05 ㎒

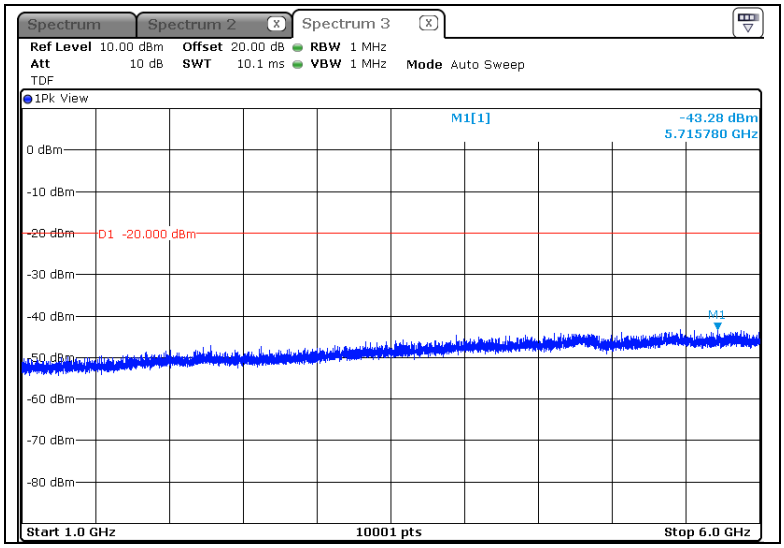
-30 ㎒ ~ 290 ㎒



-290 ㎒ ~ 1 ㎓

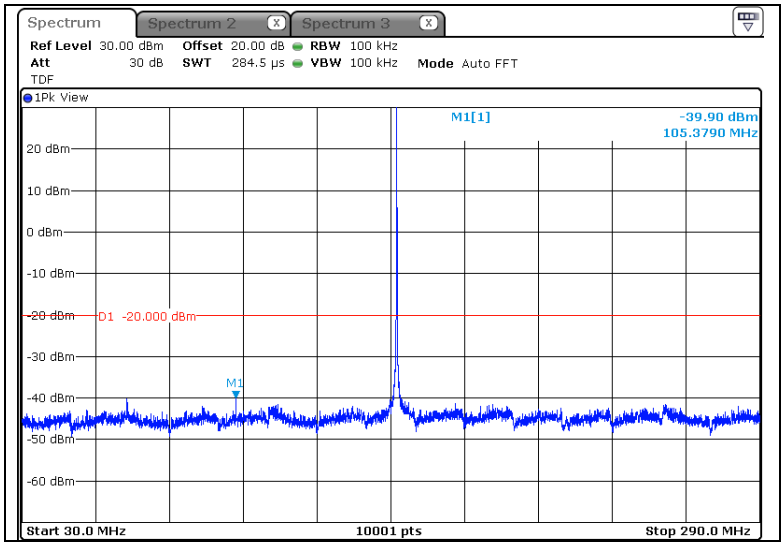


-1 ㎓ ~ 6 ㎓

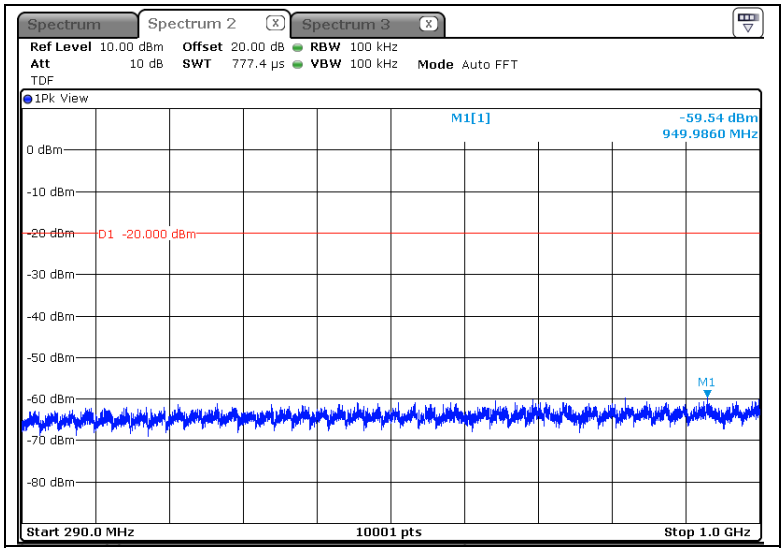


-Target Power_5W_162.00 ㎒

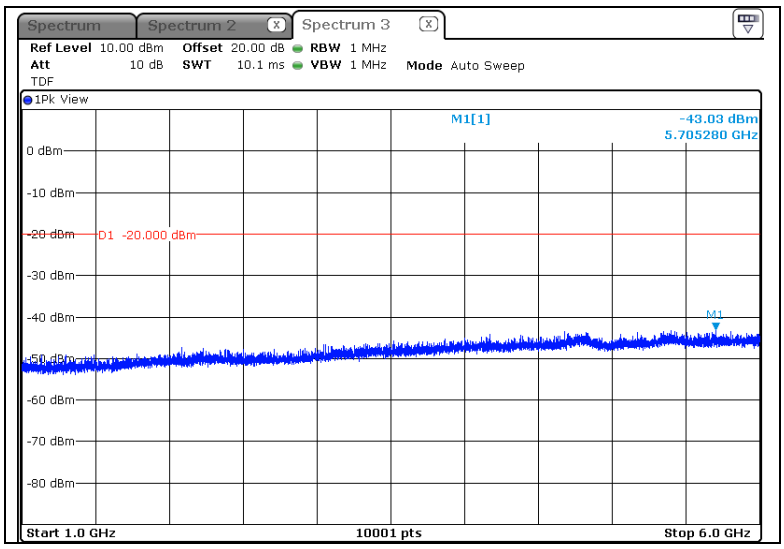
-30 ㎒ ~ 290 ㎒



-290 ㎒ ~ 1 ㎓

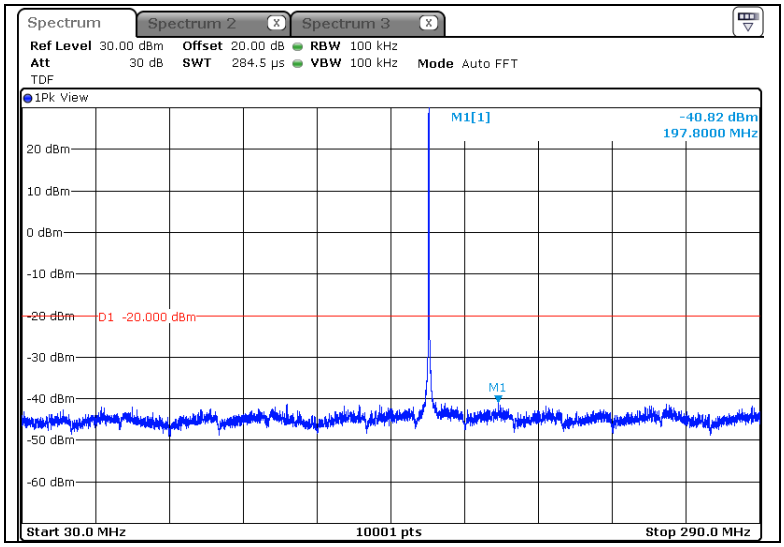


-1 ㎓ ~ 6 ㎓

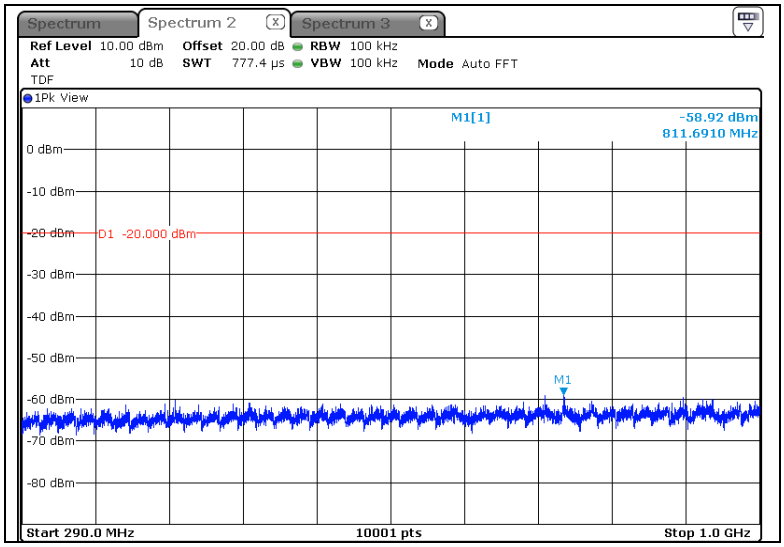


-Target Power_5W_173.40 ㎒

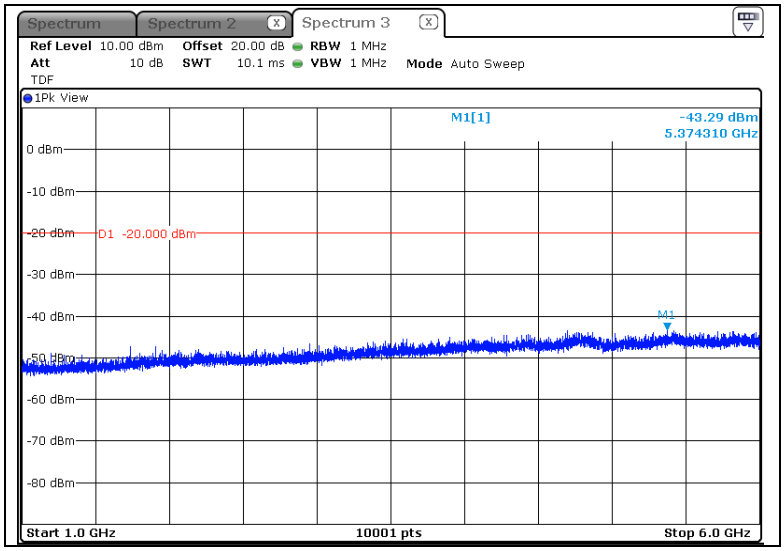
-30 ㎒ ~ 290 ㎒



-290 ㎒ ~ 1 ㎓



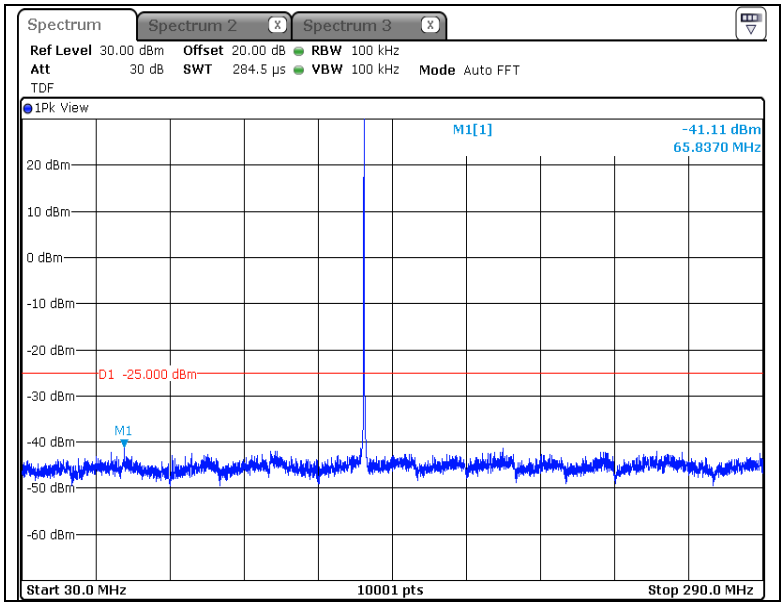
-1 ㎓ ~ 6 ㎓



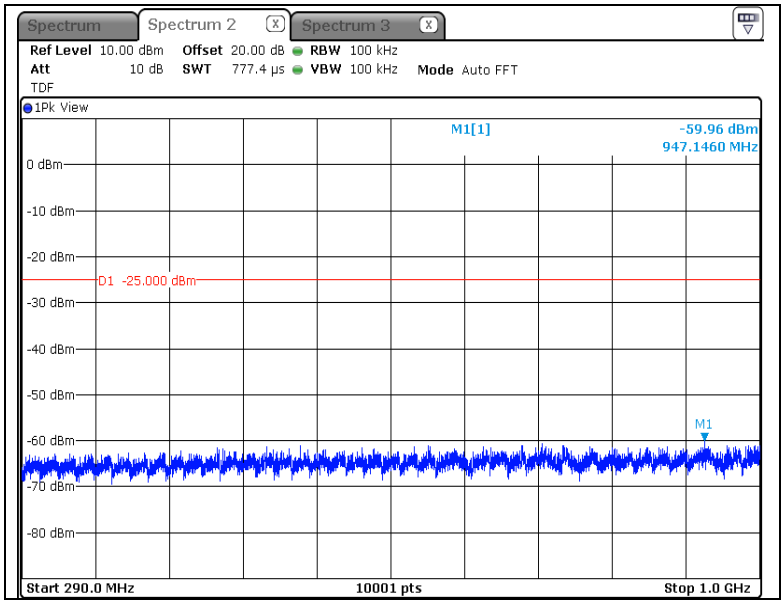
* 6.25BW

-Target Power_1W_150.05 ㎒

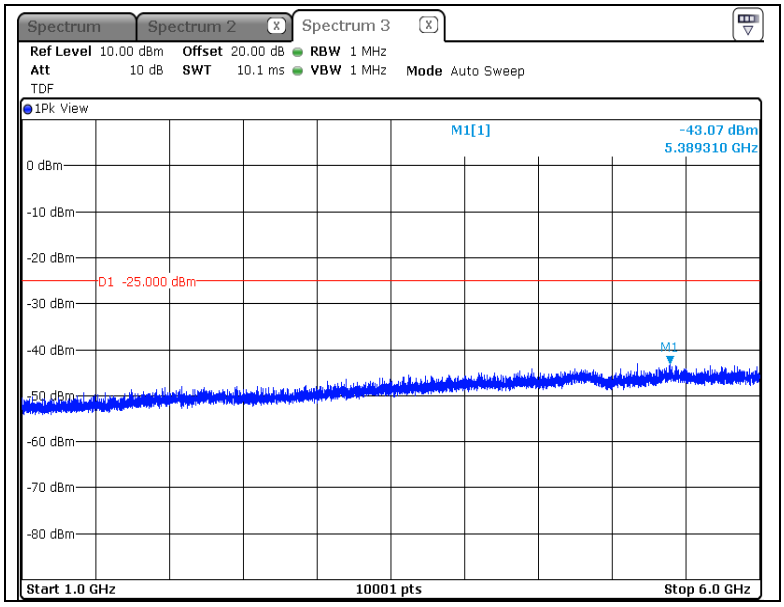
-30 ㎒ ~ 290 ㎒



-290 ㎒ ~ 1 ㎓

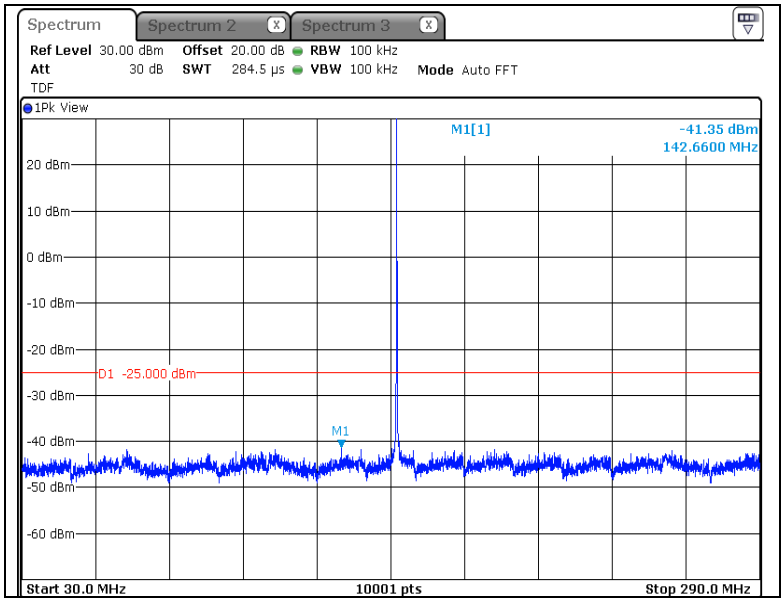


-1 ㎓ ~ 6 ㎓

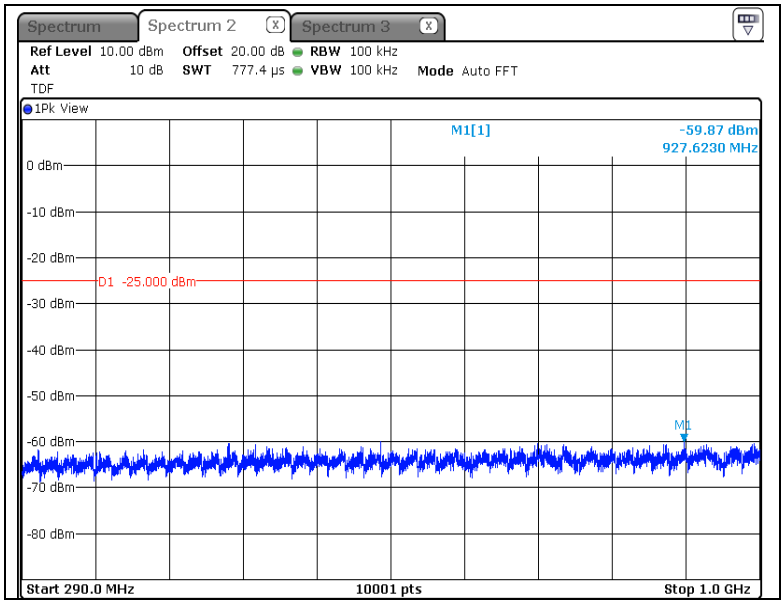


-Target Power_1W_162.00 ㎒

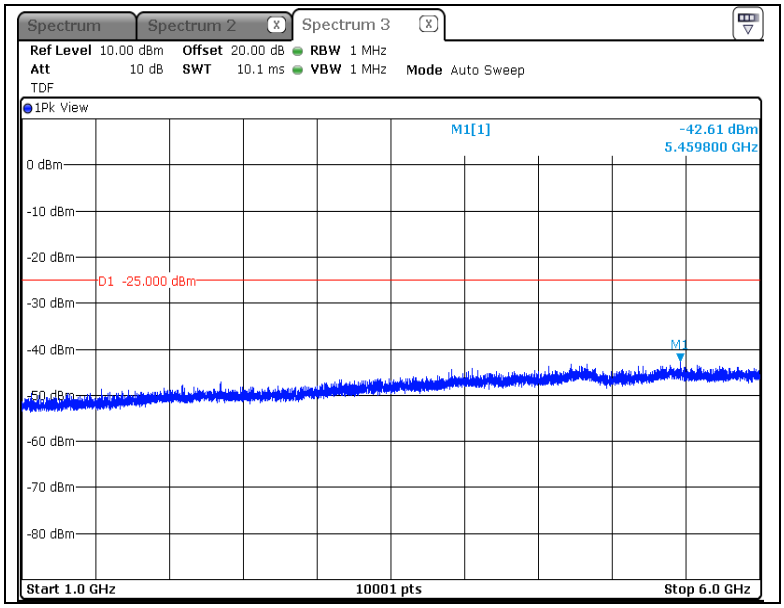
-30 ㎒ ~ 290 ㎒



-290 ㎒ ~ 1 ㎓

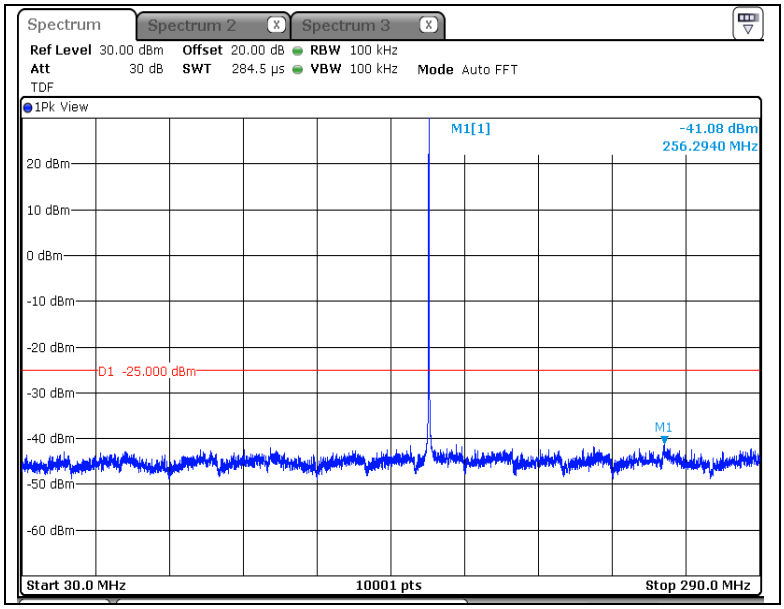


-1 ㎓ ~ 6 ㎓

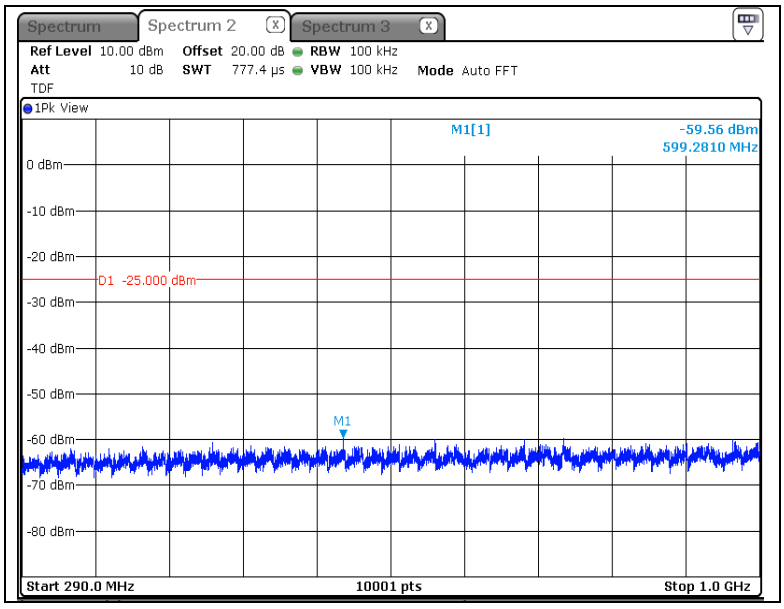


-Target Power_1W_173.40 ㎒

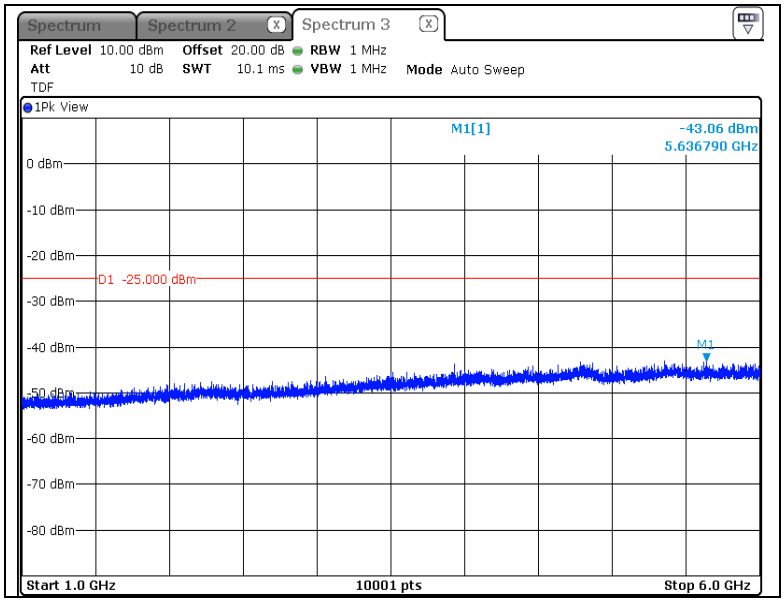
-30 ㎒ ~ 290 ㎒



-290 ㎒ ~ 1 ㎓

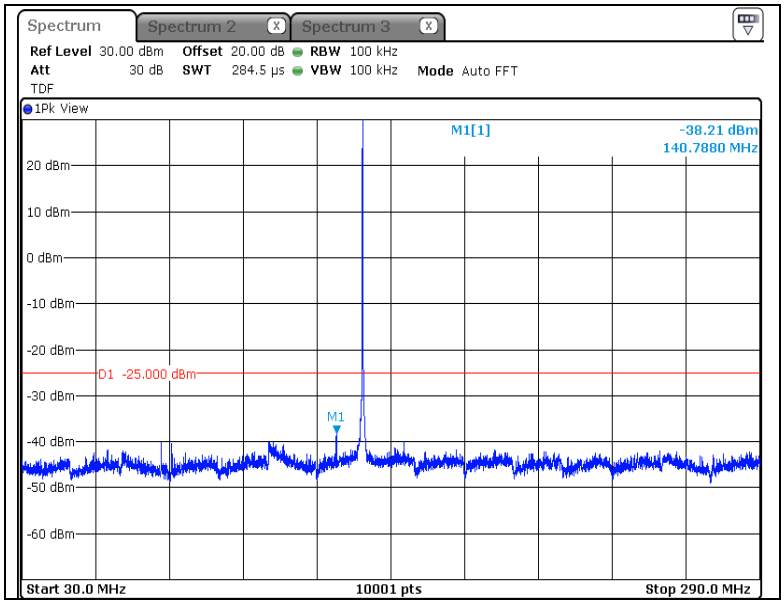


-1 ㎓ ~ 6 ㎓

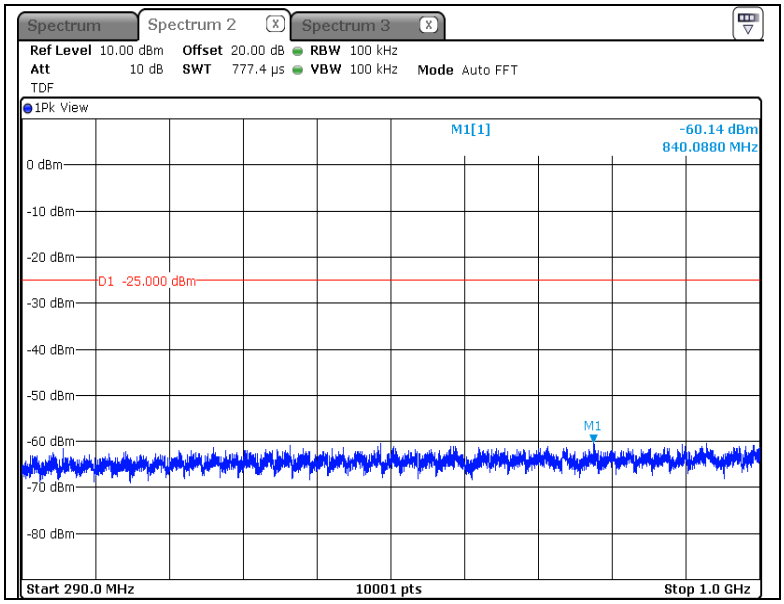


-Target Power_5W_150.05 ㎒

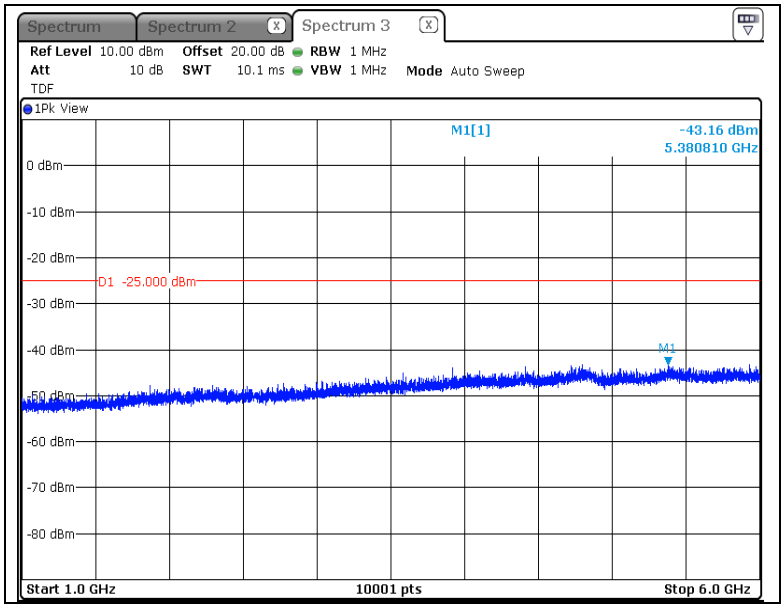
-30 ㎒ ~ 290 ㎒



-290 ㎒ ~ 1 ㎓

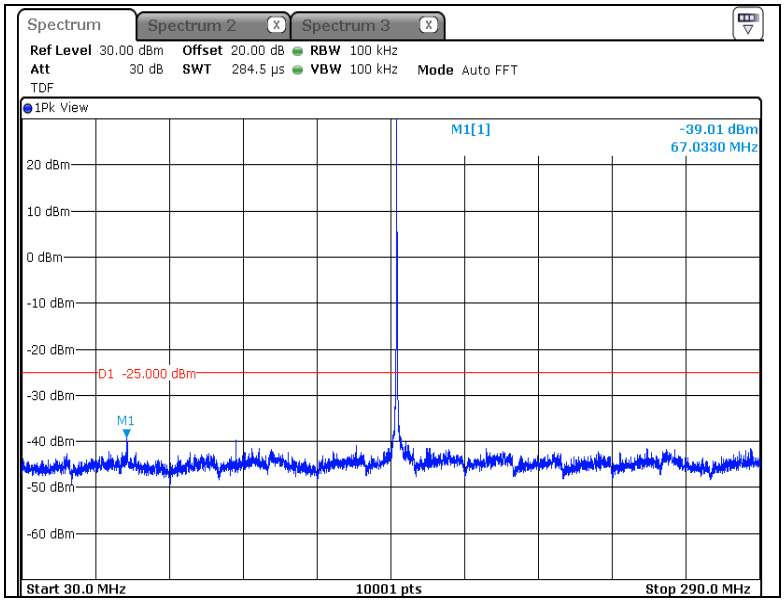


-1 ㎓ ~ 6 ㎓

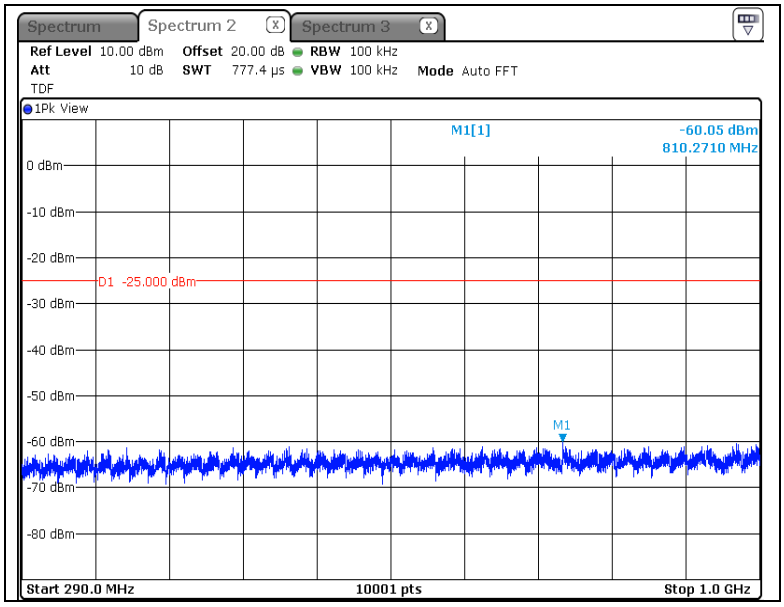


-Target Power_5W_162.00 ㎒

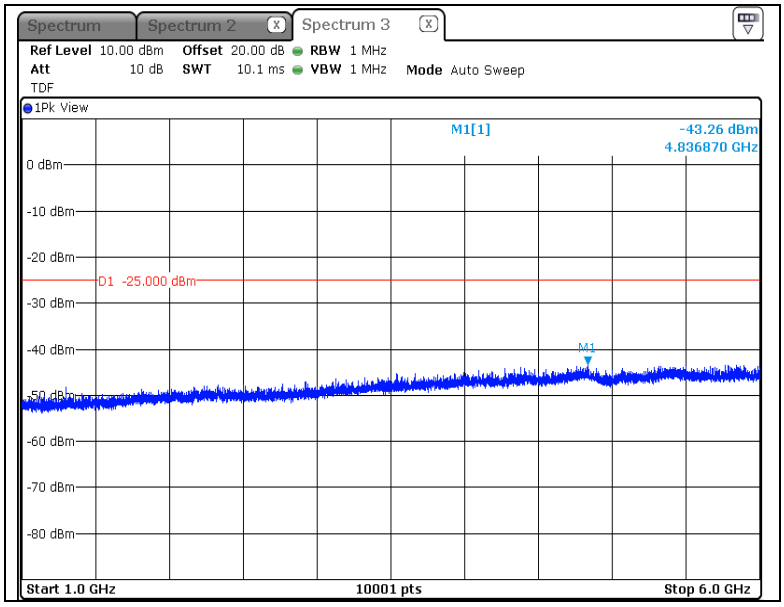
-30 ㎒ ~ 290 ㎒



-290 ㎒ ~ 1 ㎓

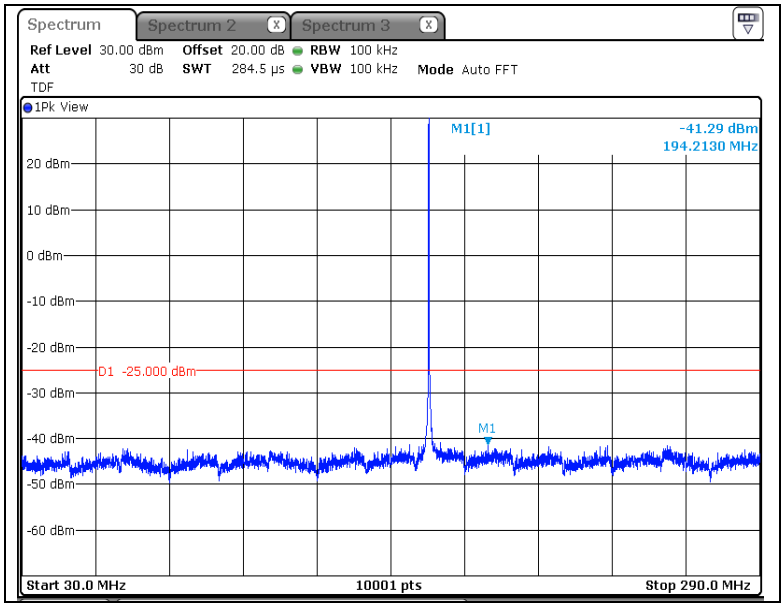


-1 ㎓ ~ 6 ㎓

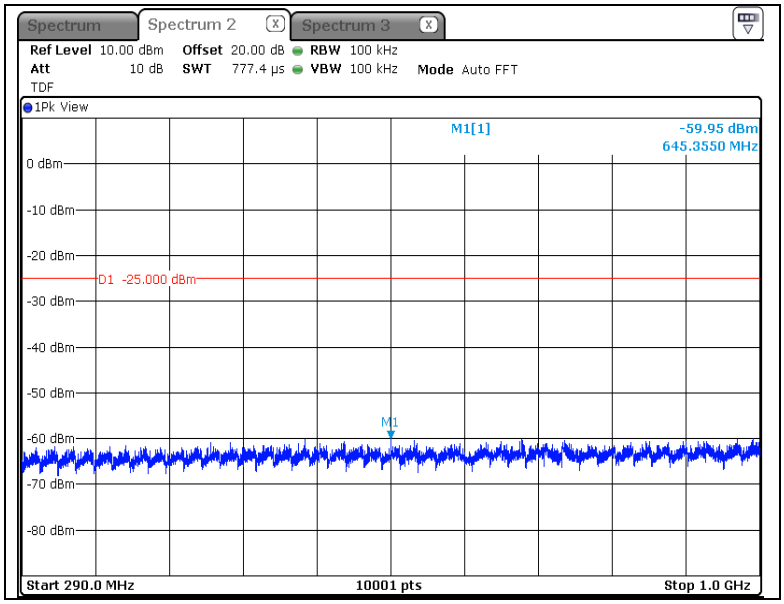


-Target Power_5W_173.40 ㎒

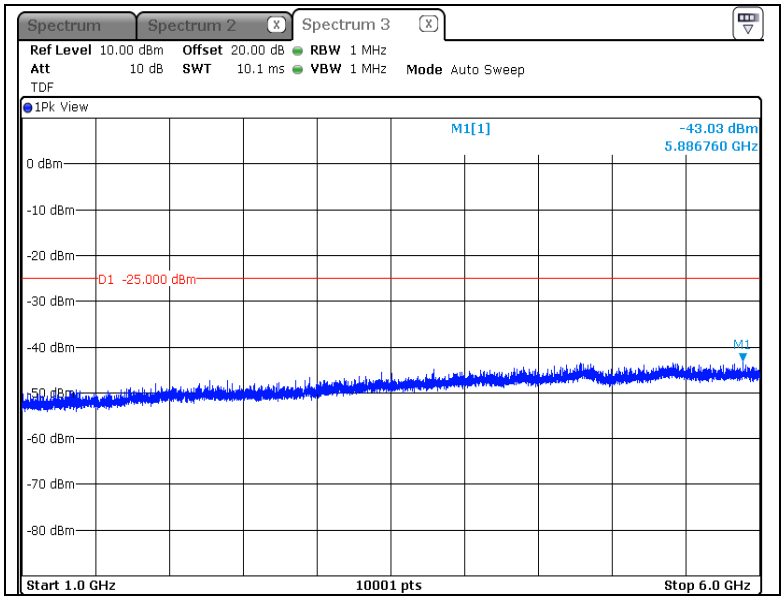
-30 ㎒ ~ 290 ㎒



-290 ㎒ ~ 1 ㎓



-1 ㎓ ~ 6 ㎓



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 ㏈m 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.

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	-33.30	1.20	-32.10	-20.00	12.10
450.19	H	-38.70	4.60	-34.10	-20.00	14.10
600.23	H	-63.00	7.60	-55.40	-20.00	35.40
750.27	V	-64.40	9.10	-55.30	-20.00	35.30
900.32	V	-64.10	9.50	-54.60	-20.00	34.60
1 050.06	V	-58.70	4.80	-53.90	-20.00	33.90
1 200.22	V	-57.40	6.10	-51.30	-20.00	31.30
1 350.39	V	-53.10	8.90	-44.20	-20.00	24.20
1 500.55	V	-52.50	8.30	-44.20	-20.00	24.20
1 650.71	V	-58.20	7.20	-51.00	-20.00	31.00
1 800.88	V	-60.80	7.80	-53.00	-20.00	33.00
1 950.43	H	-66.00	9.80	-56.20	-20.00	36.20
2 100.60	H	-51.40	13.00	-38.40	-20.00	18.40
2 250.76	H	-65.90	12.00	-53.90	-20.00	33.90

-Target Power_1W_162.00 ㎒

Frequency [㎒]	Pol [H/V]	Reading [dB(㎽)]	Space Loss [dB]	Level [dB(㎽)]	Limit [dB(㎽)]	Margin [dB]
323.98	V	-27.50	1.20	-26.30	-20.00	6.30
485.99	H	-46.10	4.50	-41.60	-20.00	21.60
647.99	H	-66.70	6.40	-60.30	-20.00	40.30
810.00	V	-61.10	8.30	-52.80	-20.00	32.80
972.00	V	-63.60	10.50	-53.10	-20.00	33.10
1 133.68	V	-59.90	4.80	-55.10	-20.00	35.10
1 296.06	V	-55.90	8.70	-47.20	-20.00	27.20
1 457.82	V	-49.40	8.80	-40.60	-20.00	20.60
1 620.19	V	-54.80	7.10	-47.70	-20.00	27.70
1 781.96	V	-63.50	7.70	-55.80	-20.00	35.80
1 944.33	H	-60.80	9.70	-51.10	-20.00	31.10
2 106.09	H	-53.60	13.00	-40.60	-20.00	20.60
2 267.86	H	-65.50	12.20	-53.30	-20.00	33.30

-Target Power_1W_173.40 ㎒

Frequency [㎒]	Pol [H/V]	Reading [dB(㎽)]	Space Loss [dB]	Level [dB(㎽)]	Limit [dB(㎽)]	Margin [dB]
346.78	V	-27.70	0.80	-26.90	-20.00	6.90
520.22	H	-48.50	4.30	-44.20	-20.00	24.20
693.58	H	-65.20	7.20	-58.00	-20.00	38.00
867.03	V	-60.30	10.00	-50.30	-20.00	30.30
1 040.29	V	-55.30	4.80	-50.50	-20.00	30.50
1 213.65	V	-49.00	6.60	-42.40	-20.00	22.40
1 387.01	V	-43.70	9.00	-34.70	-20.00	14.70
1 560.37	V	-45.80	7.30	-38.50	-20.00	18.50
1 733.73	V	-58.10	7.70	-50.40	-20.00	30.40
2 080.45	H	-56.60	12.90	-43.70	-20.00	23.70
2 253.82	H	-64.40	12.10	-52.30	-20.00	32.30
2 947.87	V	-65.60	13.60	-52.00	-20.00	32.00

-Target Power_5W_150.05 ㎒

Frequency [㎒]	Pol [H/V]	Reading [dB(㎽)]	Space Loss [dB]	Level [dB(㎽)]	Limit [dB(㎽)]	Margin [dB]
300.14	V	-28.90	1.20	-27.70	-20.00	7.70
450.19	H	-35.10	4.60	-30.50	-20.00	10.50
600.23	H	-54.10	7.60	-46.50	-20.00	26.50
750.27	V	-62.60	9.10	-53.50	-20.00	33.50
900.32	V	-58.00	9.50	-48.50	-20.00	28.50
1 050.06	V	-57.80	4.80	-53.00	-20.00	33.00
1 200.22	V	-59.50	6.10	-53.40	-20.00	33.40
1 350.39	V	-49.00	8.90	-40.10	-20.00	20.10
1 500.55	V	-51.70	8.30	-43.40	-20.00	23.40
1 650.71	V	-51.10	7.20	-43.90	-20.00	23.90
1 800.88	V	-58.90	7.80	-51.10	-20.00	31.10
1 950.43	H	-60.90	9.80	-51.10	-20.00	31.10
2 100.60	H	-53.90	13.00	-40.90	-20.00	20.90
2 250.76	H	-60.80	12.00	-48.80	-20.00	28.80

-Target Power_5W_162.00 ㎒

Frequency [㎒]	Pol [H/V]	Reading [dB(㎽)]	Space Loss [dB]	Level [dB(㎽)]	Limit [dB(㎽)]	Margin [dB]
323.98	V	-26.90	1.20	-25.70	-20.00	5.70
485.99	H	-39.80	4.50	-35.30	-20.00	15.30
647.99	H	-63.90	6.40	-57.50	-20.00	37.50
810.00	V	-58.10	8.30	-49.80	-20.00	29.80
972.00	V	-57.40	10.50	-46.90	-20.00	26.90
1 133.68	V	-58.90	4.80	-54.10	-20.00	34.10
1 296.06	V	-50.10	8.70	-41.40	-20.00	21.40
1 457.82	V	-47.50	8.80	-38.70	-20.00	18.70
1 620.19	V	-53.30	7.10	-46.20	-20.00	26.20
1 781.96	V	-54.40	7.70	-46.70	-20.00	26.70
1 944.33	H	-62.50	9.70	-52.80	-20.00	32.80
2 106.09	H	-50.70	13.00	-37.70	-20.00	17.70
2 267.86	H	-59.90	12.20	-47.70	-20.00	27.70
2 591.99	V	-63.30	12.40	-50.90	-20.00	30.90

-Target Power_5W_173.40 ㎒

Frequency [㎒]	Pol [H/V]	Reading [dB(㎽)]	Space Loss [dB]	Level [dB(㎽)]	Limit [dB(㎽)]	Margin [dB]
346.78	V	-24.20	0.80	-23.40	-20.00	3.40
417.94	H	-59.20	2.80	-56.40	-20.00	36.40
449.06	H	-62.20	4.60	-57.60	-20.00	37.60
520.22	V	-44.80	4.60	-40.20	-20.00	20.20
591.30	H	-63.40	7.20	-56.20	-20.00	36.20
1 040.29	V	-57.20	4.80	-52.40	-20.00	32.40
1 213.65	V	-53.40	6.60	-46.80	-20.00	26.80
1 387.01	V	-44.60	9.00	-35.60	-20.00	15.60
1 560.37	V	-51.30	7.30	-44.00	-20.00	24.00
1 734.34	V	-63.40	7.70	-55.70	-20.00	35.70
1 907.70	V	-63.80	8.60	-55.20	-20.00	35.20
2 081.07	V	-60.40	14.10	-46.30	-20.00	26.30
2 254.43	V	-59.80	12.00	-47.80	-20.00	27.80
2 427.79	V	-59.80	12.90	-46.90	-20.00	26.90
2 601.15	V	-62.20	12.30	-49.90	-20.00	29.90
2 774.51	V	-65.70	13.70	-52.00	-20.00	32.00
2 947.87	V	-59.50	13.60	-45.90	-20.00	25.90
3 121.23	V	-63.40	15.30	-48.10	-20.00	28.10
3 294.59	V	-65.30	16.20	-49.10	-20.00	29.10

* 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	-30.70	1.20	-29.50	-25.00	4.50
450.19	H	-39.00	4.60	-34.40	-25.00	9.40
600.14	H	-67.20	7.60	-59.60	-25.00	34.60
750.27	V	-62.70	9.10	-53.60	-25.00	28.60
900.32	V	-63.50	9.50	-54.00	-25.00	29.00
1 050.06	V	-58.10	4.80	-53.30	-25.00	28.30
1 200.22	V	-57.20	6.10	-51.10	-25.00	26.10
1 350.39	V	-52.30	8.90	-43.40	-25.00	18.40
1 500.55	V	-52.30	8.30	-44.00	-25.00	19.00
1 650.71	V	-57.60	7.20	-50.40	-25.00	25.40
1 800.27	V	-64.80	7.80	-57.00	-25.00	32.00
1 950.43	H	-61.60	9.80	-51.80	-25.00	26.80
2 100.60	H	-49.30	13.00	-36.30	-25.00	11.30
2 250.76	H	-66.50	12.00	-54.50	-25.00	29.50

-Target Power_1W_162.00 ㎒

Frequency [㎒]	Pol [H/V]	Reading [dB(㎽)]	Space Loss [dB]	Level [dB(㎽)]	Limit [dB(㎽)]	Margin [dB]
323.98	H	-34.90	2.50	-32.40	-25.00	7.40
485.99	V	-50.30	3.90	-46.40	-25.00	21.40
647.99	V	-71.70	7.10	-64.60	-25.00	39.60
810.00	V	-68.80	8.30	-60.50	-25.00	35.50
972.00	V	-71.90	10.50	-61.40	-25.00	36.40
1 133.68	V	-60.30	4.80	-55.50	-25.00	30.50
1 296.06	V	-56.30	8.70	-47.60	-25.00	22.60
1 457.82	V	-48.80	8.80	-40.00	-25.00	15.00
1 620.19	V	-56.30	7.10	-49.20	-25.00	24.20
1 781.96	V	-59.90	7.70	-52.20	-25.00	27.20
1 943.72	H	-59.50	9.70	-49.80	-25.00	24.80
2 106.09	H	-52.00	13.00	-39.00	-25.00	14.00
2 267.86	H	-63.50	12.20	-51.30	-25.00	26.30

-Target Power_1W_173.40 ㎒

Frequency [㎒]	Pol [H/V]	Reading [dB(㎽)]	Space Loss [dB]	Level [dB(㎽)]	Limit [dB(㎽)]	Margin [dB]
346.78	H	-30.30	1.30	-29.00	-25.00	4.00
520.22	V	-51.90	4.60	-47.30	-25.00	22.30
693.58	H	-72.30	7.20	-65.10	-25.00	40.10
867.03	V	-71.30	10.00	-61.30	-25.00	36.30
1 040.29	V	-56.50	4.80	-51.70	-25.00	26.70
1 213.65	V	-52.10	6.60	-45.50	-25.00	20.50
1 387.01	V	-50.20	9.00	-41.20	-25.00	16.20
1 560.37	V	-49.70	7.30	-42.40	-25.00	17.40
1 733.73	V	-57.40	7.70	-49.70	-25.00	24.70
2 081.07	H	-57.30	12.90	-44.40	-25.00	19.40
2 253.82	H	-65.10	12.10	-53.00	-25.00	28.00

-Target Power_5W_150.05 ㎒

Frequency [㎒]	Pol [H/V]	Reading [dB(㎽)]	Space Loss [dB]	Level [dB(㎽)]	Limit [dB(㎽)]	Margin [dB]
300.14	V	-36.40	1.20	-35.20	-25.00	10.20
450.19	V	-46.30	3.90	-42.40	-25.00	17.40
600.23	V	-57.60	7.00	-50.60	-25.00	25.60
750.27	V	-68.90	9.10	-59.80	-25.00	34.80
900.32	V	-69.90	9.50	-60.40	-25.00	35.40
1 050.06	V	-63.00	4.80	-58.20	-25.00	33.20
1 200.22	V	-61.70	6.10	-55.60	-25.00	30.60
1 350.39	V	-55.70	8.90	-46.80	-25.00	21.80
1 500.55	V	-54.70	8.30	-46.40	-25.00	21.40
1 650.71	V	-60.70	7.20	-53.50	-25.00	28.50
1 951.04	V	-59.40	9.60	-49.80	-25.00	24.80
2 100.60	H	-47.20	13.00	-34.20	-25.00	9.20
2 250.76	H	-60.60	12.00	-48.60	-25.00	23.60

-Target Power_5W_162.00 ㎒

Frequency [㎒]	Pol [H/V]	Reading [dB(㎽)]	Space Loss [dB]	Level [dB(㎽)]	Limit [dB(㎽)]	Margin [dB]
323.98	H	-36.70	2.50	-34.20	-25.00	9.20
485.99	V	-43.10	3.90	-39.20	-25.00	14.20
647.99	V	-67.90	7.10	-60.80	-25.00	35.80
810.00	V	-65.80	8.30	-57.50	-25.00	32.50
972.00	V	-66.80	10.50	-56.30	-25.00	31.30
1 134.29	V	-61.20	4.80	-56.40	-20.00	36.40
1 296.06	V	-51.60	8.70	-42.90	-20.00	22.90
1 457.82	V	-47.70	8.80	-38.90	-20.00	18.90
1 619.58	V	-54.50	7.10	-47.40	-20.00	27.40
1 781.96	V	-54.00	7.70	-46.30	-20.00	26.30
2 106.09	H	-51.50	13.00	-38.50	-20.00	18.50
2 267.86	H	-59.60	12.20	-47.40	-20.00	27.40
2 591.99	V	-64.50	12.40	-52.10	-20.00	32.10

-Target Power_5W_173.40 ㎒

Frequency [㎒]	Pol [H/V]	Reading [dB(㎽)]	Space Loss [dB]	Level [dB(㎽)]	Limit [dB(㎽)]	Margin [dB]
346.78	H	-29.60	1.30	-28.30	-25.00	3.30
379.45	H	-58.40	1.70	-56.70	-25.00	31.70
417.16	V	-51.30	3.40	-47.90	-25.00	22.90
449.84	V	-56.40	3.90	-52.50	-25.00	27.50
520.22	V	-49.50	4.60	-44.90	-25.00	19.90
590.61	V	-58.50	6.50	-52.00	-25.00	27.00
623.20	V	-61.10	6.20	-54.90	-25.00	29.90
1 213.65	V	-60.90	6.60	-54.30	-25.00	29.30
1 387.01	V	-54.20	9.00	-45.20	-25.00	20.20
1 489.56	V	-54.70	8.40	-46.30	-25.00	21.30
1 560.37	V	-48.40	7.30	-41.10	-25.00	16.10
2 081.07	H	-60.70	12.90	-47.80	-25.00	22.80

6. Test equipment used for test

	Description	Manufacturer	Model No.	Serial No.	Next Cal Date.
■	DC power supply	AGILENT	E3632A	MY40004791	16.07.15
■	Constant 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	-