CFR 47 FCC PART 15 SUBPART C
ISED RSS-210 Issue 11

TEST REPORT

For

Remote Controlled Locking Wheel

FCC MODEL NUMBER: W-9470C, W-947XCY-ZZ, PW-947XCY-ZZ (X, Y and Z can be 0-9 or letter or blank)

IC MODEL NUMBER: W-9470C

REPORT NUMBER: 4791519368-1-RF-1

ISSUE DATE: December 23, 2024

FCC ID: W3Z-W9470C

IC: 6817C-W9470C

Prepared for

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Prepared by

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The results reported herein have been performed in accordance with the laboratory's terms of accreditation. This report shall not be reproduced except in full without the written approval of the Laboratory. The results in this report apply to the test sample(s) mentioned above at the time of the testing period only and are not to be used to indicate applicability to other similar products.

Revision History

Rev.	Issue Date	Revisions	Revised By
V0	December 23, 2024	Initial Issue	

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Summary of Test Results			
Clause	Test Items	FCC/ISED Rules	Test Results
1	20dB Bandwidth and 99% Occupied Bandwidth	CFR 47 FCC §15.215 (c) ISED RSS-Gen Clause 6.7	Pass
2	Radiated Emission	CFR 47 FCC §15.249 (a)(d)(e) ISED RSS-210 Annex B B.10 CFR 47 FCC §15.205 and §15.209 RSS-GEN Clause 8.9 RSS-GEN Clause 8.10	Pass
3	Conducted Emission Test for AC Power Port	CFR 47 FCC §15.207 RSS-GEN Clause 8.8	Not Applicable
4	Antenna Requirement	CFR 47 FCC §15.203 ISED RSS-Gen Clause 6.8	Pass
Note 1: This test report is only published to and used by the applicant, and it is not for evidence purpose in China. Note 2: The measurement result for the sample received is <Pass> according to < CFR 47 FCC PART 15 SUBPART C, ISED RSS-210 ISSUE 11 > when <Accuracy Method> decision rule is applied. Note 3: The EUT was powered by battery and can't be charged.			

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1. ATTESTATION OF TEST RESULTS

Applicant Information

Company Name:	Gatekeeper Systems (HK) Ltd.
Address:	31/F, Tower 2, Times Square 1 Matheson Street, Causeway Bay Hong Kong

Manufacturer Information

Company Name:	Gatekeeper Systems (HK) Ltd.
Address:	31/F, Tower 2, Times Square 1 Matheson Street, Causeway Bay Hong Kong

EUT Information

EUT Name:	Remote Controlled Locking Wheel
FCC/IC Model:	W-9470C
Brand:	Gatekeeper
FCC Series Model:	W-947XCY-ZZ, PW-947XCY-ZZ (X, Y and Z can be 0-9 or letter or blank)
FCC Model difference:	X: Different Software version, BLANK (Y): Standard wheel caster, BLANK (ZZ): No caster bolt, Y: Different version of wheel caster, ZZ: Different version of wheel caster bolt length or locking clip.
Sample Received Date:	November 27, 2024
Sample ID:	7365435
Date of Tested:	November 27, 2024 to December 23, 2024

APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
CFR 47 FCC PART 15 SUBPART C **ISED RSS-210 Issue 11**	**Pass**

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2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with KDB 414788 D01 Radiated Test Site v01r01, FCC CFR 47 Part 2, FCC CFR 47 Part 15, ANSI C63.10-2013, ISED RSS-210 ISSUE 11 and ISED RSS-GEN Issue 5.

3. FACILITIES AND ACCREDITATION

Accreditation Certificate	**A2LA (Certificate No.: 4102.01)** UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. has been assessed and proved to be in compliance with A2LA. **FCC (FCC Designation No.: CN1187)** UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. Has been recognized to perform compliance testing on equipment subject to the Commission's Declaration of Conformity (DoC) and Certification rules **ISED (Company No.: 21320)** UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. has been registered and fully described in a report filed with ISED. The Company Number is 21320 and the test lab Conformity Assessment Body Identifier (CABID) is CN0046. **VCCI (Registration No.: G-20192, C-20153, T-20155 and R-20202)** UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. has been assessed and proved to be in compliance with VCCI, the Membership No. is 3793. Facility Name: Chamber D, the VCCI registration No. is G-20192 and R-20202 Shielding Room B, the VCCI registration No. is C-20153 and T-20155

Note 1:
All tests measurement facilities use to collect the measurement data are located at Building 10, Innovation Technology Park, No. 1, Li Bin Road, Song Shan Lake Hi-Tech Development Zone Dongguan, 523808, People's Republic of China.

Note 2:
The test anechoic chamber in UL Verification Services (Guangzhou) Co., Ltd.
Song Shan Lake Branch had been calibrated and compared to the open field sites and the test anechoic chamber is shown to be equivalent to or worst case from the open field site.

Note 3:
For below 30 MHz, lab had performed measurements at test anechoic chamber and comparing to measurements obtained on an open field site. And these measurements below 30 MHz had been correlated to measurements performed on an OFS.

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4. CALIBRATION AND UNCERTAINTY

4.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations and is traceable to recognized national standards.

4.2. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

Test Item	Uncertainty
Radiated Emission (Included Fundamental Emission) (9 kHz ~ 30 MHz)	2.2 dB
Radiated Emission (Included Fundamental Emission) (30 MHz ~ 1 GHz)	4.00 dB
Radiated Emission (Included Fundamental Emission) (1 GHz to 26 GHz)	5.78 dB (1 GHz ~ 18 GHz)
	5.23 dB (18 GHz ~ 26 GHz)
Duty Cycle	±0.028%
DTS and 99% Occupied Bandwidth	±0.0196%
Note: This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.	

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5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

EUT Name	Remote Controlled Locking Wheel
FCC/IC Model:	W-9470C
FCC Series Model:	W-947XCY-ZZ, PW-947XCY-ZZ (X, Y and Z can be 0-9 or letter or blank)
FCC Model difference:	X: Different Software version, BLANK (Y): Standard wheel caster, BLANK (ZZ): No caster bolt, Y: Different version of wheel caster, ZZ: Different version of wheel caster bolt length or locking clip.

Product Description	Operation Frequency	2402.8 MHz ~ 2478.6 MHz
	Radio Technology	SRD 2.4G
	Modulation Type	Data Rate
	FSK	20kbps
	MSK	500kbps
Power supply	DC 3 V	

5.2. CHANNEL LIST

Channel List For FSK							
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
/	/	64	2413.8	128	2426.6	192	2439.4
/	/	65	2414	129	2426.8	193	2439.6
/	/	66	2414.2	130	2427	194	2439.8
/	/	67	2414.4	131	2427.2	195	2440
/	/	68	2414.6	132	2427.4	196	2440.2
/	/	69	2414.8	133	2427.6	197	2440.4
/	/	70	2415	134	2427.8	198	2440.6
/	/	71	2415.2	135	2428	199	2440.8
/	/	72	2415.4	136	2428.2	200	2441
9	2402.8	73	2415.6	137	2428.4	201	2441.2
10	2403	74	2415.8	138	2428.6	202	2441.4
11	2403.2	75	2416	139	2428.8	203	2441.6
12	2403.4	76	2416.2	140	2429	204	2441.8
13	2403.6	77	2416.4	141	2429.2	205	2442
14	2403.8	78	2416.6	142	2429.4	206	2442.2
15	2404	79	2416.8	143	2429.6	207	2442.4
16	2404.2	80	2417	144	2429.8	208	2442.6
17	2404.4	81	2417.2	145	2430	209	2442.8
18	2404.6	82	2417.4	146	2430.2	210	2443
19	2404.8	83	2417.6	147	2430.4	211	2443.2
20	2405	84	2417.8	148	2430.6	212	2443.4

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21	2405.2	85	2418	149	2430.8	213	2443.6
22	2405.4	86	2418.2	150	2431	214	2443.8
23	2405.6	87	2418.4	151	2431.2	215	2444
24	2405.8	88	2418.6	152	2431.4	216	2444.2
25	2406	89	2418.8	153	2431.6	217	2444.4
26	2406.2	90	2419	154	2431.8	218	2444.6
27	2406.4	91	2419.2	155	2432	219	2444.8
28	2406.6	92	2419.4	156	2432.2	220	2445
29	2406.8	93	2419.6	157	2432.4	221	2445.2
30	2407	94	2419.8	158	2432.6	222	2445.4
31	2407.2	95	2420	159	2432.8	223	2445.6
32	2407.4	96	2420.2	160	2433	224	2445.8
33	2407.6	97	2420.4	161	2433.2	225	2446
34	2407.8	98	2420.6	162	2433.4	226	2446.2
35	2408	99	2420.8	163	2433.6	227	2446.4
36	2408.2	100	2421	164	2433.8	228	2446.6
37	2408.4	101	2421.2	165	2434	229	2446.8
38	2408.6	102	2421.4	166	2434.2	230	2447
39	2408.8	103	2421.6	167	2434.4	231	2447.2
40	2409	104	2421.8	168	2434.6	232	2447.4
41	2409.2	105	2422	169	2434.8	233	2447.6
42	2409.4	106	2422.2	170	2435	234	2447.8
43	2409.6	107	2422.4	171	2435.2	235	2448
44	2409.8	108	2422.6	172	2435.4	236	2448.2
45	2410	109	2422.8	173	2435.6	237	2448.4
46	2410.2	110	2423	174	2435.8	238	2448.6
47	2410.4	111	2423.2	175	2436	239	2448.8
48	2410.6	112	2423.4	176	2436.2	240	2449
49	2410.8	113	2423.6	177	2436.4	241	2449.2
50	2411	114	2423.8	178	2436.6	242	2449.4
51	2411.2	115	2424	179	2436.8	243	2449.6
52	2411.4	116	2424.2	180	2437	244	2449.8
53	2411.6	117	2424.4	181	2437.2	245	2450
54	2411.8	118	2424.6	182	2437.4	246	2450.2
55	2412	119	2424.8	183	2437.6	247	2450.4
56	2412.2	120	2425	184	2437.8	248	2450.6
57	2412.4	121	2425.2	185	2438	249	2450.8
58	2412.6	122	2425.4	186	2438.2	250	2451
59	2412.8	123	2425.6	187	2438.4	251	2451.2
60	2413	124	2425.8	188	2438.6	252	2451.4
61	2413.2	125	2426	189	2438.8	253	2451.6
62	2413.4	126	2426.2	190	2439	254	2451.8
63	2413.6	127	2426.4	191	2439.2	/	/

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Channel List For MSK							
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
/	/	64	2421.1	128	2441.2	192	2461.3
/	/	65	2421.4	129	2441.5	193	2461.6
/	/	66	2421.7	130	2441.8	194	2462
/	/	67	2422.1	131	2442.2	195	2462.3
/	/	68	2422.4	132	2442.5	196	2462.6
/	/	69	2422.7	133	2442.8	197	2462.9
/	/	70	2423	134	2443.1	198	2463.2
/	/	71	2423.3	135	2443.4	199	2463.5
/	/	72	2423.6	136	2443.7	200	2463.8
/	/	73	2423.9	137	2444	201	2464.2
/	/	74	2424.3	138	2444.4	202	2464.5
/	/	75	2424.6	139	2444.7	203	2464.8
/	/	76	2424.9	140	2445	204	2465.1
/	/	77	2425.2	141	2445.3	205	2465.4
/	/	78	2425.5	142	2445.6	206	2465.7
15	2405.7	79	2425.8	143	2445.9	207	2466
16	2406	80	2426.1	144	2446.2	208	2466.4
17	2406.3	81	2426.5	145	2446.6	209	2466.7
18	2406.7	82	2426.8	146	2446.9	210	2467
19	2407	83	2427.1	147	2447.2	211	2467.3
20	2407.3	84	2427.4	148	2447.5	212	2467.6
21	2407.6	85	2427.7	149	2447.8	213	2467.9
22	2407.9	86	2428	150	2448.1	214	2468.2
23	2408.2	87	2428.3	151	2448.4	215	2468.6
24	2408.5	88	2428.6	152	2448.8	216	2468.9
25	2408.9	89	2429	153	2449.1	217	2469.2
26	2409.2	90	2429.3	154	2449.4	218	2469.5
27	2409.5	91	2429.6	155	2449.7	219	2469.8
28	2409.8	92	2429.9	156	2450	220	2470.1
29	2410.1	93	2430.2	157	2450.3	221	2470.4
30	2410.4	94	2430.5	158	2450.6	222	2470.8
31	2410.7	95	2430.8	159	2451	223	2471.1
32	2411.1	96	2431.2	160	2451.3	224	2471.4
33	2411.4	97	2431.5	161	2451.6	225	2471.7
34	2411.7	98	2431.8	162	2451.9	226	2472
35	2412	99	2432.1	163	2452.2	227	2472.3
36	2412.3	100	2432.4	164	2452.5	228	2472.6
37	2412.6	101	2432.7	165	2452.8	229	2473

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38	2412.9	102	2433	166	2453.2	230	2473.3
39	2413.3	103	2433.4	167	2453.5	231	2473.6
40	2413.6	104	2433.7	168	2453.8	232	2473.9
41	2413.9	105	2434	169	2454.1	233	2474.2
42	2414.2	106	2434.3	170	2454.4	234	2474.5
43	2414.5	107	2434.6	171	2454.7	235	2474.8
44	2414.8	108	2434.9	172	2455	236	2475.2
45	2415.1	109	2435.2	173	2455.4	237	2475.5
46	2415.5	110	2435.6	174	2455.7	238	2475.8
47	2415.8	111	2435.9	175	2456	239	2476.1
48	2416.1	112	2436.2	176	2456.3	240	2476.4
49	2416.4	113	2436.5	177	2456.6	241	2476.7
50	2416.7	114	2436.8	178	2456.9	242	2477
51	2417	115	2437.1	179	2457.2	243	2477.4
52	2417.3	116	2437.4	180	2457.6	244	2477.7
53	2417.7	117	2437.8	181	2457.9	245	2478
54	2418	118	2438.1	182	2458.2	246	2478.3
55	2418.3	119	2438.4	183	2458.5	247	2478.6
56	2418.6	120	2438.7	184	2458.8	/	/
57	2418.9	121	2439	185	2459.1	/	/
58	2419.2	122	2439.3	186	2459.4	/	/
59	2419.5	123	2439.6	187	2459.8	/	/
60	2419.9	124	2440	188	2460.1	/	/
61	2420.2	125	2440.3	189	2460.4	/	/
62	2420.5	126	2440.6	190	2460.7	/	/
63	2420.8	127	2440.9	191	2461	/	/

5.3. MAXIMUM FIELD STRENGTH

Test Mode	Frequency (MHz)	Channel Number	Maximum Peak field strength (dBµV/m)	Maximum Average field strength (dBµV/m)
FSK	2402.8 ~ 2451.8	9-254[245]	95.94	75.84
MSK	2405.7 ~ 2478.6	15-247[232]	96.01	84.85

5.4. TEST CHANNEL CONFIGURATION

Test Mode	Test Channel	Frequency
FSK	CH 9(Low Channel), CH 128(MID Channel), CH 254(High Channel)	2402.8MHz, 2426.6MHz, 2451.8MHz
MSK	CH 15(Low Channel), CH 128(MID Channel), CH 247(High Channel)	2405.7MHz, 2441.2MHz, 2478.6MHz

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5.5. THE WORSE CASE POWER SETTING PARAMETER

The Worse Case Power Setting Parameter under 2405 MHz ~ 2470 MHz Band				
Test Software Version		/		
Modulation Type	Transmit Antenna Number	Test Channel		
		LCH	MCH	HCH
FSK	1	Default	Default	Default
MSK	1	Default	Default	Default

5.6. DESCRIPTION OF AVAILABLE ANTENNAS

Antenna	Frequency (MHz)	Antenna Type	Maximum Antenna Gain (dBi)
1	2400-2483.5	IFA Antenna	3.3

Test Mode	Transmit and Receive Mode	Description
FSK	☒1TX, 1RX	Antenna 1 can be used as transmitting/receiving antenna.
MSK	☒1TX, 1RX	Antenna 1 can be used as transmitting/receiving antenna.
Note: The value of the antenna gain was declared by customer		

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5.7. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Item	Equipment	Brand Name	Model Name	P/N
/	/	/	/	/

I/O CABLES

Cable No	Port	Connector Type	Cable Type	Cable Length(m)	Remarks
/	/	/	/	/	/

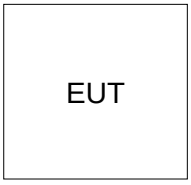
ACCESSORY

Item	Equipment	Mfr/Brand	Model/Type No.	Specification	Series No.
/	/	/	/	/	/

TEST SETUP

The EUT have the engineer mode inside.

SETUP DIAGRAM FOR TEST



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6. MEASURING EQUIPMENT AND SOFTWARE USED

Tonsend RF Test System					
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Due. Date
PXA Signal Analyzer	Keysight	N9030A	MY55410512	Sep.28, 2024	Sep.27, 2025
EXA Signal Analyzer	Keysight	N9010B	MY57110124	May 20, 2024	May 19, 2025

Software			
Description	Manufacturer	Name	Version
Tonsend SRD Test System	Tonsend	JS1120-3 RF Test System	2.6.77.0518

Radiated Emissions						
Equipment	Manufacturer	Model No.	Serial No.	Upper Last Cal.	Last Cal.	Due Date
MXE EMI Receiver	KESIGHT	N9038A	MY56400036	/	Sep.28, 2024	Sep.27, 2025
Hybrid Log Periodic Antenna	TDK	HLP-3003C	130959	/	May.08, 2023	May.07 2026
Preamplifier	HP	8447D	2944A09099	/	Sep.28, 2024	Sep.27, 2025
EMI Measurement Receiver	R&S	ESR26	101377	/	Sep.28, 2024	Sep.27, 2025
Horn Antenna	TDK	HRN-0118	130939	/	Apr.29, 2022	Apr.28, 2025
Preamplifier	TDK	PA-02-0118	TRS-305-00067	/	Sep.28, 2024	Sep.27, 2025
Horn Antenna	Schwarzbeck	BBHA9170	697	/	Jun 30, 2024	Jun 29, 2027
Preamplifier	TDK	PA-02-2	TRS-307-00003	/	Sep.28, 2024	Sep.27, 2025
Preamplifier	TDK	PA-02-3	TRS-308-00002	/	Sep.28, 2024	Sep.27, 2025
Loop antenna	Schwarzbeck	1519B	00008	Dec.14, 2021	Dec.09 2024	Dec.08, 2027
High Pass Filter	Wi	WHKX10-2700-3000-18000-40SS	23	/	Sep.28, 2024	Sep.27, 2025
Band Reject Filter	Wainwright	WRCJV8-2350-2400-2483.5-2533.5-40SS	4	/	Sep.28, 2024	Sep.27, 2025

Software			
Description	Manufacturer	Name	Version
Test Software for Radiated Emissions	Farad	EZ-EMC	Ver. UL-3A1

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7. ANTENNA PORT TEST RESULTS

7.1. 20DB BANDWIDTH AND 99% OCCUPIED BANDWIDTH

LIMITS

CFR 47 FCC Part15 (15.249) Subpart C RSS-Gen Issue 5			
Section	Test Item	Limit	Frequency Range (MHz)
CFR 47 FCC §15.215 (c)	20dB Bandwidth	for reporting purposes only	2400-2483.5
ISED RSS-Gen Clause 6.7 Issue 5	99% Occupied Bandwidth	For reporting purposes only.	2400-2483.5

TEST PROCEDURE

Connect the UUT to the spectrum analyzer and use the following settings:

Center Frequency	The center frequency of the channel under test
Detector	Peak
RBW	1% to 5% of the occupied bandwidth
VBW	approximately 3×RBW
Trace	Max hold
Sweep	Auto couple

Allow the trace to stabilize and measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 20 dB/99% relative to the maximum level measured in the fundamental emission.

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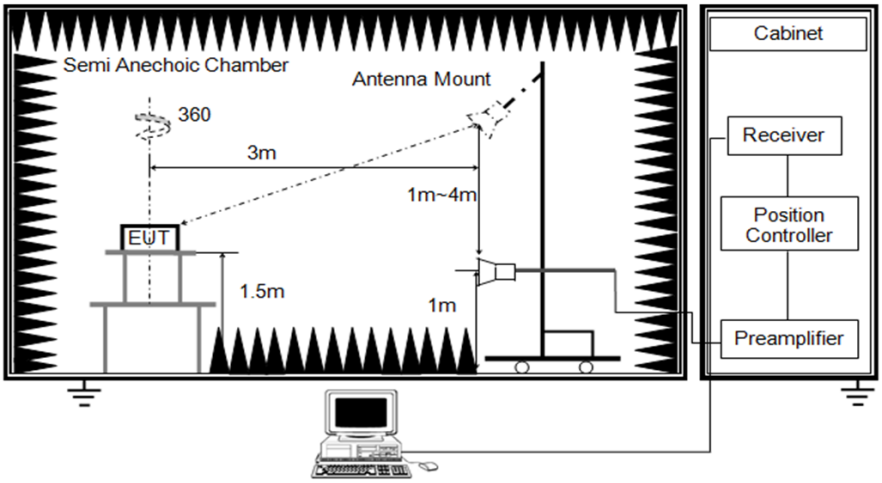
TEST SETUP

Above 1 GHz

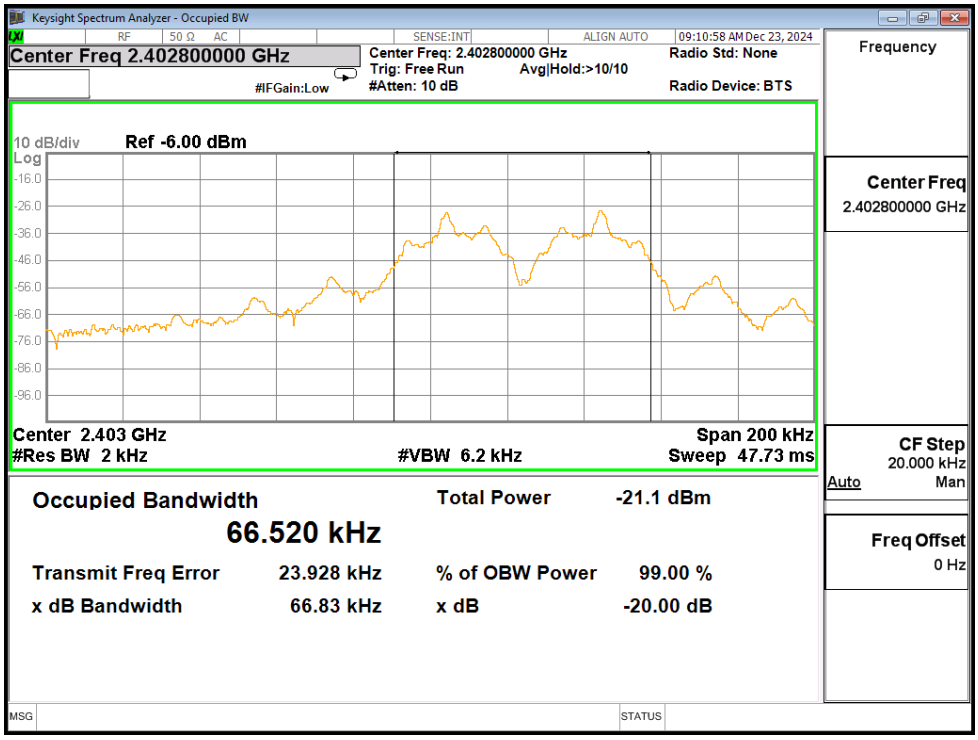


TEST ENVIRONMENT

Temperature	23.1℃	Relative Humidity	51%
Atmosphere Pressure	101kPa	Test Voltage	DC 3 V

TEST RESULTS

Test Mode	Frequency (MHz)	99% Bandwidth (MHz)	20dB Bandwidth (MHz)	Result
FSK	2402.8	0.066520	0.06683	PASS



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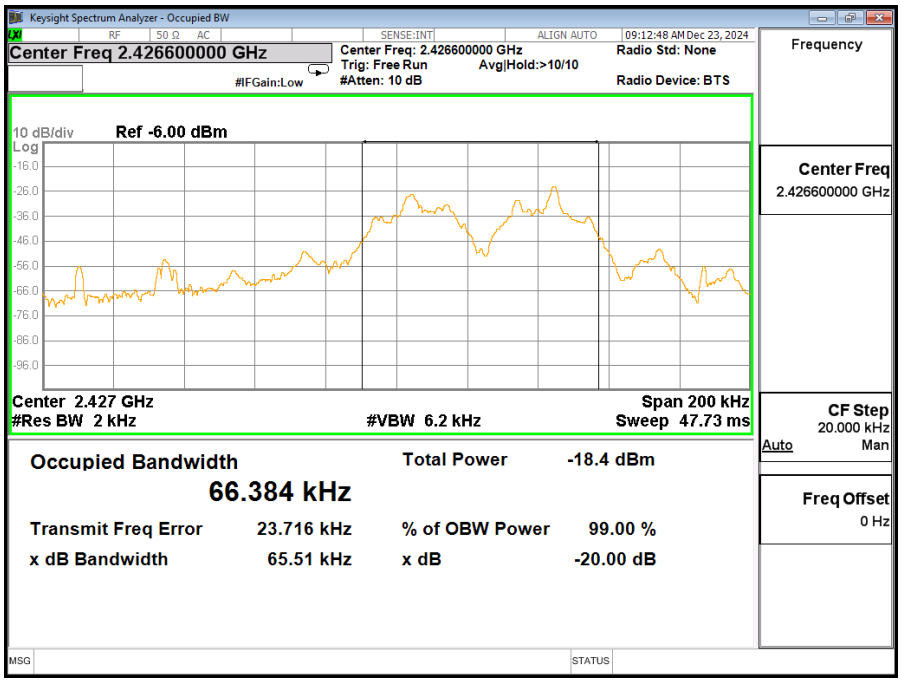
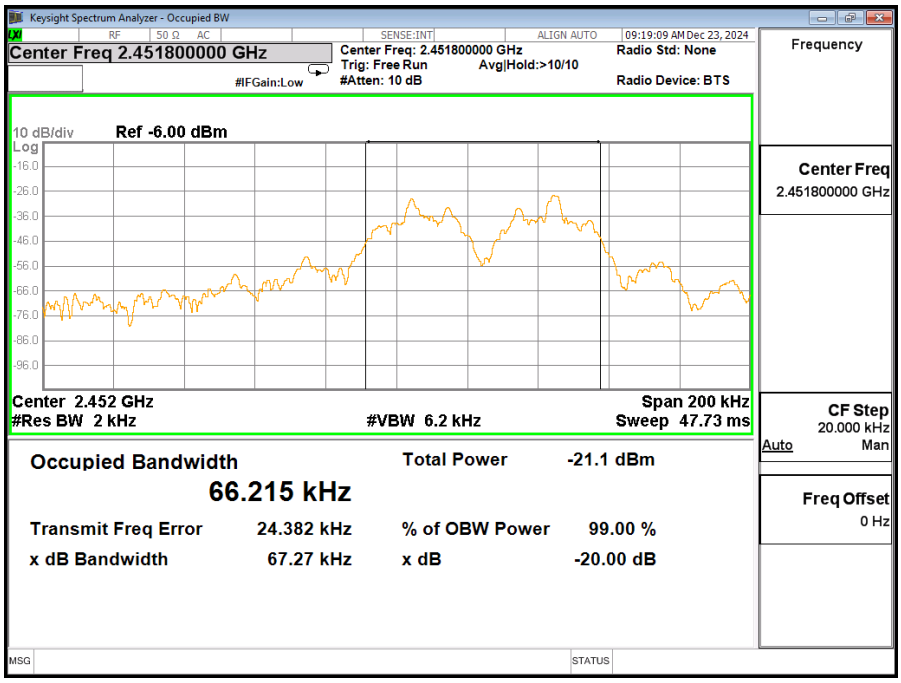
Test Mode	Frequency (MHz)	99% Bandwidth (MHz)	20dB Bandwidth (MHz)	Result
FSK	2426.6	0.066384	0.06551	PASS



Test Mode	Frequency (MHz)	99% Bandwidth (MHz)	20dB Bandwidth (MHz)	Result
FSK	2451.8	0.066215	0.06727	PASS



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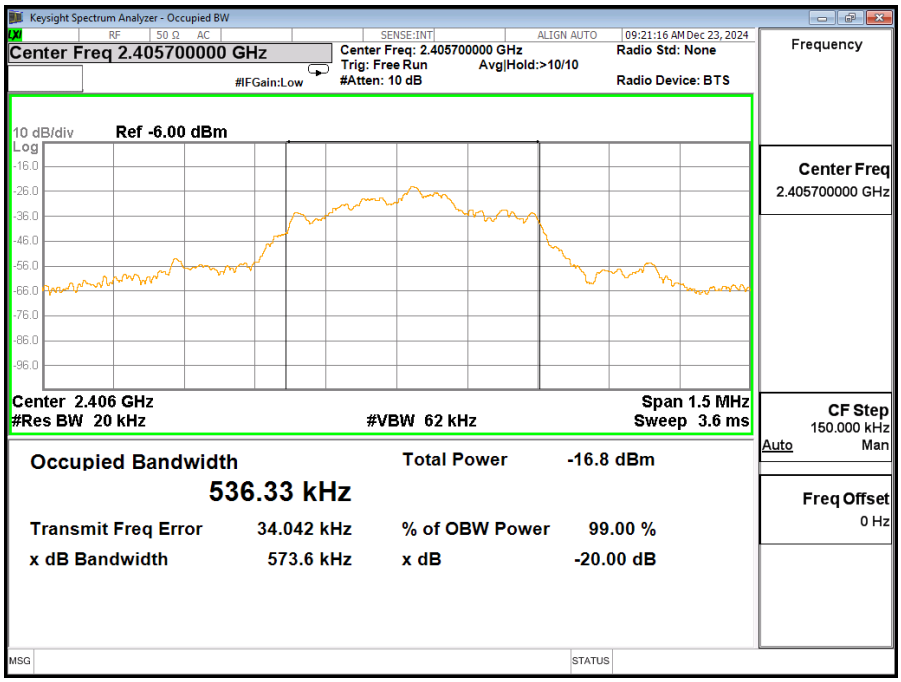
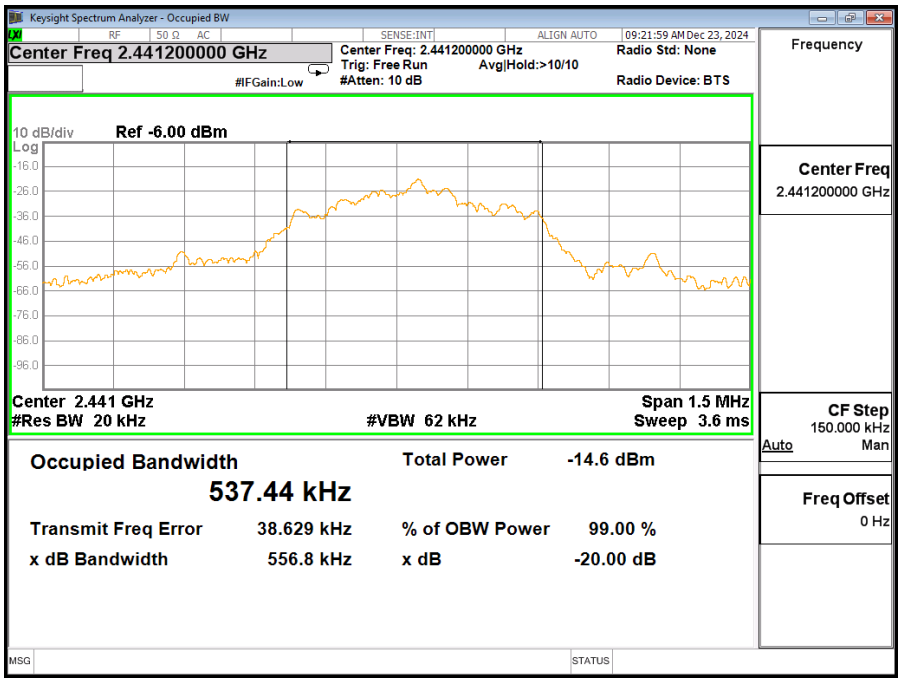
Test Mode	Frequency (MHz)	99% Bandwidth (MHz)	20dB Bandwidth (MHz)	Result
MSK	2405.7	0.53633	0.5736	PASS



Test Mode	Frequency (MHz)	99% Bandwidth (MHz)	20dB Bandwidth (MHz)	Result
MSK	2441.2	0.53744	0.5568	PASS



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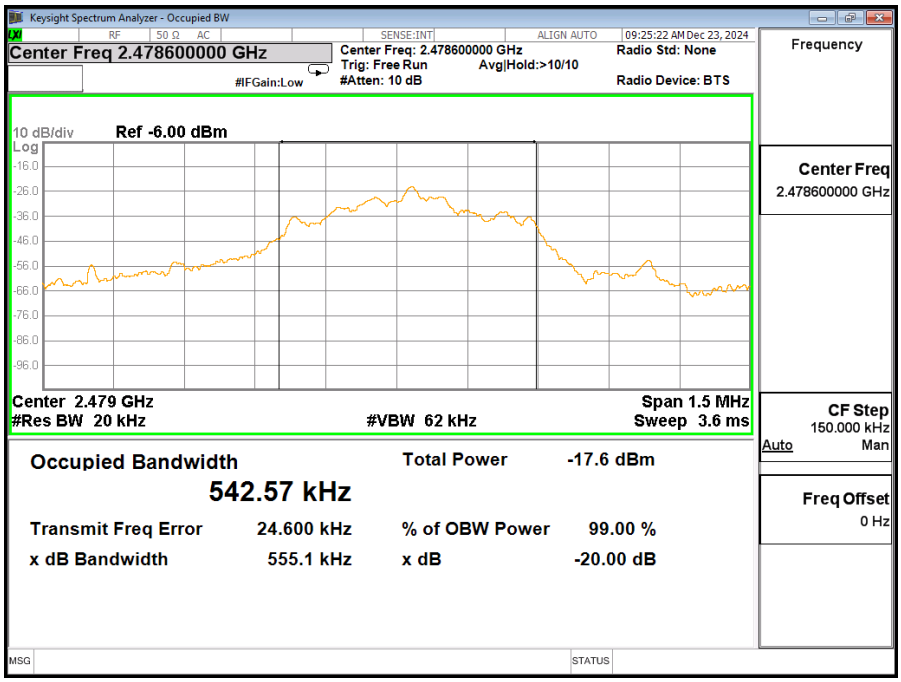
Test Mode	Frequency (MHz)	99% Bandwidth (MHz)	20dB Bandwidth (MHz)	Result
MSK	2478.6	0.54257	0.5551	PASS



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7.2. DUTY CYCLE

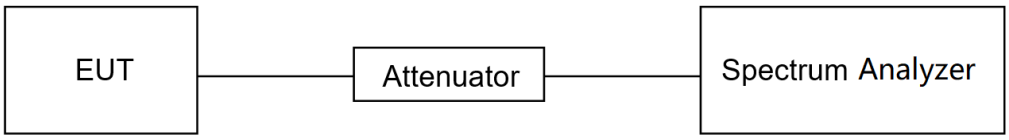
LIMITS

None; for reporting purposes only.

TEST PROCEDURE

Refer to ANSI C63.10-2013 clause 11.6 Zero – Span Spectrum Analyzer method.

TEST SETUP



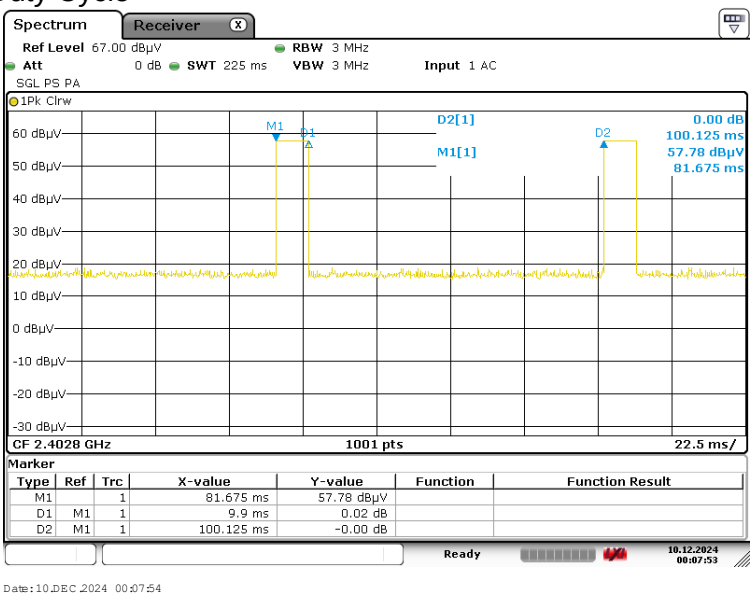
TEST ENVIRONMENT

Temperature	23.1℃	Relative Humidity	51%
Atmosphere Pressure	101kPa	Test Voltage	DC 3 V

TEST RESULTS

Mode	On Time (msec)	Period (msec)	Duty Cycle x (Linear)	Duty Cycle (%)	Duty Cycle Correction Factor (db)
FSK	9.9	100.125	0.0989	9.89	-20.10

Note: Duty Cycle Correction Factor=20log(x).
Where: x is Duty Cycle



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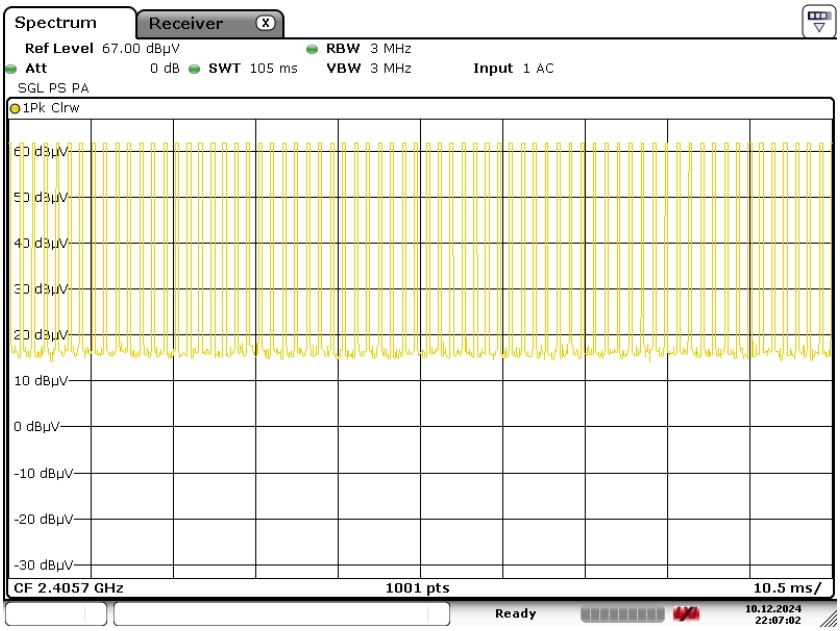
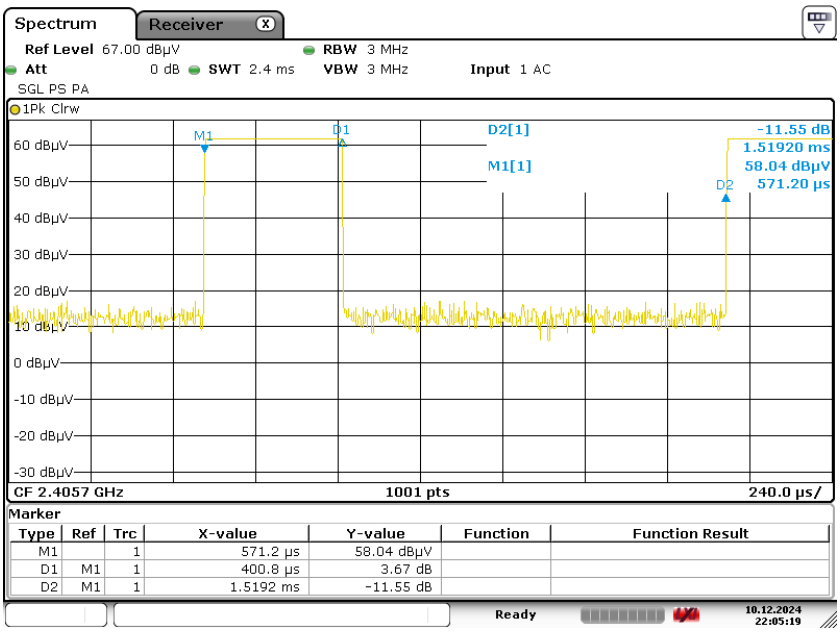
Mode	Ton 1 (msec)	Burst	On Time (msec)	Period (msec)	Duty Cycle x (Linear)	Duty Cycle (%)	Duty Cycle Correction Factor (db)
MSK	0.4008	69	27.6552	100	0.2766	27.66	-11.16

Note: Duty Cycle Correction Factor=20log(x).
Where: x is Duty Cycle



Date: 10.DEC.2024 22:07:03



Date: 10.DEC.2024 22:05:18

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8. RADIATED TEST RESULTS

LIMITS

Please refer to CFR 47 FCC §15.205 and §15.209.

Please refer to ISED RSS-GEN Clause 8.9 and Clause 8.10.

Radiation Disturbance Test Limit for FCC (Class B) (9 kHz ~ 1 GHz)

FCC field strength of emissions from intentional radiators operated within these frequency bands			
Frequency (MHz)	Field strength of Fundamental	Field strength of Harmonics	Distance (m)
902 - 928	50 mV/m (94 dBuV/m)	500 uV/m (54 dBuV/m)	3
2400 – 2483.5	50 mV/m (94 dBuV/m)	500 uV/m (54 dBuV/m)	3
5725 – 5875	50 mV/m (94 dBuV/m)	500 uV/m (54 dBuV/m)	3

The field strength of fundamental and harmonic emissions measured at 3 m shall not exceed the limits in table B2 for ISED.

Table B2 — Field strength limits at various frequencies		
	Field strength (mV/m)	
Frequency bands (MHz)	Fundamental emissions	Harmonic emissions
902-928	50	0.5
2400-2483.5	50	0.5
5725-5875	50	0.5
24000-24250	250	2.5

Emissions radiated outside of the specified frequency bands above 30 MHz			
Frequency Range (MHz)	Field Strength Limit (uV/m) at 3 m	Field Strength Limit (dBuV/m) at 3 m	
		Quasi-Peak	
30 - 88	100	40	
88 - 216	150	43.5	
216 - 960	200	46	
Above 960	500	54	
Above 1000	500	Peak	Average

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		74	54

FCC Emissions radiated outside of the specified frequency bands below 30 MHz		
Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30

ISED General field strength limits at frequencies below 30 MHz

Table 6 – General field strength limits at frequencies below 30 MHz		
Frequency	**Magnetic field strength (H-Field) (µA/m)**	**Measurement distance (m)**
9 - 490 kHz[Note 1]	6.37/F (F in kHz)	300
490 - 1705 kHz	63.7/F (F in kHz)	30
1.705 - 30 MHz	0.08	30

Note 1: The emission limits for the ranges 9-90 kHz and 110-490 kHz are based on measurements employing a linear average detector.

ISED Restricted bands please refer to ISED RSS-GEN Clause 8.10

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Table 7 – Restricted frequency bands[Note 1]		
MHz	MHz	GHz
0.090 - 0.110	149.9 - 150.05	9.0 - 9.2
0.495 - 0.505	156.52475 - 156.52525	9.3 - 9.5
2.1735 - 2.1905	156.7 - 156.9	10.6 - 12.7
3.020 - 3.026	162.0125 - 167.17	13.25 - 13.4
4.125 - 4.128	167.72 - 173.2	14.47 - 14.5
4.17725 - 4.17775	240 – 285	15.35 - 16.2
4.20725 - 4.20775	322 - 335.4	17.7 - 21.4
5.677 - 5.683	399.9 - 410	22.01 - 23.12
6.215 - 6.218	608 - 614	23.6 - 24.0
6.26775 - 6.26825	960 - 1427	31.2 - 31.8
6.31175 - 6.31225	1435 - 1626.5	36.43 - 36.5
8.291 - 8.294	1645.5 - 1646.5	Above 38.6
8.362 - 8.366	1660 - 1710	
8.37625 - 8.38675	1718.8 - 1722.2	
8.41425 - 8.41475	2200 - 2300	
12.29 - 12.293	2310 - 2390	
12.51975 - 12.52025	2483.5 - 2500	
12.57675 - 12.57725	2655 - 2900	
13.36 - 13.41	3260 – 3267	
16.42 - 16.423	3332 - 3339	
16.69475 - 16.69525	3345.8 - 3358	
16.80425 - 16.80475	3500 - 4400	
25.5 - 25.67	4500 - 5150	
37.5 - 38.25	5350 - 5460	
73 - 74.6	7250 - 7750	
74.8 - 75.2	8025 – 8500	
108 – 138		

Note 1: Certain frequency bands listed in table 7 and in bands above 38.6 GHz are designated for licence-exempt applications. These frequency bands and the requirements that apply to related devices are set out in the 200 and 300 series of RSSs.

FCC Restricted bands of operation refer to FCC §15.205 (a):

MHz	MHz	MHz	GHz
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
[1]0.495-0.505	16.69475-16.69525	608-614	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	108-121.94	1718.8-1722.2	13.25-13.4
6.31175-6.31225	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3600-4400	([2])
13.36-13.41			

Note: [1]Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.
[2]Above 38.6c

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TEST PROCEDURE

Below 30 MHz

The setting of the spectrum analyzer

RBW	200 Hz (From 9 kHz to 0.15 MHz)/ 9 kHz (From 0.15 MHz to 30 MHz)
VBW	200 Hz (From 9 kHz to 0.15 MHz)/ 9 kHz (From 0.15 MHz to 30 MHz)
Sweep	Auto

1. The testing follows the guidelines in ANSI C63.10-2013 clause 6.4.

2. The EUT was arranged to its worst case and then turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level. Both Horizontal, Face-on and Face-off polarizations of the antenna are set to make the measurement.

3. The EUT was placed on a turntable with 80 cm above ground.

4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a 1 m height antenna tower.

5. The radiated emission limits are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz and above 1000 MHz Radiated emission limits in these three bands are based on measurements employing an average detector.

6. For measurement below 1 GHz, the initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak and average detector mode re-measured. If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak and average detector and reported.

7. Although these tests were performed other than open field site, adequate comparison measurements were confirmed against 30m open field site. Therefore sufficient tests were made to demonstrate that the alternative site produces results that correlate with the ones of tests made in an open field site based on KDB 414788.

8. The limits in CFR 47, Part 15, Subpart C, paragraph 15.209 (a), are identical to those in RSS-GEN Section 8.9, Table 6, since the measurements are performed in terms of magnetic field strength and converted to electric field strength levels (as reported in the table) using the free space impedance of 377Ω. For example, the measurement frequency X kHz resulted in a level of Y dBuV/m, which is equivalent to Y-51.5 = Z dBuA/m, which has the same margin, W dB, to the corresponding RSS-GEN Table 6 limit as it has to be 15.209(a) limit.

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Below 1 GHz and above 30 MHz

The setting of the spectrum analyzer

RBW	120 kHz
VBW	300 kHz
Sweep	Auto
Detector	Peak/QP
Trace	Max hold

1. The testing follows the guidelines in ANSI C63.10-2013 clause 6.5.

2. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

3. The EUT was placed on a turntable with 80 cm above ground.

4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.

5. For measurement below 1 GHz, the initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured. If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.

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Above 1 GHz

The setting of the spectrum analyzer

RBW	1 MHz
VBW	3 MHz
Sweep	Auto
Detector	Peak
Trace	Max hold

1. The testing follows the guidelines in ANSI C63.10-2013 clause 6.6.

2. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

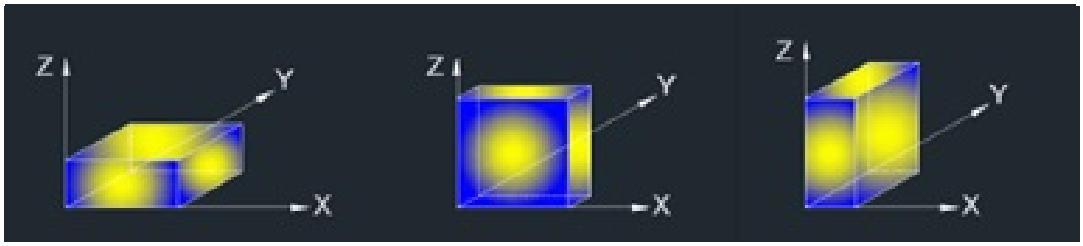
3. The EUT was placed on a turntable with 1.5 m above ground.

4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.

5. For measurement above 1 GHz, the emission measurement will be measured by the peak detector. This peak level, once corrected, must comply with the limit specified in Section 15.209.

6. For measurements above 1 GHz the resolution bandwidth is set to 1 MHz, then the video bandwidth is set to 3 MHz for peak measurements. AVG Result=Peak Result + Duty Cycle Correction Factor. For the + Duty Cycle Correction Factor please refer to clause 7.2. ON TIME AND DUTY CYCLE.

X axis, Y axis, Z axis positions:



Note: For all radiated test, EUT in each of three orthogonal axis emissions had been tested, but only the worst case (Y axis) data recorded in the report.

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TEST PROCEDURE

For Restricted Bandedge and field strength of intentional emission:
Note:
1. Measurement = Reading Level + Correct Factor.
2. If the peak values are less than the average limit of 54 dBuV/m, the average result is deemed to comply with average limit.
3. Peak: Peak detector.
4. AVG Result=Peak Result + Duty Cycle Correction Factor.
5. For the transmitting duration, please refer to clause 7.2.
6. Only the worst data was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.
7. Both horizontal and vertical have been tested, only the worst data was recorded in the report.
8. All modes, channels and antennas have been tested, only the worst data was recorded in the report.

For Radiate Spurious emission (9 kHz ~ 30 MHz):
Note:
1. Measurement = Reading Level + Correct Factor.
2. If the peak values are less than the QP limit, the QP result is deemed to comply with QP limit.
3. All 3 polarizations (Horizontal, Face-on and Face-off) of the loop antenna had been tested, but only the worst data recorded in the report.
4. All modes, channels and antennas have been tested, only the worst data was recorded in the report.

For Radiate Spurious Emission (30 MHz ~ 1 GHz):
Note:
1. Result Level = Read Level + Correct Factor.
2. If the peak values are less than the QP limit, the QP result is deemed to comply with QP limit.
3. All modes, channels and antennas have been tested, only the worst data was recorded in the report.

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For Radiate Spurious Emission (1 GHz ~ 3 GHz):
1. Measurement = Reading Level + Correct Factor.
2. If the peak values are less than the average limit of 54 dBuV/m, the average result is deemed to comply with average limit.
3. Peak: Peak detector.
4. AVG Result=Peak Result + Duty Cycle Correction Factor.
5. For the transmitting duration, please refer to clause 7.2.
6. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for Band reject filter losses.
7. Proper operation of the transmitter prior to adding the filter to the measurement chain.
8. All modes, channels and antennas have been tested, only the worst data was recorded in the report.

For Radiate Spurious Emission (3 GHz ~ 18 GHz):
Note:
1. Peak Result = Reading Level + Correct Factor.
2. If the peak values are less than the average limit of 54 dBuV/m, the average result is deemed to comply with average limit.
3. Peak: Peak detector.
4. AVG Result=Peak Result + Duty Cycle Correction Factor.
5. For the transmitting duration, please refer to clause 7.2.
6. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.
7. Proper operation of the transmitter prior to adding the filter to the measurement chain.
8. All modes, channels and antennas have been tested, only the worst data was recorded in the report.

For Radiate Spurious emission (18 GHz ~ 26 GHz):
Note:
1. Measurement = Reading Level + Correct Factor.
2. If the peak values are less than the average limit of 54 dBuV/m, the average result is deemed to comply with average limit.
3. Peak: Peak detector.
4. All modes, channels and antennas have been tested, only the worst data was recorded in the report.

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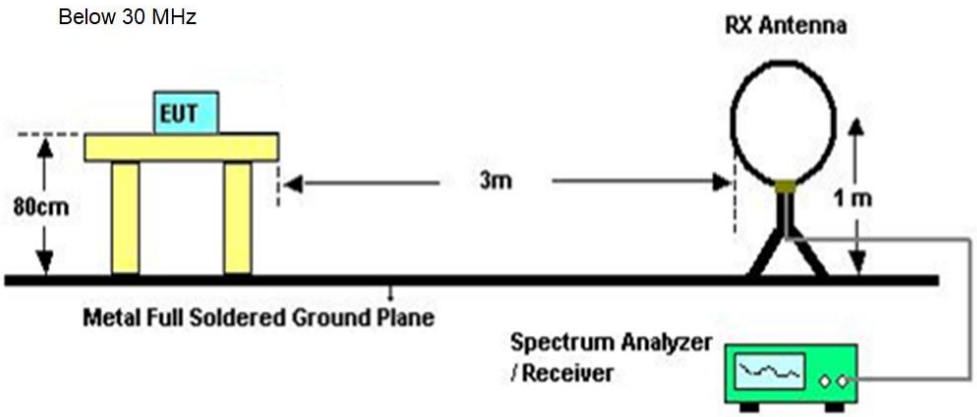
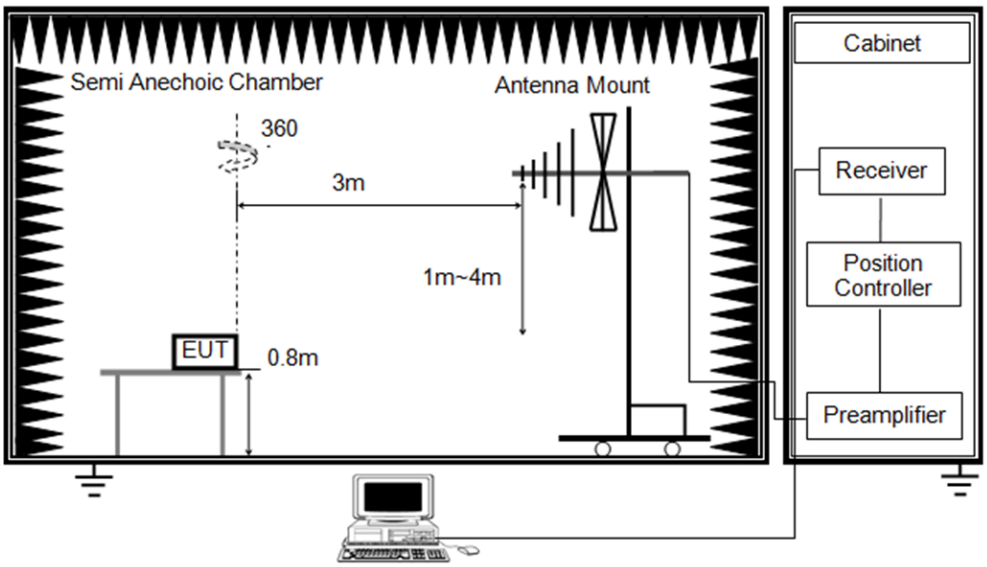
TEST SETUP

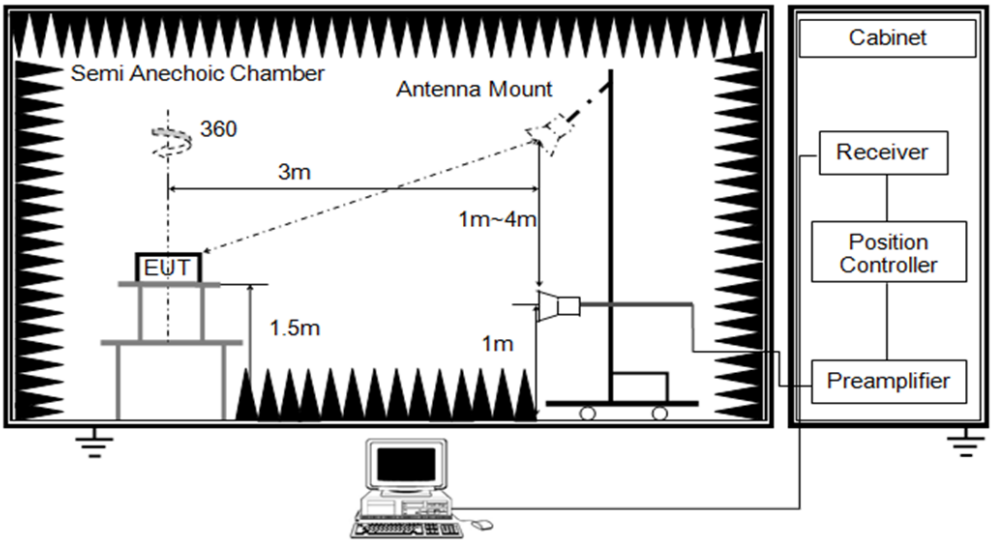
Below 30 MHz



Below 1 GHz and above 30 MHz



Above 1 GHz



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TEST ENVIRONMENT

Temperature	22.9℃	Relative Humidity	55%
Atmosphere Pressure	101kPa	Test Voltage	DC 3 V

TEST RESULTS

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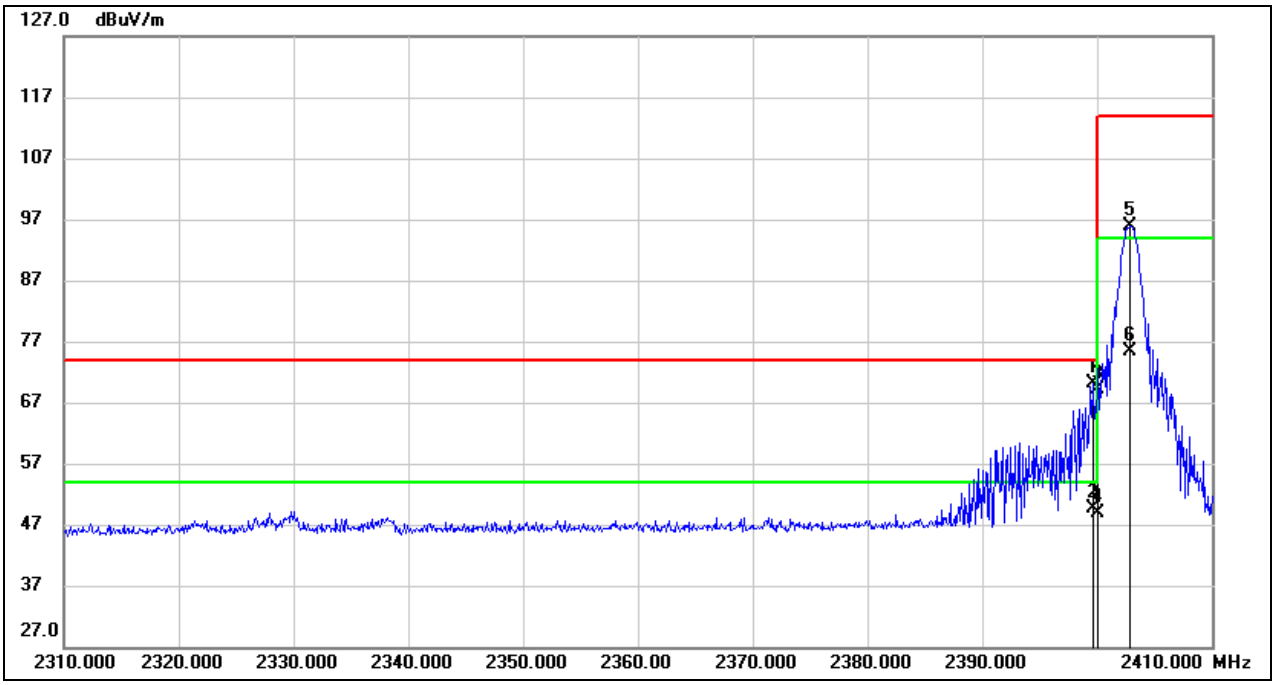
8.1. RESTRICTED BANDEDGE

Test Mode:	FSK PK	Frequency(MHz):	2402.8
Polarity:	Vertical	Test Voltage:	DC 3 V



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2399.600	38.19	31.91	70.10	74.00	-3.90	peak
2	2399.600	/	/	50.00	54.00	-4.00	AVG
3	2400.000	37.30	31.91	69.21	74.00	-4.79	peak
4	2400.000	/	/	49.11	54.00	-4.89	AVG
5	2402.800	64.02	31.92	95.94	114.00	-18.06	peak
6	2402.800	/	/	75.84	94.00	-18.16	AVG

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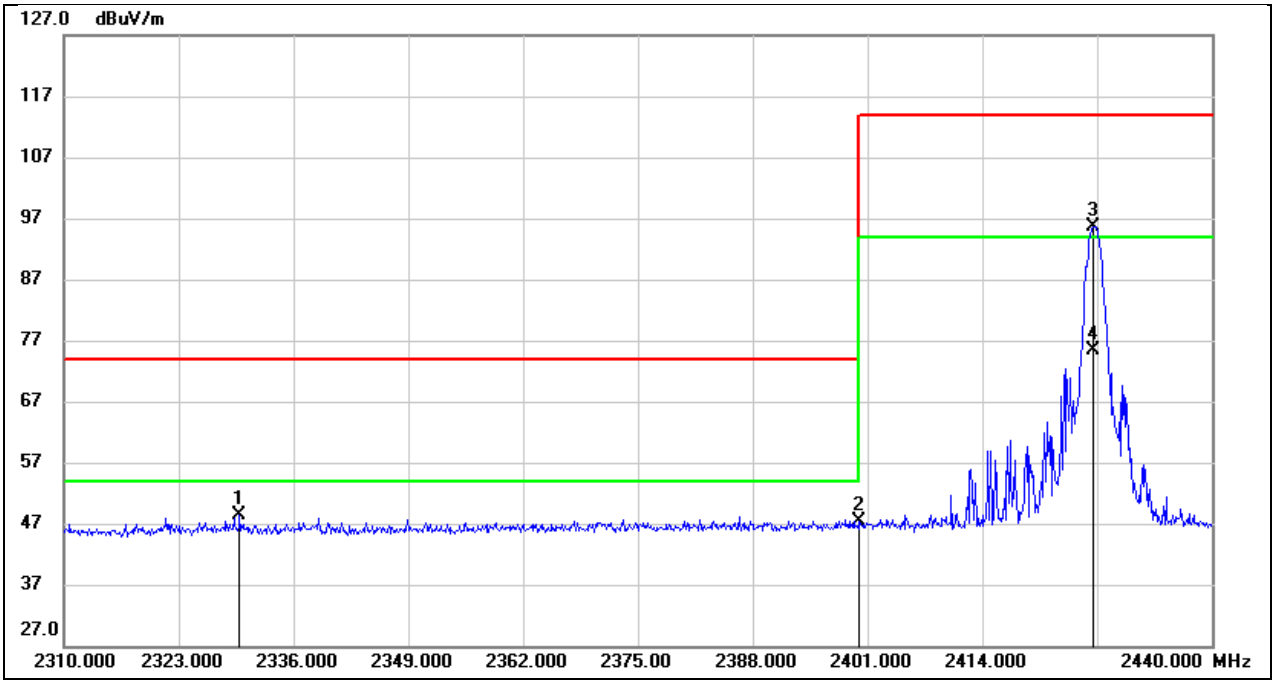
Test Mode:	FSK PK	Frequency(MHz):	2426.8
Polarity:	Vertical	Test Voltage:	DC 3 V



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2329.890	16.84	31.60	48.44	74.00	-25.56	peak
2	2400.000	15.42	31.91	47.33	74.00	-26.67	peak
3	2426.600	63.73	32.00	95.73	114.00	-18.27	peak
4	2426.600	/	/	75.63	94.00	-18.37	AVG

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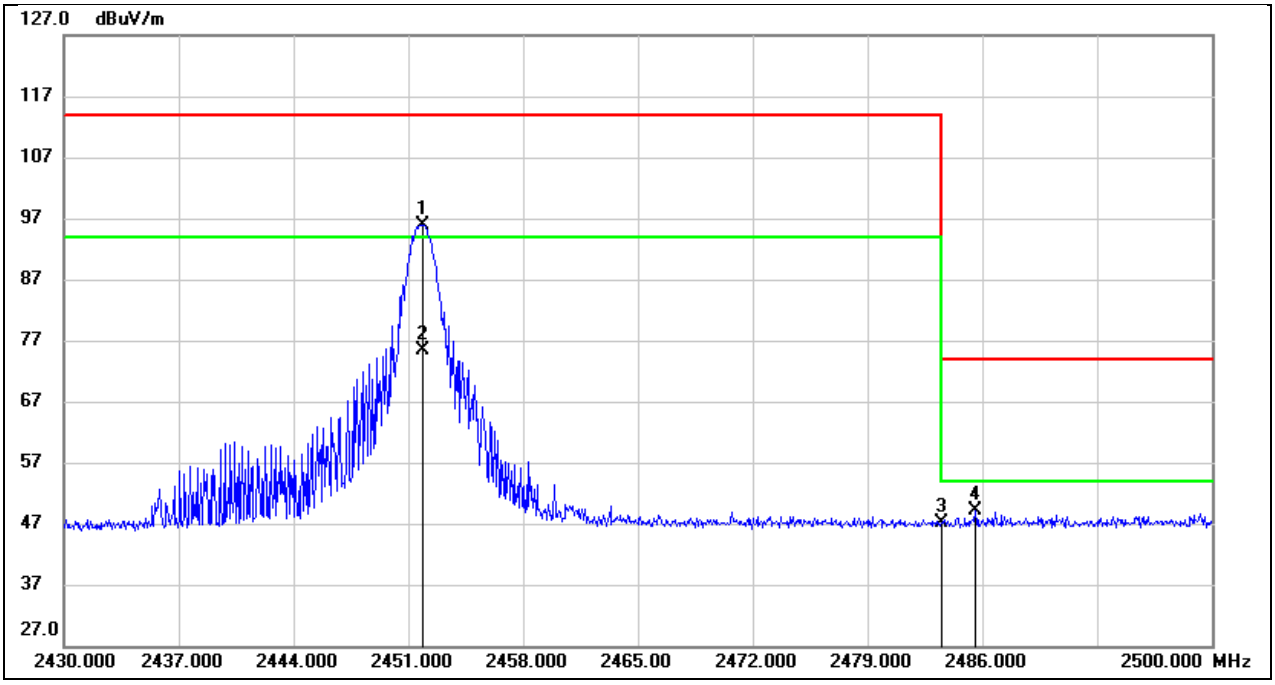
Test Mode:	FSK PK	Frequency(MHz):	2451.8
Polarity:	Vertical	Test Voltage:	DC 3 V



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2451.800	63.81	32.08	95.89	114.00	-18.11	peak
2	2451.800	/	/	75.79	94.00	-18.21	AVG
3	2483.500	14.99	32.19	47.18	74.00	-26.82	peak
4	2485.580	16.84	32.19	49.03	74.00	-24.97	peak

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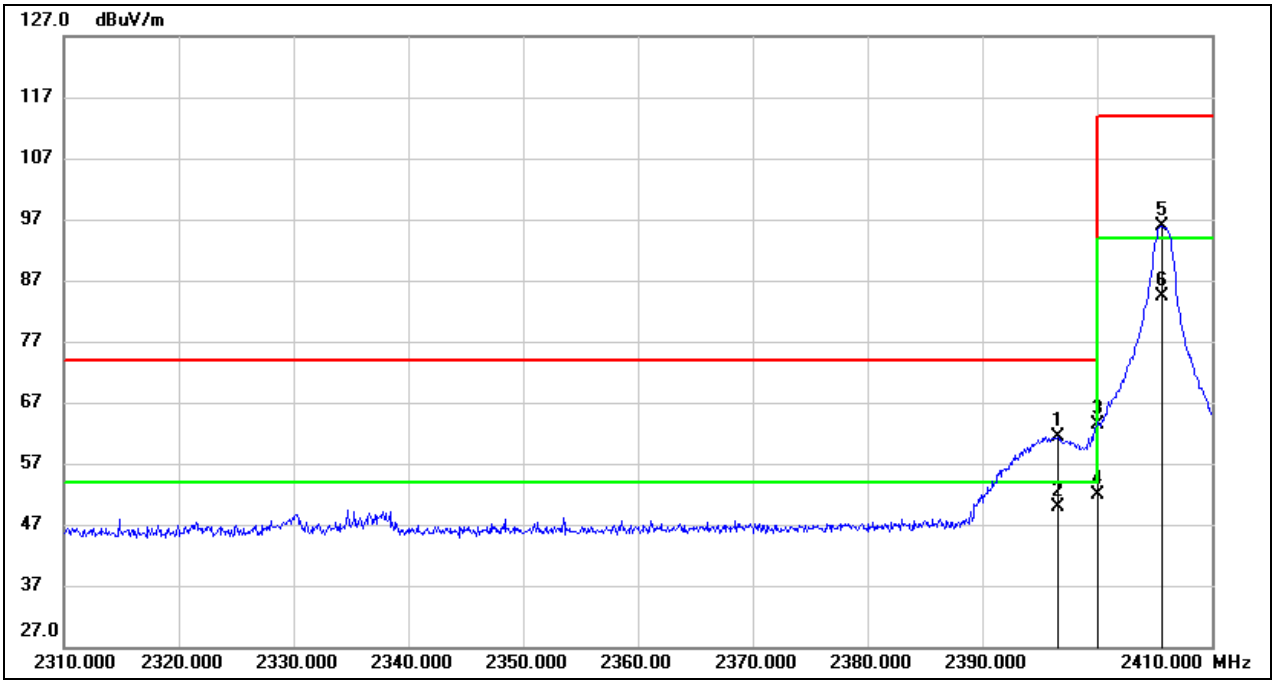
Test Mode:	MSK PK	Frequency(MHz):	2405.7
Polarity:	Vertical	Test Voltage:	DC 3 V



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2396.600	29.55	31.89	61.44	74.00	-12.56	peak
2	2396.600	/	/	50.28	54.00	-3.72	AVG
3	2400.000	31.55	31.91	63.46	74.00	-10.54	peak
4	2400.000	/	/	40.84	54.00	-13.16	AVG
5	2405.700	63.88	31.92	95.80	114.00	-18.20	peak
6	2405.700	/	/	84.64	94.00	-9.36	AVG

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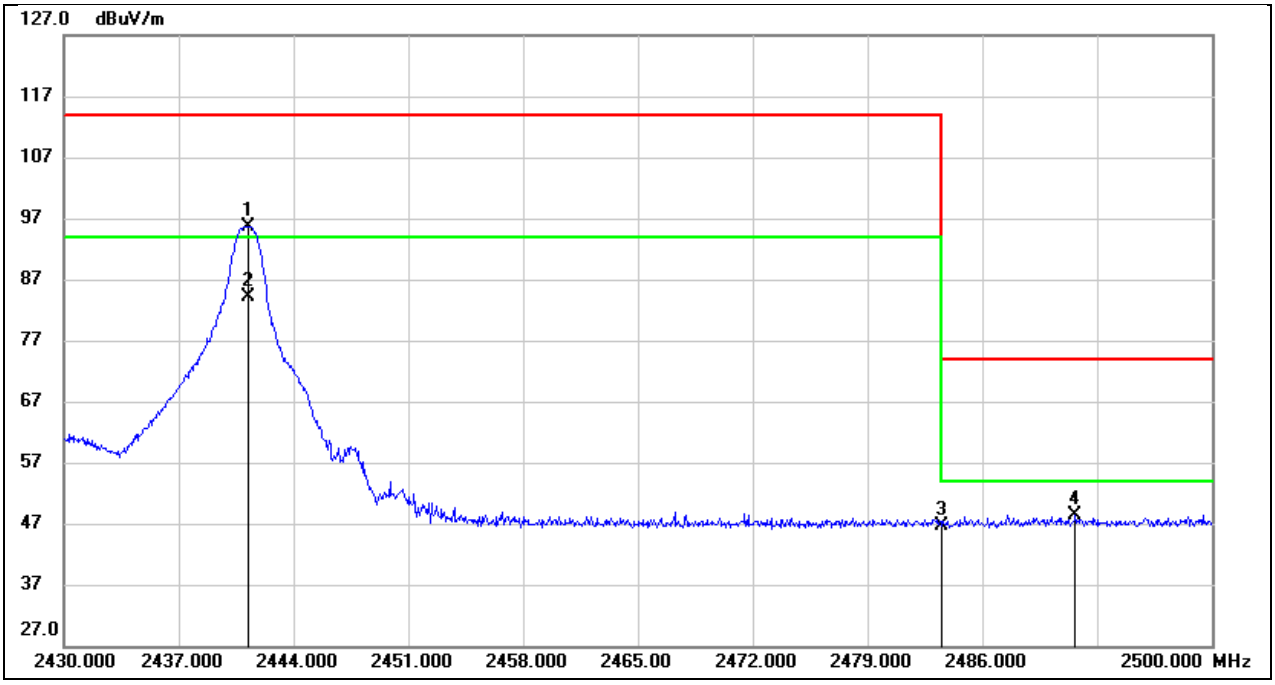
Test Mode:	MSK PK	Frequency(MHz):	2441.2
Polarity:	Vertical	Test Voltage:	DC 3 V



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2441.200	63.55	32.05	95.60	114.00	-18.40	peak
2	2441.200	/	/	84.44	94.00	-9.56	AVG
3	2483.500	14.32	32.19	46.51	74.00	-27.49	peak
4	2491.670	16.26	32.21	48.47	74.00	-25.53	peak

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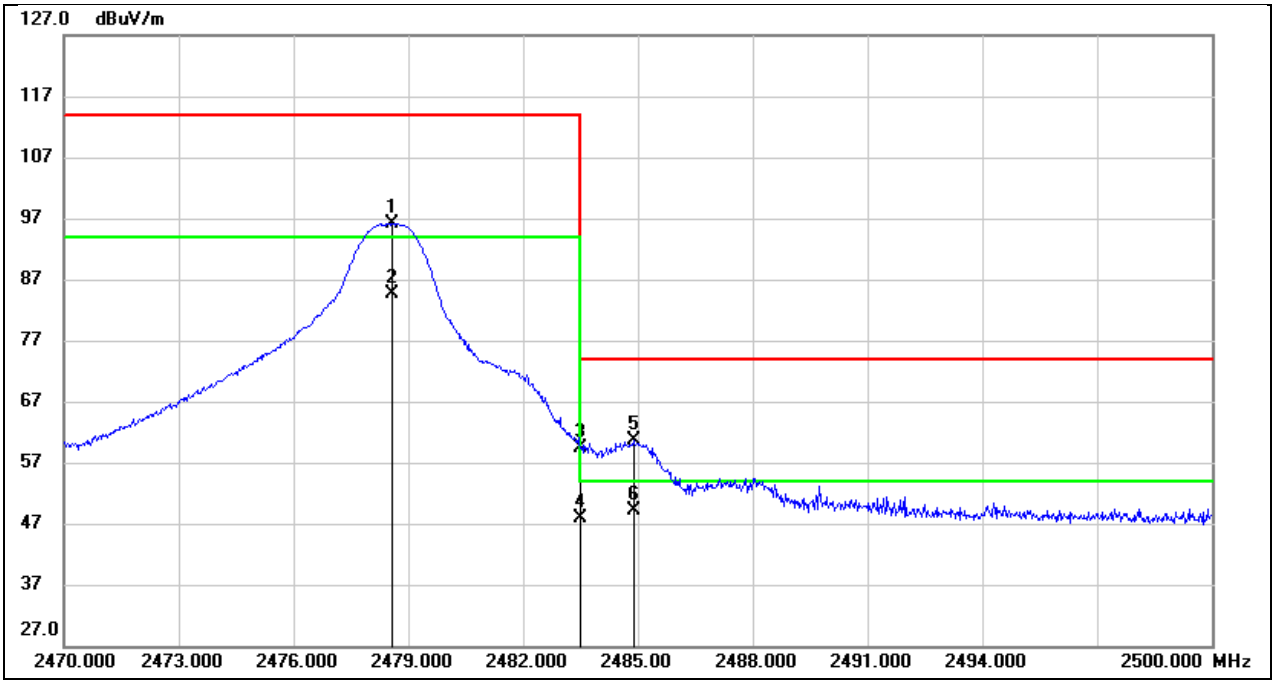
Test Mode:	MSK PK	Frequency(MHz):	2478.6
Polarity:	Vertical	Test Voltage:	DC 3 V



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2478.600	63.85	32.16	96.01	114.00	-17.99	peak
2	2478.600	/	/	84.85	94.00	-9.15	AVG
3	2483.500	27.15	32.19	59.34	74.00	-14.66	peak
4	2483.500	/	/	48.18	54.00	-5.82	AVG
5	2484.880	28.35	32.19	60.54	74.00	-13.46	peak
6	2484.880	/	/	49.38	54.00	-4.62	AVG

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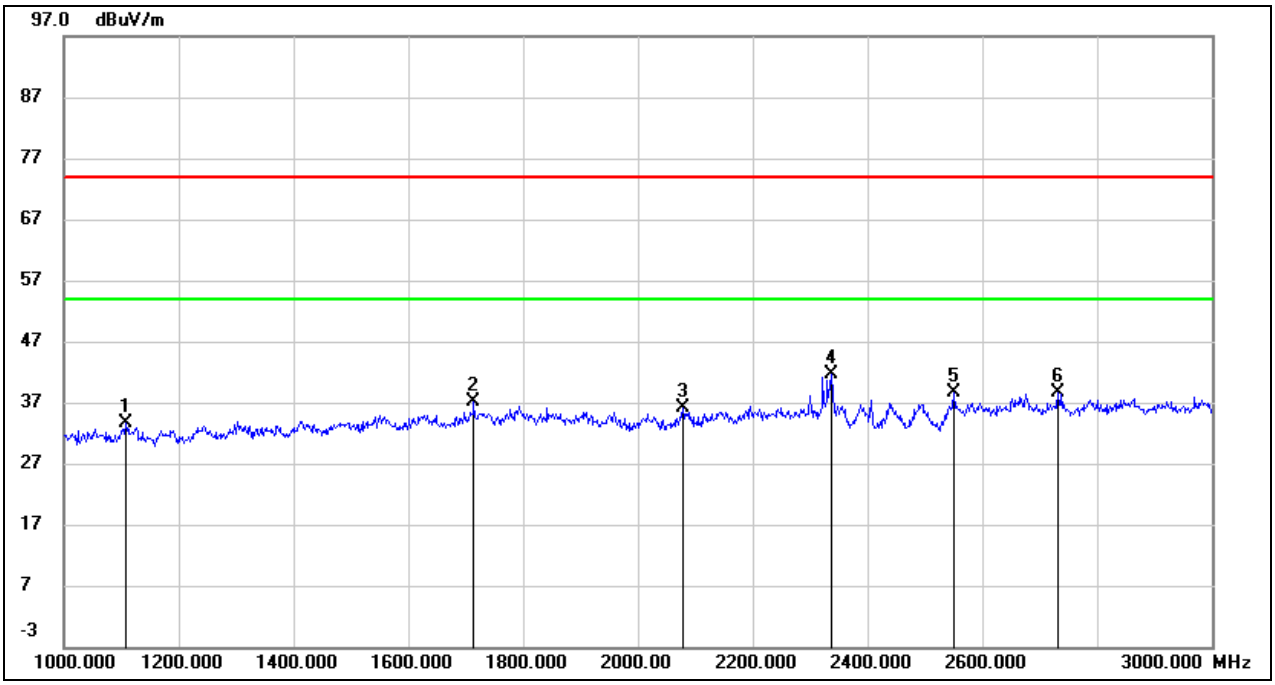
8.2. SPURIOUS EMISSIONS (1 GHZ ~ 3 GHZ)

Test Mode:	FSK	Frequency(MHz):	2402.8
Polarity:	Horizontal	Test Voltage:	DC 3 V



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1108.000	47.43	-13.92	33.51	74.00	-40.49	peak
2	1714.000	47.73	-10.57	37.16	74.00	-36.84	peak
3	2078.000	45.92	-9.80	36.12	74.00	-37.88	peak
4	2338.000	50.43	-8.82	41.61	74.00	-32.39	peak
5	2550.000	46.67	-7.98	38.69	74.00	-35.31	peak
6	2732.000	45.73	-7.21	38.52	74.00	-35.48	peak

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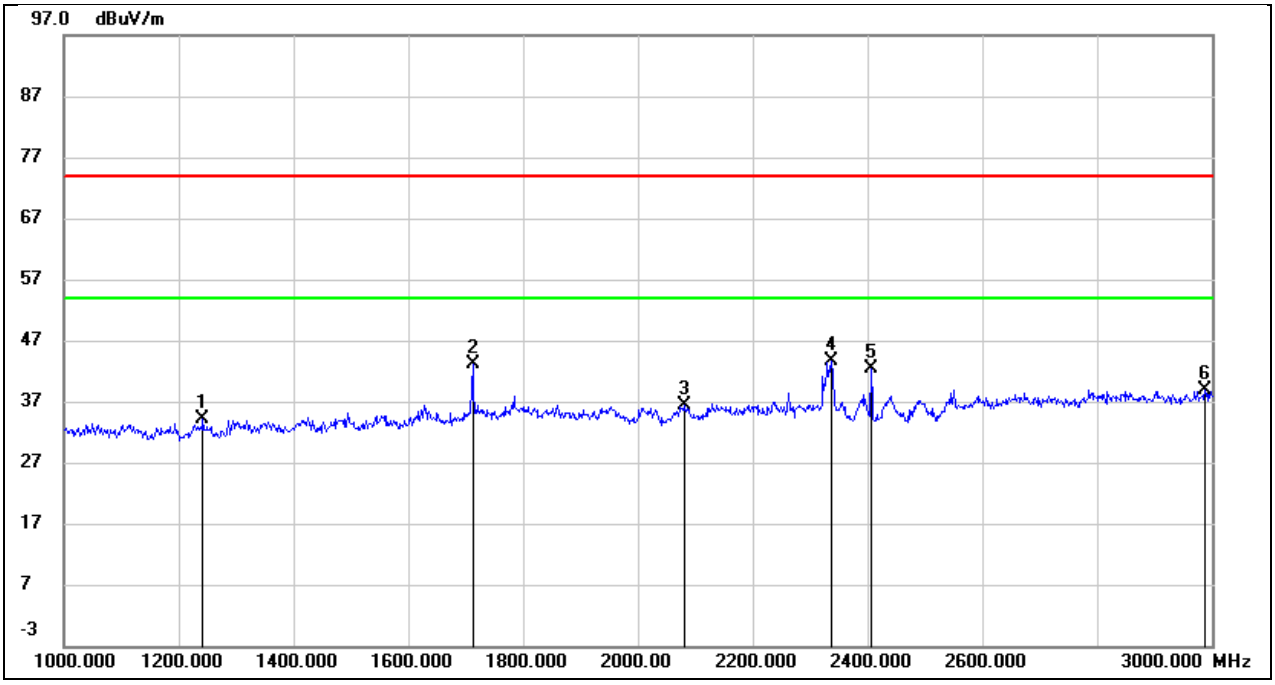
Test Mode:	FSK	Frequency(MHz):	2402.8
Polarity:	Vertical	Test Voltage:	DC 3 V



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1242.000	46.86	-12.84	34.02	74.00	-39.98	peak
2	1712.000	53.18	-10.14	43.04	74.00	-30.96	peak
3	2080.000	45.40	-8.91	36.49	74.00	-37.51	peak
4	2338.000	51.65	-7.99	43.66	74.00	-30.34	peak
5	2402.800	50.04	-7.75	42.29	/	/	fundamental
6	2988.000	43.57	-4.78	38.79	74.00	-35.21	peak

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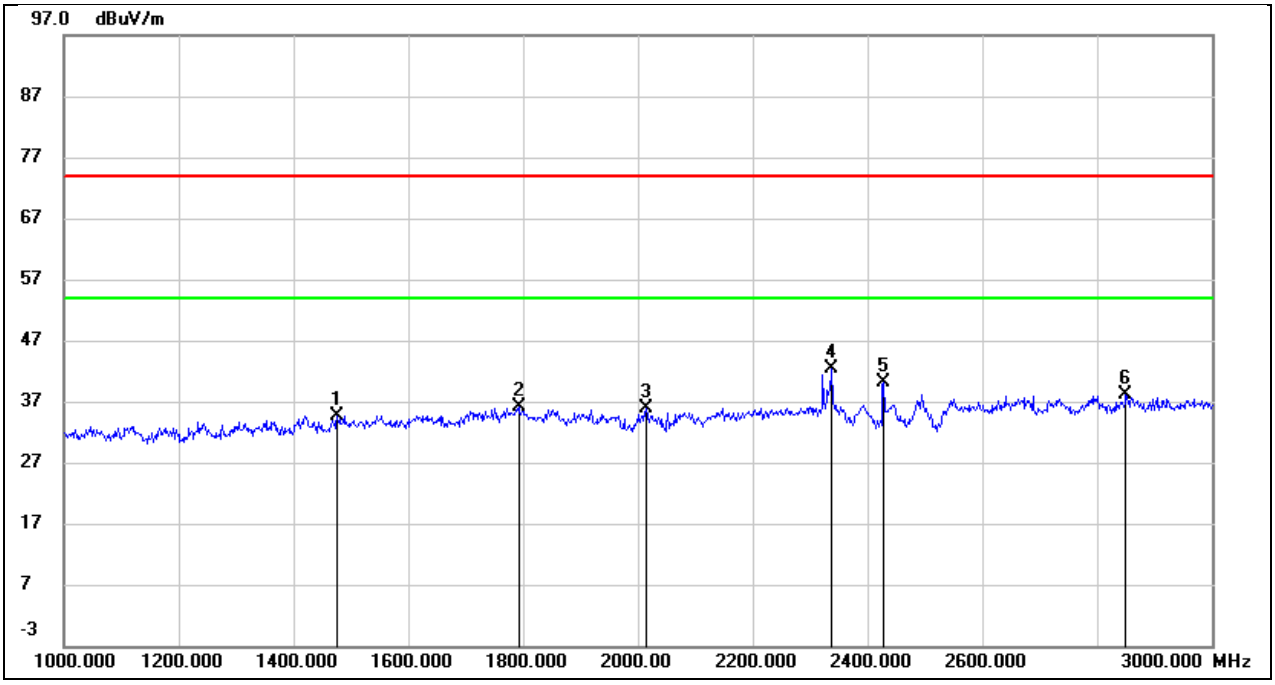
Test Mode:	FSK	Frequency(MHz):	2426.6
Polarity:	Horizontal	Test Voltage:	DC 3 V



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1476.000	46.67	-12.01	34.66	74.00	-39.34	peak
2	1792.000	46.06	-10.02	36.04	74.00	-37.96	peak
3	2014.000	45.95	-10.04	35.91	74.00	-38.09	peak
4	2338.000	51.30	-8.82	42.48	74.00	-31.52	peak
5	2426.600	48.52	-8.48	40.04	/	/	fundamental
6	2850.000	44.80	-6.69	38.11	74.00	-35.89	peak

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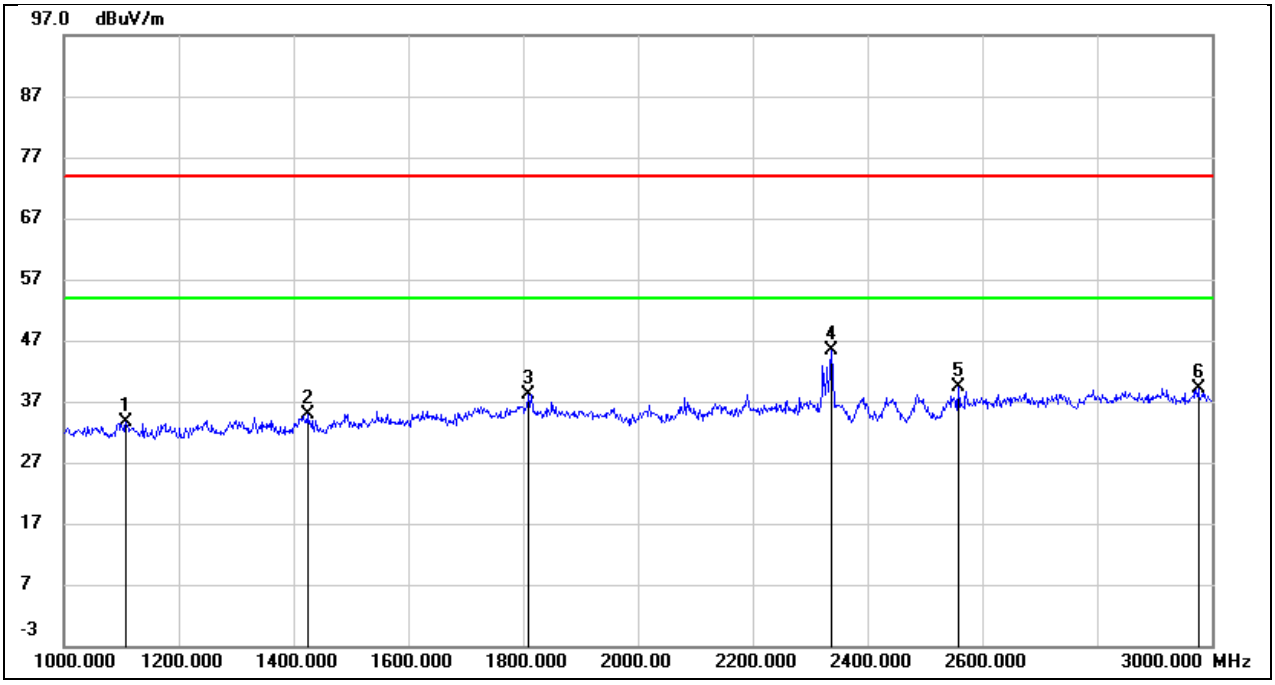
Test Mode:	FSK	Frequency(MHz):	2426.6
Polarity:	Vertical	Test Voltage:	DC 3 V



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1108.000	46.97	-13.35	33.62	74.00	-40.38	peak
2	1424.000	47.03	-12.14	34.89	74.00	-39.11	peak
3	1810.000	47.61	-9.37	38.24	74.00	-35.76	peak
4	2336.000	53.50	-8.00	45.50	74.00	-28.50	peak
5	2558.000	46.56	-7.09	39.47	74.00	-34.53	peak
6	2976.000	43.97	-4.84	39.13	74.00	-34.87	peak

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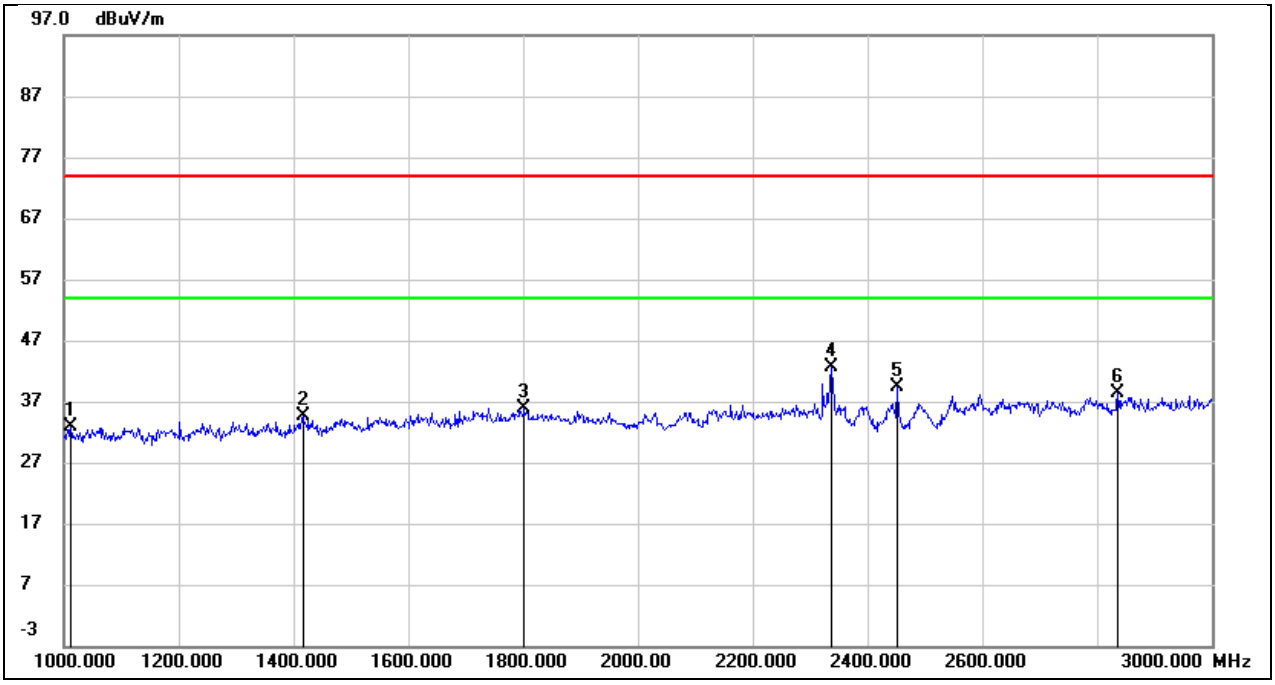
Test Mode:	FSK	Frequency(MHz):	2451.8
Polarity:	Horizontal	Test Voltage:	DC 3 V



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1012.000	47.18	-14.38	32.80	74.00	-41.20	peak
2	1416.000	46.98	-12.37	34.61	74.00	-39.39	peak
3	1802.000	45.83	-9.97	35.86	74.00	-38.14	peak
4	2336.000	51.54	-8.83	42.71	74.00	-31.29	peak
5	2451.800	47.81	-8.40	39.41	/	/	fundamental
6	2836.000	45.04	-6.76	38.28	74.00	-35.72	peak

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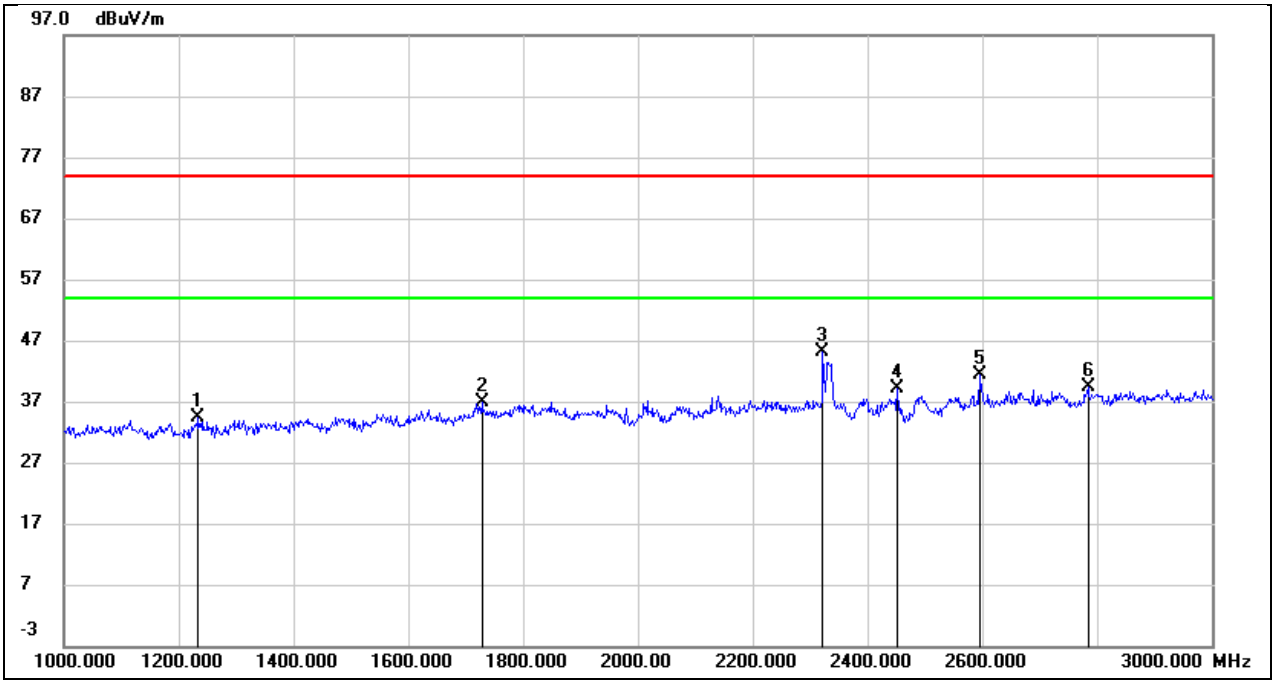
Test Mode:	FSK	Frequency(MHz):	2451.8
Polarity:	Vertical	Test Voltage:	DC 3 V



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1234.000	47.19	-12.88	34.31	74.00	-39.69	peak
2	1728.000	46.99	-10.00	36.99	74.00	-37.01	peak
3	2322.000	53.16	-8.05	45.11	74.00	-28.89	peak
4	2451.800	46.64	-7.59	39.05	/	/	fundamental
5	2596.000	48.28	-6.88	41.40	74.00	-32.60	peak
6	2784.000	45.26	-5.91	39.35	74.00	-34.65	peak

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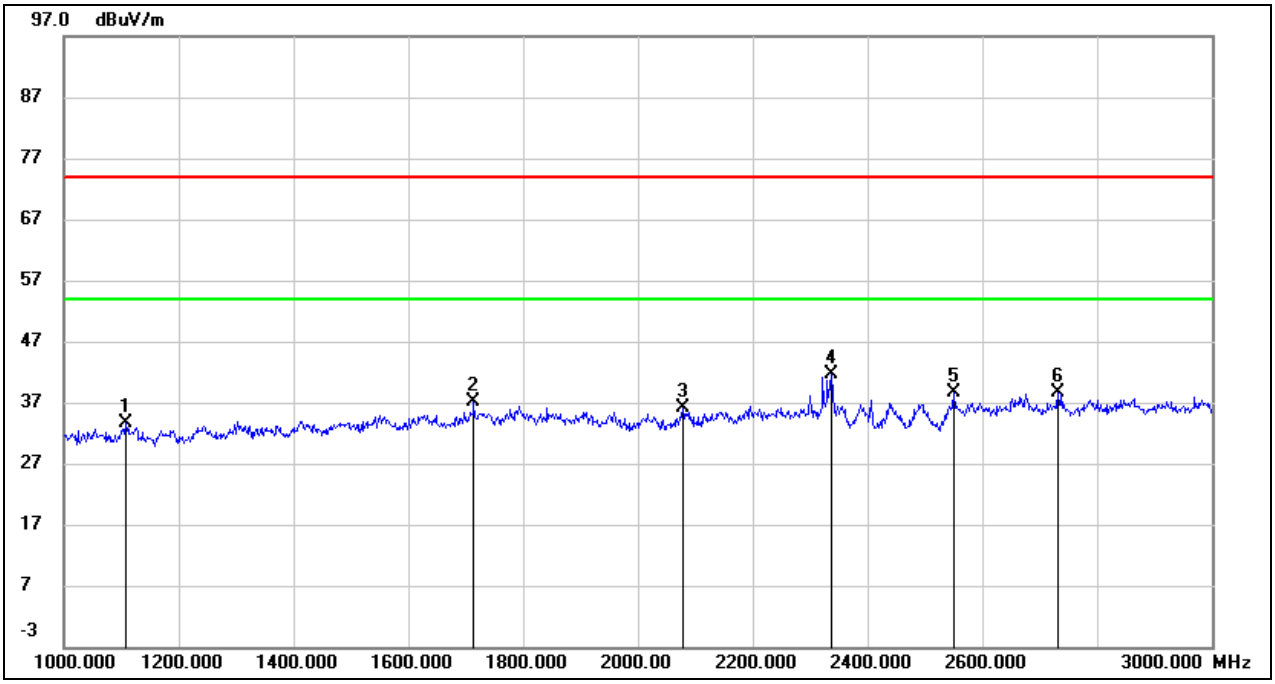
Test Mode:	MSK	Frequency(MHz):	2405.7
Polarity:	Horizontal	Test Voltage:	DC 3 V



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1108.000	47.43	-13.92	33.51	74.00	-40.49	peak
2	1714.000	47.73	-10.57	37.16	74.00	-36.84	peak
3	2078.000	45.92	-9.80	36.12	74.00	-37.88	peak
4	2338.000	50.43	-8.82	41.61	74.00	-32.39	peak
5	2550.000	46.67	-7.98	38.69	74.00	-35.31	peak
6	2732.000	45.73	-7.21	38.52	74.00	-35.48	peak

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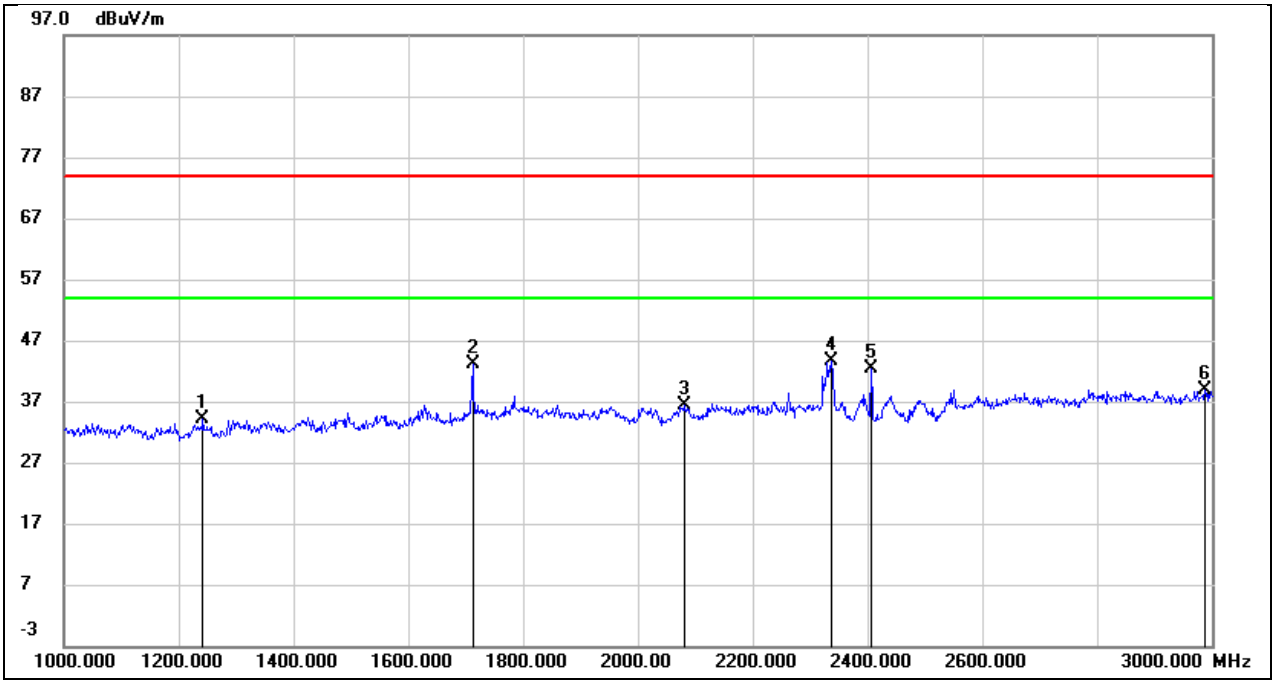
Test Mode:	MSK	Frequency(MHz):	2405.7
Polarity:	Vertical	Test Voltage:	DC 3 V



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1242.000	46.86	-12.84	34.02	74.00	-39.98	peak
2	1712.000	53.18	-10.14	43.04	74.00	-30.96	peak
3	2080.000	45.40	-8.91	36.49	74.00	-37.51	peak
4	2338.000	51.65	-7.99	43.66	74.00	-30.34	peak
5	2405.700	50.04	-7.75	42.29	/	/	fundamental
6	2988.000	43.57	-4.78	38.79	74.00	-35.21	peak

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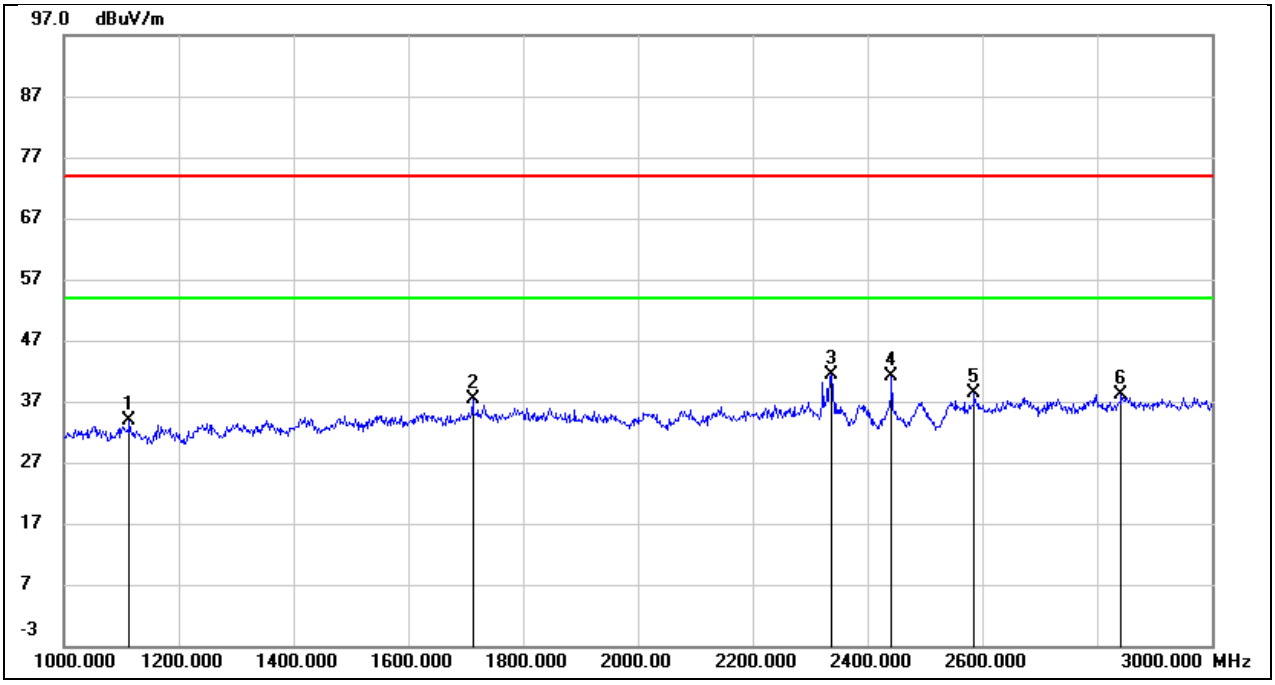
Test Mode:	MSK	Frequency(MHz):	2441.2
Polarity:	Horizontal	Test Voltage:	DC 3 V



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1114.000	47.66	-13.89	33.77	74.00	-40.23	peak
2	1712.000	47.88	-10.58	37.30	74.00	-36.70	peak
3	2336.000	50.24	-8.83	41.41	74.00	-32.59	peak
4	2441.200	49.56	-8.43	41.13	/	/	fundamental
5	2586.000	46.17	-7.83	38.34	74.00	-35.66	peak
6	2842.000	44.79	-6.72	38.07	74.00	-35.93	peak

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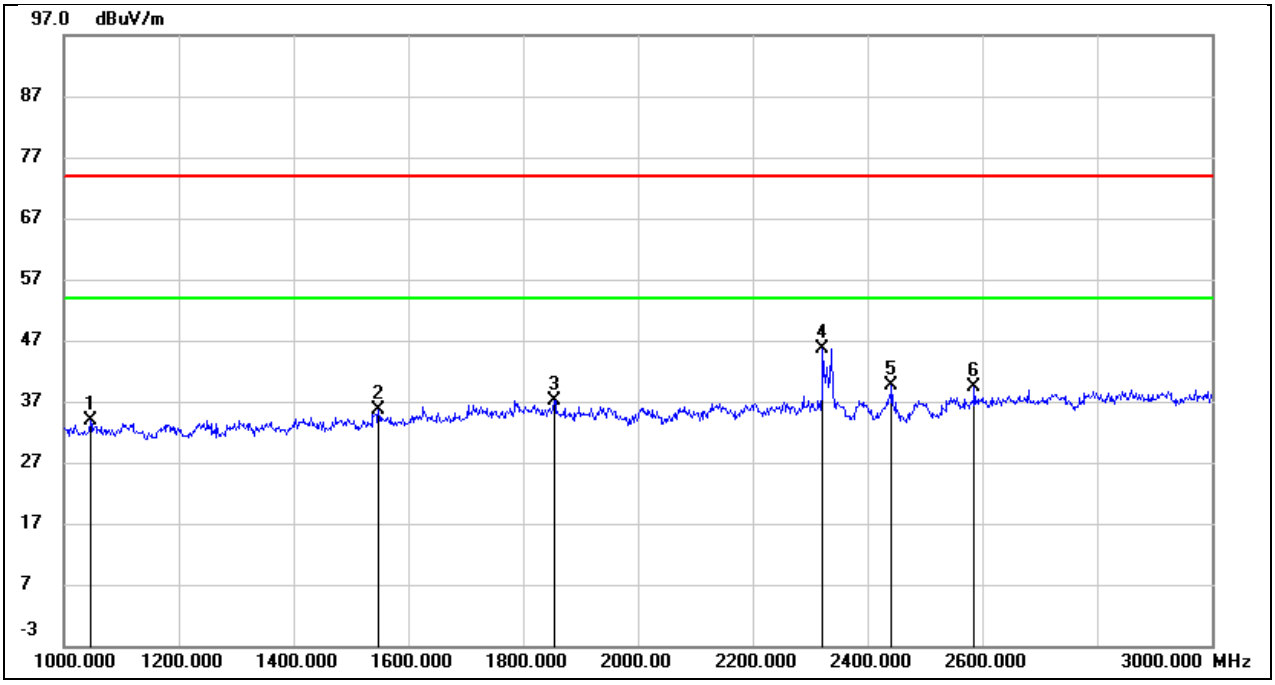
Test Mode:	MSK	Frequency(MHz):	2441.2
Polarity:	Vertical	Test Voltage:	DC 3 V



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1046.000	47.47	-13.57	33.90	74.00	-40.10	peak
2	1548.000	47.00	-11.47	35.53	74.00	-38.47	peak
3	1854.000	46.56	-9.33	37.23	74.00	-36.77	peak
4	2322.000	53.74	-8.05	45.69	74.00	-28.31	peak
5	2441.200	47.21	-7.61	39.60	/	/	fundamental
6	2586.000	46.27	-6.94	39.33	74.00	-34.67	peak

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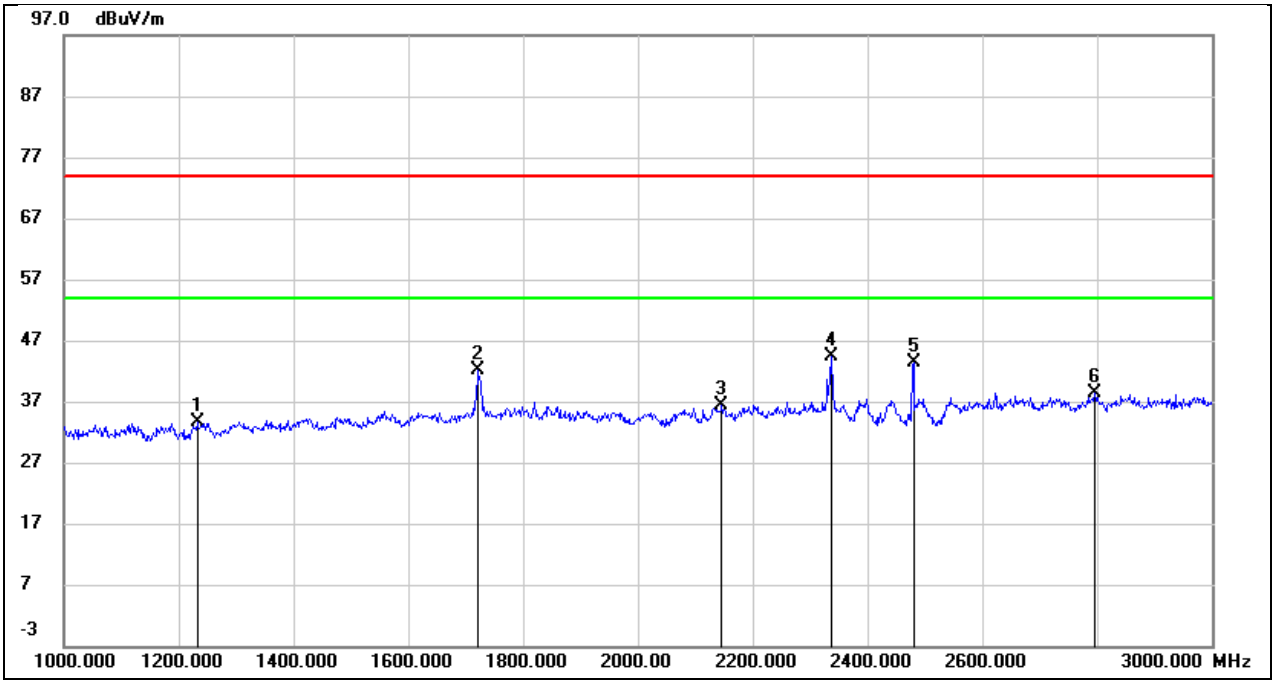
Test Mode:	MSK	Frequency(MHz):	2478.6
Polarity:	Horizontal	Test Voltage:	DC 3 V



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1232.000	46.85	-13.30	33.55	74.00	-40.45	peak
2	1722.000	52.57	-10.52	42.05	74.00	-31.95	peak
3	2146.000	45.80	-9.54	36.26	74.00	-37.74	peak
4	2338.000	53.20	-8.82	44.38	74.00	-29.62	peak
5	2478.600	51.56	-8.28	43.28	/	/	fundamental
6	2796.000	45.24	-6.93	38.31	74.00	-35.69	peak

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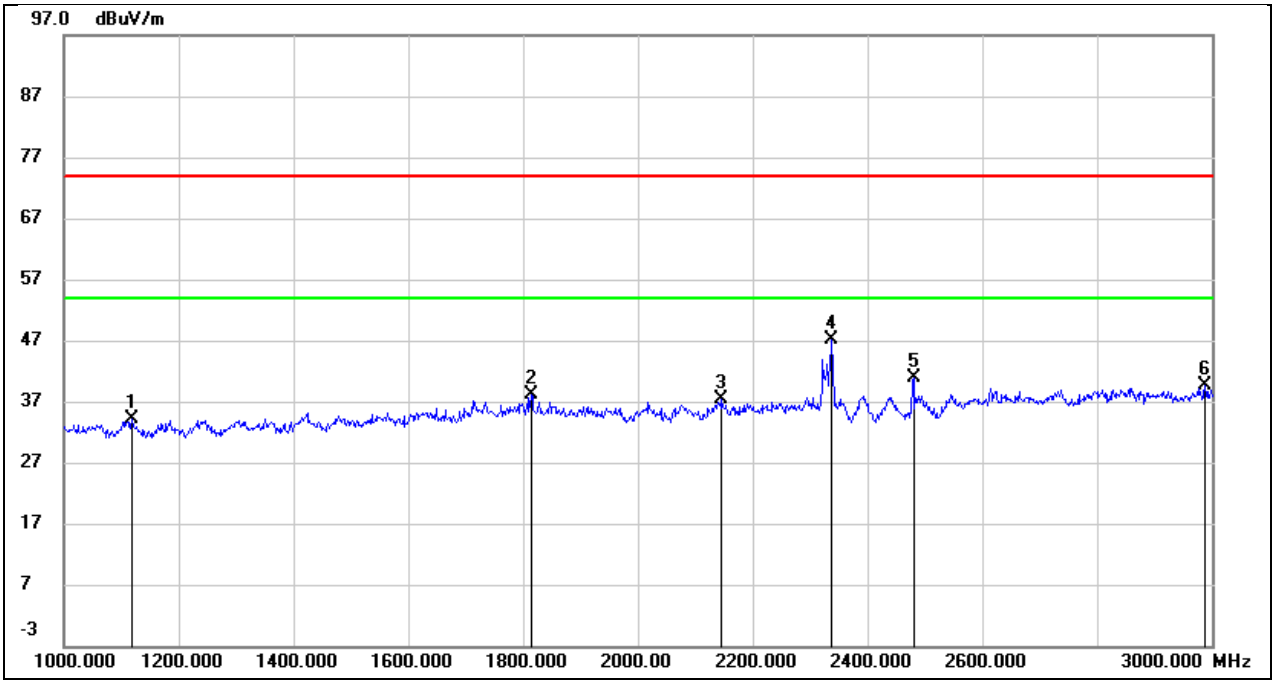
Test Mode:	MSK	Frequency(MHz):	2478.6
Polarity:	Vertical	Test Voltage:	DC 3 V



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1118.000	47.39	-13.32	34.07	74.00	-39.93	peak
2	1814.000	47.50	-9.37	38.13	74.00	-35.87	peak
3	2146.000	45.97	-8.67	37.30	74.00	-36.70	peak
4	2338.000	55.00	-7.99	47.01	74.00	-26.99	peak
5	2478.600	48.34	-7.48	40.86	/	/	fundamental
6	2988.000	44.44	-4.78	39.66	74.00	-34.34	peak

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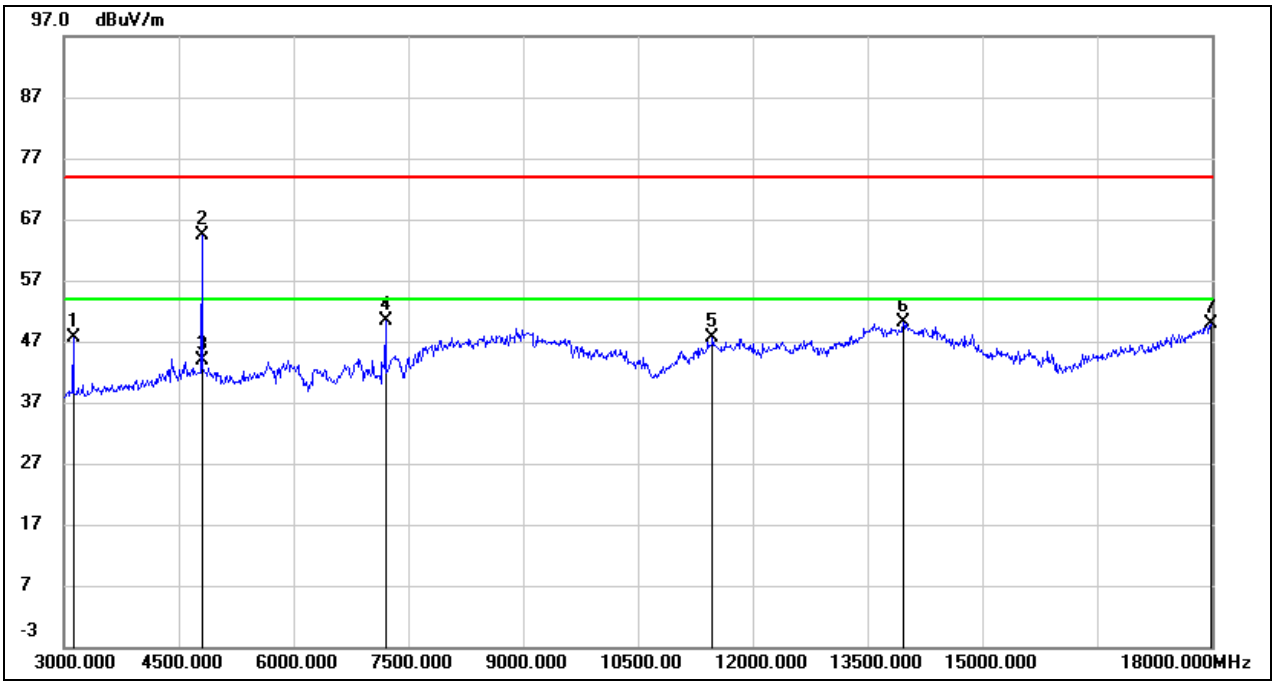
8.3. SPURIOUS EMISSIONS (3 GHZ ~ 18 GHZ)

Test Mode:	FSK	Frequency(MHz):	2402.8
Polarity:	Horizontal	Test Voltage:	DC 3 V



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	3120.000	51.93	-4.36	47.57	74.00	-26.43	peak
2	4800.000	63.87	0.47	64.34	74.00	-9.66	peak
3	4800.000	/	/	44.24	54.00	-9.76	AVG
4	7200.000	43.58	6.89	50.47	74.00	-23.53	peak
5	11475.000	29.74	17.88	47.62	74.00	-26.38	peak
6	13965.000	26.36	23.65	50.01	74.00	-23.99	peak
7	17985.000	20.40	29.49	49.89	74.00	-24.11	peak

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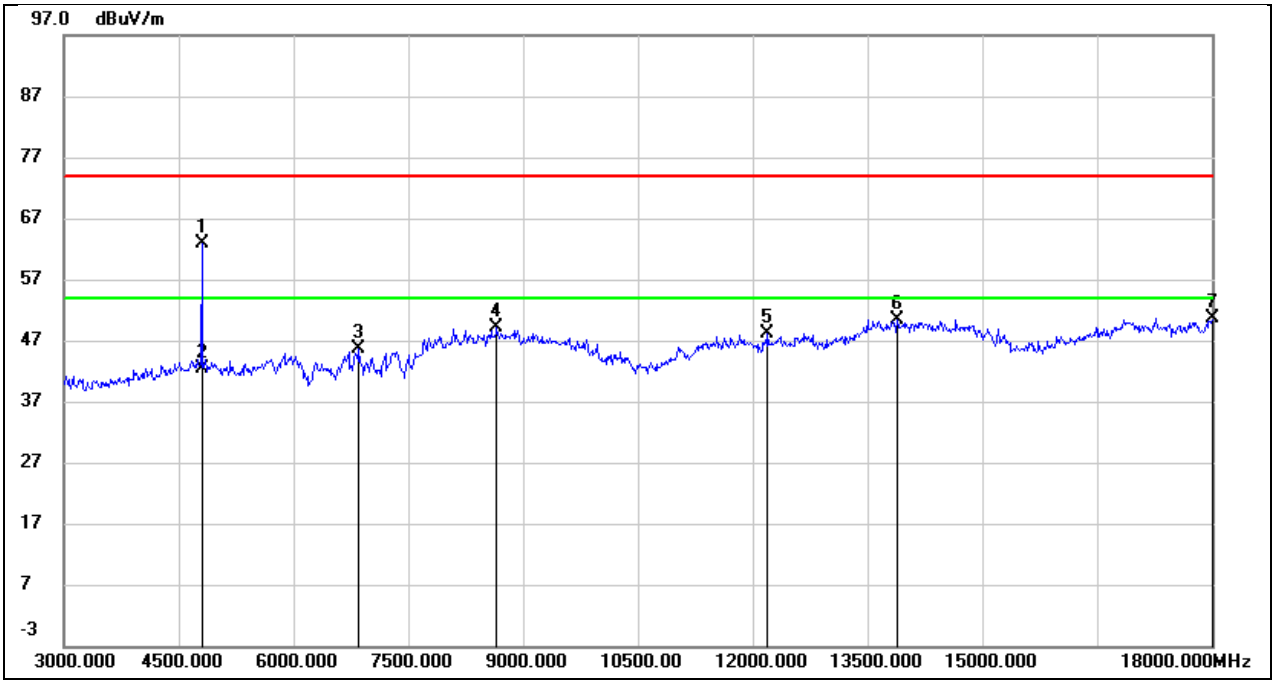
Test Mode:	FSK	Frequency(MHz):	2402.8
Polarity:	Vertical	Test Voltage:	DC 3 V



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4800.000	61.32	1.55	62.87	74.00	-11.13	peak
2	4800.000	/	/	42.77	54.00	-11.23	AVG
3	6855.000	38.86	6.88	45.74	74.00	-28.26	peak
4	8655.000	39.22	9.91	49.13	74.00	-24.87	peak
5	12195.000	30.50	17.71	48.21	74.00	-25.79	peak
6	13890.000	28.70	21.70	50.40	74.00	-23.60	peak
7	18000.000	23.28	27.44	50.72	74.00	-23.28	peak

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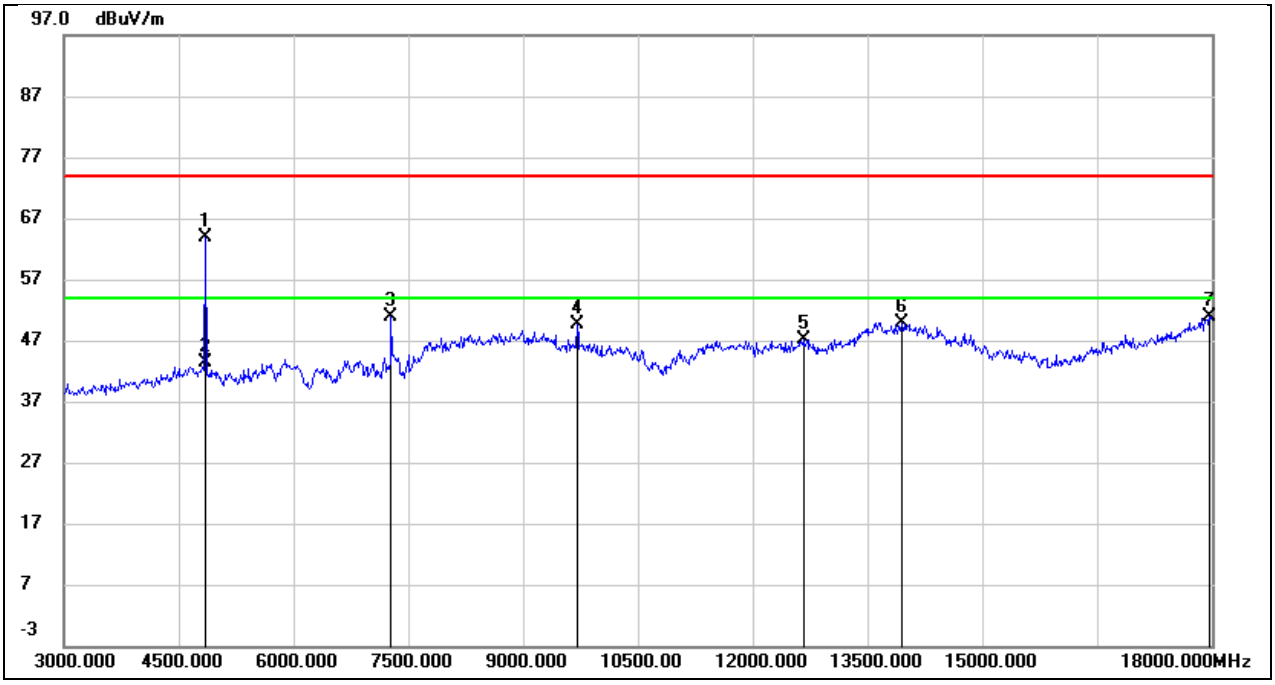
Test Mode:	FSK	Frequency(MHz):	2426.6
Polarity:	Horizontal	Test Voltage:	DC 3 V



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4845.000	63.22	0.58	63.80	74.00	-10.20	peak
2	4845.000	/	/	43.70	54.00	-10.30	AVG
3	7275.000	43.99	6.99	50.98	74.00	-23.02	peak
4	9705.000	36.43	13.08	49.51	74.00	-24.49	peak
5	12660.000	28.08	19.12	47.20	74.00	-26.80	peak
6	13950.000	26.39	23.58	49.97	74.00	-24.03	peak
7	17970.000	21.55	29.33	50.88	74.00	-23.12	peak

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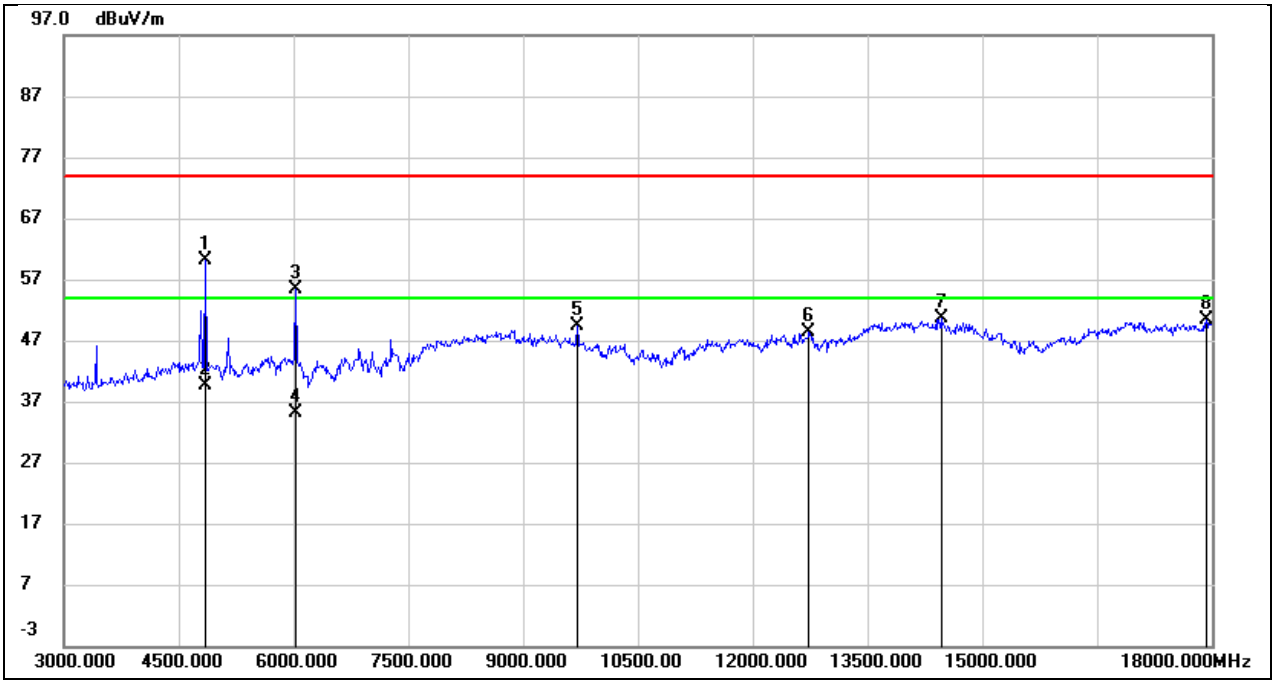
Test Mode:	FSK	Frequency(MHz):	2426.6
Polarity:	Vertical	Test Voltage:	DC 3 V



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4845.000	58.47	1.69	60.16	74.00	-13.84	peak
2	4845.000	/	/	40.06	54.00	-13.94	AVG
3	6030.000	51.24	4.25	55.49	74.00	-18.51	peak
4	6030.000	/	/	35.39	54.00	-18.61	AVG
5	9705.000	36.60	12.79	49.39	74.00	-24.61	peak
6	12735.000	30.04	18.29	48.33	74.00	-25.67	peak
7	14460.000	28.99	21.64	50.63	74.00	-23.37	peak
8	17925.000	23.32	27.00	50.32	74.00	-23.68	peak

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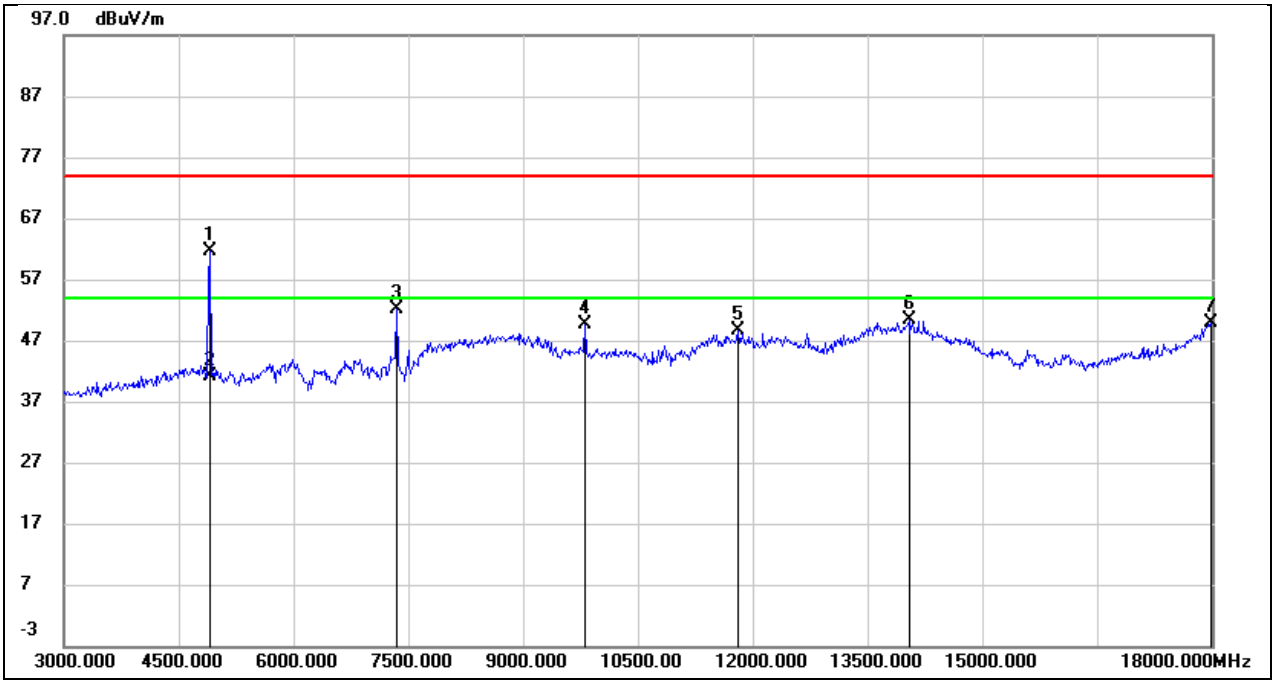
Test Mode:	FSK	Frequency(MHz):	2451.8
Polarity:	Horizontal	Test Voltage:	DC 3 V



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4905.000	60.93	0.72	61.65	74.00	-12.35	peak
2	4905.000	/	/	41.55	54.00	-12.45	AVG
3	7350.000	45.09	7.09	52.18	74.00	-21.82	peak
4	9810.000	36.29	13.29	49.58	74.00	-24.42	peak
5	11805.000	30.01	18.50	48.51	74.00	-25.49	peak
6	14040.000	26.69	23.70	50.39	74.00	-23.61	peak
7	17985.000	20.42	29.49	49.91	74.00	-24.09	peak

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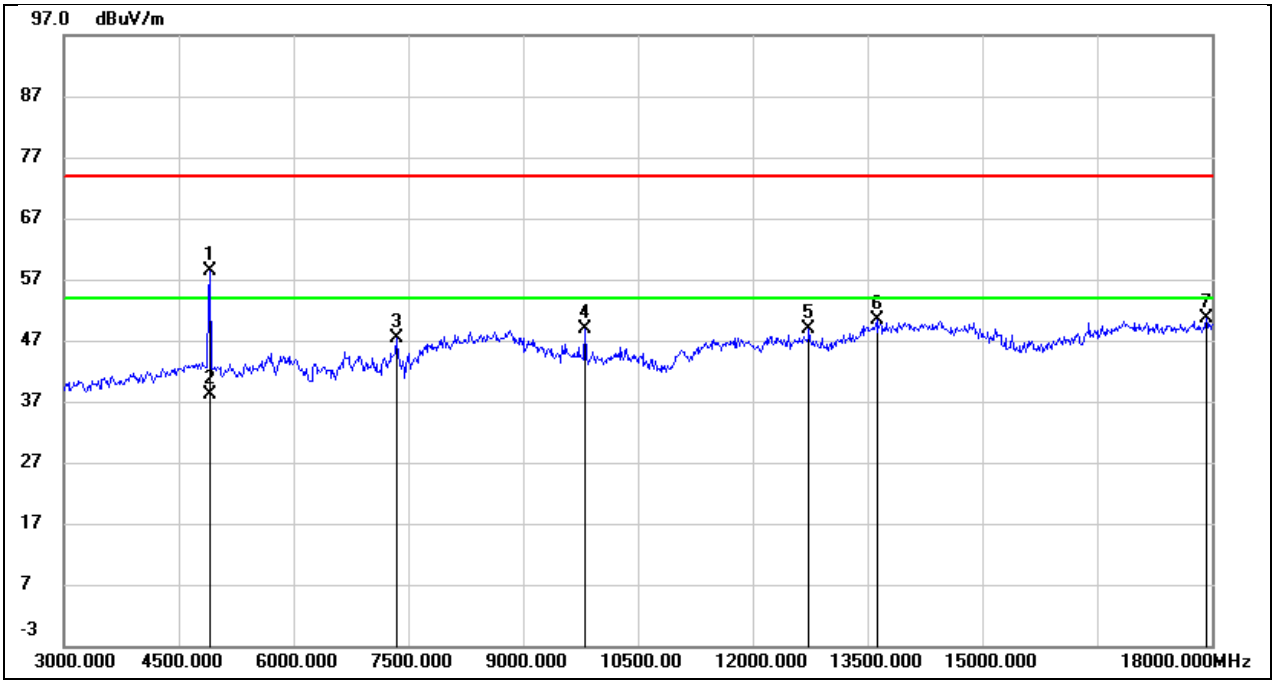
Test Mode:	FSK	Frequency(MHz):	2451.8
Polarity:	Vertical	Test Voltage:	DC 3 V



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4905.000	56.60	1.86	58.46	74.00	-15.54	peak
2	4905.000	/	/	38.36	54.00	-15.64	AVG
3	7350.000	39.67	7.71	47.38	74.00	-26.62	peak
4	9810.000	36.04	12.86	48.90	74.00	-25.10	peak
5	12735.000	30.63	18.29	48.92	74.00	-25.08	peak
6	13620.000	29.42	20.97	50.39	74.00	-23.61	peak
7	17925.000	23.52	27.00	50.52	74.00	-23.48	peak

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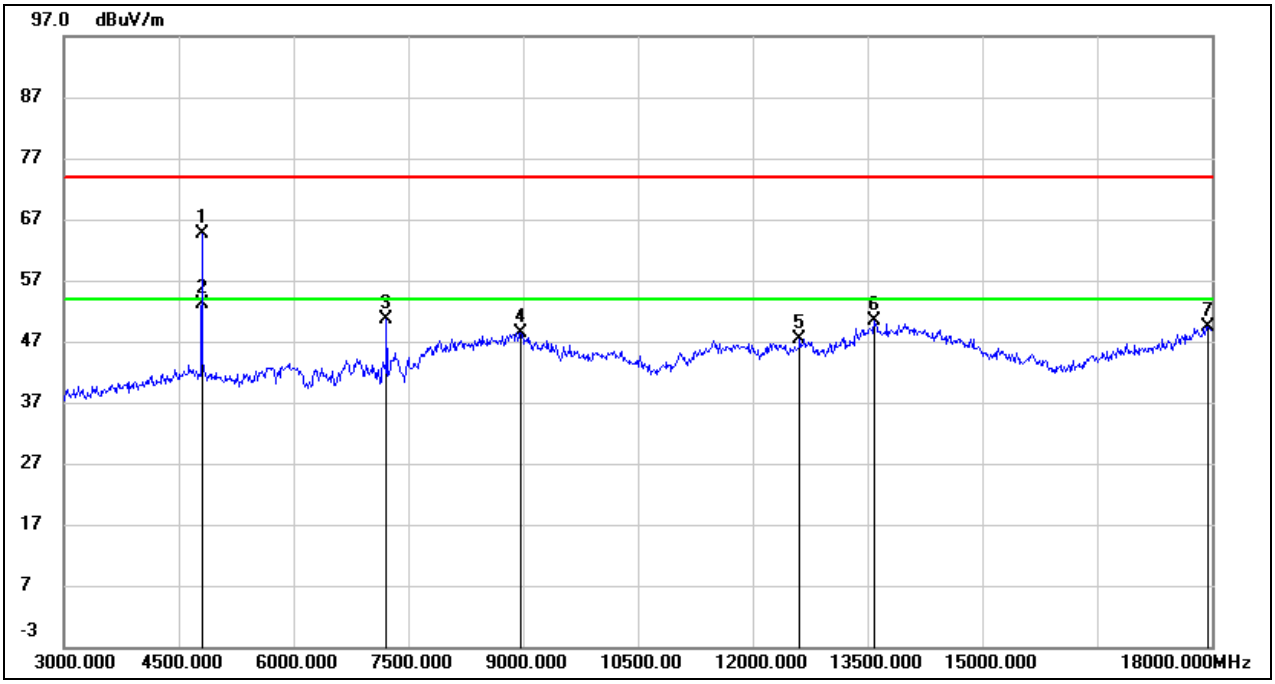
Test Mode:	MSK	Frequency(MHz):	2405.7
Polarity:	Horizontal	Test Voltage:	DC 3 V



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4800.000	64.06	0.47	64.53	74.00	-9.47	peak
2	4800.000	/	/	53.37	54.00	-0.63	AVG
3	7215.000	43.63	6.91	50.54	74.00	-23.46	peak
4	8970.000	38.37	10.08	48.45	74.00	-25.55	peak
5	12615.000	28.43	19.01	47.44	74.00	-26.56	peak
6	13590.000	27.89	22.60	50.49	74.00	-23.51	peak
7	17955.000	20.25	29.18	49.43	74.00	-24.57	peak

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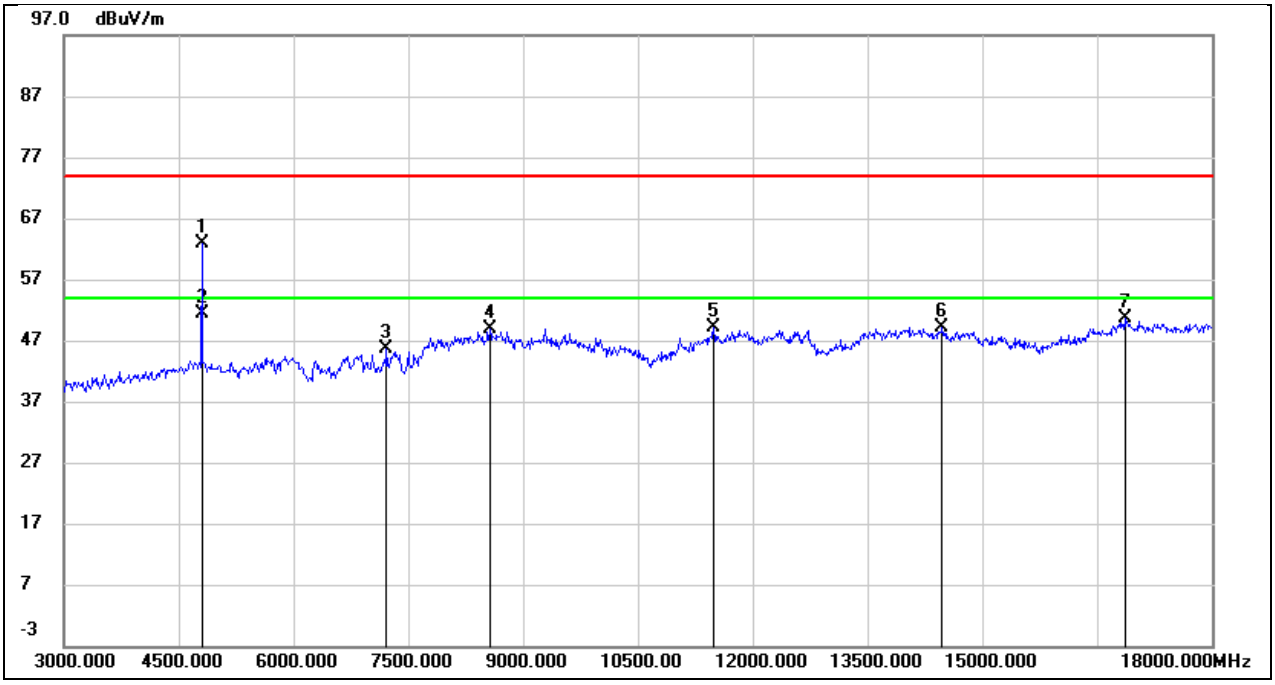
Test Mode:	MSK	Frequency(MHz):	2405.7
Polarity:	Vertical	Test Voltage:	DC 3 V



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4800.000	61.40	1.55	62.95	74.00	-11.05	peak
2	4800.000	/	/	51.79	54.00	-2.21	AVG
3	7215.000	38.06	7.64	45.70	74.00	-28.30	peak
4	8565.000	39.17	9.78	48.95	74.00	-25.05	peak
5	11490.000	32.62	16.45	49.07	74.00	-24.93	peak
6	14475.000	27.47	21.62	49.09	74.00	-24.91	peak
7	16860.000	25.56	25.00	50.56	74.00	-23.44	peak

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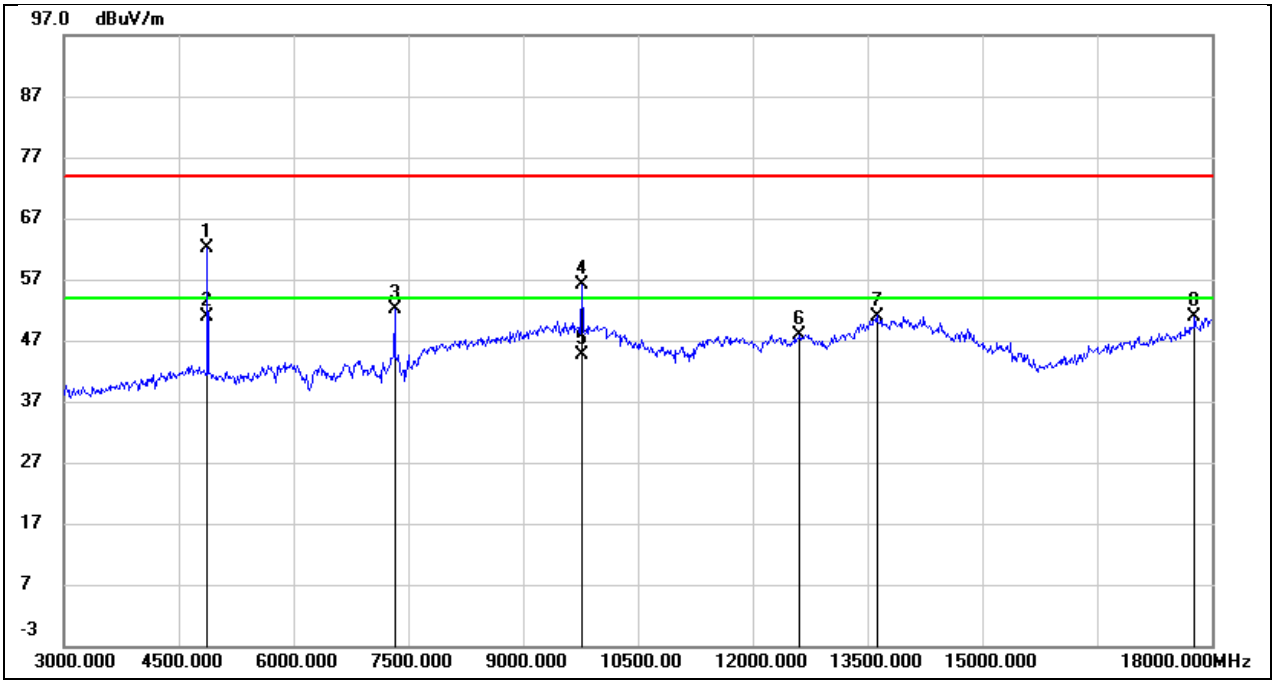
Test Mode:	MSK	Frequency(MHz):	2441.2
Polarity:	Horizontal	Test Voltage:	DC 3 V



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4875.000	61.59	0.65	62.24	74.00	-11.76	peak
2	4875.000	/	/	51.08	54.00	-2.92	AVG
3	7320.000	45.11	7.05	52.16	74.00	-21.84	peak
4	9765.000	42.83	13.21	56.04	74.00	-17.96	peak
5	9765.000	/	/	44.88	54.00	-9.12	AVG
6	12615.000	28.98	19.01	47.99	74.00	-26.01	peak
7	13620.000	28.35	22.65	51.00	74.00	-23.00	peak
8	17775.000	23.37	27.42	50.79	74.00	-23.21	peak

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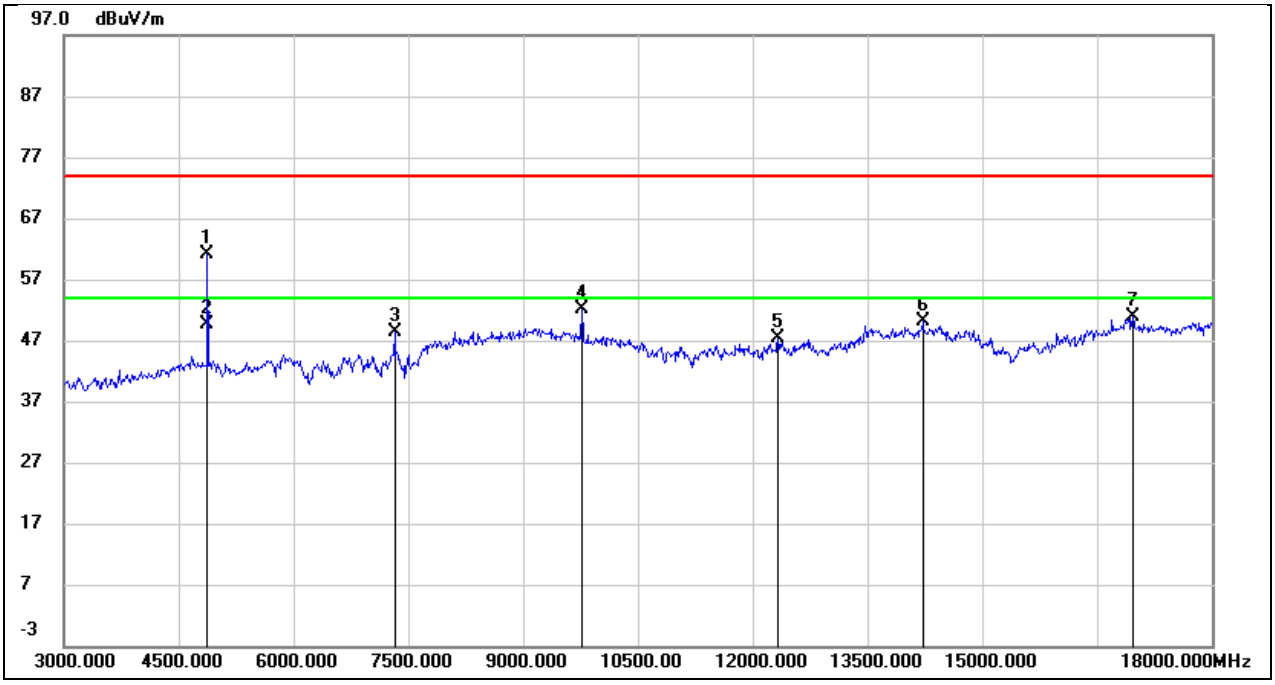
Test Mode:	MSK	Frequency(MHz):	2441.2
Polarity:	Vertical	Test Voltage:	DC 3 V



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4875.000	59.28	1.78	61.06	74.00	-12.94	peak
2	4875.000	/	/	49.90	54.00	-4.10	AVG
3	7320.000	40.65	7.69	48.34	74.00	-25.66	peak
4	9765.000	39.19	12.83	52.02	74.00	-21.98	peak
5	12330.000	29.49	17.93	47.42	74.00	-26.58	peak
6	14220.000	27.94	22.22	50.16	74.00	-23.84	peak
7	16965.000	25.69	25.14	50.83	74.00	-23.17	peak

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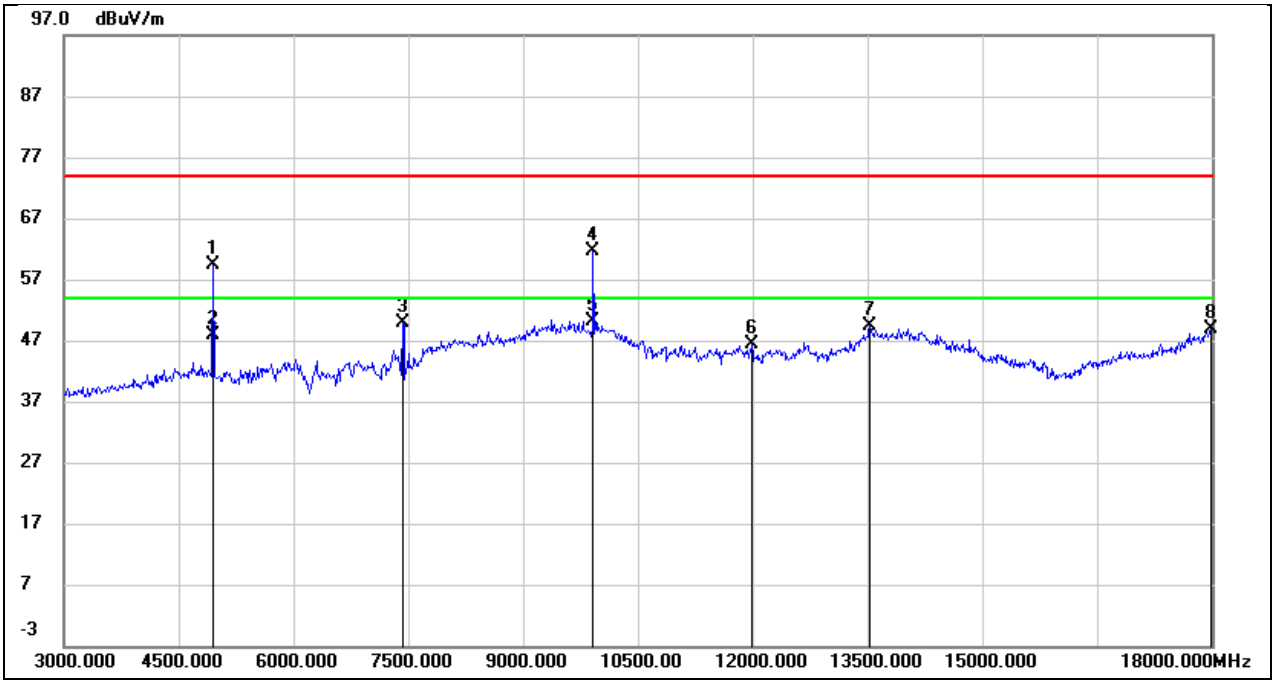
Test Mode:	MSK	Frequency(MHz):	2478.6
Polarity:	Horizontal	Test Voltage:	DC 3 V



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4950.000	58.63	0.83	59.46	74.00	-14.54	peak
2	4950.000	/	/	48.30	54.00	-5.70	AVG
3	7425.000	42.62	7.21	49.83	74.00	-24.17	peak
4	9915.000	48.38	13.32	61.70	74.00	-12.30	peak
5	9915.000	/	/	50.54	54.00	-3.46	AVG
6	11985.000	27.78	18.71	46.49	74.00	-27.51	peak
7	13530.000	26.91	22.49	49.40	74.00	-24.60	peak
8	17985.000	19.37	29.49	48.86	74.00	-25.14	peak

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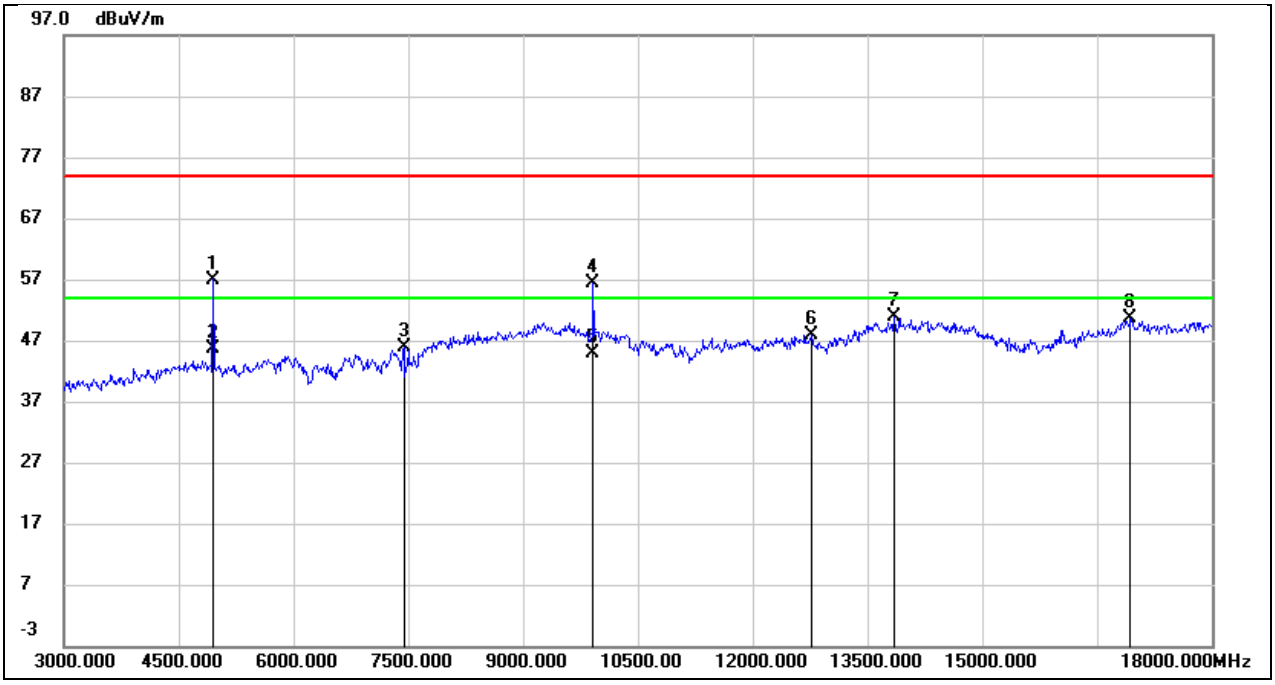
Test Mode:	MSK	Frequency(MHz):	2478.6
Polarity:	Vertical	Test Voltage:	DC 3 V



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4950.000	55.00	2.00	57.00	74.00	-17.00	peak
2	4950.000	/	/	45.84	54.00	-8.16	AVG
3	7440.000	38.15	7.80	45.95	74.00	-28.05	peak
4	9915.000	43.65	12.73	56.38	74.00	-17.62	peak
5	9915.000	/	/	45.22	54.00	-8.78	AVG
6	12765.000	29.60	18.34	47.94	74.00	-26.06	peak
7	13845.000	29.40	21.49	50.89	74.00	-23.11	peak
8	16935.000	25.63	25.10	50.73	74.00	-23.27	peak

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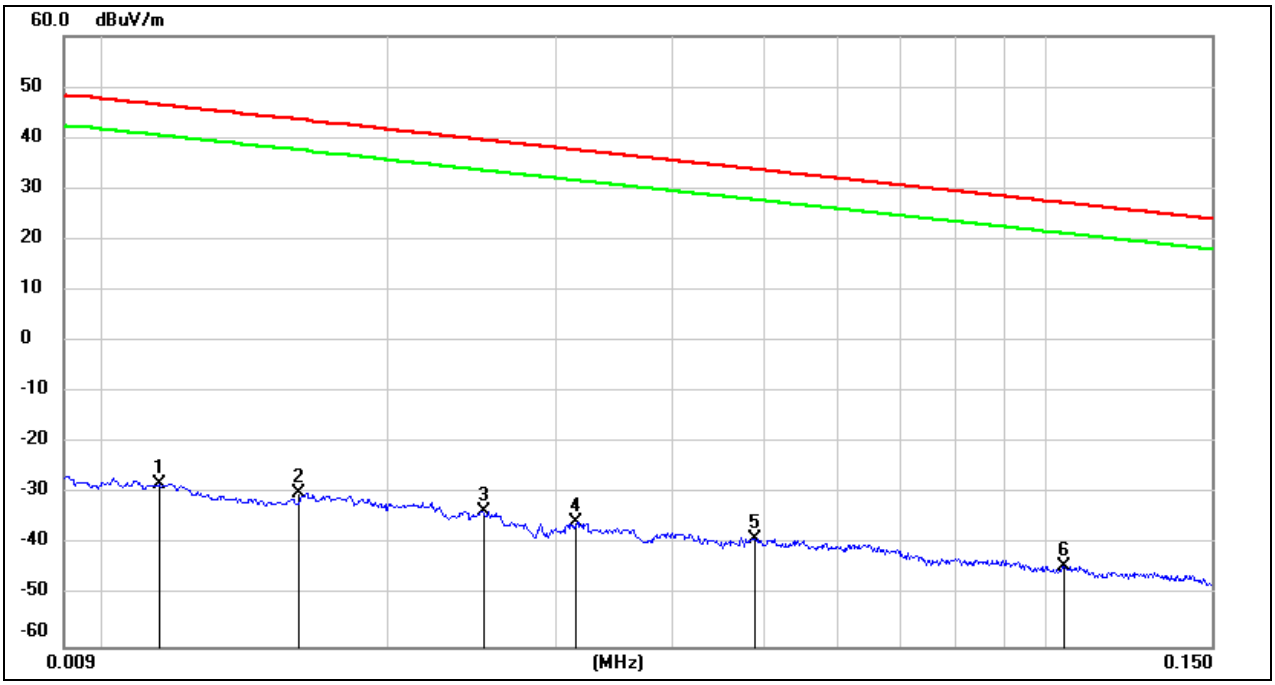
8.4. SPURIOUS EMISSIONS (9 KHZ ~ 30 MHZ)

Test Mode:	MSK	Frequency(MHz):	2405.7
Polarity:	Loop Antenna Face On To The EUT	Test Voltage:	DC 3 V



No.	Frequency	Reading	Correct	FCC Result	FCC Limit	ISED Result	ISED Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dBuA/m)	(dBuA/m)	(dB)	
1	0.0114	73.45	-101.40	-27.95	46.46	-79.45	-5.04	-74.41	peak
2	0.0160	71.47	-101.37	-29.90	43.52	-81.40	-7.98	-73.42	peak
3	0.0252	67.82	-101.37	-33.55	39.57	-85.05	-11.93	-73.12	peak
4	0.0316	65.74	-101.40	-35.66	37.61	-87.16	-13.89	-73.27	peak
5	0.0490	62.75	-101.47	-38.72	33.80	-90.22	-17.70	-72.52	peak
6	0.1044	57.56	-101.78	-44.22	27.23	-95.72	-24.27	-71.45	peak

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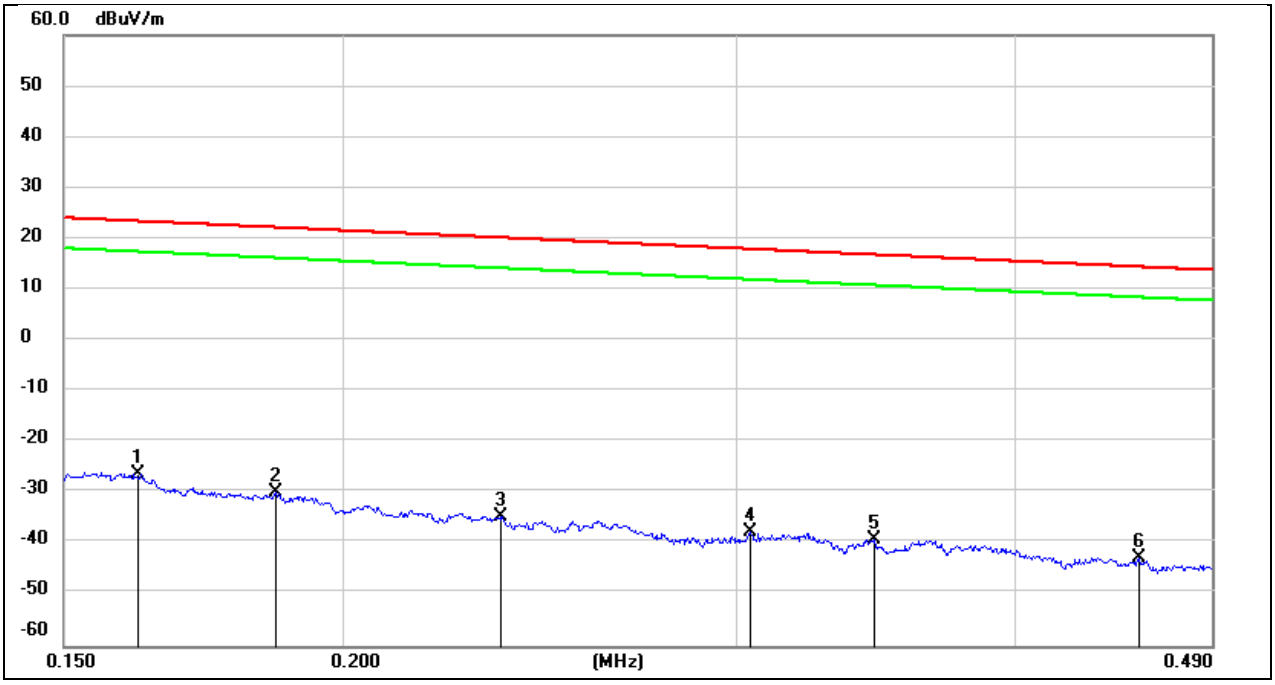
Test Mode:	MSK	Frequency(MHz):	2405.7
Polarity:	Loop Antenna Face On To The EUT	Test Voltage:	DC 3 V



No.	Frequency	Reading	Correct	FCC Result	FCC Limit	ISED Result	ISED Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dBuA/m)	(dBuA/m)	(dB)	
1	0.1621	75.42	-101.65	-26.23	23.41	-77.73	-28.09	-49.64	peak
2	0.1867	71.90	-101.70	-29.80	22.18	-81.30	-29.32	-51.98	peak
3	0.2356	67.01	-101.78	-34.77	20.16	-86.27	-31.34	-54.93	peak
4	0.3047	64.34	-101.86	-37.52	17.92	-89.02	-33.58	-55.44	peak
5	0.3462	62.74	-101.90	-39.16	16.81	-90.66	-34.69	-55.97	peak
6	0.4550	59.14	-102.02	-42.88	14.44	-94.38	-37.06	-57.32	peak

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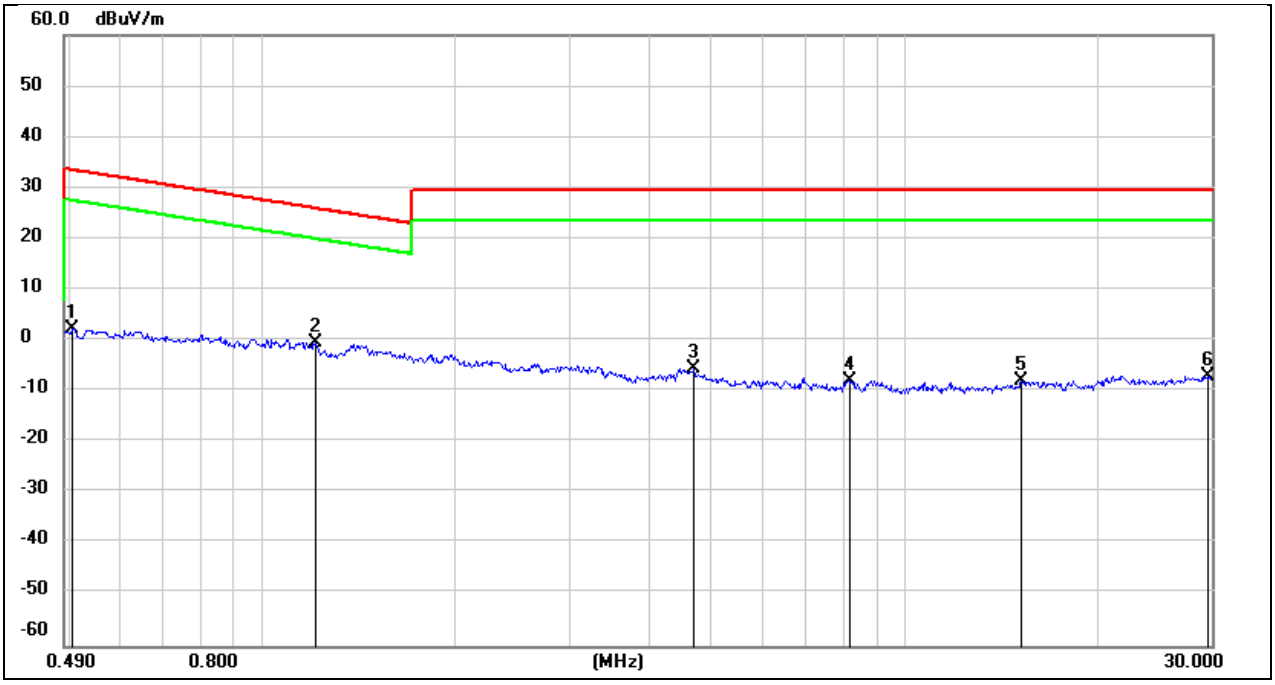
Test Mode:	MSK	Frequency(MHz):	2405.7
Polarity:	Loop Antenna Face On To The EUT	Test Voltage:	DC 3 V



No.	Frequency	Reading	Correct	FCC Result	FCC Limit	ISED Result	ISED Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dBuA/m)	(dBuA/m)	(dB)	
1	0.5039	64.43	-62.07	2.36	33.56	-49.14	-17.94	-31.20	peak
2	1.2056	61.65	-62.17	-0.52	25.98	-52.02	-25.52	-26.50	peak
3	4.6905	55.82	-61.44	-5.62	29.54	-57.12	-21.96	-35.16	peak
4	8.1920	53.17	-61.05	-7.88	29.54	-59.38	-21.96	-37.42	peak
5	15.1859	53.05	-61.01	-7.96	29.54	-59.46	-21.96	-37.50	peak
6	29.7344	52.95	-60.00	-7.05	29.54	-58.55	-21.96	-36.59	peak

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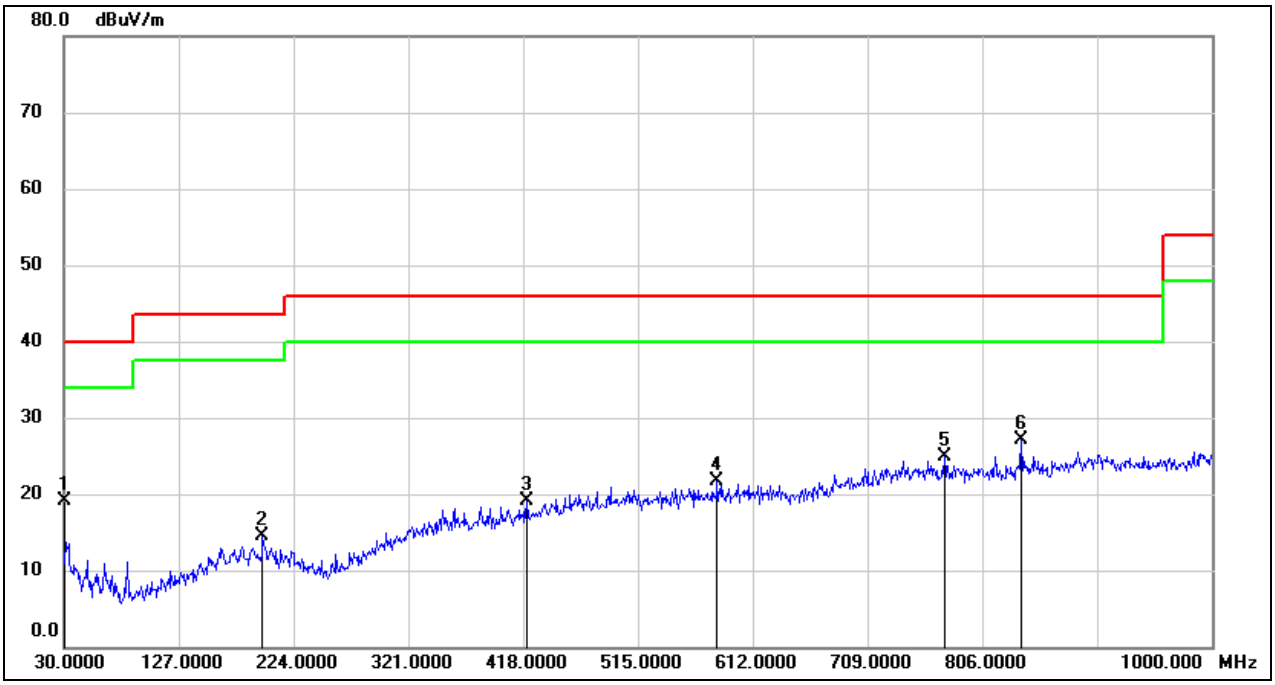
8.5. SPURIOUS EMISSIONS (30 MHZ ~ 1 GHZ)

Test Mode:	MSK	Frequency(MHz):	2405.7
Polarity:	Horizontal	Test Voltage:	DC 3 V



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	30.0000	33.09	-14.06	19.03	40.00	-20.97	QP
2	197.8100	25.64	-11.17	14.47	43.50	-29.03	QP
3	420.9100	27.09	-8.03	19.06	46.00	-26.94	QP
4	581.9300	26.92	-5.21	21.71	46.00	-24.29	QP
5	773.9900	26.11	-1.22	24.89	46.00	-21.11	QP
6	838.9800	28.11	-1.08	27.03	46.00	-18.97	QP

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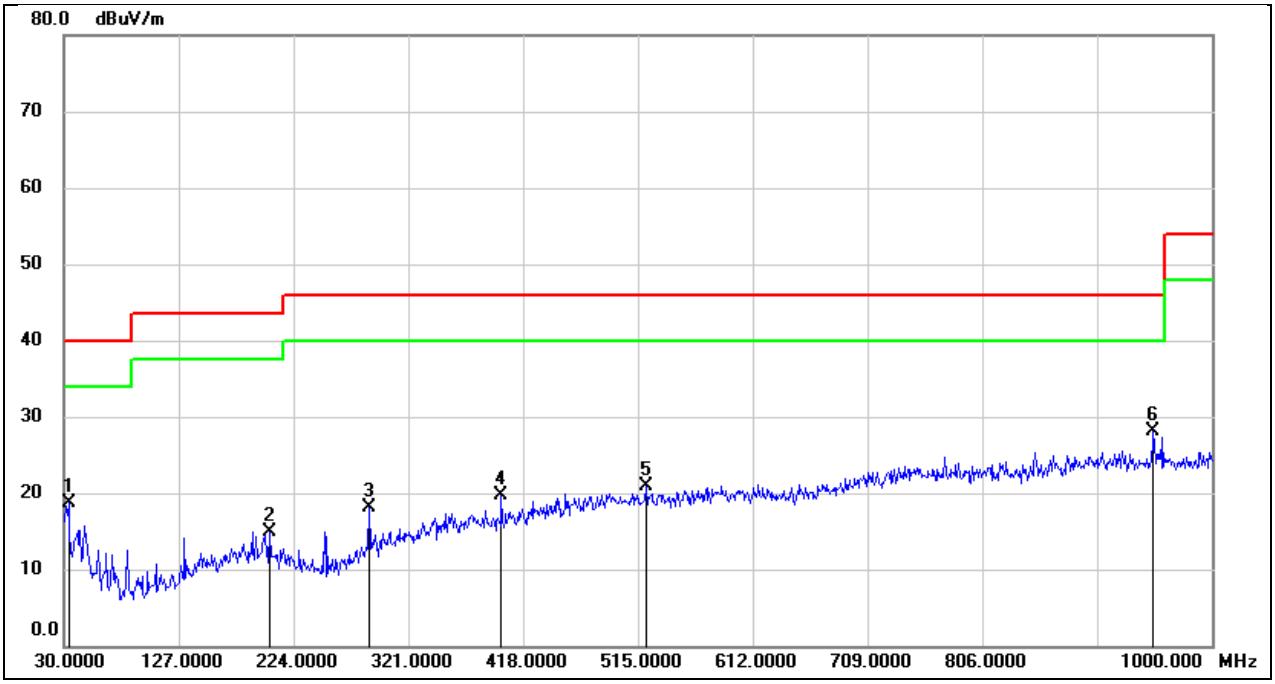
Test Mode:	MSK	Frequency(MHz):	2405.7
Polarity:	Vertical	Test Voltage:	DC 3 V



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	33.8800	32.95	-14.18	18.77	40.00	-21.23	QP
2	203.6300	26.26	-11.38	14.88	43.50	-28.62	QP
3	288.0200	29.59	-11.46	18.13	46.00	-27.87	QP
4	399.5700	28.26	-8.63	19.63	46.00	-26.37	QP
5	521.7900	26.98	-6.04	20.94	46.00	-25.06	QP
6	950.5300	28.63	-0.44	28.19	46.00	-17.81	QP

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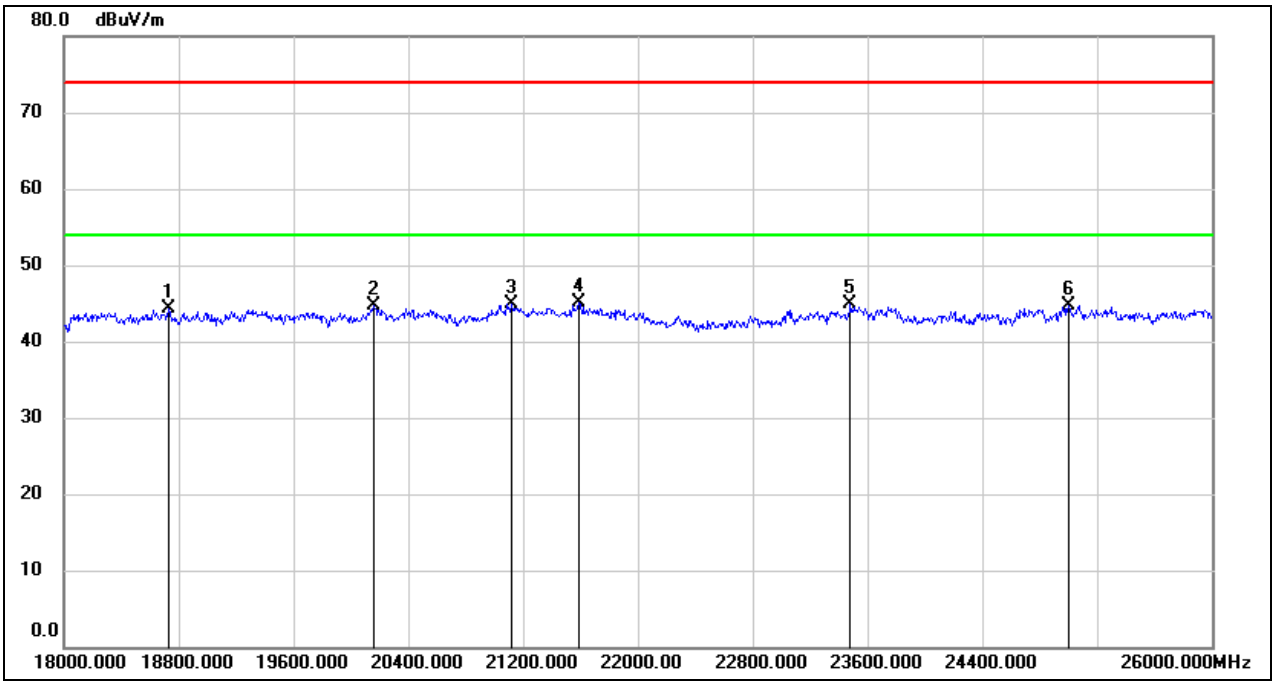
8.6. SPURIOUS EMISSIONS (18 GHZ ~ 26 GHZ)

Test Mode:	MSK	Frequency(MHz):	2405.7
Polarity:	Horizontal	Test Voltage:	DC 3 V



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	18728.000	49.65	-5.40	44.25	74.00	-29.75	peak
2	20160.000	50.23	-5.56	44.67	74.00	-29.33	peak
3	21120.000	49.69	-4.82	44.87	74.00	-29.13	peak
4	21584.000	49.69	-4.56	45.13	74.00	-28.87	peak
5	23480.000	48.04	-3.16	44.88	74.00	-29.12	peak
6	25000.000	46.86	-2.10	44.76	74.00	-29.24	peak

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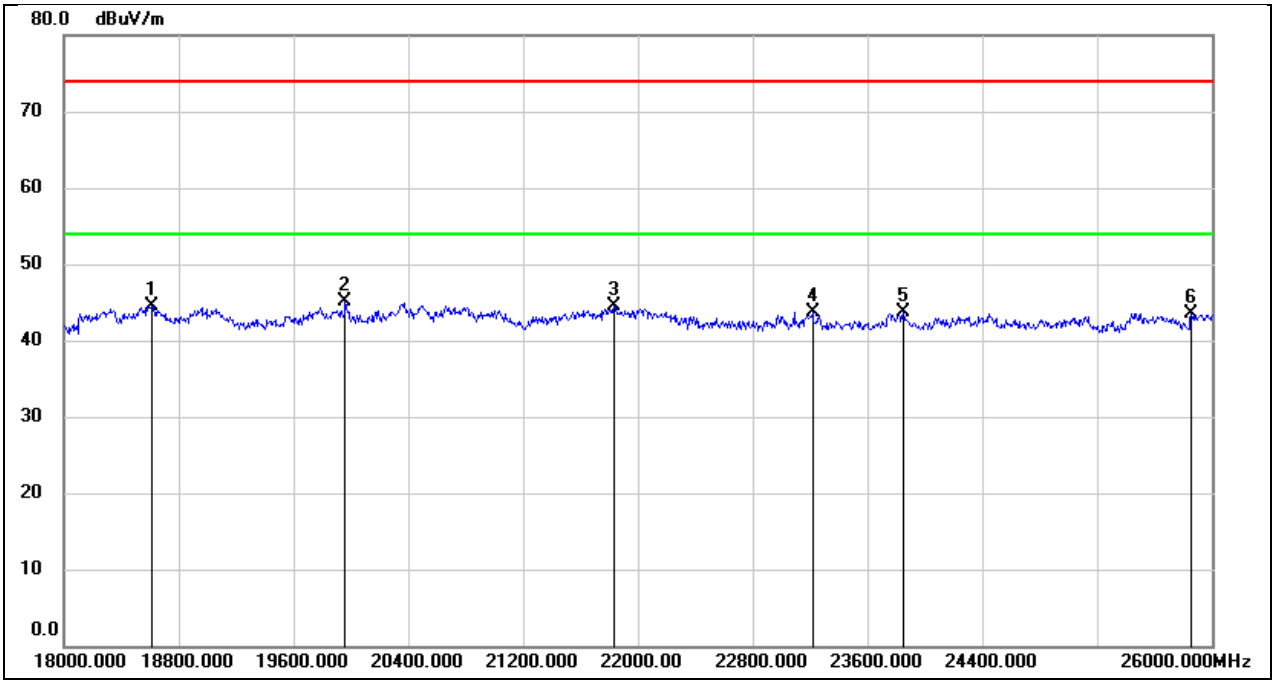
Test Mode:	MSK	Frequency(MHz):	2405.7
Polarity:	Vertical	Test Voltage:	DC 3 V



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	18616.000	49.89	-5.34	44.55	74.00	-29.45	peak
2	19960.000	50.56	-5.42	45.14	74.00	-28.86	peak
3	21832.000	48.86	-4.38	44.48	74.00	-29.52	peak
4	23216.000	47.01	-3.38	43.63	74.00	-30.37	peak
5	23848.000	46.68	-3.03	43.65	74.00	-30.35	peak
6	25856.000	44.29	-0.80	43.49	74.00	-30.51	peak

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9. ANTENNA REQUIREMENT

REQUIREMENT

Please refer to FCC part 15.203
An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

DESCRIPTION

Pass

END OF REPORT

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