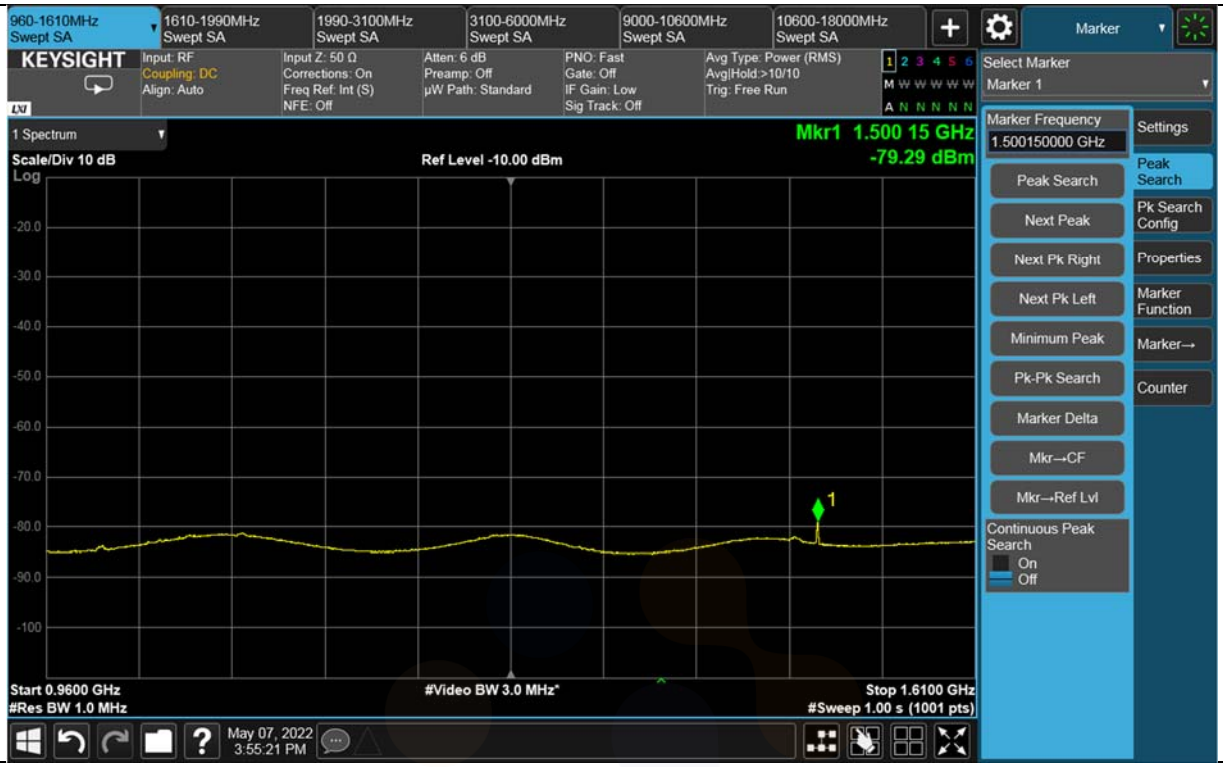
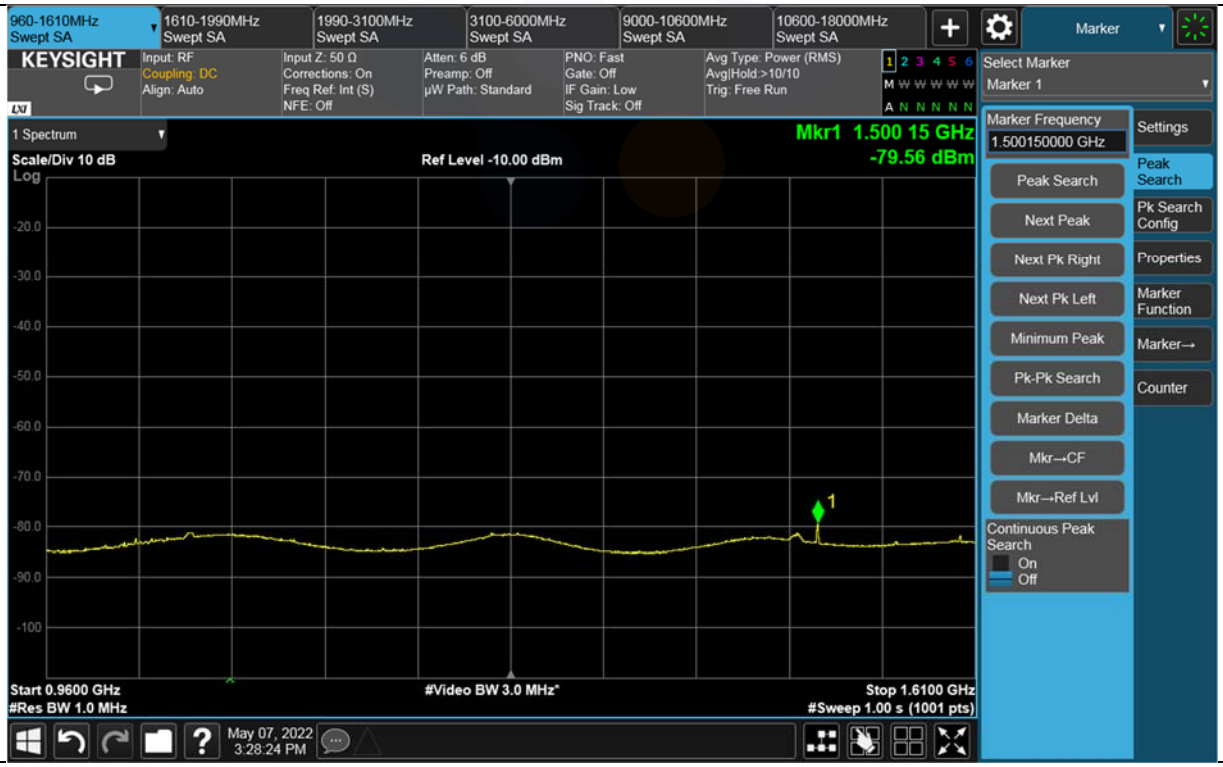
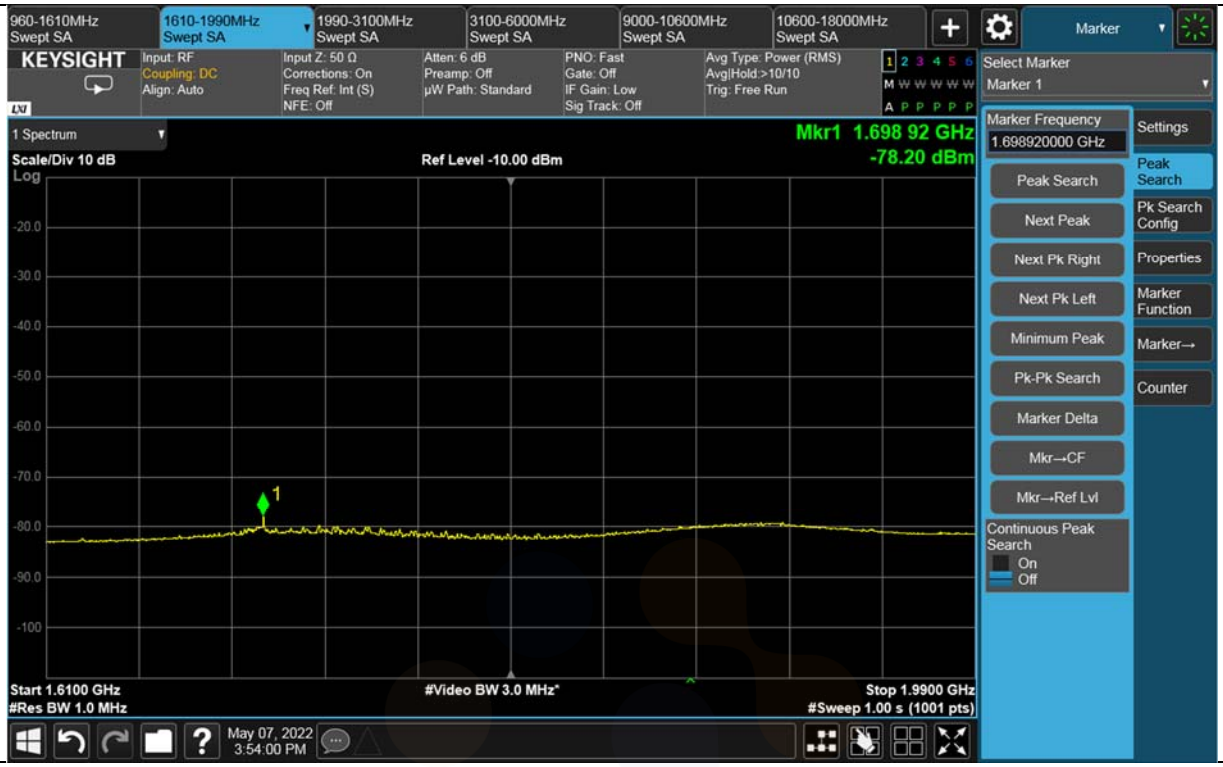
960 ㎒ ~ 1 610 ㎒ Horizontal



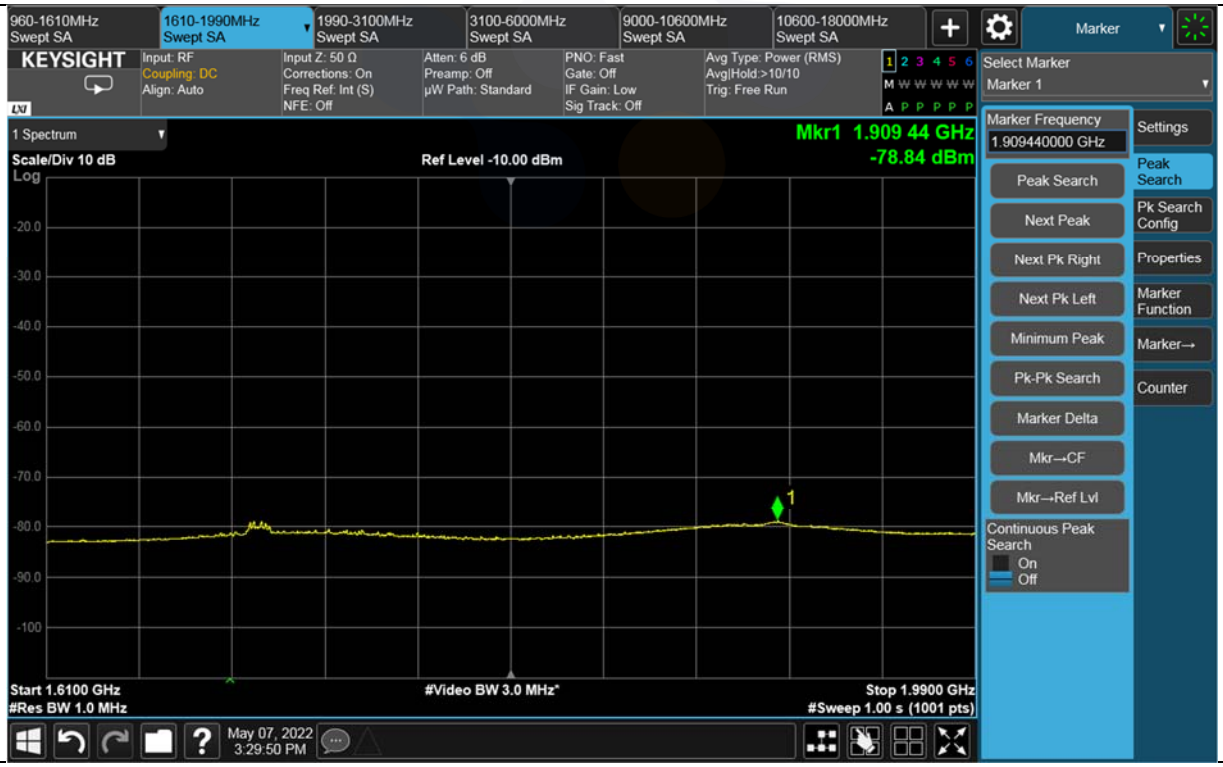
960 ㎒ ~ 1 610 ㎒ Vertical



1 610 ㎒ ~ 1 990 ㎒ Horizontal



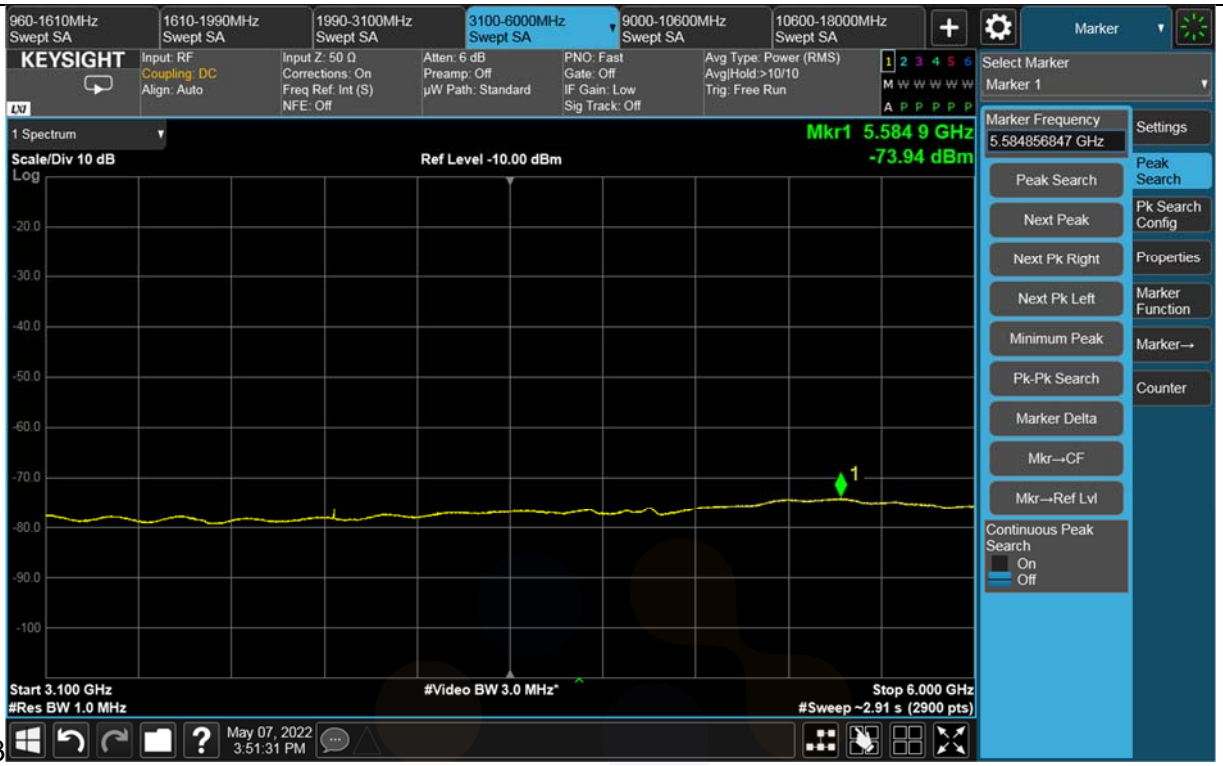
1 610 ㎒ ~ 1 990 ㎒ Vertical



1 990 ㎒ ~ 3 100 ㎒ Horizontal

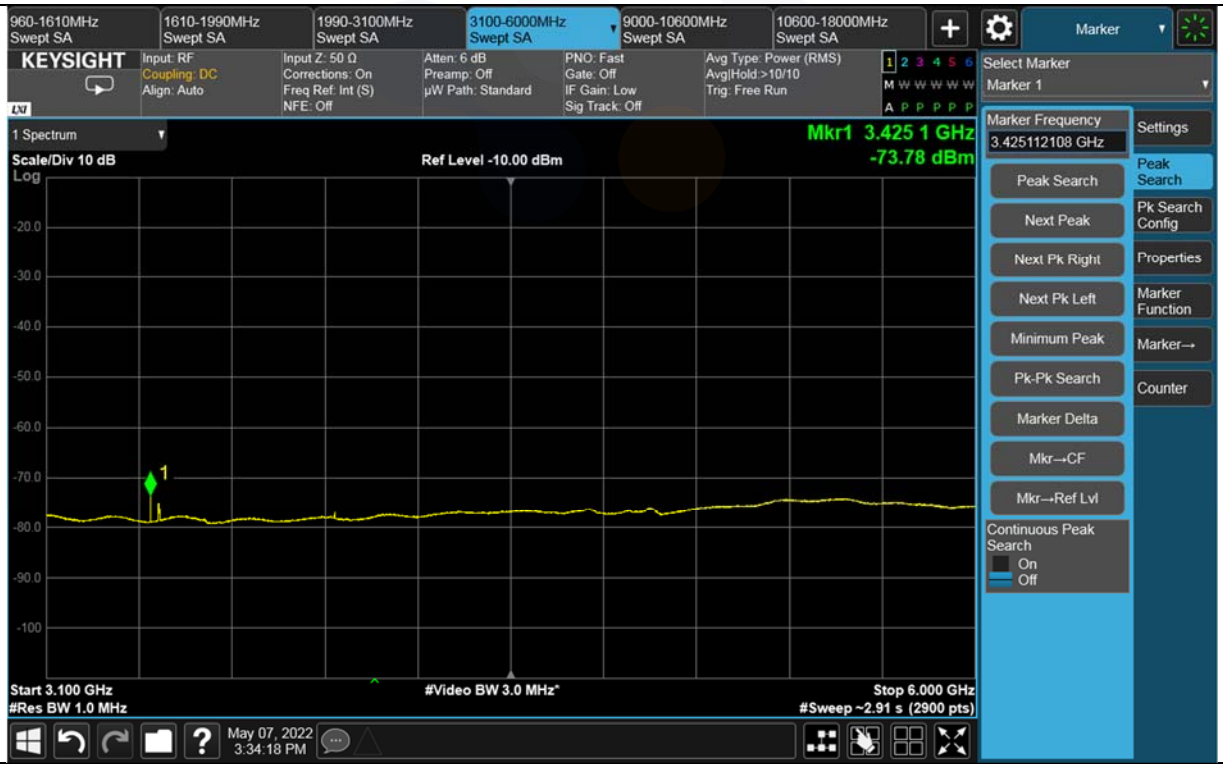
1 990 ㎒ ~ 3 100 ㎒ Vertical

3 100 ㎒ ~ 6 000 ㎒ Horizontal

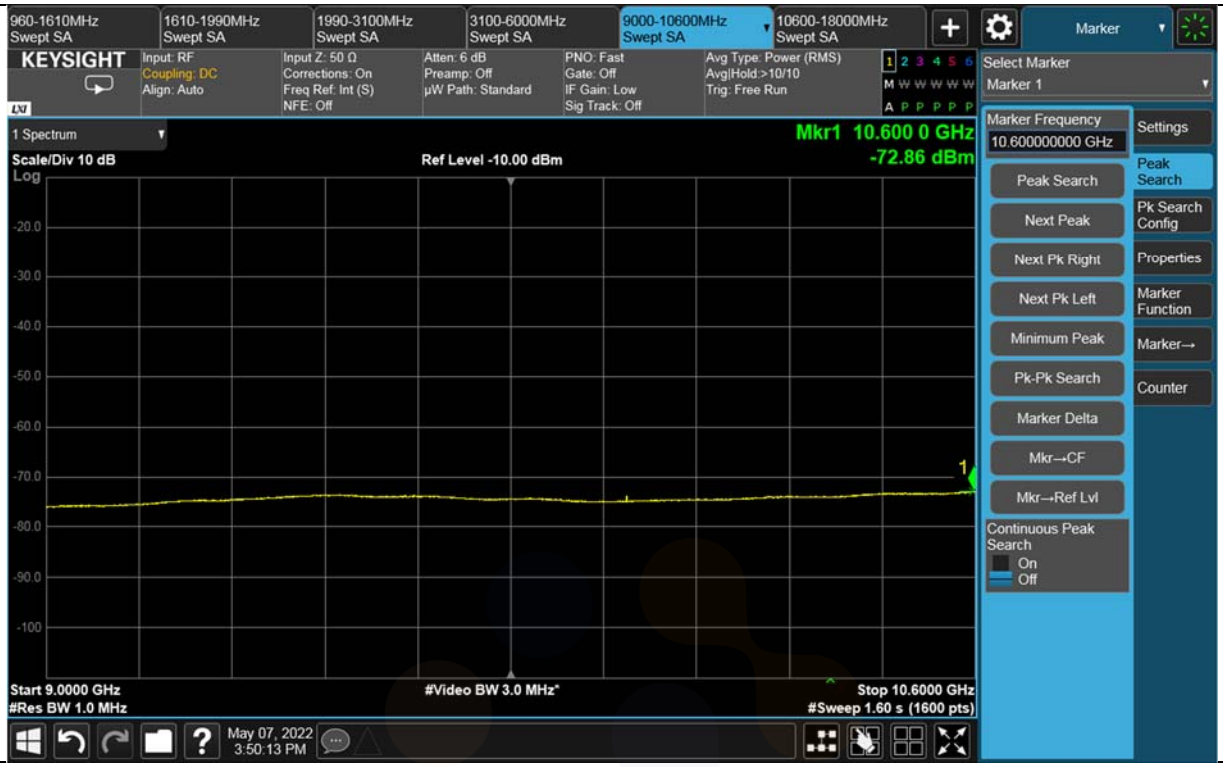


3

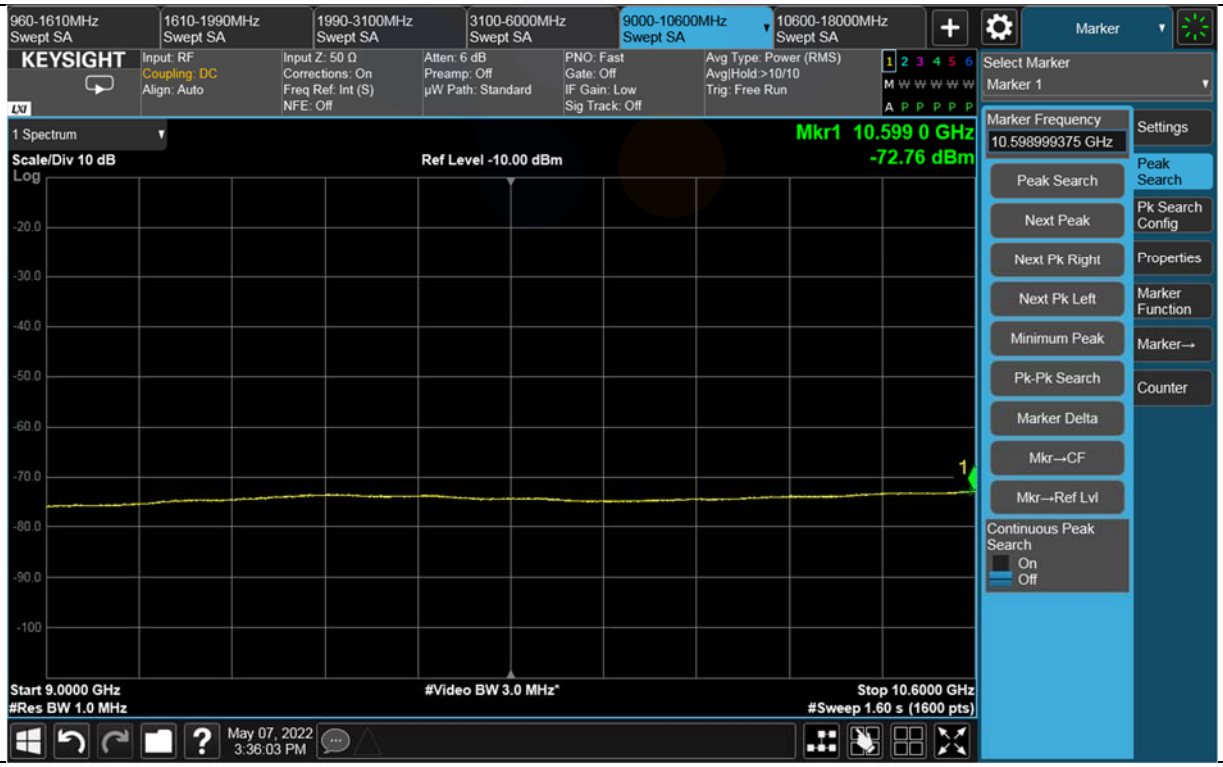
3 100 ㎒ ~ 6 000 ㎒ Vertical



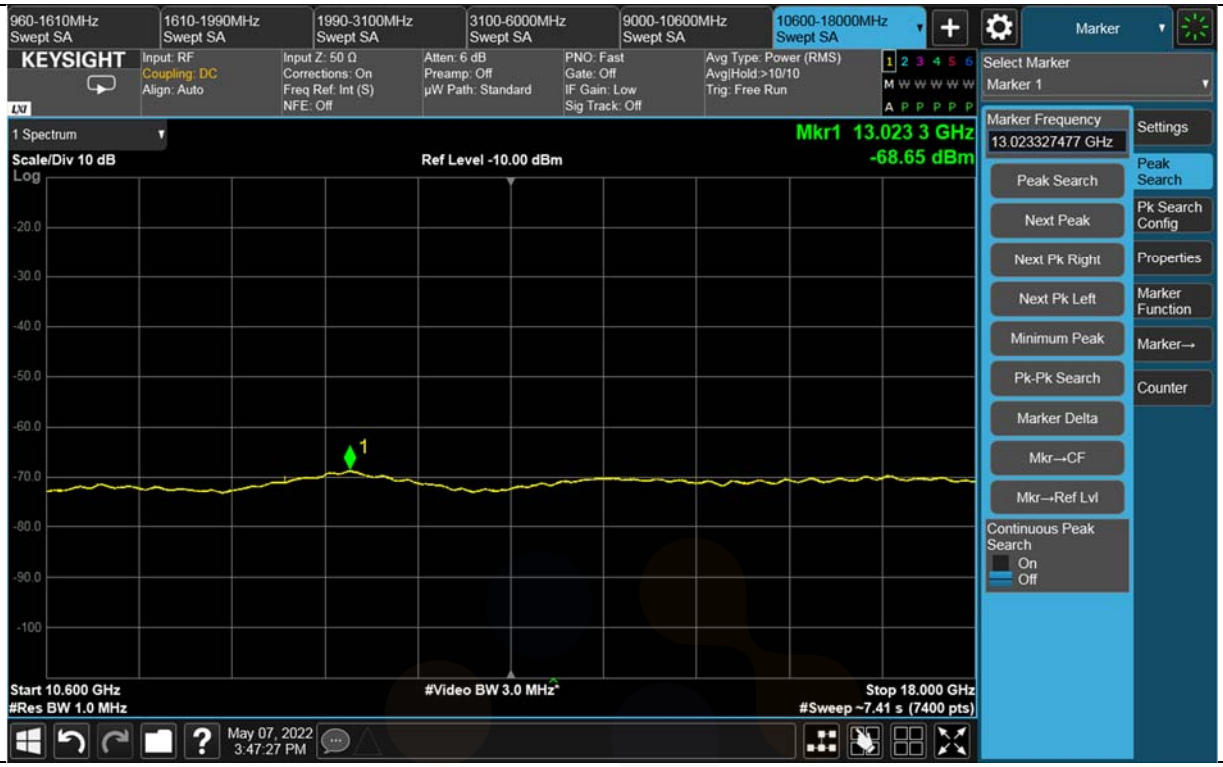
9 000 ㎒ ~ 10 600 ㎒ Horizontal



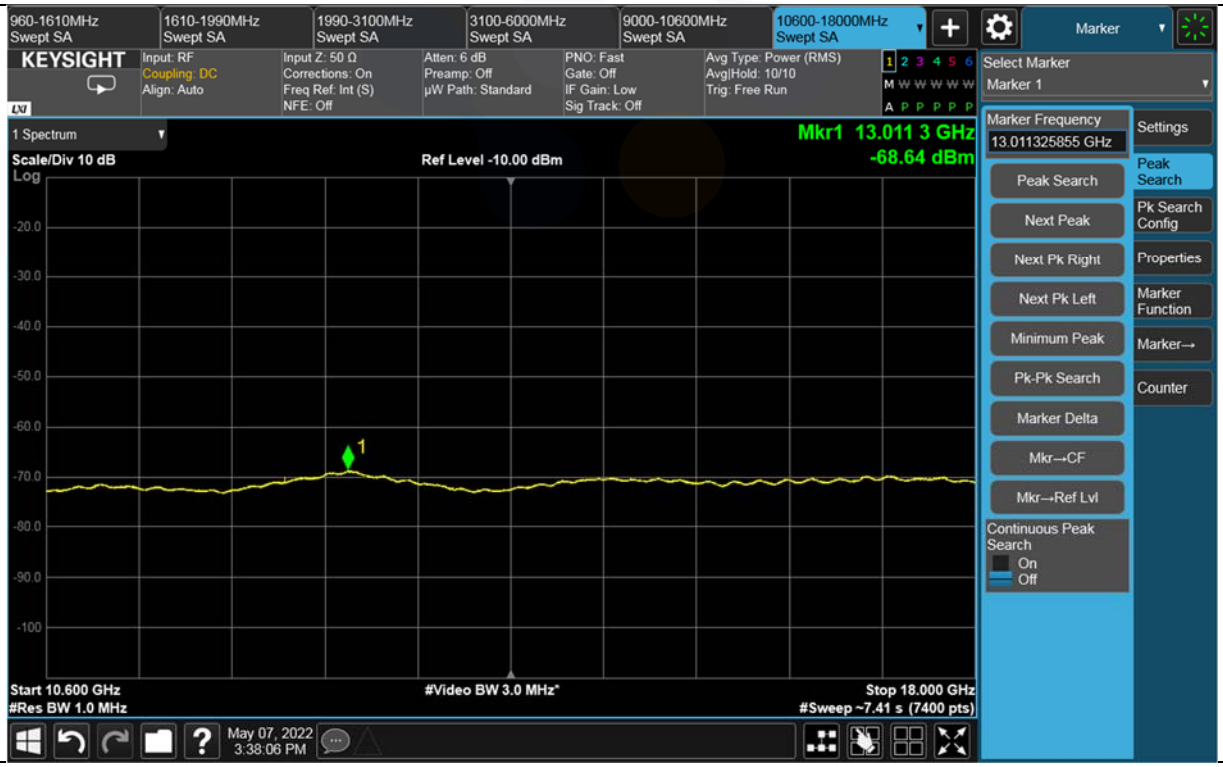
9 000 ㎒ ~ 10 600 ㎒ Vertical



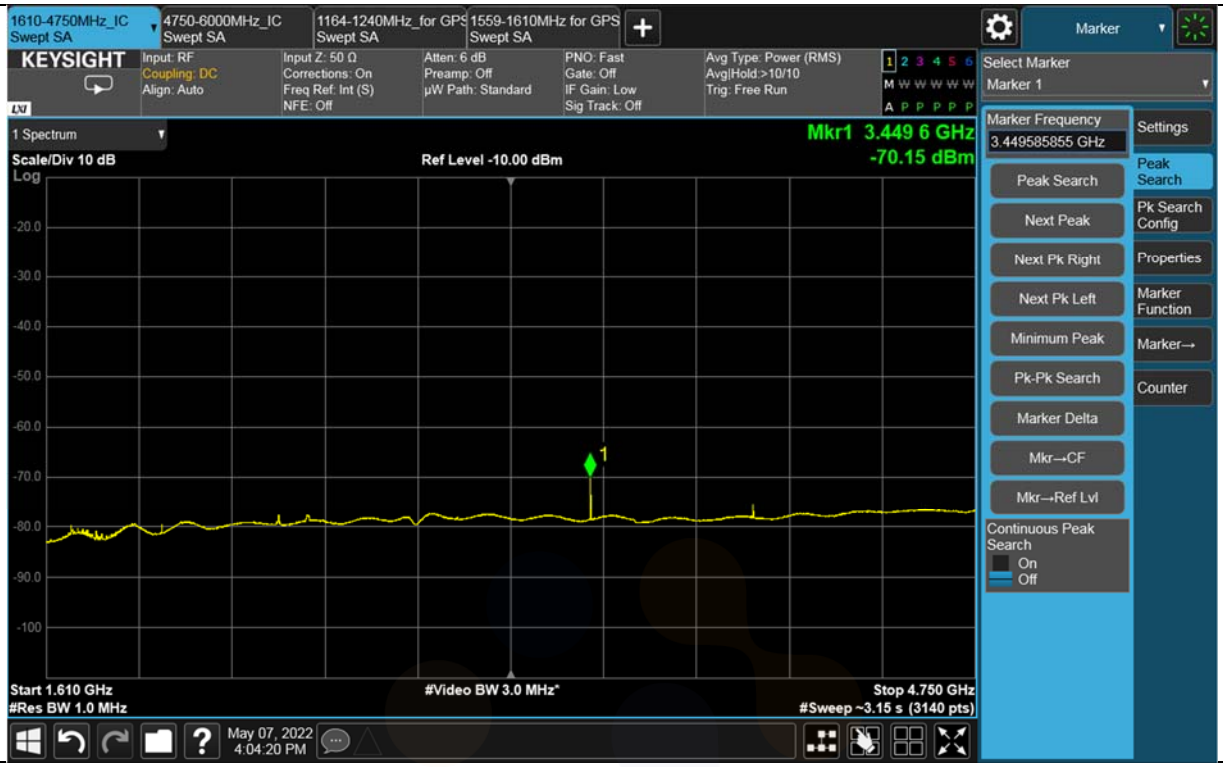
10 600 ㎒ ~ 18 000 ㎒ Horizontal



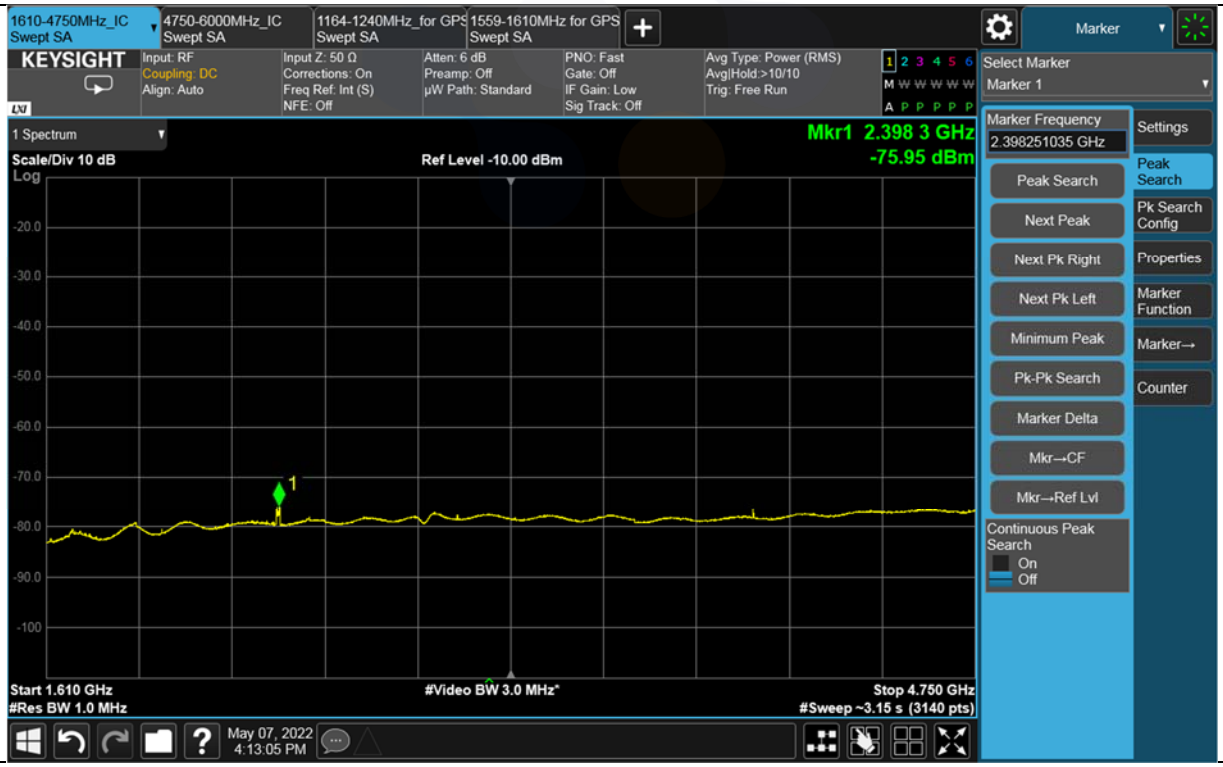
10 600 ㎒ ~ 18 000 ㎒ Vertical



1 610 ㎒ ~ 4 750 ㎒ Horizontal

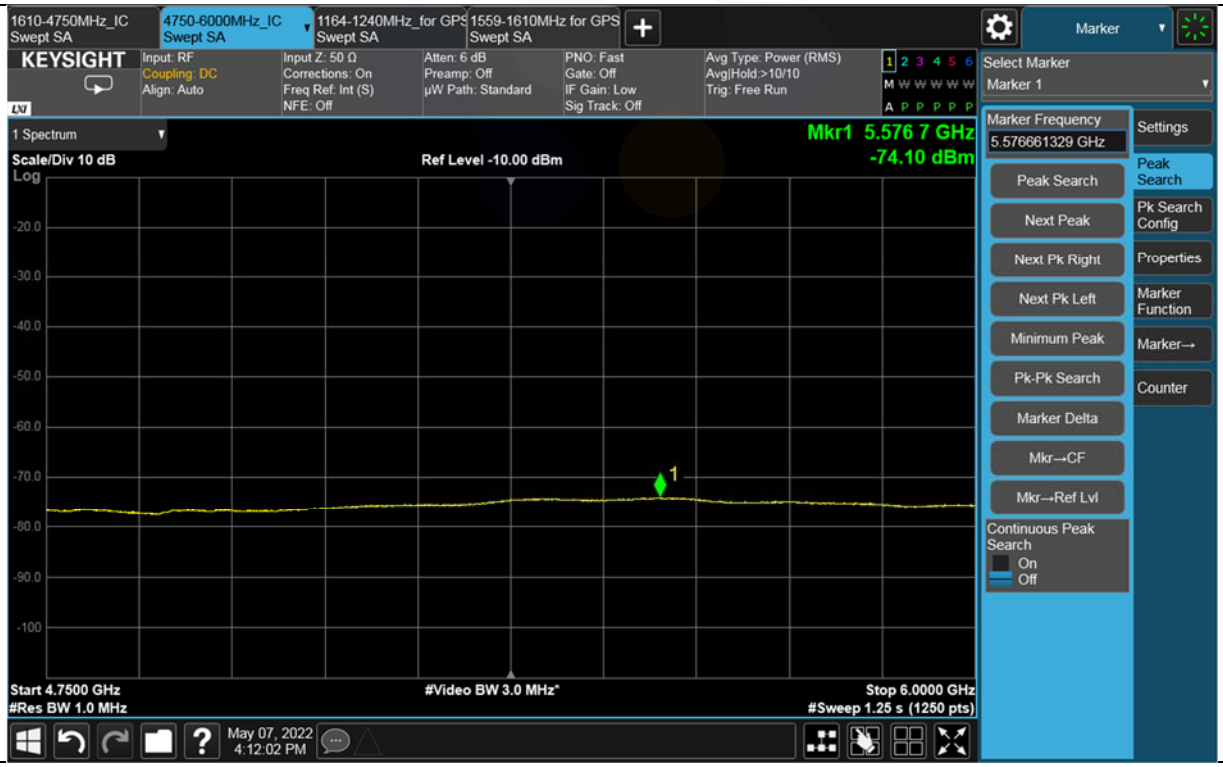


1 610 ㎒ ~ 4 750 ㎒ Vertical

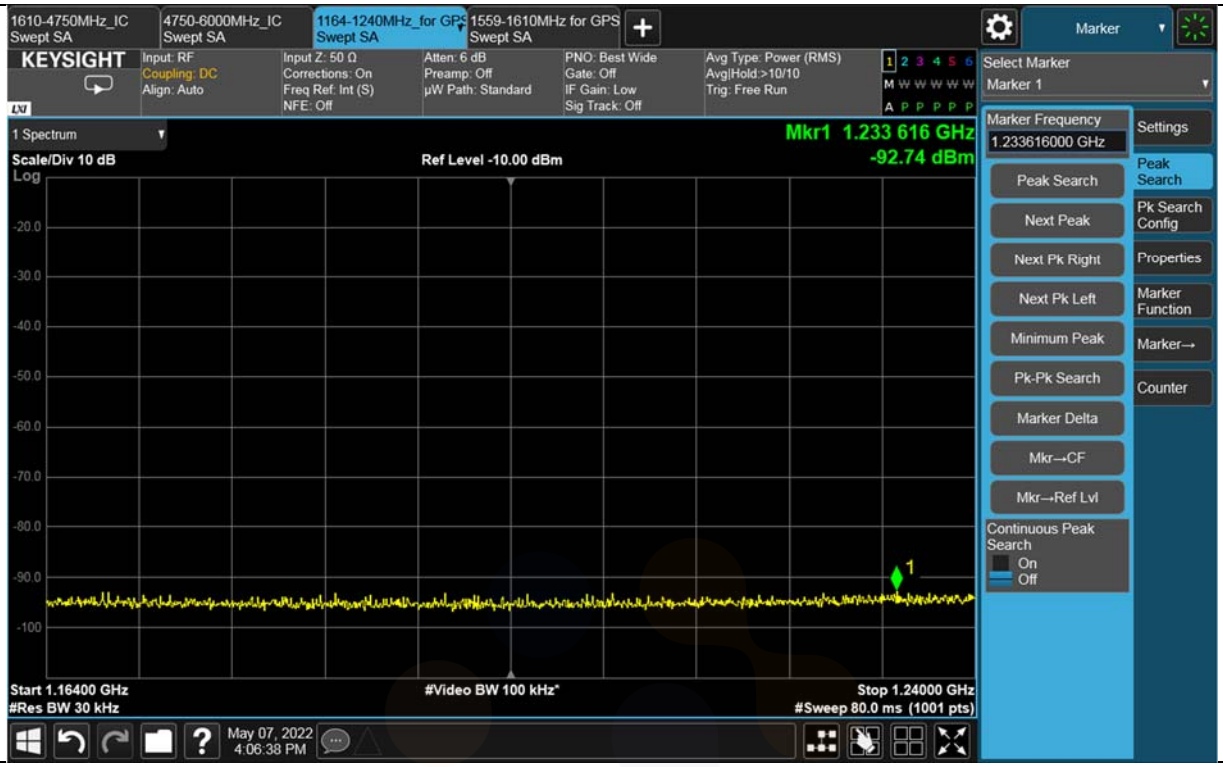


4 750 ㎒ ~ 6 000 ㎒ Horizontal

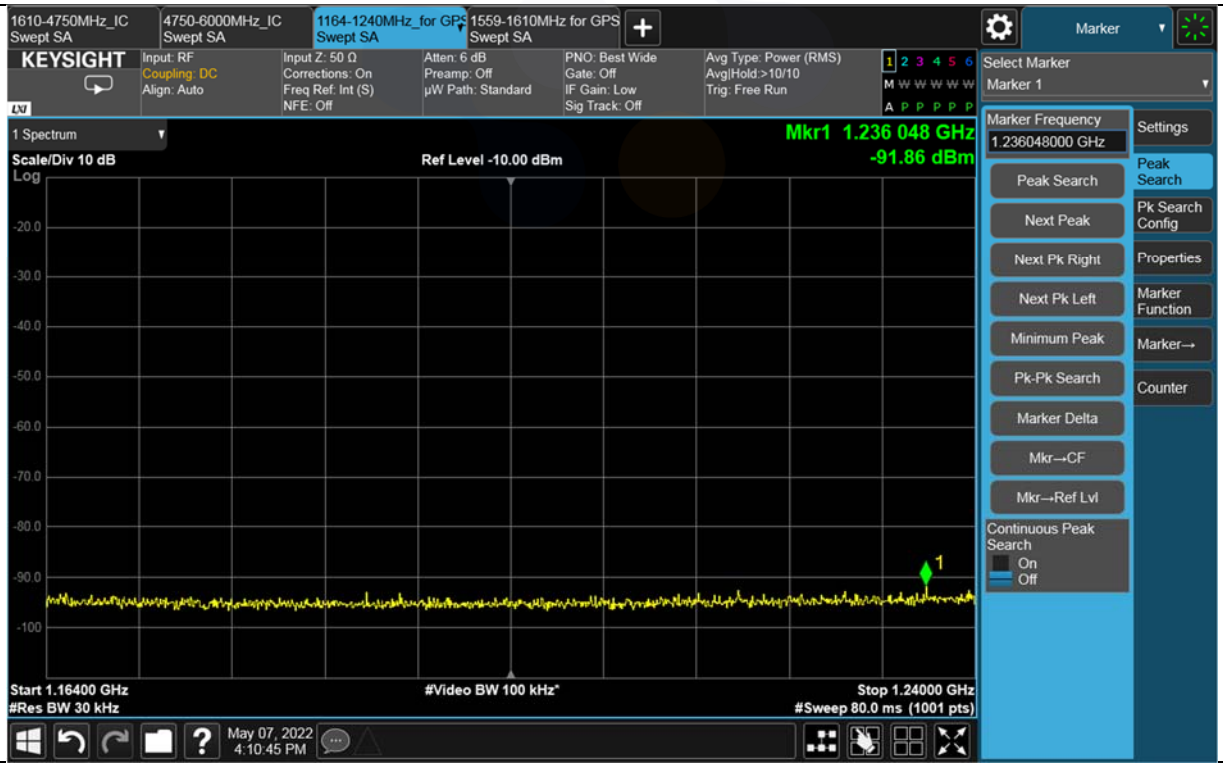
4 750 ㎒ ~ 6 000 ㎒ Vertical



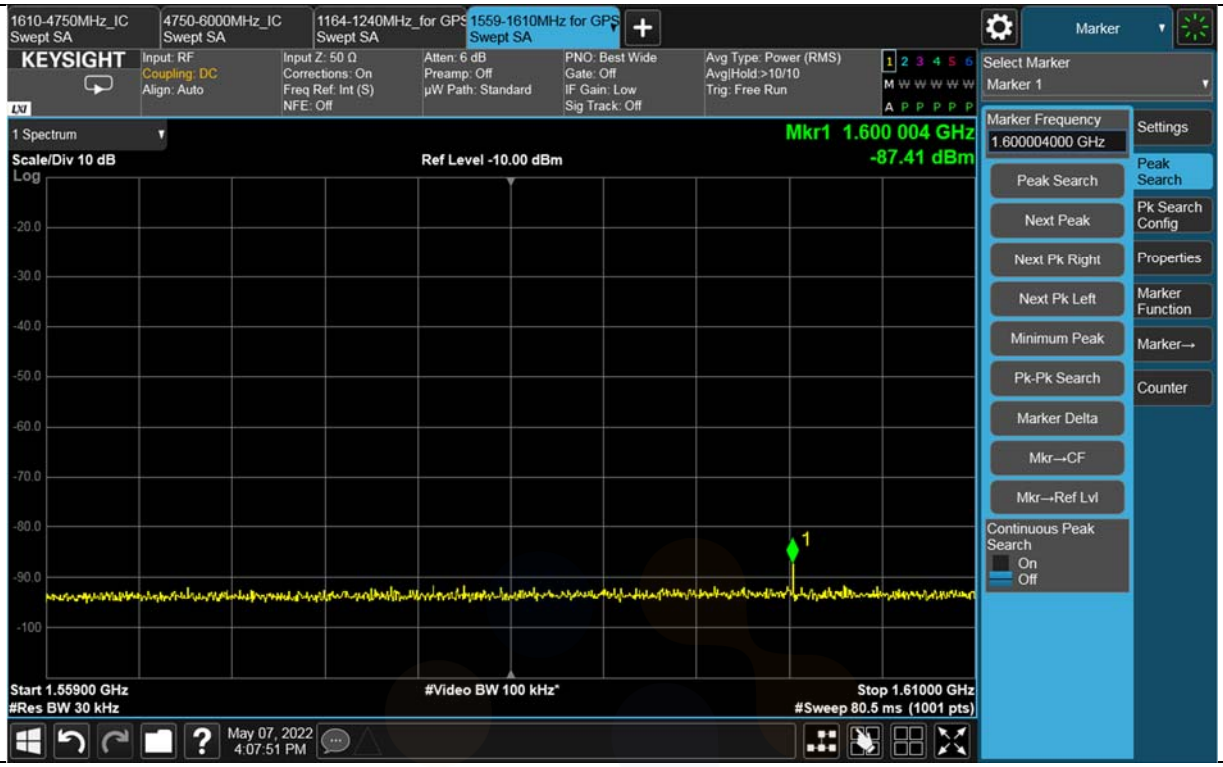
1 164 ㎒ ~ 1 240 ㎒ Horizontal



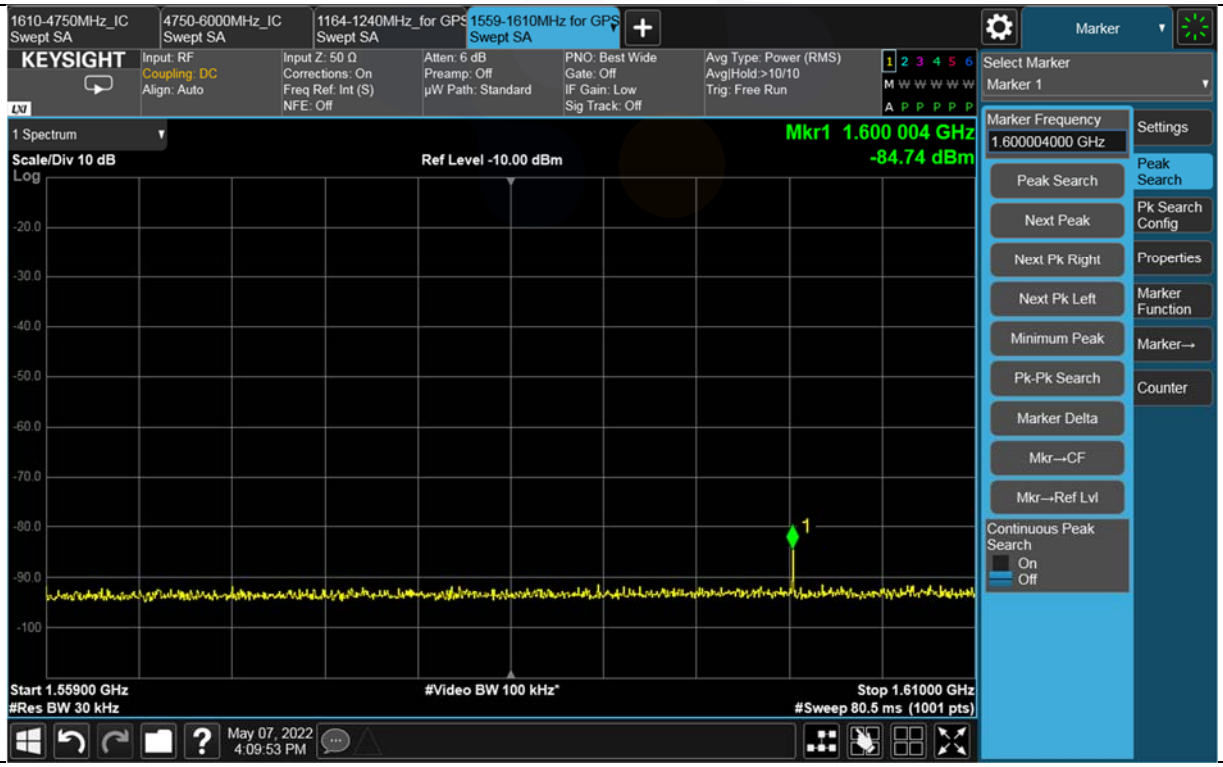
1 164 ㎒ ~ 1 240 ㎒ Vertical



1 559 ㎒ ~ 1 610 ㎒ Horizontal



1 559 ㎒ ~ 1 610 ㎒ Vertical



6.4. Radiated Spurious Emission – Below 960 ㎒

Limit

Except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency[㎒]	Field strength [㎶/m]	Measurement distance[m]
0.009-0.490	2400/F	300
0.490-1.705	24000/F	30
1.705-30.0	30	30
30-88	100**	3
88-216	150**	3
216-960	200**	3
Above 960	500	3

***Radiated Limit**

**Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54-72 ㎒, 76-88 ㎒, 174-216 ㎒ or 470-806 ㎒. However, operation within these frequency bands is permitted under other sections of this part, e.g., §§15.231 and 15.241.

Test procedure

ANSI C63.10-2013

Test settings

Below 30 ㎒

RBW	120 ㎑ (for emissions from 30 ㎒ – 1 ㎓)
Detector	Quasi-peak
Trace mode	Max-hold
Sweep time	Auto couple
The trace was allowed to stabilize	

Below 960 ㎒

RBW	120 ㎑ (for emissions from 30 ㎒ – 1 ㎓)
VBW	300 ㎑
Detector	Peak
Trace mode	Max-hold
Sweep time	Auto couple
The trace was allowed to stabilize	

*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 ㎑ resulted in a level of Y ㏈(㎶/m), which is equivalent to Y-51.5 = Z ㏈(㎂/m), which has the same margin, W ㏈, to the corresponding RSS-GEN Table 6 limit as it has to the 15.209(a) limit

Test results

Worst case(Below 30 ㎒) : ANT. A_CH. 5_Preamble 9

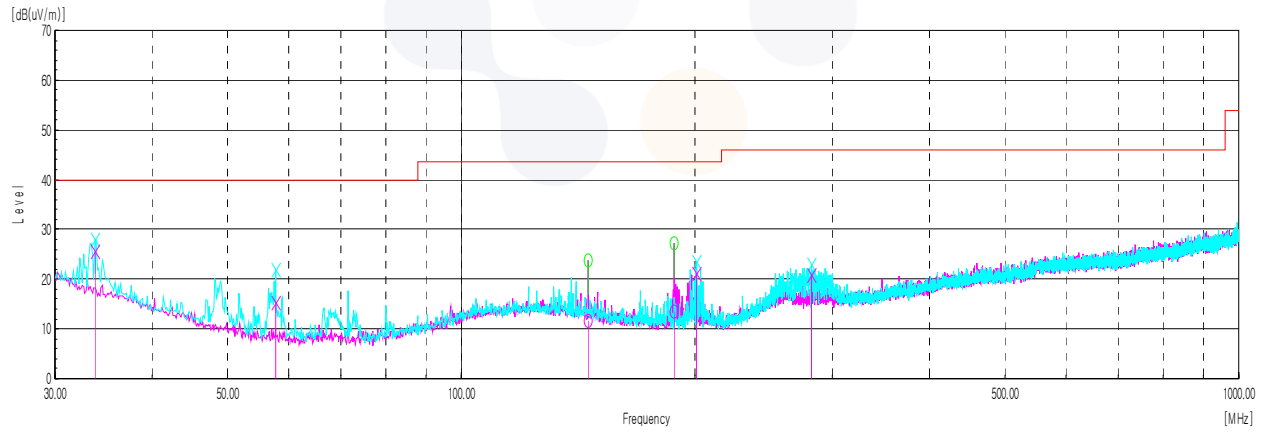
Frequency [㎒]	Pol. [V/H]	Reading [dB(㎶)]	Ant. Factor [dB]	Amp. + Cable [dB]	Conv. Factor [dB]	Result [dB(㎶/m]	Limit [dB(㎶/m]	Margin [dB]
No spurious emissions were detected within 20 ㏈ of the limit.								

Worst case(Below 960 ㎒) : ANT. A_CH. 5_Preamble 9

Frequency [㎒]	Pol. [V/H]	Reading [dB(㎶)]	Ant. Factor [dB]	Amp. + Cable [dB]	Conv. Factor [dB]	Result [dB(㎶/m]	Limit [dB(㎶/m]	Margin [dB]
33.76	V	33.40	22.52	-30.44	-	25.48	40.00	14.52
57.65	V	32.80	12.68	-29.82	-	15.66	40.00	24.34
145.55	H	23.20	16.87	-28.37	-	11.70	43.50	31.80
187.75	H	26.50	15.02	-27.88	-	13.64	43.50	29.86
200.96	V	33.70	15.26	-27.69	-	21.27	43.50	22.23
281.84	V	28.90	18.85	-26.76	-	20.99	46.00	25.01

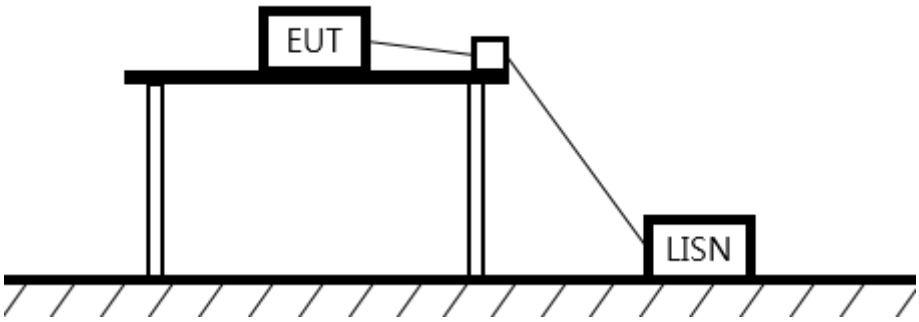
*Configuration : 0 / Preamble Length : 256 / Packet Length : 32 as a default setting.

Horizontal/Vertical



6.5. AC Conducted emission

Test setup



Limit

According to 15.207(a), for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 ㎑ to 30 ㎒, shall not exceed the limits in the following table, as measured using a 50uH/50 ohm line impedance stabilization network (LISN). Compliance with the provision of this paragraph shall on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower applies at the boundary between the frequencies ranges.

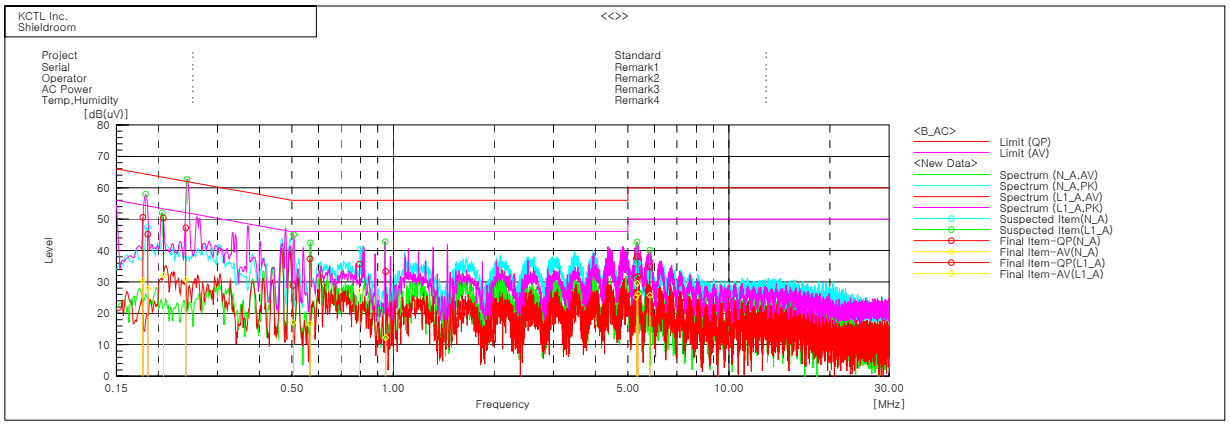
Frequency of Emission (㎒)	Conducted limit (dBμV/m)	
	Quasi-peak	Average
0.15 – 0.50	66 - 56*	56 - 46*
0.50 – 5.00	56	46
5.00 – 30.0	60	50

Measurement procedure

1. The EUT was placed on a wooden table of size, 1 m by 1.5 m, raised 80 ㎝ in which is located 40 ㎝ away from the vertical wall and 1.5m away from the side wall of the shielded room.
2. Each current-carrying conductor of the EUT power cord was individually connected through a 50Ω/50μH LISN, which is an input transducer to a spectrum analyzer or an EMI/Field Intensity ㅡ Meter, to the input power source.
3. Exploratory measurements were made to identify the frequency of the emission that had the highest amplitude relative to the limit by operating the EUT in a range of typical modes of operation, cable position, and with a typical system equipment configuration and arrangement. Based on the exploratory tests of the EUT, the one EUT cable configuration and arrangement and mode of operation that had produced the emission with the highest amplitude relative to the limit was selected for the final measurement.
4. The final test on all current-carrying conductors of all of the power cords to the equipment that comprises the EUT (but not the cords associated with other non-EUT equipment is the system) was then performed over the frequency range of 0.15 ㎒ to 30 ㎒.
5. The measurements were made with the detector set to peak amplitude within a bandwidth of 10 ㎑ or to quasi-peak and average within a bandwidth of 9 ㎑. The EUT was in transmitting mode during the measurements.

Test results

Worst case: ANT. A CH. 5_Preamble9



Final Result

--- N_A Phase ---

No.	Frequency [MHz]	Reading QP [dB(uV)]	Reading CAV [dB(uV)]	c.f [dB]	Result QP [dB(uV)]	Result CAV [dB(uV)]	Limit QP [dB(uV)]	Limit AV [dB(uV)]	Margin QP [dB]	Margin CAV [dB]
1	0.18616	35.1	17.7	10.1	45.2	27.8	64.2	54.2	19.0	26.4
2	0.7939	25.9	17.1	9.8	35.7	26.9	56.0	46.0	20.3	19.1
3	5.28813	21.6	15.3	9.8	31.4	25.1	60.0	50.0	28.6	24.9
4	5.35198	21.9	16.4	9.8	31.7	26.2	60.0	50.0	28.3	23.8

--- L1_A Phase ---

No.	Frequency [MHz]	Reading QP [dB(uV)]	Reading CAV [dB(uV)]	c.f [dB]	Result QP [dB(uV)]	Result CAV [dB(uV)]	Limit QP [dB(uV)]	Limit AV [dB(uV)]	Margin QP [dB]	Margin CAV [dB]
1	0.24155	37.5	21.0	9.7	47.2	30.7	62.0	52.0	14.8	21.3
2	0.17995	40.5	20.3	10.1	50.6	30.4	64.5	54.5	13.9	24.1
3	0.20716	40.5	22.2	9.9	50.4	32.1	63.3	53.3	12.9	21.2
4	0.95031	23.6	2.5	9.8	33.4	12.3	56.0	46.0	22.6	33.7
5	0.56565	27.5	6.7	9.9	37.4	16.6	56.0	46.0	18.6	29.4
6	0.50308	19.0	7.2	9.9	28.9	17.1	56.0	46.0	27.1	28.9
7	5.331	28.0	19.6	9.9	37.9	29.5	60.0	50.0	22.1	20.5
8	5.81345	25.0	15.8	9.9	34.9	25.7	60.0	50.0	25.1	24.3

7. Measurement equipment

Equipment Name	Manufacturer	Model No.	Serial No.	Next Cal. Date
UXA Signal Analyzer	KEYSIGHT	N9040B	US56050101	22.07.28
Signal Generator	R&S	SMB100A	176206	23.01.19
EMI TEST RECEIVER	R&S	ESCI3	101408	22.08.19
Bi-Log Antenna	AMETEK	CBL 6112D	55545	24.04.27
Amplifier	SONOMA INSTRUMENT	310N	284608	22.08.19
COAXIAL FIXED ATTENUATOR	Agilent	8491B-003	2708A18758	24.04.19
Horn antenna	ETS.lindgren	3117	155787	22.10.05
Horn antenna	ETS.lindgren	3116	86635	23.05.04
Broadband PreAmplifier	SCHWARZBECK	BBV9718	216	22.07.27
AMPLIFIER	L-3 Narda-MITEQ	AMF-7D-01001800-22-10P	2003683	22.08.19
AMPLIFIER	L-3 Narda-MITEQ	JS44-18004000-33-8P	2000996	23.01.21
LOOP Antenna	R&S	HFH2-Z2	100355	22.08.21
Antenna Mast	Innco Systems	MA4640-XP-ET	-	-
Turn Table	Innco Systems	DT2000	79	-
Antenna Mast	Innco Systems	MA4000-EP	303	-
Turn Table	Innco Systems	DT2000	79	-
High Pass Filter	Wainwright Instruments GmbH	WHKX6.5/18G-8SS	2	23.05.03
High Pass Filter	QOTANA TECHNOLOGIES	DBHF0508004000A	20070100016	22.07.09
TWO-LINE V - NETWORK	R&S	ENV216	101358	22.09.30
EMI TEST RECEIVER	R&S	ESCI	100001	22.08.19
Vector Signal Generator	R&S	SMBV100A	257566	22.07.09

End of test report