

8.5 CONDUCTED SPURIOUS EMISSION

LIMITS

§ 15.247(d) In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the and that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. Attenuation below the general limits specified in § 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in § 15.205(a), must also comply with the radiated emission limits specified in § 15.209(a) (see § 15.205(c)).

TEST EQUIPMENTS

Chamber Room #966					
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due
EXA Spectrum Analyzer	KEYSIGHT	N9010A	MY54430216	07/22/2021	07/21/2022
Power Meter	Anritsu	ML2487A	6K00003888	05/18/2021	05/17/2022
Power Sensor	Anritsu	MA2491A	033265	05/18/2021	05/17/2022
SMA Cable+10dB Attenuator	CCS	SMA+10dB ATT	SMA/10dB	01/28/2022	01/27/2023
Software	Excel(ccs-o6-2020 v1.1)				

TEST SETUP**TEST PROCEDURE**

The transmitter output is connected to a spectrum analyzer. The resolution bandwidth is set to 100 kHz. The video bandwidth is set to 300 kHz.

The spectrum from 30 MHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in the 2.4 GHz band.

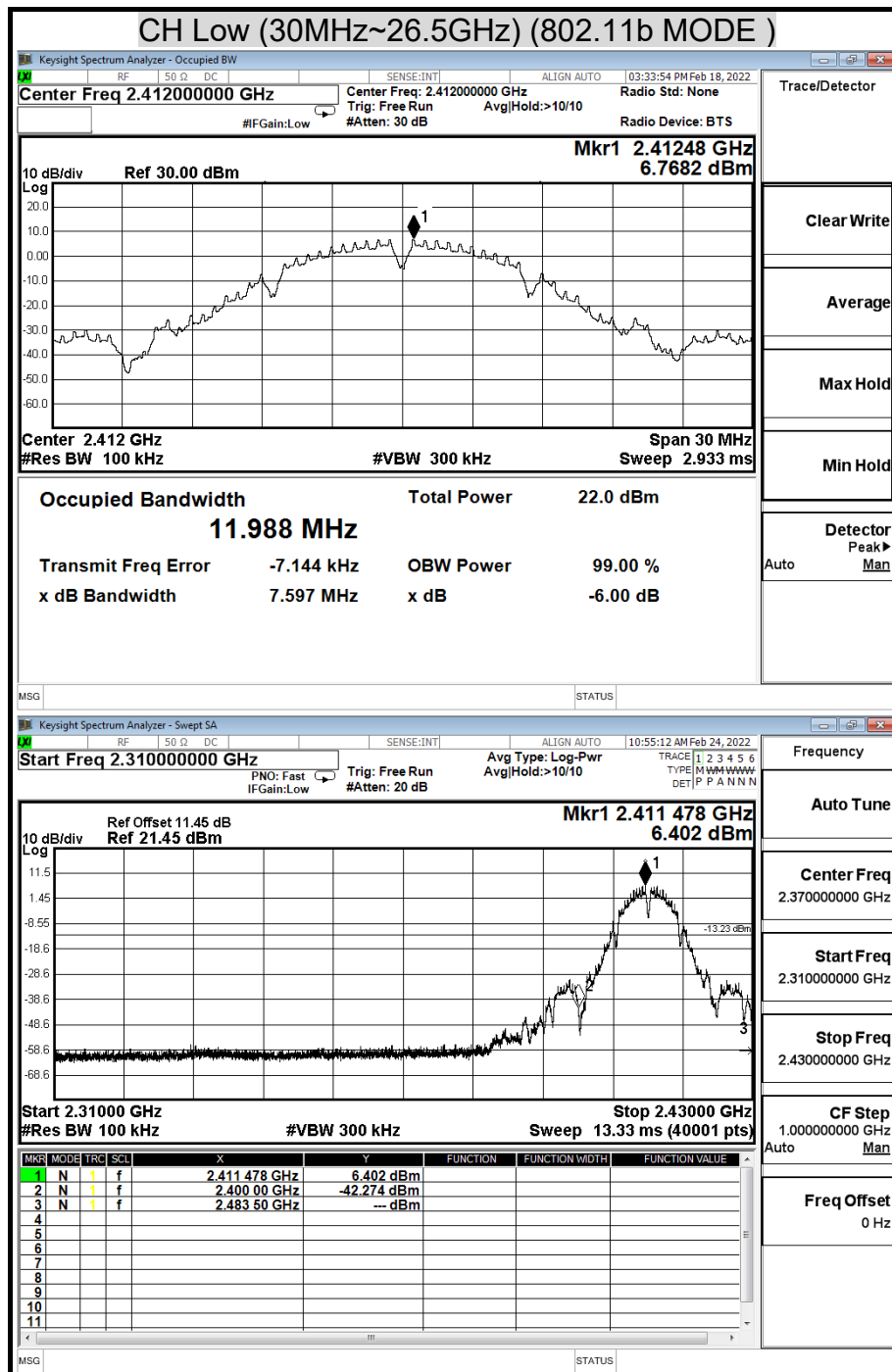
Report No.: TMTN2112000709NR
TEST RESULTS

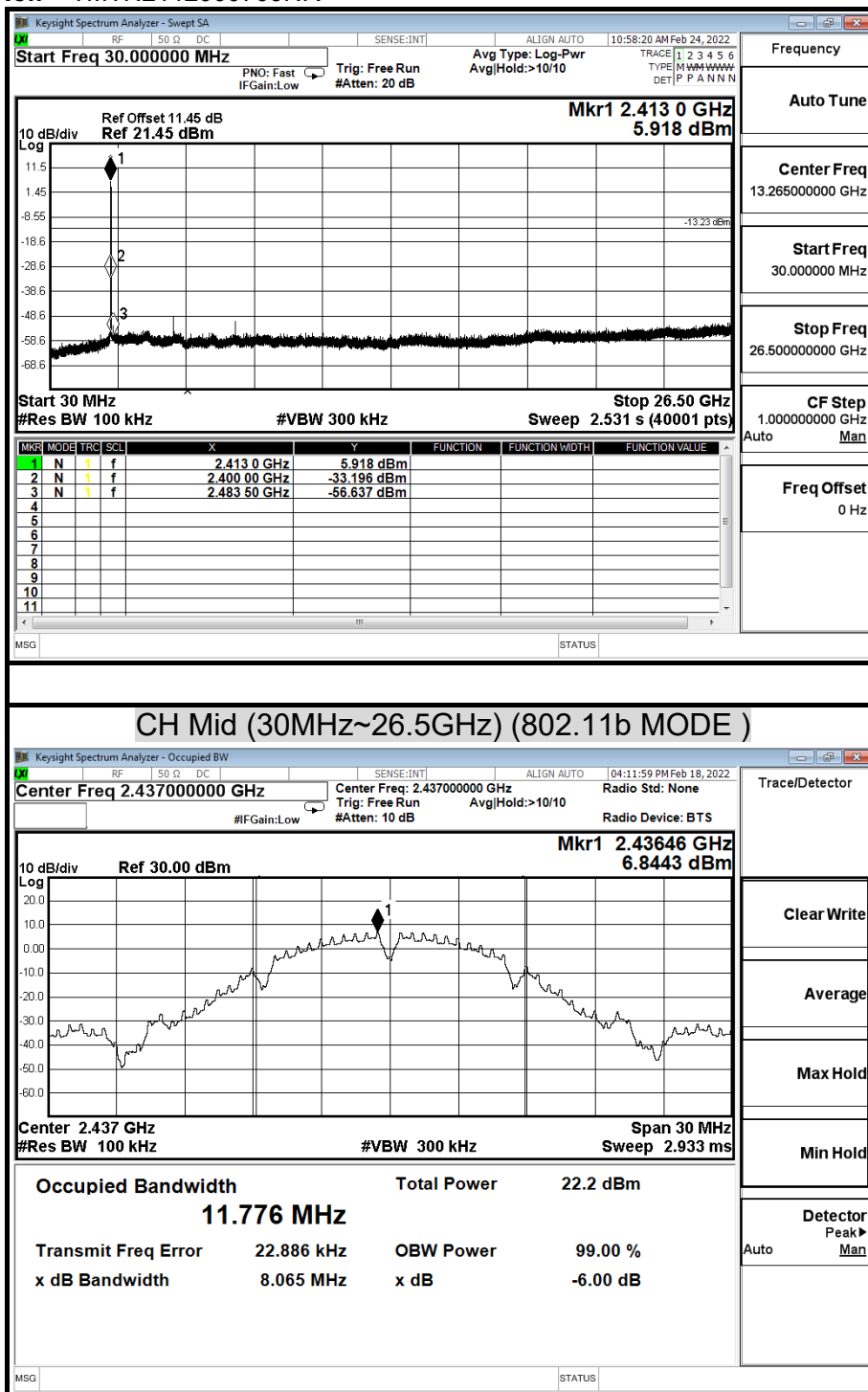
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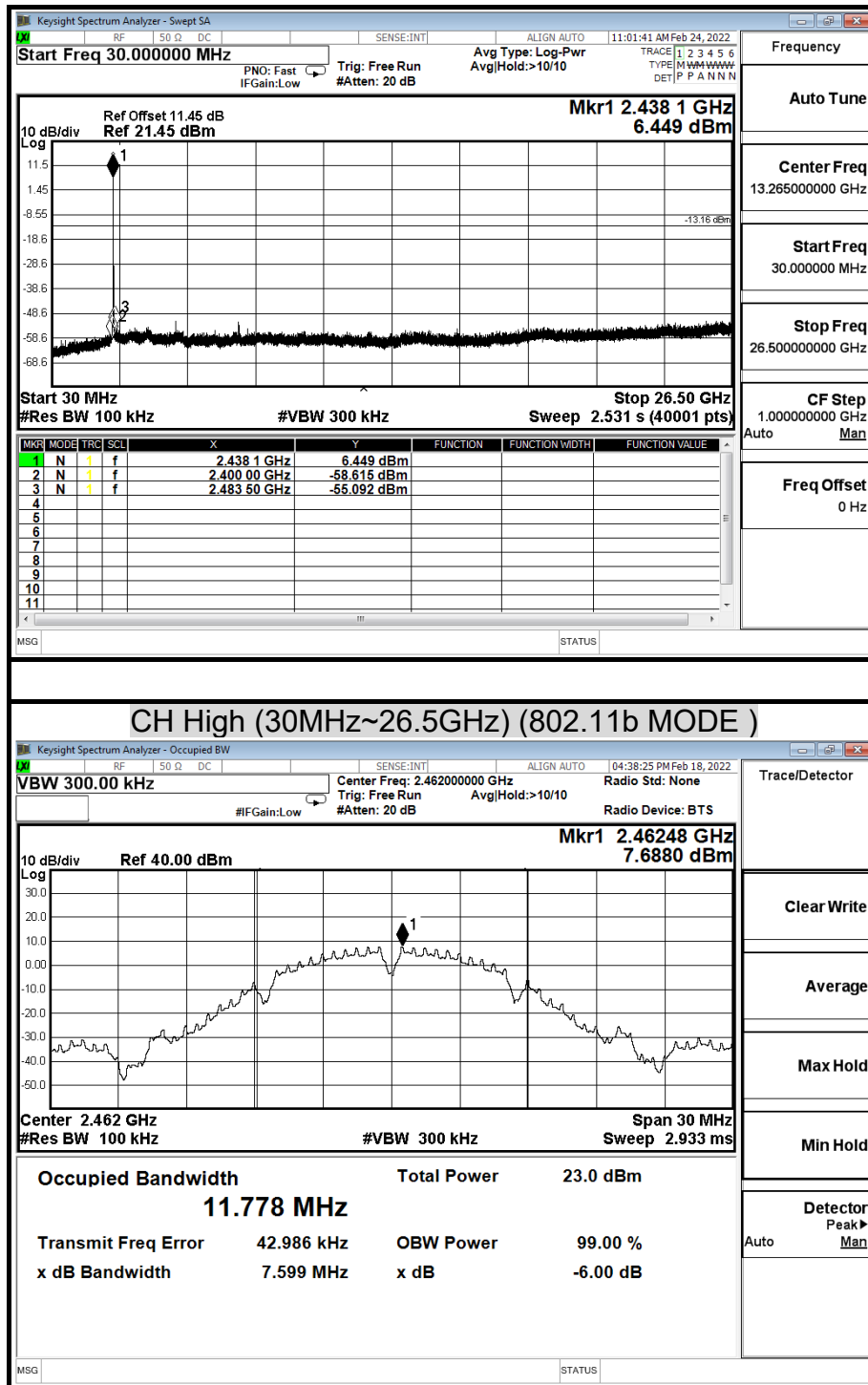
OUT-OF-BAND SPURIOUS EMISSIONS-CONDUCTED MEASUREMENT

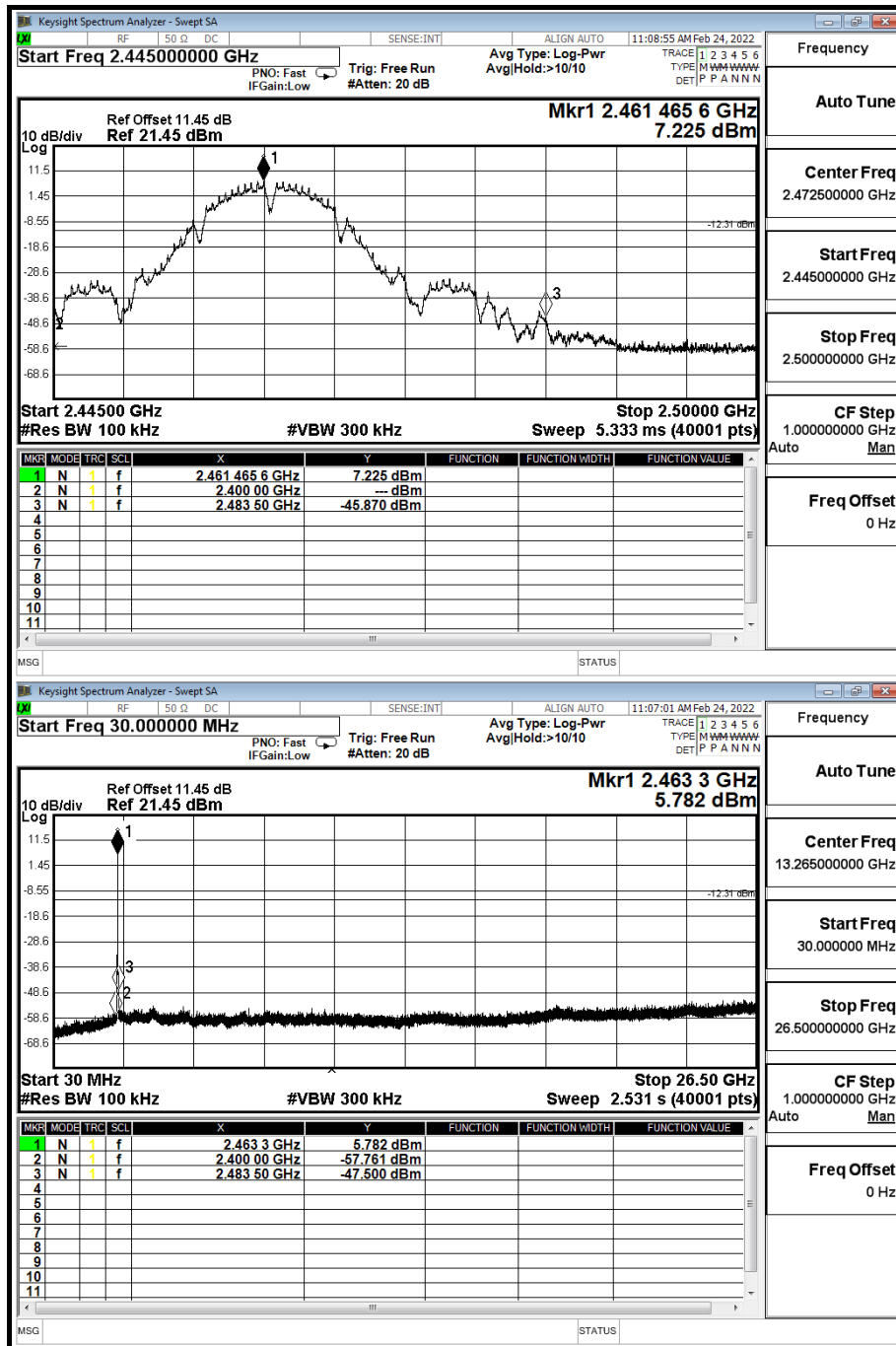
Model Name	HV01	Test By	Ted Huang
Temp & Humidity	23.2°C, 65%	Test Date	2022/02/17

(IEEE 802.11b MODE)



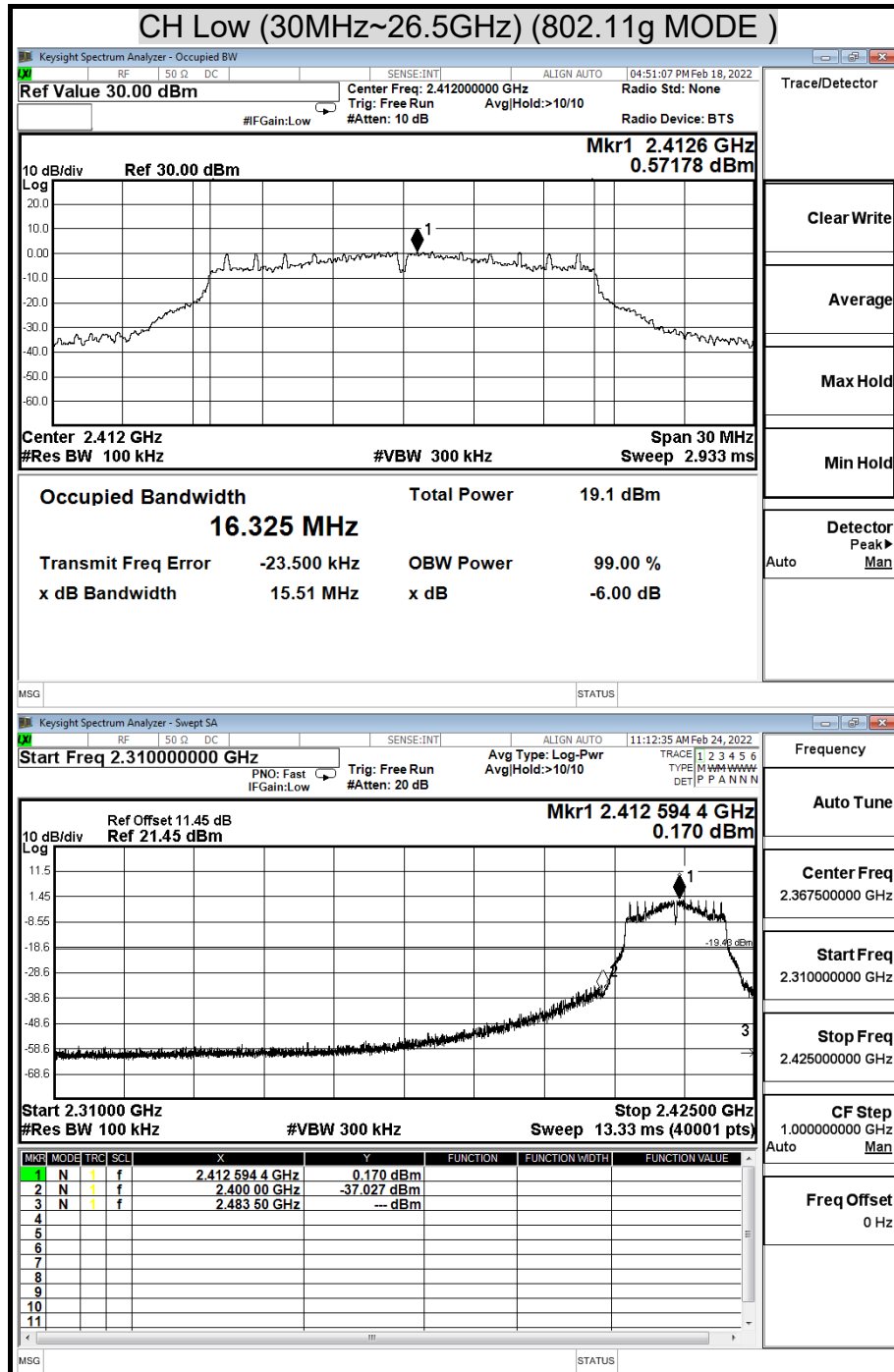


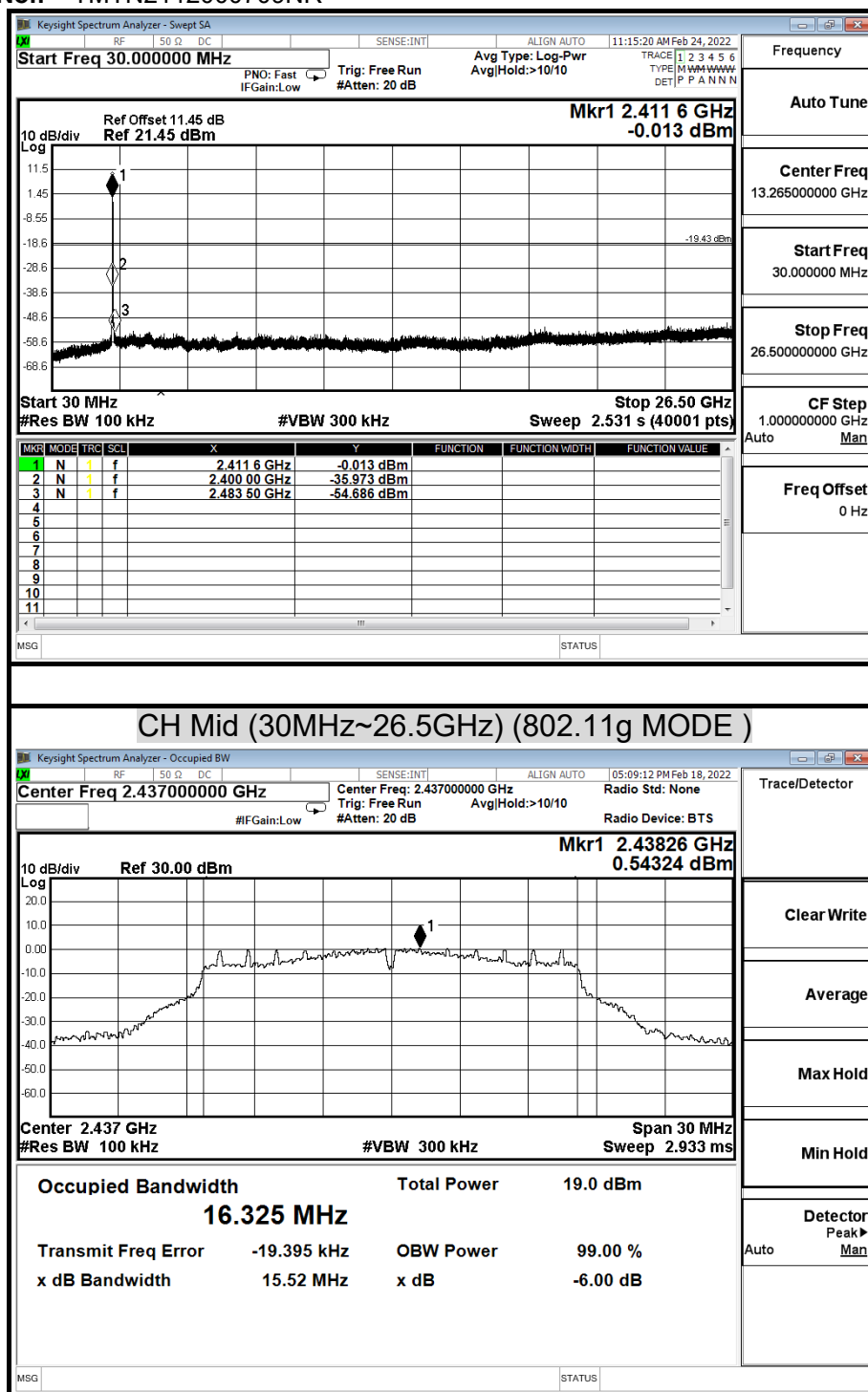


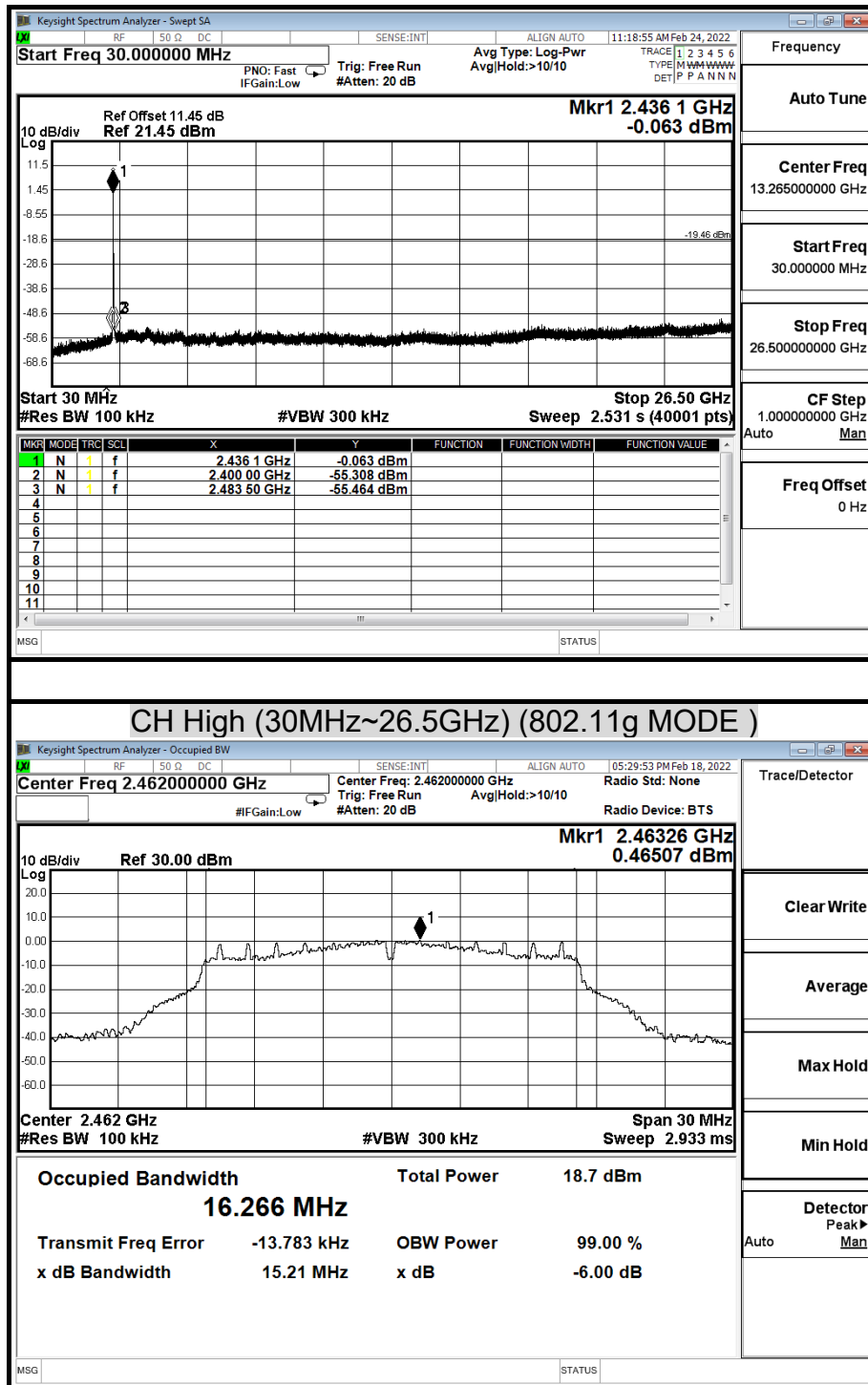


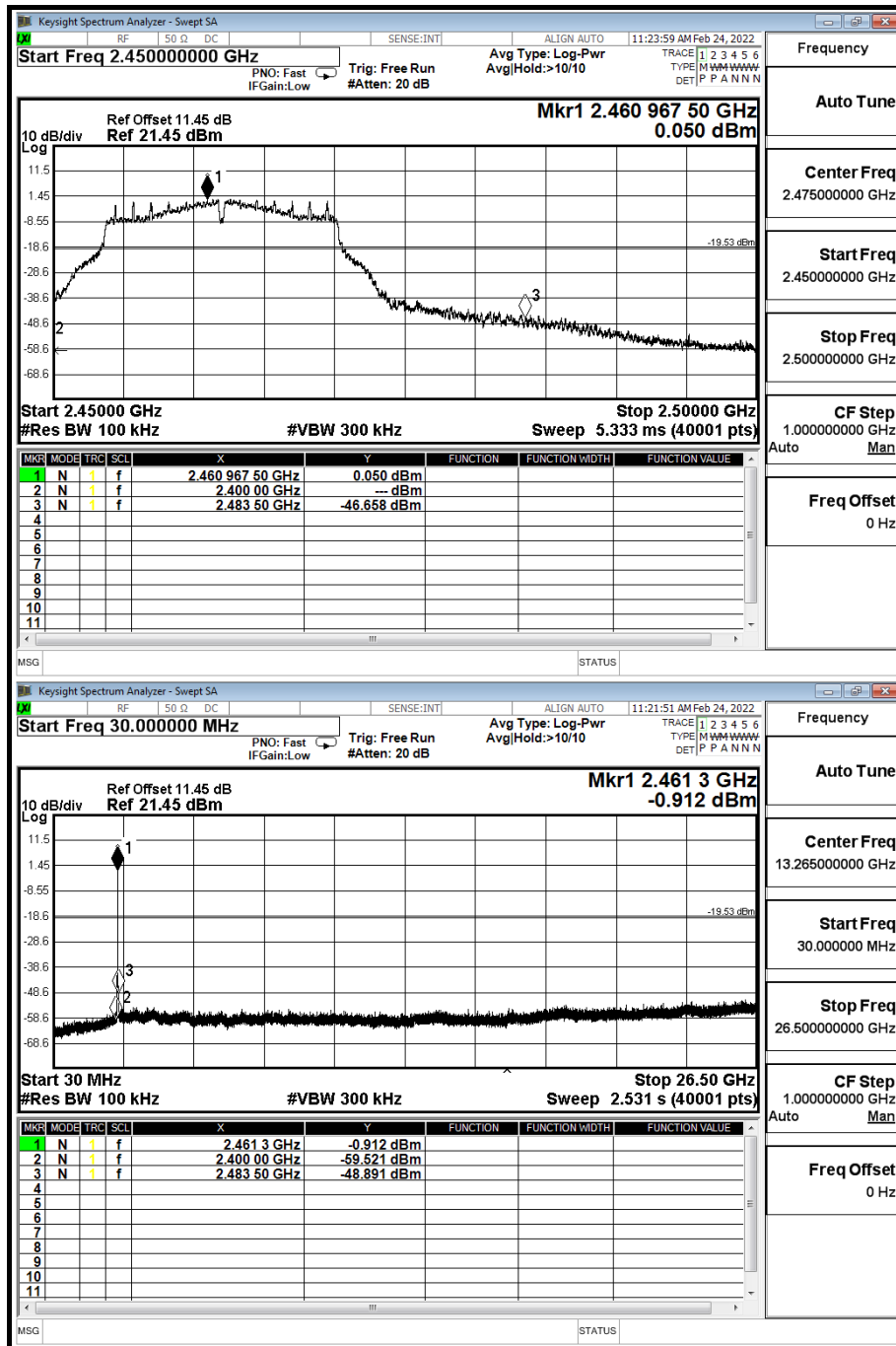
OUT-OF-BAND SPURIOUS EMISSIONS-CONDUCTED MEASUREMENT

(802.11g MODE)



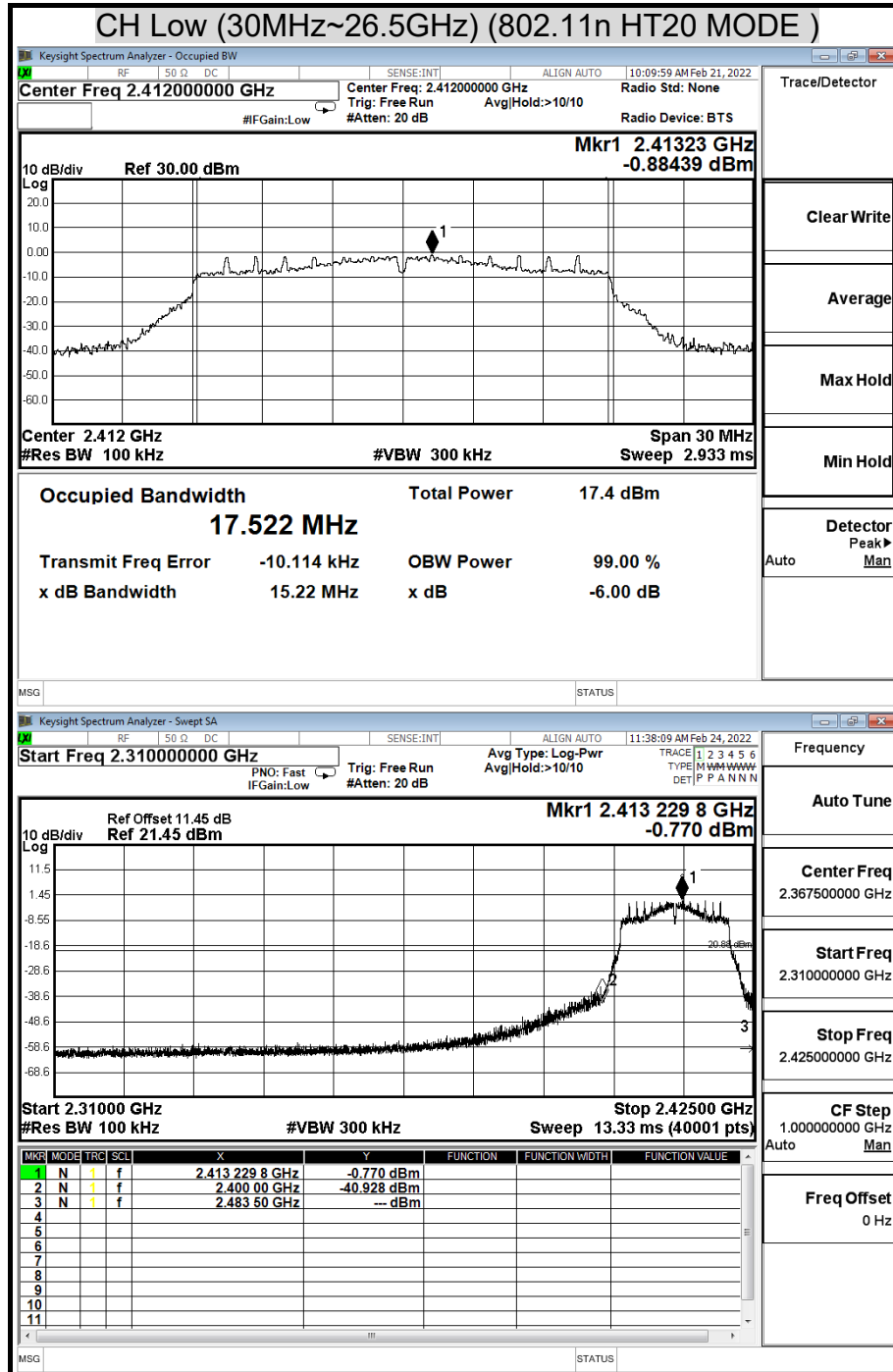


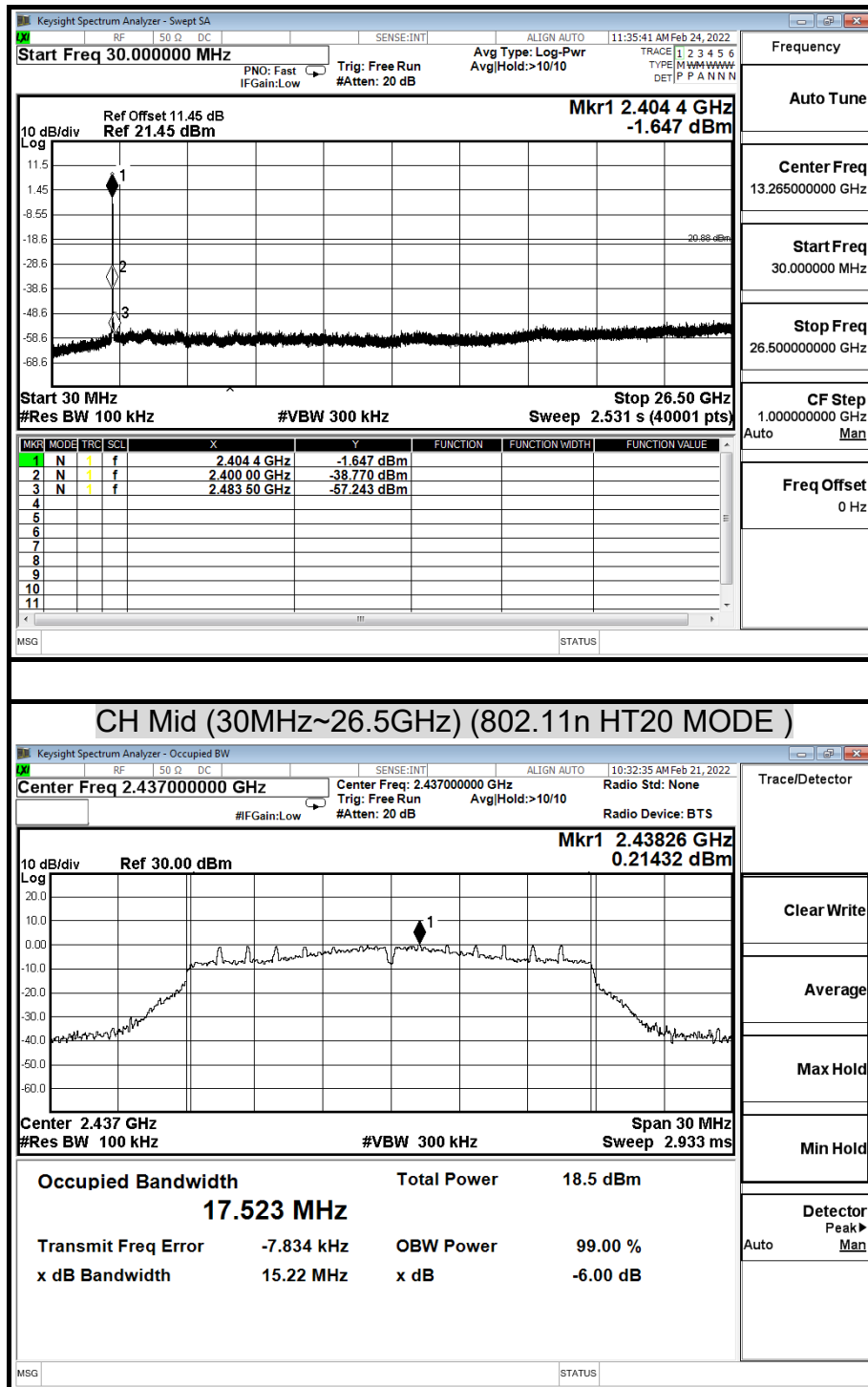


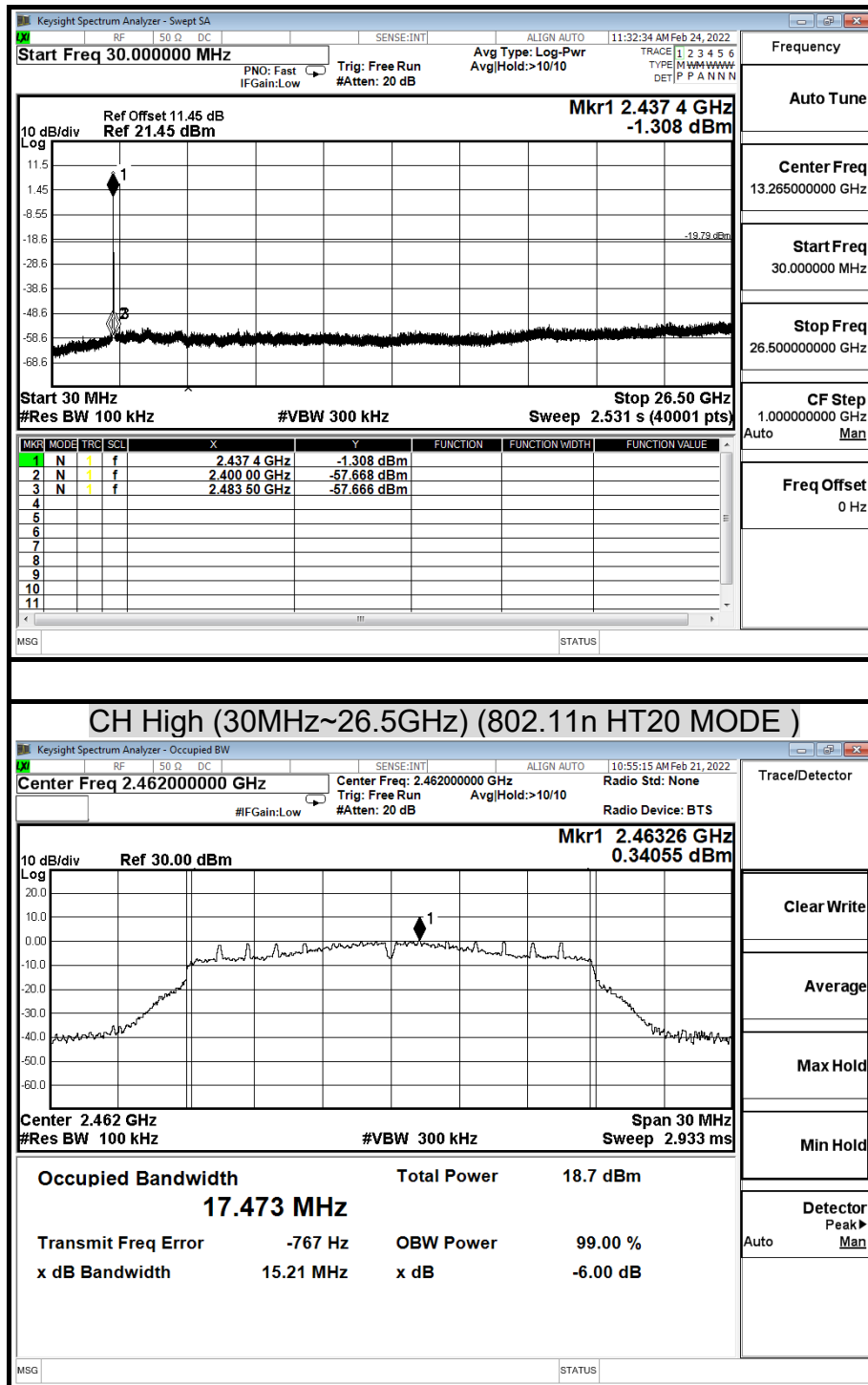


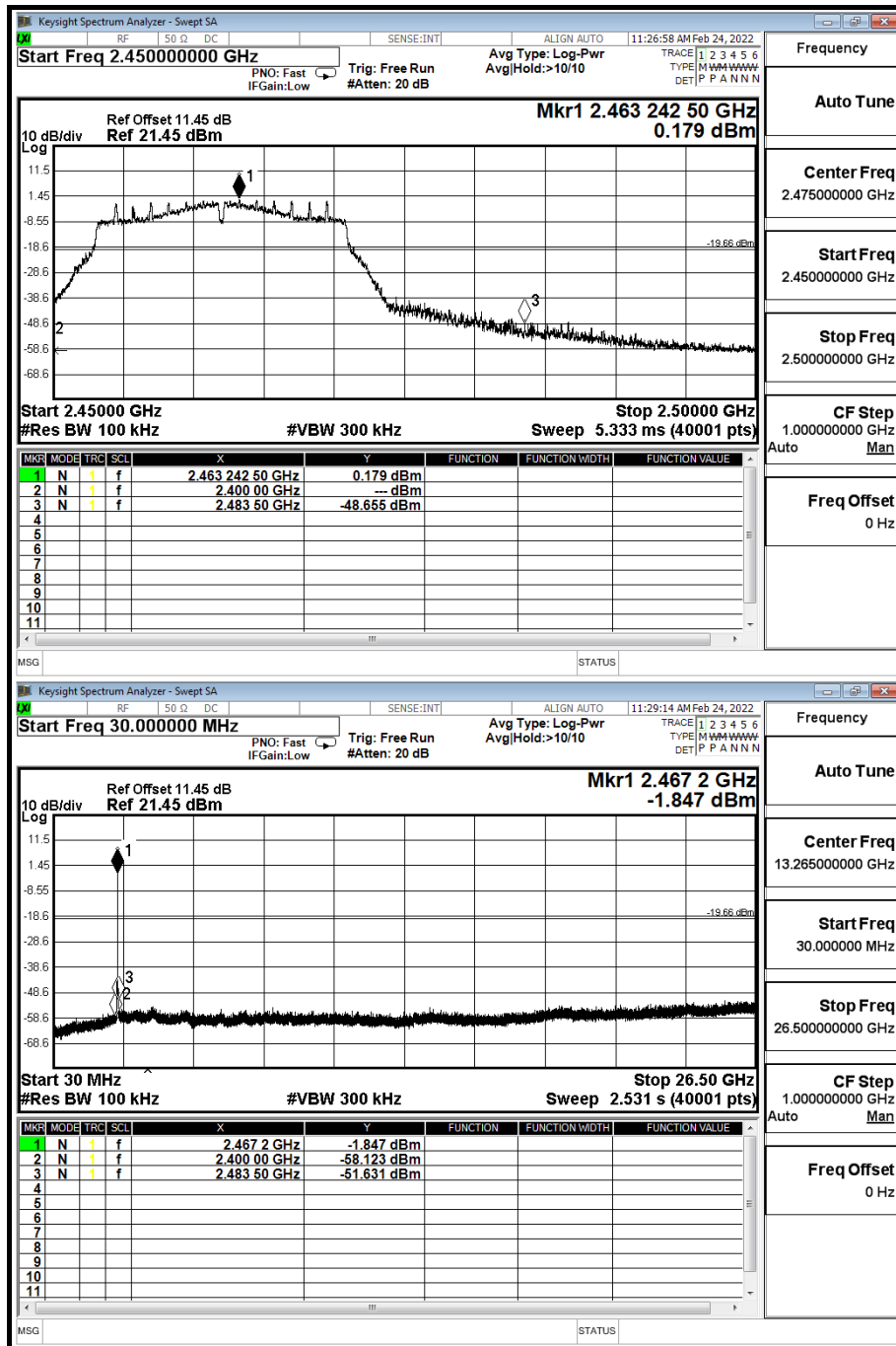
OUT-OF-BAND SPURIOUS EMISSIONS-CONDUCTED MEASUREMENT

(802.11n HT20 MODE)





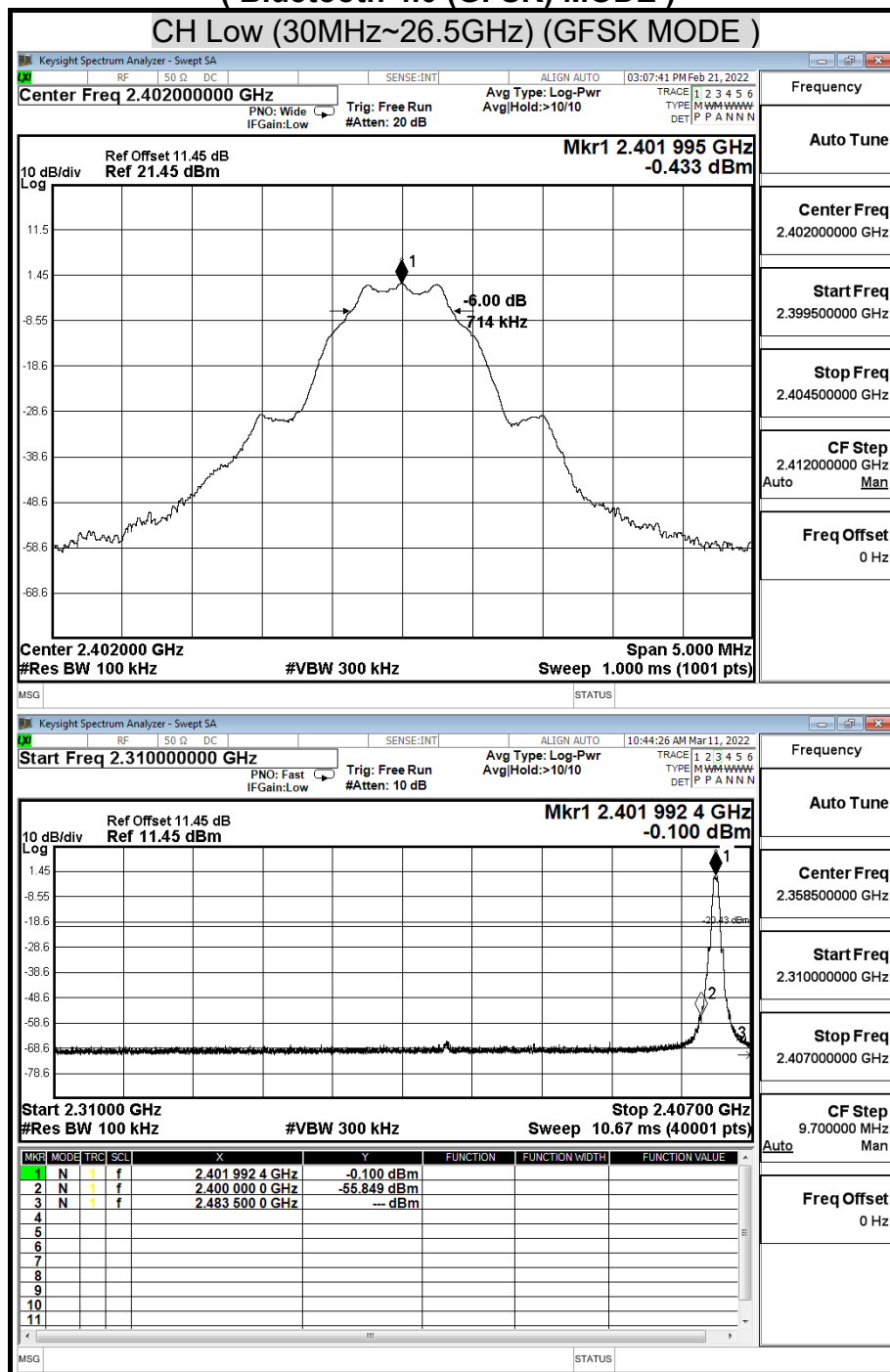


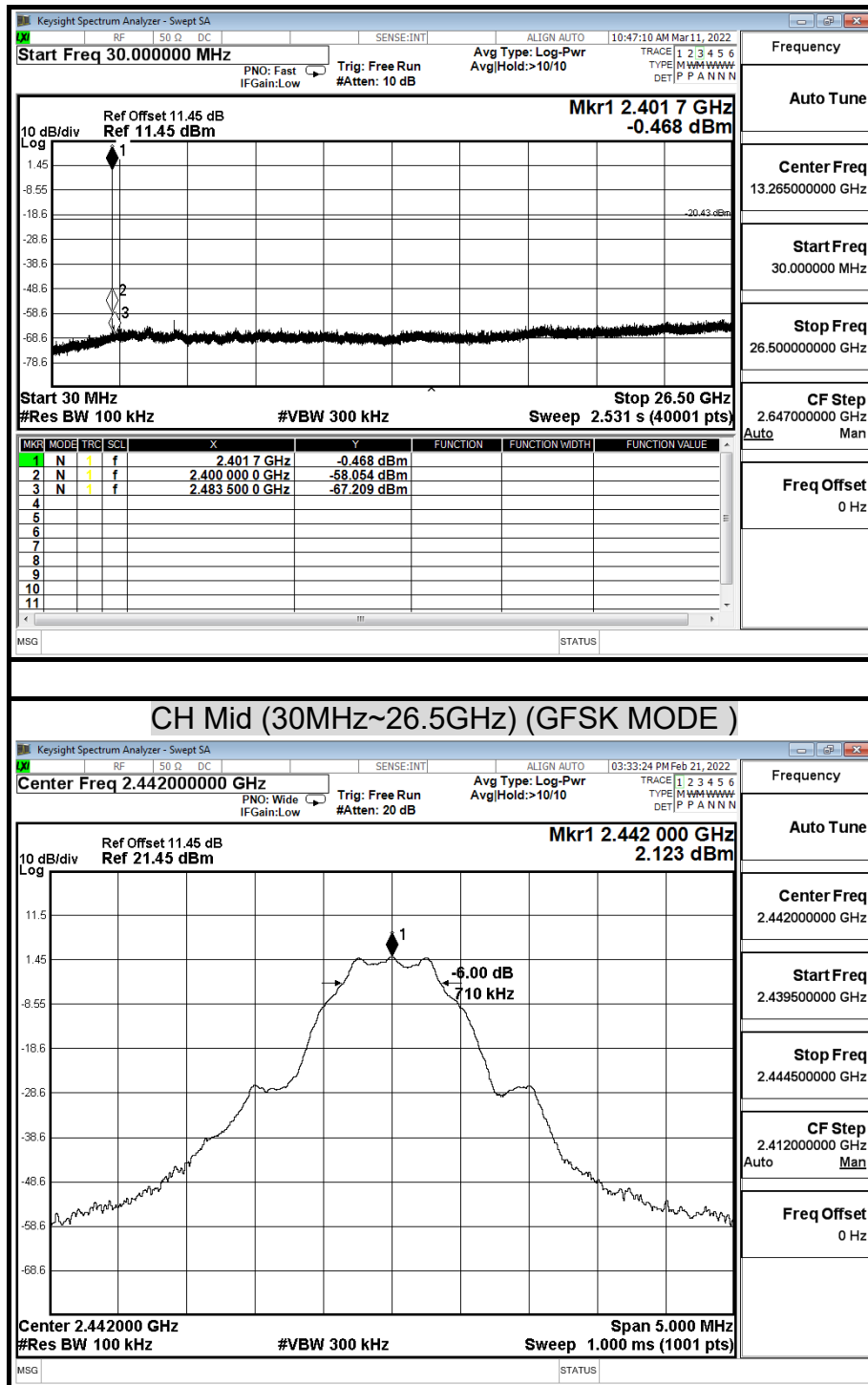


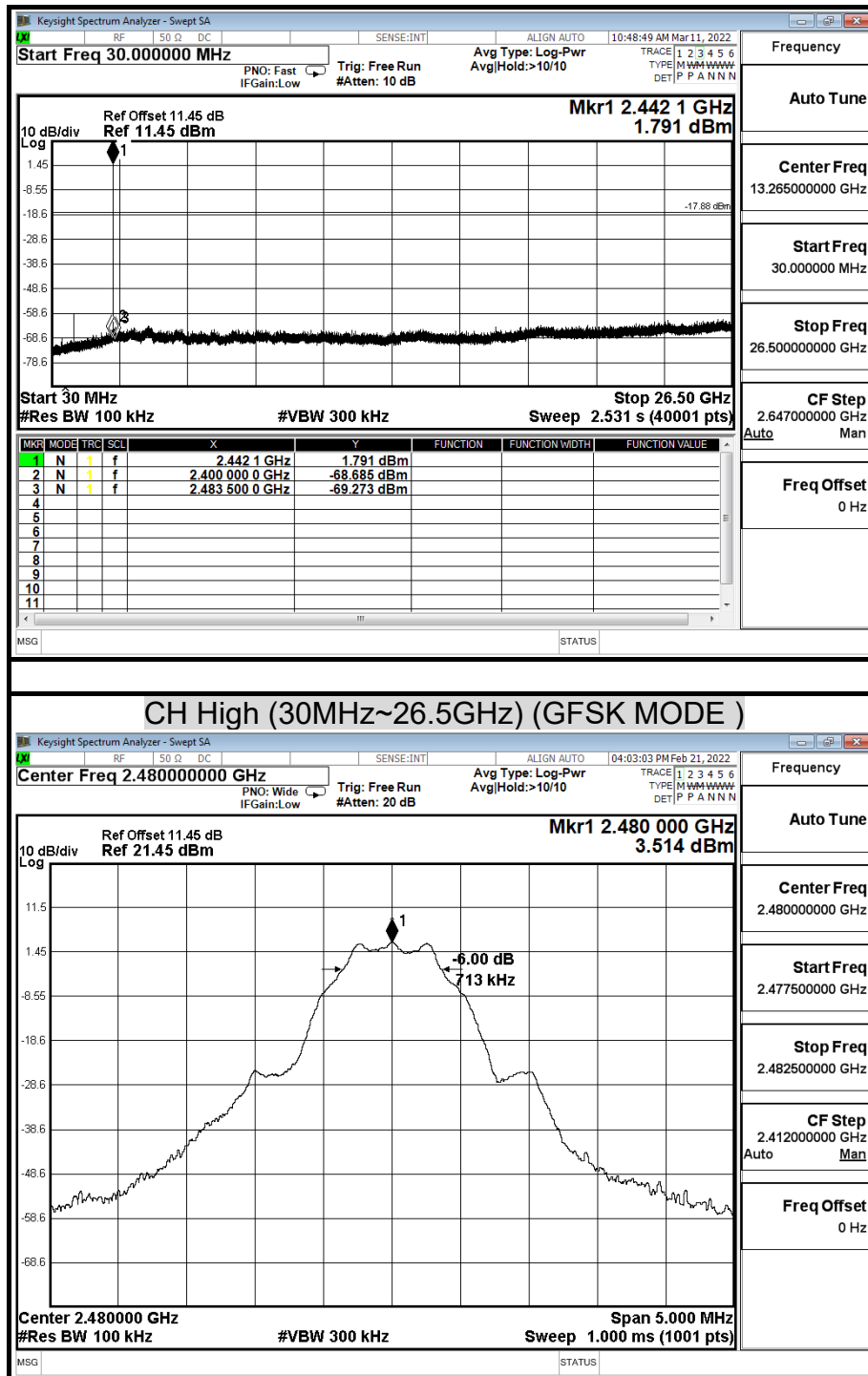
OUT-OF-BAND SPURIOUS EMISSIONS-CONDUCTED MEASUREMENT

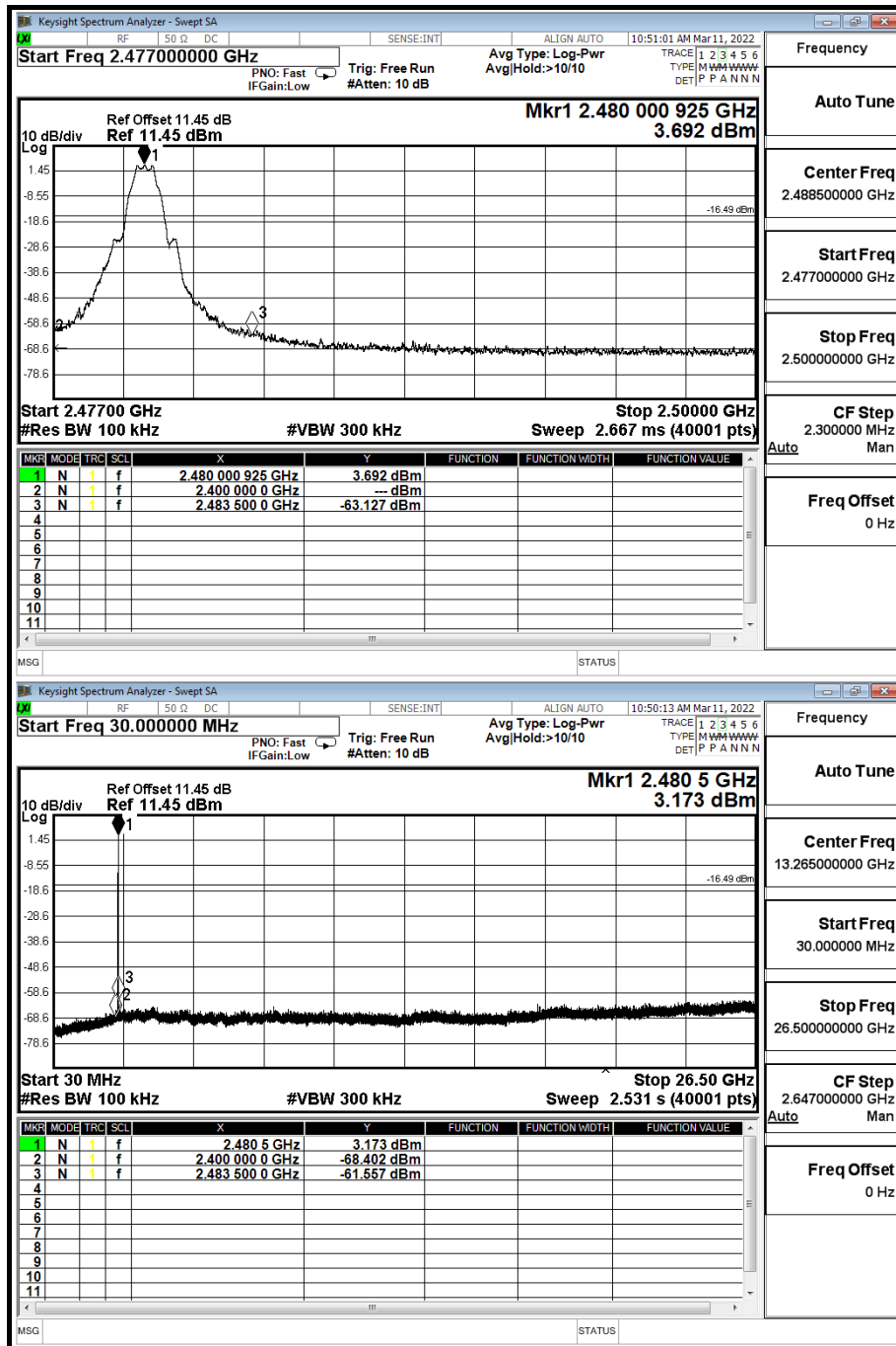
Model Name	HV01	Test By	Ted Huang
Temp & Humidity	22.5°C, 68%	Test Date	2022/02/18

(Bluetooth 4.0 (GFSK) MODE)





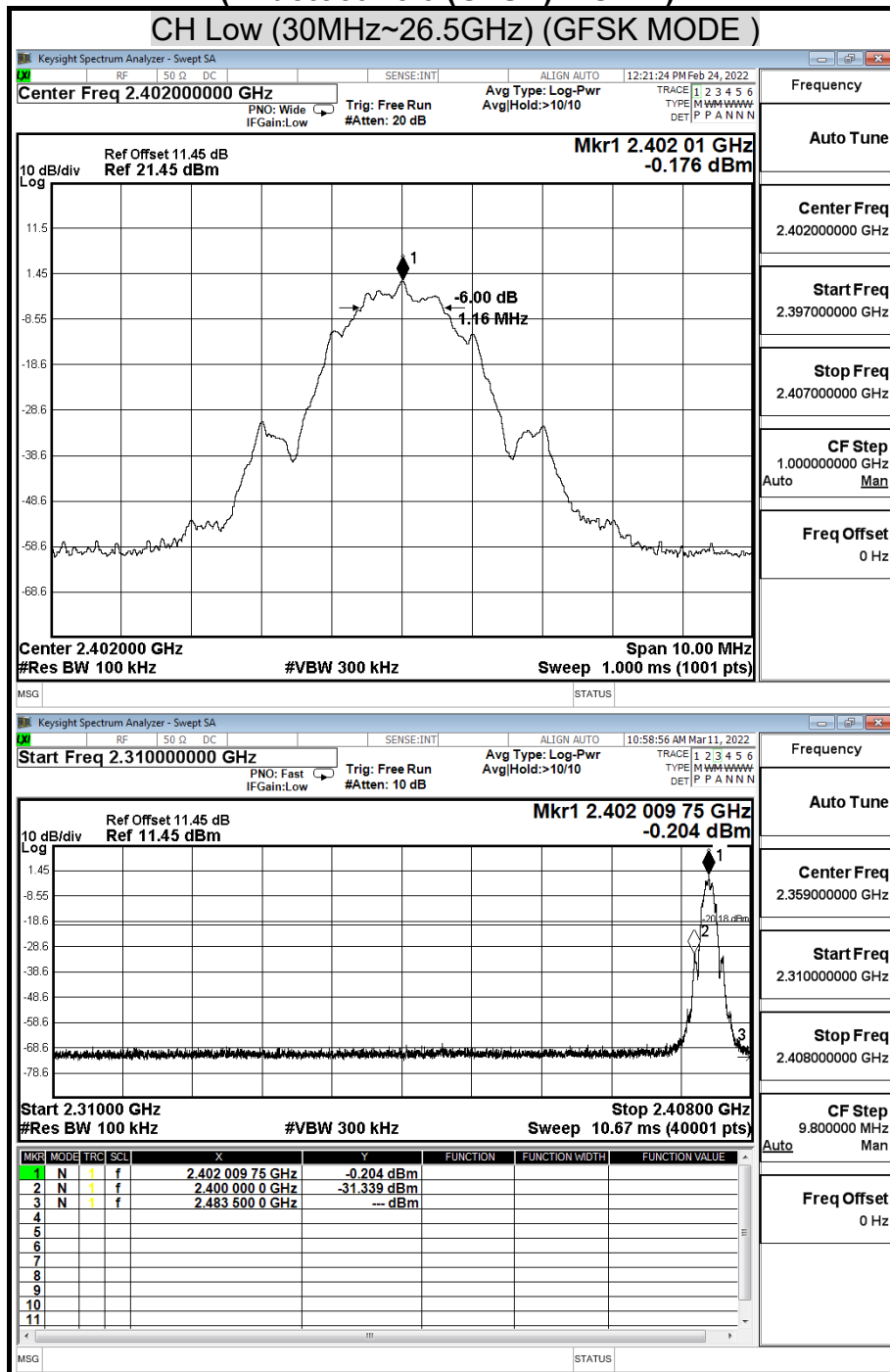


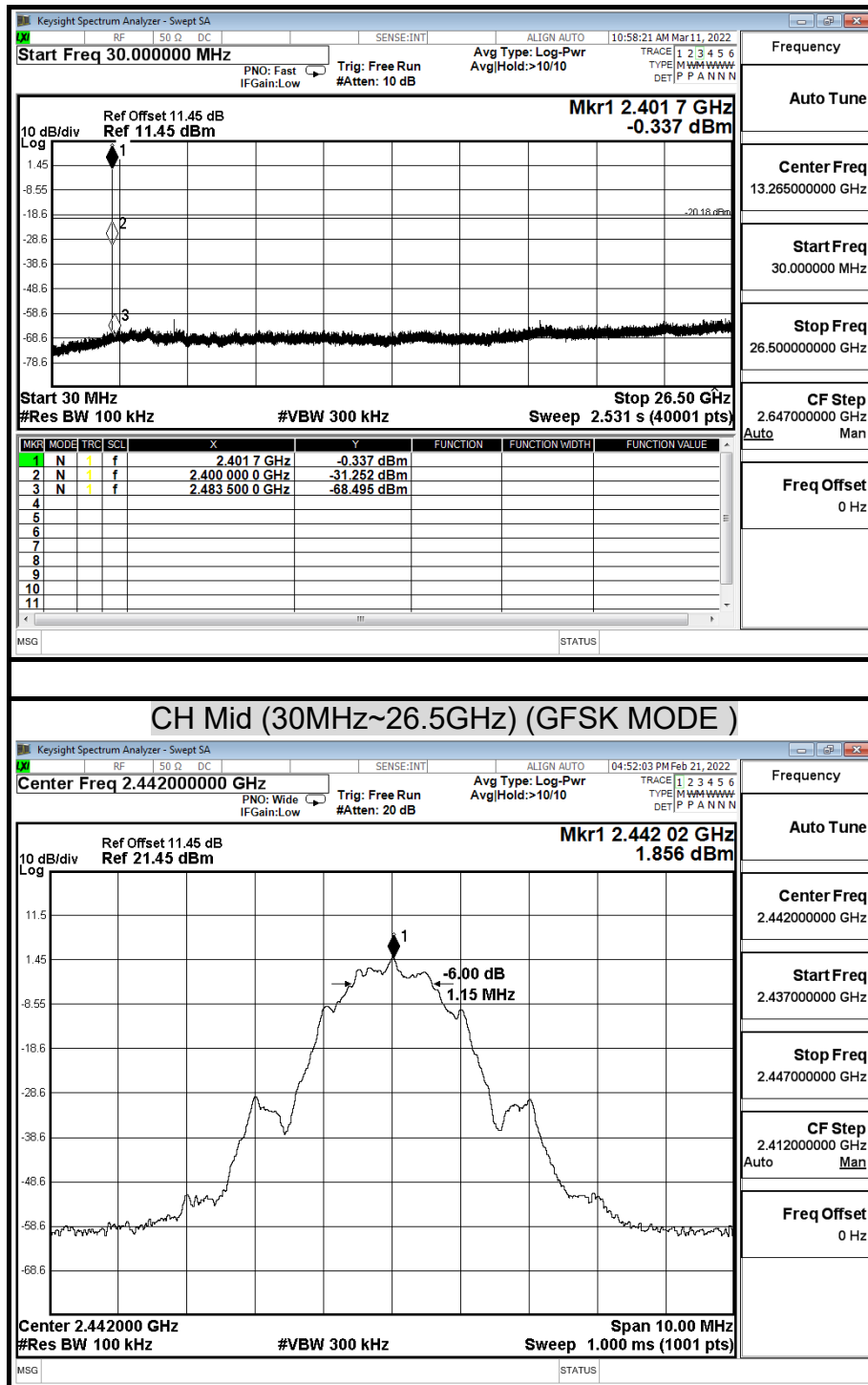


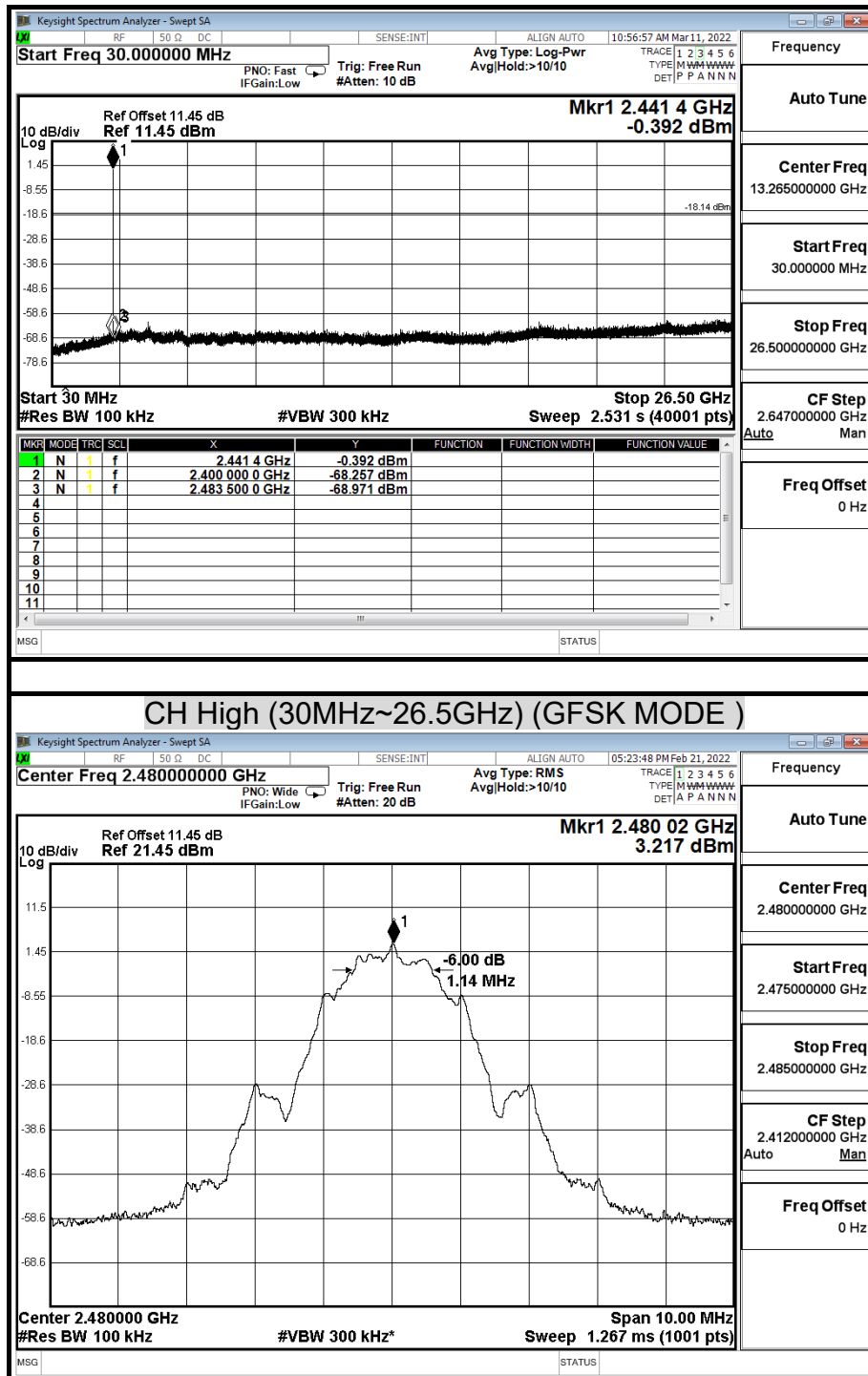
OUT-OF-BAND SPURIOUS EMISSIONS-CONDUCTED MEASUREMENT

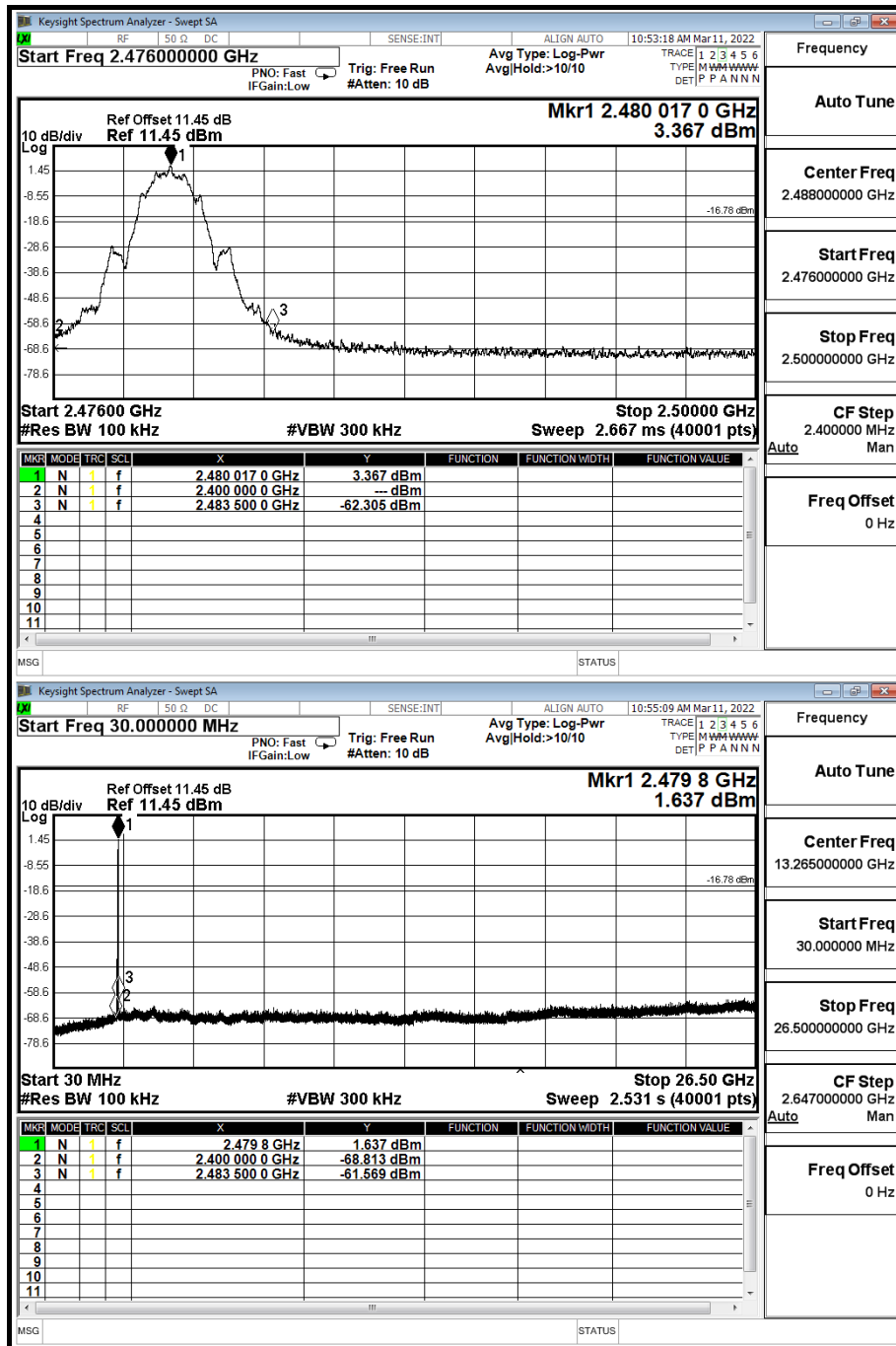
Model Name	HV01	Test By	Ted Huang
Temp & Humidity	22.5°C, 68%	Test Date	2022/02/18

(Bluetooth 5.0 (GFSK) MODE)









8.6 RADIATED EMISSIONS

8.6.1 TRANSMITTER RADIATED SUPURIOUS EMSSIONS

LIMITS

§ 15.205 (a) Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

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	2655 - 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 - 3338	36.43 - 36.5
12.57675 - 12.57725	322 - 335.4	3600 - 4400	(²)
13.36 - 13.41			

¹ Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.

² Above 38.6

§ 15.205 (b) Except as provided in paragraphs (d) and (e), the field strength of emissions appearing within these frequency bands shall not exceed the limits shown in Section 15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in Section 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in Section 15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in Section 15.35 apply to these measurements.

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§ 15.209 (a) 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 (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
30 - 88	100 **	3
88 - 216	150 **	3
216 - 960	200 **	3
Above 960	500	3

** 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 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz, However, operation within these frequency bands is permitted under other sections of this Part, e-g, Sections 15.231 and 15.241.

§ 15.209 (b) In the emission table above, the tighter limit applies at the band edges.

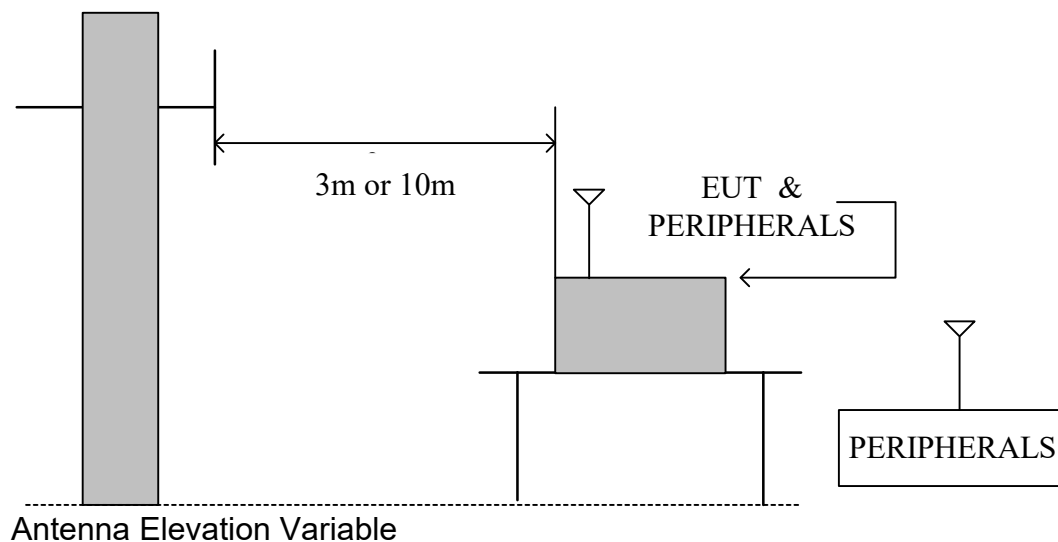
TEST EQUIPMENTS

The following test equipments are utilized in making the measurements contained in this report.

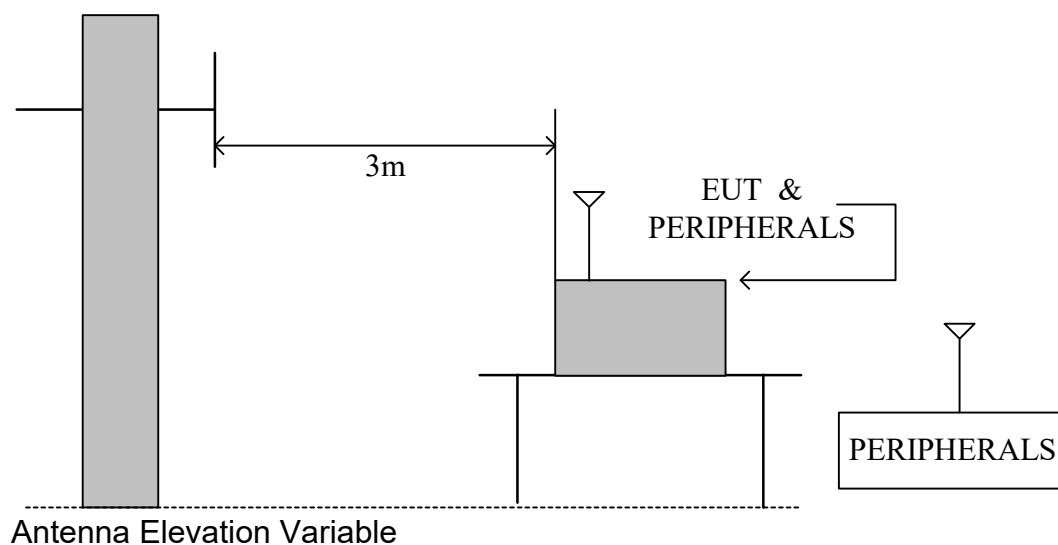
Chamber Room #966					
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due
Active Loop Antenna	ETS-LINDREN	6502	8905-2356	09/06/2021	09/05/2023
Attenuator	MCL	BW-S15W5	0535	01/28/2022	01/27/2023
Band Reject Filter	MICRO-TRONICS	HPM13525	006	01/28/2022	01/27/2023
Band Reject Filter	MICRO-TRONICS	HP50107-01	001	01/28/2022	01/27/2023
Bilog Antenna With 6dB Attenator	SUNOL SCIENCES & EMCI	JB1 & N-6-06	A070506-1 & AT-N0681	10/07/2021	10/06/2022
Cable	Suhner	SUCOFLEX104PEA	20520/4PEA&O6	01/28/2022	01/27/2023
Double Ridged Guide Horn Antenna	ETS-LINDGREN	3116	00078900	03/30/2021	03/29/2022
EMI Test Receiver	R&S	ESCI	100960	02/05/2021	02/04/2022
EXA Spectrum Analyzer	KEYSIGHT	N9010A	MY54430216	07/22/2021	07/21/2022
Horn Antenna	Com-Power	AH-118	071032	05/04/2021	05/03/2022
Notch Filter	MICRO-TRONICS	BRM50702-01	018	01/28/2022	01/27/2023
Pre-Amplifier	EMCI	EMC012645	980098	01/28/2022	01/27/2023
Pre-Amplifier	HP	8447F	2443A01683	01/18/2022	01/17/2023
Pre-Amplifier	Com-Power	PAM-840A	461378	07/05/2021	07/04/2022
Type N coaxial cable	Suhner	CHA9513	6	01/18/2022	01/17/2023
Software	Excel(ccs-o6-2020 v1.1) , e3(v6.101222)				

TEST SETUP

The diagram below shows the test setup that is utilized to make the measurements for emission from 30 to 1GHz.



The diagram below shows the test setup that is utilized to make the measurements for emission above 1GHz.



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TEST PROCEDURE

- a. The EUT was placed on the top of a rotating table 0.8/1.5 meters above the ground at a 10 meter open area test site. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. While measuring the radiated emission below 1GHz, the EUT was set 3/10 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. While measuring the radiated emission above 1GHz, the EUT was set 3 meters away from the interference-receiving antenna
- c. The antenna is a broadband antenna, and its height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarization of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- f. If the emission level of the EUT in peak mode was 10 dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10 dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.
- g. The tests were performed in accordance with 558074 D01 DTS Meas Guidance v03r03.

NOTE :

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 KHz for Peak detection (PK) and Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1 MHz for Peak detection and frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 10 Hz for Average detection (AV) at frequency above 1GHz.
4. No emission is found between lowest internal used/generated frequency to 30MHz (9kHz~30MHz)

TEST RESULTS

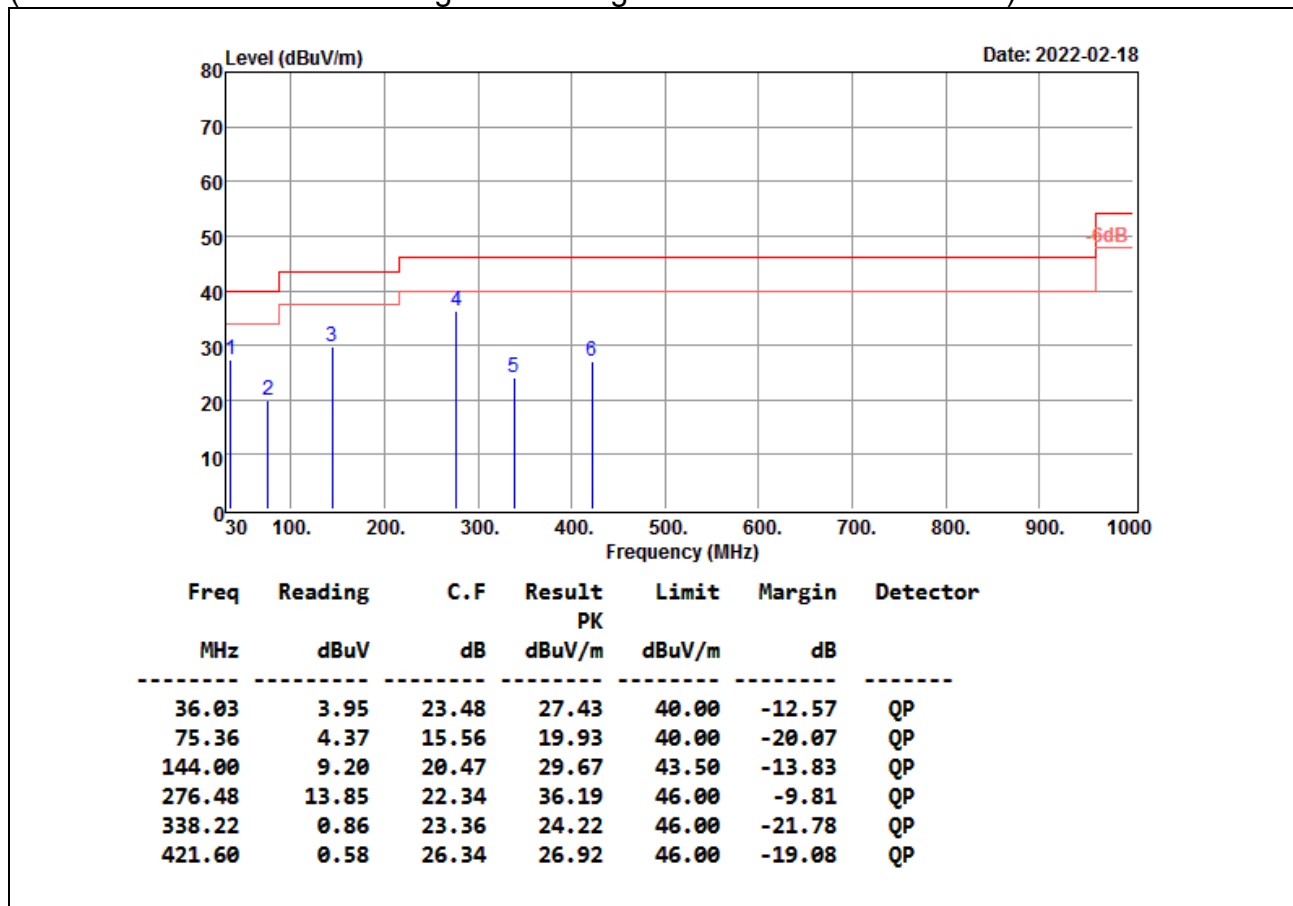
No non-compliance noted.

8.6.2 WORST-CASE RADIATED EMISSION BELOW 1 GHz

Product Name	Audio Device	Test Date	2022/02/18
Model	HV01	Test By	Ted Huang
Test Mode	TX	TEMP& Humidity	25.4°C/63%

Horizontal

(The chart below shows the highest readings taken from the final data.)



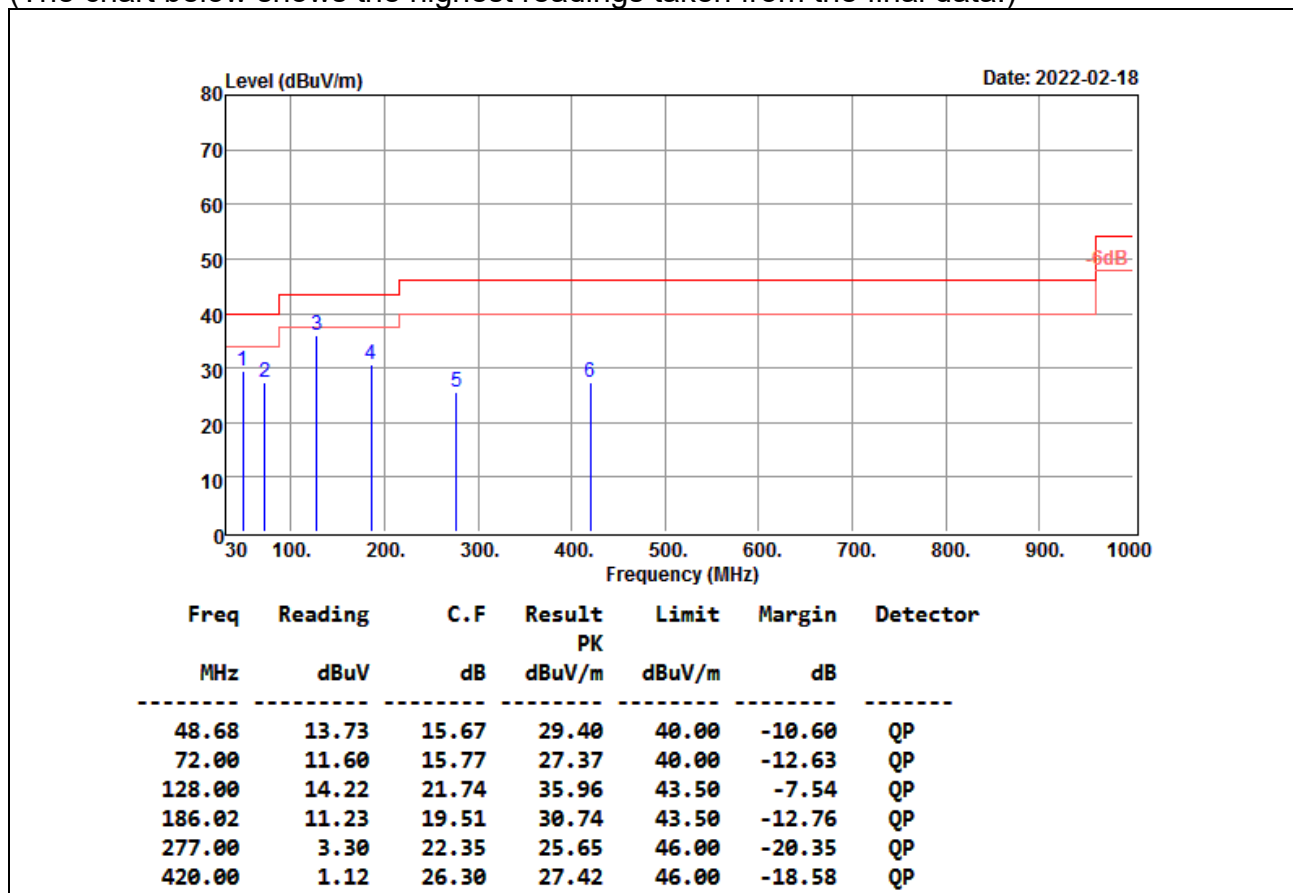
Remark:

1. No emission found between lowest internal used/generated frequency to 30MHz (9kHz~30MHz).
2. Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using peak/quasi-peak detector mode.
3. Quasi-peak test would be performed if the peak result were greater than the quasi-peak limit or as required by the applicant.
4. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
5. Emission at 3m Level=Meter Reading +Antenna Factor +Cable Loss
Margin= Emission at 3m Level -Limits
6. That the limit for signals below 1GHz is a QP limit and peak readings are below the QP limit.
7. The fundamental signal is not shown in the test data because measurements at fundamental frequency are shown separately and were ignored during the 30 – 1000 MHz scan.

Product Name	Audio Device	Test Date	2022/02/17
Model	HV01	Test By	Ted Huang
Test Mode	TX	TEMP& Humidity	25.4°C/63%

Vertical

(The chart below shows the highest readings taken from the final data.)



Remark:

- No emission found between lowest internal used/generated frequency to 30MHz (9kHz~30MHz).
- Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using peak/quasi-peak detector mode.
- Quasi-peak test would be performed if the peak result were greater than the quasi-peak limit or as required by the applicant.
- Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
- Emission at 3m Level=Meter Reading +Antenna Factor +Cable Loss
Margin= Emission at 3m Level -Limits
- That the limit for signals below 1GHz is a QP limit and peak readings are below the QP limit.
- The fundamental signal is not shown in the test data because measurements at fundamental frequency are shown separately and were ignored during the 30 – 1000 MHz scan.

8.6.3 TRANSMITTER RADIATED EMISSION ABOVE 1 GHz

Product Name	Audio Device	Test Date	2022/02/17
Model	HV01	Test By	Ted Huang
Test Mode	IEEE 802.11b TX (CH Low)	TEMP& Humidity	23.2°C, 65%

TX / IEEE 802.11b mode / CH Low				Measurement Distance at 3m				Horizontal polarity	
Freq.	Reading	AF	Cable Loss	Pre-amp	Filter	Level	Limit	Margin	Mark
(MHz)	(dBμV)	(dB/m)	(dB)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	(P/Q/A)
*1550.82	58.25	27.01	2.78	44.57	0.75	44.21	74.00	-29.79	P
*1550.82	47.66	27.01	2.78	44.57	0.75	33.62	54.00	-20.38	A
*4824.22	57.65	33.14	4.40	42.50	0.57	53.25	74.00	-20.75	P
*4824.22	48.45	33.14	4.40	42.50	0.57	44.05	54.00	-9.95	A
7238.42	55.76	38.81	5.48	42.32	0.42	58.15	74.00	-15.85	P
7238.42	45.86	38.81	5.48	42.32	0.42	48.25	54.00	-5.75	A
N/A	-----	-----	-----	-----	-----	-----	-----	-----	P
N/A	-----	-----	-----	-----	-----	-----	-----	-----	A

TX / IEEE 802.11b mode / CH Low				Measurement Distance at 3m				Vertical polarity	
Freq.	Reading	AF	Cable Loss	Pre-amp	Filter	Level	Limit	Margin	Mark
(MHz)	(dBμV)	(dB/m)	(dB)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	(P/Q/A)
1631.56	57.82	27.65	2.79	44.45	0.85	44.66	74.00	-29.34	P
1631.56	48.62	27.65	2.79	44.45	0.85	35.46	54.00	-18.54	A
*4823.75	57.48	33.14	4.39	42.50	0.57	53.08	74.00	-20.92	P
*4823.75	47.65	33.14	4.39	42.50	0.57	43.25	54.00	-10.75	A
7235.54	55.68	38.80	5.48	42.32	0.42	58.05	74.00	-15.95	P
7235.54	45.38	38.80	5.48	42.32	0.42	47.75	54.00	-6.25	A
N/A	-----	-----	-----	-----	-----	-----	-----	-----	P
N/A	-----	-----	-----	-----	-----	-----	-----	-----	A

REMARK:

1. AF: Antenna Factor, Cable: Cable Loss, Pre-Amp: Preamplifier gain, Filter: 2.4GHz~2.5GHz Filter Insertion Loss
2. Spectrum analyzer setting P(Peak): RBW=1MHz, VBW=1MHz, A(Average): RBW=1MHz, VBW=10Hz
3. The result basic equation calculation is as follow:
Level = Reading + AF + Cable – Preamp + Filter , Margin = Level-Limit
4. The other emission levels were 10dB below the limit
5. The test limit distance is 3M limit.
6. *=Restricted bands of operation

Product Name	Audio Device	Test Date	2022/02/17
Model	HV01	Test By	Ted Huang
Test Mode	IEEE 802.11b TX (CH Middle)	TEMP& Humidity	23.2°C, 65%

TX / IEEE 802.11b mode / CH Middle				Measurement Distance at 3m				Horizontal polarity	
Freq.	Reading	AF	Cable Loss	Pre-amp	Filter	Level	Limit	Margin	Mark
(MHz)	(dBμV)	(dB/m)	(dB)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	(P/Q/A)
* 1550.68	58.41	27.01	2.78	44.57	0.75	44.37	74.00	-29.63	P
* 1550.68	47.50	27.01	2.78	44.57	0.75	33.46	54.00	-20.54	A
* 4875.52	56.58	33.30	4.42	42.50	0.57	52.37	74.00	-21.63	P
* 4875.52	46.45	33.30	4.42	42.50	0.57	42.24	54.00	-11.76	A
* 7313.74	57.38	39.09	5.52	42.22	0.43	60.20	74.00	-13.80	P
* 7313.74	46.45	39.09	5.52	42.22	0.43	49.27	54.00	-4.73	A
N/A	-----	-----	-----	-----	-----	-----	-----	-----	P
N/A	-----	-----	-----	-----	-----	-----	-----	-----	A

TX / IEEE 802.11b mode / CH Middle				Measurement Distance at 3m				Vertical polarity	
Freq.	Reading	AF	Cable Loss	Pre-amp	Filter	Level	Limit	Margin	Mark
(MHz)	(dBμV)	(dB/m)	(dB)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	(P/Q/A)
1631.68	57.65	27.65	2.79	44.45	0.85	44.49	74.00	-29.51	P
1631.68	48.80	27.65	2.79	44.45	0.85	35.64	54.00	-18.36	A
* 4876.25	56.72	33.30	4.42	42.50	0.57	52.51	74.00	-21.49	P
* 4876.25	47.58	33.30	4.42	42.50	0.57	43.37	54.00	-10.63	A
* 7310.28	56.64	39.08	5.52	42.22	0.42	59.44	74.00	-14.56	P
* 7310.28	45.89	39.08	5.52	42.22	0.42	48.69	54.00	-5.31	A
N/A	-----	-----	-----	-----	-----	-----	-----	-----	P
N/A	-----	-----	-----	-----	-----	-----	-----	-----	A

REMARK:

1. AF: Antenna Factor, Cable: Cable Loss, Pre-Amp: Preamplifier gain, Filter: 2.4GHz~2.5GHz Filter Insertion Loss
2. Spectrum analyzer setting P(Peak): RBW=1MHz, VBW=1MHz, A(Average): RBW=1MHz, VBW=10Hz
3. The result basic equation calculation is as follow:
Level = Reading + AF + Cable – Preamp + Filter, Margin = Level-Limit
4. The other emission levels were 10dB below the limit
5. The test limit distance is 3M limit.
6. *=Restricted bands of operation

Product Name	Audio Device	Test Date	2022/02/17
Model	HV01	Test By	Ted Huang
Test Mode	IEEE 802.11b TX (CH High)	TEMP& Humidity	23.2°C, 65%

TX / IEEE 802.11b mode / CH High				Measurement Distance at 3m				Horizontal polarity	
Freq.	Reading	AF	Cable Loss	Pre-amp	Filter	Level	Limit	Margin	Mark
(MHz)	(dBμV)	(dB/m)	(dB)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	(P/Q/A)
* 1550.45	58.38	27.00	2.78	44.57	0.75	44.34	74.00	-29.66	P
* 1550.45	47.68	27.00	2.78	44.57	0.75	33.64	54.00	-20.36	A
* 4924.32	57.56	33.46	4.45	42.50	0.56	53.54	74.00	-20.46	P
* 4924.32	47.74	33.46	4.45	42.50	0.56	43.72	54.00	-10.28	A
* 7390.25	57.36	39.38	5.56	42.12	0.43	60.62	74.00	-13.38	P
* 7390.25	48.72	39.38	5.56	42.12	0.43	51.98	54.00	-2.02	A
N/A	-----	-----	-----	-----	-----	-----	-----	-----	P
N/A	-----	-----	-----	-----	-----	-----	-----	-----	A

TX / IEEE 802.11b mode / CH High				Measurement Distance at 3m				Vertical polarity	
Freq.	Reading	AF	Cable Loss	Pre-amp	Filter	Level	Limit	Margin	Mark
(MHz)	(dBμV)	(dB/m)	(dB)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	(P/Q/A)
1631.56	57.75	27.65	2.79	44.45	0.85	44.59	74.00	-29.41	P
1631.56	48.58	27.65	2.79	44.45	0.85	35.42	54.00	-18.58	A
* 4923.92	56.65	33.46	4.45	42.50	0.56	52.62	74.00	-21.38	P
* 4923.92	46.56	33.46	4.45	42.50	0.56	42.53	54.00	-11.47	A
* 7384.45	56.42	39.36	5.56	42.12	0.43	59.65	74.00	-14.35	P
* 7384.45	46.56	39.36	5.56	42.12	0.43	49.79	54.00	-4.21	A
N/A	-----	-----	-----	-----	-----	-----	-----	-----	P
N/A	-----	-----	-----	-----	-----	-----	-----	-----	A

REMARK:

1. AF: Antenna Factor, Cable: Cable Loss, Pre-Amp: Preamplifier gain, Filter: 2.4GHz~2.5GHz Filter Insertion Loss
2. Spectrum analyzer setting P(Peak): RBW=1MHz, VBW=1MHz, A(Average): RBW=1MHz, VBW=10Hz
3. The result basic equation calculation is as follow:
Level = Reading + AF + Cable – Preamp + Filter, Margin = Level-Limit
4. The other emission levels were 10dB below the limit
5. The test limit distance is 3M limit.
6. *=Restricted bands of operation

Product Name	Audio Device	Test Date	2022/02/17
Model	HV01	Test By	Ted Huang
Test Mode	IEEE 802.11g TX (CH Low)	TEMP& Humidity	23.2°C, 65%

TX / IEEE 802.11g mode / CH Low				Measurement Distance at 3m				Horizontal polarity	
Freq.	Reading	AF	Cable Loss	Pre-amp	Filter	Level	Limit	Margin	Mark
(MHz)	(dBμV)	(dB/m)	(dB)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	(P/Q/A)
*1550.28	58.52	27.00	2.78	44.57	0.75	44.48	74.00	-29.52	P
*1550.28	47.85	27.00	2.78	44.57	0.75	33.81	54.00	-20.19	A
*4824.60	60.58	33.14	4.40	42.50	0.57	56.18	74.00	-17.82	P
*4824.60	51.65	33.14	4.40	42.50	0.57	47.25	54.00	-6.75	A
7237.45	56.66	38.80	5.48	42.32	0.42	59.04	74.00	-14.96	P
7237.45	45.40	38.80	5.48	42.32	0.42	47.78	54.00	-6.22	A
N/A	-----	-----	-----	-----	-----	-----	-----	-----	P
N/A	-----	-----	-----	-----	-----	-----	-----	-----	A

TX / IEEE 802.11g mode / CH Low				Measurement Distance at 3m				Vertical polarity	
Freq.	Reading	AF	Cable Loss	Pre-amp	Filter	Level	Limit	Margin	Mark
(MHz)	(dBμV)	(dB/m)	(dB)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	(P/Q/A)
1631.62	57.85	27.65	2.79	44.45	0.85	44.69	74.00	-29.31	P
1631.62	48.66	27.65	2.79	44.45	0.85	35.50	54.00	-18.50	A
*4824.18	57.62	33.14	4.40	42.50	0.57	53.22	74.00	-20.78	P
*4824.18	46.58	33.14	4.40	42.50	0.57	42.18	54.00	-11.82	A
7238.84	55.72	38.81	5.48	42.32	0.42	58.11	74.00	-15.89	P
7238.84	46.36	38.81	5.48	42.32	0.42	48.75	54.00	-5.25	A
N/A	-----	-----	-----	-----	-----	-----	-----	-----	P
N/A	-----	-----	-----	-----	-----	-----	-----	-----	A

REMARK:

1. AF: Antenna Factor, Cable: Cable Loss, Pre-Amp: Preamplifier gain, Filter: 2.4GHz~2.5GHz Filter Insertion Loss
2. Spectrum analyzer setting P(Peak): RBW=1MHz, VBW=1MHz, A(Average): RBW=1MHz, VBW=10Hz
3. The result basic equation calculation is as follow:
Level = Reading + AF + Cable – Preamp + Filter, Margin = Level-Limit
4. The other emission levels were 10dB below the limit
5. The test limit distance is 3M limit.
6. *=Restricted bands of operation

Product Name	Audio Device	Test Date	2022/02/17
Model	HV01	Test By	Ted Huang
Test Mode	IEEE 802.11g TX (CH Middle)	TEMP& Humidity	23.2°C, 65%

TX / IEEE 802.11g mode / CH Middle				Measurement Distance at 3m		Horizontal polarity			
Freq.	Reading	AF	Cable Loss	Pre-amp	Filter	Level	Limit	Margin	Mark
(MHz)	(dBμV)	(dB/m)	(dB)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	(P/Q/A)
* 1550.80	58.25	27.01	2.78	44.57	0.75	44.21	74.00	-29.79	P
* 1550.80	47.66	27.01	2.78	44.57	0.75	33.62	54.00	-20.38	A
* 4872.85	56.38	33.29	4.42	42.50	0.57	52.16	74.00	-21.84	P
* 4872.85	45.76	33.29	4.42	42.50	0.57	41.54	54.00	-12.46	A
* 7312.45	55.65	39.09	5.52	42.22	0.42	58.46	74.00	-15.54	P
* 7312.45	44.52	39.09	5.52	42.22	0.42	47.33	54.00	-6.67	A
N/A	-----	-----	-----	-----	-----	-----	-----	-----	P
N/A	-----	-----	-----	-----	-----	-----	-----	-----	A

TX / IEEE 802.11g mode / CH Middle				Measurement Distance at 3m		Vertical polarity			
Freq.	Reading	AF	Cable Loss	Pre-amp	Filter	Level	Limit	Margin	Mark
(MHz)	(dBμV)	(dB/m)	(dB)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	(P/Q/A)
1631.48	58.12	27.65	2.79	44.45	0.85	44.96	74.00	-29.04	P
1631.48	48.32	27.65	2.79	44.45	0.85	35.16	54.00	-18.84	A
* 4875.26	55.65	33.30	4.42	42.50	0.57	51.44	74.00	-22.56	P
* 4875.26	45.45	33.30	4.42	42.50	0.57	41.24	54.00	-12.76	A
* 7313.63	56.55	39.09	5.52	42.22	0.43	59.37	74.00	-14.63	P
* 7313.63	44.75	39.09	5.52	42.22	0.43	47.57	54.00	-6.43	A
N/A	-----	-----	-----	-----	-----	-----	-----	-----	P
N/A	-----	-----	-----	-----	-----	-----	-----	-----	A

REMARK:

1. AF: Antenna Factor, Cable: Cable Loss, Pre-Amp: Preamplifier gain, Filter: 2.4GHz~2.5GHz Filter Insertion Loss
2. Spectrum analyzer setting P(Peak): RBW=1MHz, VBW=1MHz, A(Average): RBW=1MHz, VBW=10Hz
3. The result basic equation calculation is as follow:
Level = Reading + AF + Cable – Preamp + Filter, Margin = Level-Limit
4. The other emission levels were 10dB below the limit
5. The test limit distance is 3M limit.
6. *=Restricted bands of operation

Product Name	Audio Device	Test Date	2022/02/17
Model	HV01	Test By	Ted Huang
Test Mode	IEEE 802.11g TX (CH High)	TEMP& Humidity	23.2°C, 65%

TX / IEEE 802.11g mode / CH High				Measurement Distance at 3m				Horizontal polarity	
Freq.	Reading	AF	Cable Loss	Pre-amp	Filter	Level	Limit	Margin	Mark
(MHz)	(dBμV)	(dB/m)	(dB)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	(P/Q/A)
* 1550.52	58.41	27.00	2.78	44.57	0.75	44.37	74.00	-29.63	P
* 1550.52	47.85	27.00	2.78	44.57	0.75	33.81	54.00	-20.19	A
* 4923.94	57.24	33.46	4.45	42.50	0.56	53.21	74.00	-20.79	P
* 4923.94	46.62	33.46	4.45	42.50	0.56	42.59	54.00	-11.41	A
* 7386.56	55.20	39.37	5.56	42.12	0.43	58.44	74.00	-15.56	P
* 7386.56	44.75	39.37	5.56	42.12	0.43	47.99	54.00	-6.01	A
N/A	-----	-----	-----	-----	-----	-----	-----	-----	P
N/A	-----	-----	-----	-----	-----	-----	-----	-----	A

TX / IEEE 802.11g mode / CH High				Measurement Distance at 3m				Vertical polarity	
Freq.	Reading	AF	Cable Loss	Pre-amp	Filter	Level	Limit	Margin	Mark
(MHz)	(dBμV)	(dB/m)	(dB)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	(P/Q/A)
1631.73	57.65	27.65	2.79	44.45	0.85	44.49	74.00	-29.51	P
1631.73	48.96	27.65	2.79	44.45	0.85	35.80	54.00	-18.20	A
* 4921.60	56.85	33.45	4.45	42.50	0.56	52.82	74.00	-21.18	P
* 4921.60	45.72	33.45	4.45	42.50	0.56	41.69	54.00	-12.31	A
* 7357.67	55.75	39.26	5.55	42.16	0.43	58.82	74.00	-15.18	P
* 7357.67	44.68	39.26	5.55	42.16	0.43	47.75	54.00	-6.25	A
N/A	-----	-----	-----	-----	-----	-----	-----	-----	P
N/A	-----	-----	-----	-----	-----	-----	-----	-----	A

REMARK:

1. AF: Antenna Factor, Cable: Cable Loss, Pre-Amp: Preamplifier gain, Filter: 2.4GHz~2.5GHz Filter Insertion Loss
2. Spectrum analyzer setting P(Peak): RBW=1MHz, VBW=1MHz, A(Average): RBW=1MHz, VBW=10Hz
3. The result basic equation calculation is as follow:
Level = Reading + AF + Cable – Preamp + Filter , Margin = Level-Limit
4. The other emission levels were 10dB below the limit
5. The test limit distance is 3M limit.
6. *=Restricted bands of operation

Product Name	Audio Device	Test Date	2022/02/17
Model	HV01	Test By	Ted Huang
Test Mode	IEEE 802.11n HT20 TX (CH Low)	TEMP& Humidity	23.2°C, 65%

TX / IEEE 802.11n HT20 mode / CH Low				Measurement Distance at 3m				Horizontal polarity	
Freq.	Reading	AF	Cable Loss	Pre-amp	Filter	Level	Limit	Margin	Mark
(MHz)	(dBμV)	(dB/m)	(dB)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	(P/Q/A)
* 1550.64	58.28	27.01	2.78	44.57	0.75	44.24	74.00	-29.76	P
* 1550.64	47.76	27.01	2.78	44.57	0.75	33.72	54.00	-20.28	A
* 4824.26	57.68	33.14	4.40	42.50	0.57	53.28	74.00	-20.72	P
* 4824.26	48.86	33.14	4.40	42.50	0.57	44.46	54.00	-9.54	A
7235.73	56.75	38.80	5.48	42.32	0.42	59.12	74.00	-14.88	P
7235.73	45.70	38.80	5.48	42.32	0.42	48.07	54.00	-5.93	A
N/A	-----	-----	-----	-----	-----	-----	-----	-----	P
N/A	-----	-----	-----	-----	-----	-----	-----	-----	A

TX / IEEE 802.11n HT20 mode / CH Low				Measurement Distance at 3m				Vertical polarity	
Freq.	Reading	AF	Cable Loss	Pre-amp	Filter	Level	Limit	Margin	Mark
(MHz)	(dBμV)	(dB/m)	(dB)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	(P/Q/A)
1631.60	57.48	27.65	2.79	44.45	0.85	44.32	74.00	-29.68	P
1631.60	48.72	27.65	2.79	44.45	0.85	35.56	54.00	-18.44	A
* 4823.86	58.36	33.14	4.39	42.50	0.57	53.96	74.00	-20.04	P
* 4823.86	53.42	33.14	4.39	42.50	0.57	49.02	54.00	-4.98	A
7235.65	55.55	38.80	5.48	42.32	0.42	57.92	74.00	-16.08	P
7235.65	44.60	38.80	5.48	42.32	0.42	46.97	54.00	-7.03	A
N/A	-----	-----	-----	-----	-----	-----	-----	-----	P
N/A	-----	-----	-----	-----	-----	-----	-----	-----	A

REMARK:

1. AF: Antenna Factor, Cable: Cable Loss, Pre-Amp: Preamplifier gain, Filter: 2.4GHz~2.5GHz Filter Insertion Loss
2. Spectrum analyzer setting P(Peak): RBW=1MHz, VBW=1MHz, A(Average): RBW=1MHz, VBW=10Hz
3. The result basic equation calculation is as follow:
Level = Reading + AF + Cable – Preamp + Filter , Margin = Level-Limit
4. The other emission levels were 10dB below the limit
5. The test limit distance is 3M limit.
6. *=Restricted bands of operation

Product Name	Audio Device	Test Date	2022/02/17
Model	HV01	Test By	Ted Huang
Test Mode	IEEE 802.11n HT20 TX (CH Middle)	TEMP& Humidity	23.2°C, 65%

TX / IEEE 802.11n HT20 mode / CH Middle				Measurement Distance at 3m				Horizontal polarity	
Freq.	Reading	AF	Cable Loss	Pre-amp	Filter	Level	Limit	Margin	Mark
(MHz)	(dBμV)	(dB/m)	(dB)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	(P/Q/A)
* 1550.38	58.45	27.00	2.78	44.57	0.75	44.41	74.00	-29.59	P
* 1550.38	47.68	27.00	2.78	44.57	0.75	33.64	54.00	-20.36	A
* 4873.76	58.68	33.30	4.42	42.50	0.57	54.47	74.00	-19.53	P
* 4873.76	52.68	33.30	4.42	42.50	0.57	48.47	54.00	-5.53	A
* 7310.60	55.38	39.08	5.52	42.22	0.42	58.18	74.00	-15.82	P
* 7310.60	45.45	39.08	5.52	42.22	0.42	48.25	54.00	-5.75	A
N/A	-----	-----	-----	-----	-----	-----	-----	-----	P
N/A	-----	-----	-----	-----	-----	-----	-----	-----	A

TX / IEEE 802.11n HT20 mode / CH Middle				Measurement Distance at 3m				Vertical polarity	
Freq.	Reading	AF	Cable Loss	Pre-amp	Filter	Level	Limit	Margin	Mark
(MHz)	(dBμV)	(dB/m)	(dB)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	(P/Q/A)
1631.48	57.64	27.65	2.79	44.45	0.85	44.48	74.00	-29.52	P
1631.48	48.58	27.65	2.79	44.45	0.85	35.42	54.00	-18.58	A
* 4874.08	58.82	33.30	4.42	42.50	0.57	54.61	74.00	-19.39	P
* 4874.08	48.38	33.30	4.42	42.50	0.57	44.17	54.00	-9.83	A
* 7312.52	55.54	39.09	5.52	42.22	0.43	58.35	74.00	-15.65	P
* 7312.52	44.58	39.09	5.52	42.22	0.43	47.39	54.00	-6.61	A
N/A	-----	-----	-----	-----	-----	-----	-----	-----	P
N/A	-----	-----	-----	-----	-----	-----	-----	-----	A

REMARK:

1. AF: Antenna Factor, Cable: Cable Loss, Pre-Amp: Preamplifier gain, Filter: 2.4GHz~2.5GHz Filter Insertion Loss
2. Spectrum analyzer setting P(Peak): RBW=1MHz, VBW=1MHz, A(Average): RBW=1MHz, VBW=10Hz
3. The result basic equation calculation is as follow:
Level = Reading + AF + Cable – Preamp + Filter , Margin = Level-Limit
4. The other emission levels were 10dB below the limit
5. The test limit distance is 3M limit.
6. *=Restricted bands of operation

Product Name	Audio Device	Test Date	2022/02/17
Model	HV01	Test By	Ted Huang
Test Mode	IEEE 802.11n HT20 TX (CH High)	TEMP& Humidity	23.2°C, 65%

TX / IEEE 802.11n HT20 mode / CH High				Measurement Distance at 3m				Horizontal polarity	
Freq.	Reading	AF	Cable Loss	Pre-amp	Filter	Level	Limit	Margin	Mark
(MHz)	(dBμV)	(dB/m)	(dB)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	(P/Q/A)
* 1550.82	58.46	27.01	2.78	44.57	0.75	44.42	74.00	-29.58	P
* 1550.82	47.66	27.01	2.78	44.57	0.75	33.62	54.00	-20.38	A
* 4921.85	56.70	33.45	4.45	42.50	0.56	52.67	74.00	-21.33	P
* 4921.85	45.66	33.45	4.45	42.50	0.56	41.63	54.00	-12.37	A
* 7385.83	55.28	39.37	5.56	42.12	0.43	58.51	74.00	-15.49	P
* 7385.83	45.32	39.37	5.56	42.12	0.43	48.55	54.00	-5.45	A
N/A	-----	-----	-----	-----	-----	-----	-----	-----	P
N/A	-----	-----	-----	-----	-----	-----	-----	-----	A

TX / IEEE 802.11n HT20 mode / CH High				Measurement Distance at 3m				Vertical polarity	
Freq.	Reading	AF	Cable Loss	Pre-amp	Filter	Level	Limit	Margin	Mark
(MHz)	(dBμV)	(dB/m)	(dB)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	(P/Q/A)
1631.60	57.75	27.65	2.79	44.45	0.85	44.59	74.00	-29.41	P
1631.60	48.62	27.65	2.79	44.45	0.85	35.46	54.00	-18.54	A
* 4920.26	56.56	33.44	4.45	42.50	0.56	52.52	74.00	-21.48	P
* 4920.26	45.46	33.44	4.45	42.50	0.56	41.42	54.00	-12.58	A
* 7390.28	55.36	39.38	5.56	42.12	0.43	58.62	74.00	-15.38	P
* 7390.28	44.28	39.38	5.56	42.12	0.43	47.54	54.00	-6.46	A
N/A	-----	-----	-----	-----	-----	-----	-----	-----	P
N/A	-----	-----	-----	-----	-----	-----	-----	-----	A

REMARK:

1. AF: Antenna Factor, Cable: Cable Loss, Pre-Amp: Preamplifier gain, Filter: 2.4GHz~2.5GHz Filter Insertion Loss
2. Spectrum analyzer setting P(Peak): RBW=1MHz, VBW=1MHz, A(Average): RBW=1MHz, VBW=10Hz
3. The result basic equation calculation is as follow:
Level = Reading + AF + Cable – Preamp + Filter , Margin = Level-Limit
4. The other emission levels were 10dB below the limit
5. The test limit distance is 3M limit.
6. *=Restricted bands of operation

Product Name	Audio Device	Test Date	2022/02/18
Model	HV01	Test By	Ted Huang
Test Mode	Bluetooth 4.0 TX (CH Low)	TEMP& Humidity	22.5°C, 68%

TX / Bluetooth 4.0 (GFSK) mode / CH Low					Measurement Distance at 3m			Horizontal polarity		
	Freq.	Reading	AF	Cable Loss	Pre-amp	Filter	Level	Limit	Margin	Mark
	(MHz)	(dBμV)	(dB/m)	(dB)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	(P/Q/A)
*	1222.62	58.68	25.44	2.62	44.71	0.66	42.69	74.00	-31.31	P
*	1222.62	49.45	25.44	2.62	44.71	0.66	33.46	54.00	-20.54	A
*	1550.56	58.65	27.00	2.78	44.57	0.75	44.61	74.00	-29.39	P
*	1550.56	48.38	27.00	2.78	44.57	0.75	34.34	54.00	-19.66	A
*	4804.12	56.68	33.07	4.38	42.51	0.57	52.20	74.00	-21.80	P
*	4804.12	46.78	33.07	4.38	42.51	0.57	42.30	54.00	-11.70	A
	N/A	-----	-----	-----	-----	-----	-----	-----	-----	P
	N/A	-----	-----	-----	-----	-----	-----	-----	-----	A

TX / Bluetooth 4.0 (GFSK) mode / CH Low					Measurement Distance at 3m			Vertical polarity		
	Freq.	Reading	AF	Cable Loss	Pre-amp	Filter	Level	Limit	Margin	Mark
	(MHz)	(dBμV)	(dB/m)	(dB)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	(P/Q/A)
*	1223.25	57.25	25.44	2.62	44.71	0.66	41.26	74.00	-32.74	P
*	1223.25	48.46	25.44	2.62	44.71	0.66	32.47	54.00	-21.53	A
	1630.86	57.75	27.65	2.79	44.45	0.85	44.58	74.00	-29.42	P
	1630.86	48.63	27.65	2.79	44.45	0.85	35.46	54.00	-18.54	A
*	4804.08	56.78	33.07	4.38	42.51	0.57	52.30	74.00	-21.70	P
*	4804.08	46.56	33.07	4.38	42.51	0.57	42.08	54.00	-11.92	A
	N/A	-----	-----	-----	-----	-----	-----	-----	-----	P
	N/A	-----	-----	-----	-----	-----	-----	-----	-----	A

REMARK:

1. AF: Antenna Factor, Cable: Cable Loss, Pre-Amp: Preamplifier gain, Filter: 2.4GHz~2.5GHz Filter Insertion Loss
2. Spectrum analyzer setting P(Peak): RBW=1MHz, VBW=1MHz, A(Average): RBW=1MHz, VBW=10Hz
3. The result basic equation calculation is as follow:
Level = Reading + AF + Cable – Preamp + Filter, Margin = Level-Limit
4. The other emission levels were 10dB below the limit
5. The test limit distance is 3M limit.
6. *=Restricted bands of operation

Product Name	Audio Device	Test Date	2022/02/17
Model	HV01	Test By	Ted Huang
Test Mode	Bluetooth 4.0 TX (CH Middle)	TEMP& Humidity	23.2°C, 65%

	TX / Bluetooth 4.0 (GFSK) mode / CH Middle				Measurement Distance at 3m				Horizontal polarity	
	Freq.	Reading	AF	Cable Loss	Pre-amp	Filter	Level	Limit	Margin	Mark
	(MHz)	(dBμV)	(dB/m)	(dB)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	(P/Q/A)
*	1222.56	58.62	25.43	2.62	44.71	0.66	42.63	74.00	-31.37	P
*	1222.56	49.85	25.43	2.62	44.71	0.66	33.86	54.00	-20.14	A
*	1550.70	58.62	27.01	2.78	44.57	0.75	44.58	74.00	-29.42	P
*	1550.70	48.23	27.01	2.78	44.57	0.75	34.19	54.00	-19.81	A
*	4883.86	57.62	33.33	4.43	42.50	0.57	53.44	74.00	-20.56	P
*	4883.86	47.56	33.33	4.43	42.50	0.57	43.38	54.00	-10.62	A
	N/A	-----	-----	-----	-----	-----	-----	-----	-----	P
	N/A	-----	-----	-----	-----	-----	-----	-----	-----	A

	TX / Bluetooth 4.0 (GFSK) mode / CH Middle				Measurement Distance at 3m				Vertical	polarity
	Freq.	Reading	AF	Cable Loss	Pre-amp	Filter	Level	Limit	Margin	Mark
	(MHz)	(dBμV)	(dB/m)	(dB)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	(P/Q/A)
*	1309.48	60.35	25.80	2.67	44.69	0.67	44.80	74.00	-29.20	P
*	1309.48	54.48	25.80	2.67	44.69	0.67	38.93	54.00	-15.07	A
*	1445.06	60.64	26.37	2.74	44.66	0.68	45.77	74.00	-28.23	P
*	1445.06	58.25	26.37	2.74	44.66	0.68	43.38	54.00	-10.62	A
*	4884.06	57.48	33.33	4.43	42.50	0.57	53.30	74.00	-20.70	P
*	4884.06	46.72	33.33	4.43	42.50	0.57	42.54	54.00	-11.46	A
	N/A	-----	-----	-----	-----	-----	-----	-----	-----	P
	N/A	-----	-----	-----	-----	-----	-----	-----	-----	A

REMARK:

1. AF: Antenna Factor, Cable: Cable Loss, Pre-Amp: Preamplifier gain, Filter: 2.4GHz~2.5GHz Filter Insertion Loss
2. Spectrum analyzer setting P(Peak): RBW=1MHz, VBW=1MHz, A(Average): RBW=1MHz, VBW=10Hz
3. The result basic equation calculation is as follow:
Level = Reading + AF + Cable – Preamp + Filter , Margin = Level-Limit
4. The other emission levels were 10dB below the limit
5. The test limit distance is 3M limit.
6. *=Restricted bands of operation

Product Name	Audio Device	Test Date	2022/02/17
Model	HV01	Test By	Ted Huang
Test Mode	Bluetooth 4.0 TX (CH High)	TEMP& Humidity	23.2°C, 65%

TX / Bluetooth 4.0 (GFSK) mode / CH High				Measurement Distance at 3m				Horizontal polarity	
Freq.	Reading	AF	Cable Loss	Pre-amp	Filter	Level	Limit	Margin	Mark
(MHz)	(dBμV)	(dB/m)	(dB)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	(P/Q/A)
* 1309.63	59.45	25.80	2.67	44.69	0.67	43.90	74.00	-30.10	P
* 1309.63	56.82	25.80	2.67	44.69	0.67	41.27	54.00	-12.73	A
* 1399.95	59.45	26.18	2.72	44.67	0.68	44.35	74.00	-29.65	P
* 1399.95	55.63	26.18	2.72	44.67	0.68	40.53	54.00	-13.47	A
* 4959.93	59.18	33.57	4.47	42.49	0.56	55.29	74.00	-18.71	P
* 4959.93	48.86	33.57	4.47	42.49	0.56	44.97	54.00	-9.03	A
N/A	-----	-----	-----	-----	-----	-----	-----	-----	P
N/A	-----	-----	-----	-----	-----	-----	-----	-----	A

TX / Bluetooth 4.0 (GFSK) mode / CH High				Measurement Distance at 3m				Vertical polarity	
Freq.	Reading	AF	Cable Loss	Pre-amp	Filter	Level	Limit	Margin	Mark
(MHz)	(dBμV)	(dB/m)	(dB)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	(P/Q/A)
* 1309.36	60.42	25.80	2.67	44.69	0.67	44.87	74.00	-29.13	P
* 1309.36	54.65	25.80	2.67	44.69	0.67	39.10	54.00	-14.90	A
* 1445.09	60.72	26.37	2.74	44.66	0.68	45.85	74.00	-28.15	P
* 1445.09	57.76	26.37	2.74	44.66	0.68	42.89	54.00	-11.11	A
* 4959.94	57.86	33.57	4.47	42.49	0.56	53.97	74.00	-20.03	P
* 4959.94	47.46	33.57	4.47	42.49	0.56	43.57	54.00	-10.43	A
N/A	-----	-----	-----	-----	-----	-----	-----	-----	P
N/A	-----	-----	-----	-----	-----	-----	-----	-----	A

REMARK:

1. AF: Antenna Factor, Cable: Cable Loss, Pre-Amp: Preamplifier gain, Filter: 2.4GHz~2.5GHz Filter Insertion Loss
2. Spectrum analyzer setting P(Peak): RBW=1MHz, VBW=1MHz, A(Average): RBW=1MHz, VBW=10Hz
3. The result basic equation calculation is as follow:
Level = Reading + AF + Cable – Preamp + Filter , Margin = Level-Limit
4. The other emission levels were 10dB below the limit
5. The test limit distance is 3M limit.
6. *=Restricted bands of operation

Product Name	Audio Device	Test Date	2022/02/18
Model	HV01	Test By	Ted Huang
Test Mode	Bluetooth 5.0 TX (CH Low)	TEMP& Humidity	22.5°C, 68%

TX / Bluetooth 5.0 (GFSK) mode / CH Low					Measurement Distance at 3m			Horizontal polarity		
	Freq.	Reading	AF	Cable Loss	Pre-amp	Filter	Level	Limit	Margin	Mark
	(MHz)	(dBμV)	(dB/m)	(dB)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	(P/Q/A)
*	1309.75	59.68	25.80	2.67	44.69	0.67	44.13	74.00	-29.87	P
*	1309.75	56.76	25.80	2.67	44.69	0.67	41.21	54.00	-12.79	A
*	1399.92	59.43	26.18	2.72	44.67	0.68	44.33	74.00	-29.67	P
*	1399.92	55.58	26.18	2.72	44.67	0.68	40.48	54.00	-13.52	A
*	4803.88	56.40	33.07	4.38	42.51	0.57	51.92	74.00	-22.08	P
*	4803.88	46.36	33.07	4.38	42.51	0.57	41.88	54.00	-12.12	A
	N/A	-----	-----	-----	-----	-----	-----	-----	-----	P
	N/A	-----	-----	-----	-----	-----	-----	-----	-----	A

TX / Bluetooth 5.0 (GFSK) mode / CH Low					Measurement Distance at 3m			Vertical polarity		
	Freq.	Reading	AF	Cable Loss	Pre-amp	Filter	Level	Limit	Margin	Mark
	(MHz)	(dBμV)	(dB/m)	(dB)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	(P/Q/A)
*	1309.43	60.35	25.80	2.67	44.69	0.67	44.80	74.00	-29.20	P
*	1309.43	54.65	25.80	2.67	44.69	0.67	39.10	54.00	-14.90	A
*	1445.16	60.78	26.37	2.74	44.66	0.68	45.91	74.00	-28.09	P
*	1445.16	57.62	26.37	2.74	44.66	0.68	42.75	54.00	-11.25	A
*	4804.15	56.44	33.07	4.38	42.51	0.57	51.96	74.00	-22.04	P
*	4804.15	45.68	33.07	4.38	42.51	0.57	41.20	54.00	-12.80	A
	N/A	-----	-----	-----	-----	-----	-----	-----	-----	P
	N/A	-----	-----	-----	-----	-----	-----	-----	-----	A

REMARK:

1. AF: Antenna Factor, Cable: Cable Loss, Pre-Amp: Preamplifier gain, Filter: 2.4GHz~2.5GHz Filter Insertion Loss
2. Spectrum analyzer setting P(Peak): RBW=1MHz, VBW=1MHz, A(Average): RBW=1MHz, VBW=10Hz
3. The result basic equation calculation is as follow:
Level = Reading + AF + Cable – Preamp + Filter , Margin = Level-Limit
4. The other emission levels were 10dB below the limit
5. The test limit distance is 3M limit.
6. *=Restricted bands of operation

Product Name	Audio Device	Test Date	2022/02/17
Model	HV01	Test By	Ted Huang
Test Mode	Bluetooth 5.0 TX (CH Middle)	TEMP& Humidity	23.2°C, 65%

TX / Bluetooth 5.0 (GFSK) mode / CH Middle					Measurement Distance at 3m Horizontal polarity					
Freq.	Reading	AF	Cable Loss	Pre-amp	Filter	Level	Limit	Margin	Mark	
(MHz)	(dBμV)	(dB/m)	(dB)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	(P/Q/A)	
* 1222.45	58.42	25.43	2.62	44.71	0.66	42.43	74.00	-31.57	P	
* 1222.45	49.38	25.43	2.62	44.71	0.66	33.39	54.00	-20.61	A	
* 1550.70	58.65	27.01	2.78	44.57	0.75	44.61	74.00	-29.39	P	
* 1550.70	48.26	27.01	2.78	44.57	0.75	34.22	54.00	-19.78	A	
* 4884.13	56.45	33.33	4.43	42.50	0.57	52.27	74.00	-21.73	P	
* 4884.13	45.76	33.33	4.43	42.50	0.57	41.58	54.00	-12.42	A	
N/A	-----	-----	-----	-----	-----	-----	-----	-----	P	
N/A	-----	-----	-----	-----	-----	-----	-----	-----	A	

TX / Bluetooth 5.0 (GFSK) mode / CH Middle					Measurement Distance at 3m Vertical polarity					
Freq.	Reading	AF	Cable Loss	Pre-amp	Filter	Level	Limit	Margin	Mark	
(MHz)	(dBμV)	(dB/m)	(dB)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	(P/Q/A)	
* 1223.20	57.72	25.44	2.62	44.71	0.66	41.73	74.00	-32.27	P	
* 1223.20	48.45	25.44	2.62	44.71	0.66	32.46	54.00	-21.54	A	
1631.06	57.75	27.65	2.79	44.45	0.85	44.59	74.00	-29.41	P	
1631.06	48.39	27.65	2.79	44.45	0.85	35.23	54.00	-18.77	A	
* 4884.06	57.24	33.33	4.43	42.50	0.57	53.06	74.00	-20.94	P	
* 4884.06	45.86	33.33	4.43	42.50	0.57	41.68	54.00	-12.32	A	
N/A	-----	-----	-----	-----	-----	-----	-----	-----	P	
N/A	-----	-----	-----	-----	-----	-----	-----	-----	A	

REMARK:

1. AF: Antenna Factor, Cable: Cable Loss, Pre-Amp: Preamplifier gain, Filter: 2.4GHz~2.5GHz Filter Insertion Loss
2. Spectrum analyzer setting P(Peak): RBW=1MHz, VBW=1MHz, A(Average): RBW=1MHz, VBW=10Hz
3. The result basic equation calculation is as follow:
Level = Reading + AF + Cable – Preamp + Filter , Margin = Level-Limit
4. The other emission levels were 10dB below the limit
5. The test limit distance is 3M limit.
6. *=Restricted bands of operation

Product Name	Audio Device	Test Date	2022/02/17
Model	HV01	Test By	Ted Huang
Test Mode	Bluetooth 5.0 TX (CH High)	TEMP& Humidity	23.2°C, 65%

TX / Bluetooth 5.0 (GFSK) mode / CH High				Measurement Distance at 3m				Horizontal polarity	
Freq.	Reading	AF	Cable Loss	Pre-amp	Filter	Level	Limit	Margin	Mark
(MHz)	(dBμV)	(dB/m)	(dB)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	(P/Q/A)
* 1222.68	58.44	25.44	2.62	44.71	0.66	42.45	74.00	-31.55	P
* 1222.68	49.64	25.44	2.62	44.71	0.66	33.65	54.00	-20.35	A
* 1551.06	58.45	27.01	2.78	44.57	0.75	44.42	74.00	-29.58	P
* 1551.06	48.28	27.01	2.78	44.57	0.75	34.25	54.00	-19.75	A
* 4959.76	57.65	33.57	4.47	42.49	0.56	53.76	74.00	-20.24	P
* 4959.76	46.25	33.57	4.47	42.49	0.56	42.36	54.00	-11.64	A
N/A	-----	-----	-----	-----	-----	-----	-----	-----	P
N/A	-----	-----	-----	-----	-----	-----	-----	-----	A

TX / Bluetooth 5.0 (GFSK) mode / CH High				Measurement Distance at 3m				Vertical polarity	
Freq.	Reading	AF	Cable Loss	Pre-amp	Filter	Level	Limit	Margin	Mark
(MHz)	(dBμV)	(dB/m)	(dB)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	(P/Q/A)
* 1309.56	60.36	25.80	2.67	44.69	0.67	44.81	74.00	-29.19	P
* 1309.56	54.48	25.80	2.67	44.69	0.67	38.93	54.00	-15.07	A
* 1445.30	60.48	26.37	2.74	44.66	0.68	45.61	74.00	-28.39	P
* 1445.30	58.25	26.37	2.74	44.66	0.68	43.38	54.00	-10.62	A
* 4959.95	57.36	33.57	4.47	42.49	0.56	53.47	74.00	-20.53	P
* 4959.95	46.66	33.57	4.47	42.49	0.56	42.77	54.00	-11.23	A
N/A	-----	-----	-----	-----	-----	-----	-----	-----	P
N/A	-----	-----	-----	-----	-----	-----	-----	-----	A

REMARK:

1. AF: Antenna Factor, Cable: Cable Loss, Pre-Amp: Preamplifier gain, Filter: 2.4GHz~2.5GHz Filter Insertion Loss
2. Spectrum analyzer setting P(Peak): RBW=1MHz, VBW=1MHz, A(Average): RBW=1MHz, VBW=10Hz
3. The result basic equation calculation is as follow:
Level = Reading + AF + Cable – Preamp + Filter , Margin = Level-Limit
4. The other emission levels were 10dB below the limit
5. The test limit distance is 3M limit.
6. *=Restricted bands of operation

8.6.4 RESTRICTED BAND EDGES

Product Name	Audio Device	Test Date	2022/02/17
Model	HV01	Test By	Ted Huang
Test Mode	IEEE 802.11b TX (CH Low)	TEMP& Humidity	23.2°C , 65%

Horizontal

TX mode / CH Low				Measurement Distance at 3m				Horizontal polarity		
Freq.	Reading	AF	Cable Loss	Pre-amp	Atten	Filter	Level	Limit	Margin	Mark
(MHz)	(dBμV)	(dB/m)	(dB)	(dB)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	(P/Q/A)
* 2390.00	57.27	30.13	3.08	43.63	15.21	0.00	62.06	74.00	-11.94	P
* 2390.00	46.67	30.13	3.08	43.63	15.21	0.00	51.46	54.00	-2.54	A

Vertical

TX mode / CH Low				Measurement Distance at 3m				Vertical polarity		
Freq.	Reading	AF	Cable Loss	Pre-amp	Atten	Filter	Level	Limit	Margin	Mark
(MHz)	(dBμV)	(dB/m)	(dB)	(dB)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	(P/Q/A)
* 2390.00	55.87	30.13	3.08	43.63	15.21	0.00	60.66	74.00	-13.34	P
* 2390.00	44.31	30.13	3.08	43.63	15.21	0.00	49.10	54.00	-4.90	A

Product Name	Audio Device	Test Date	2022/02/17
Model	HV01	Test By	Ted Huang
Test Mode	IEEE 802.11b TX (CH High)	TEMP& Humidity	23.2°C , 65%

Horizontal

TX mode / CH High				Measurement Distance at 3m				Horizontal polarity		
Freq.	Reading	AF	Cable Loss	Pre-amp	Atten	Filter	Level	Limit	Margin	Mark
(MHz)	(dBμV)	(dB/m)	(dB)	(dB)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	(P/Q/A)
* 2483.50	56.60	30.02	3.14	43.57	15.21	0.00	61.39	74.00	-12.61	P
* 2483.50	46.34	30.02	3.14	43.57	15.21	0.00	51.13	54.00	-2.87	A

Vertical

TX mode / CH High				Measurement Distance at 3m				Vertical polarity		
Freq.	Reading	AF	Cable Loss	Pre-amp	Atten	Filter	Level	Limit	Margin	Mark
(MHz)	(dBμV)	(dB/m)	(dB)	(dB)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	(P/Q/A)
* 2483.50	55.91	30.02	3.14	43.57	15.21	0.00	60.70	74.00	-13.30	P
* 2483.50	46.48	30.02	3.14	43.57	15.21	0.00	51.28	54.00	-2.72	A

Product Name	Audio Device	Test Date	2022/02/17
Model	HV01	Test By	Ted Huang
Test Mode	IEEE 802.11g TX (CH Low)	TEMP& Humidity	23.2°C, 65%

Horizontal

	TX mode / CH Low				Measurement Distance at 3m				Horizontal polarity		
	Freq.	Reading	AF	Cable Loss	Pre-amp	Atten	Filter	Level	Limit	Margin	Mark
	(MHz)	(dBμV)	(dB/m)	(dB)	(dB)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	(P/Q/A)
*	2390.00	67.85	30.13	3.08	43.63	15.21	0.00	72.64	74.00	-1.36	P
*	2390.00	47.70	30.13	3.08	43.63	15.21	0.00	52.49	54.00	-1.51	A

Vertical

	TX mode / CH Low				Measurement Distance at 3m Vertical polarity						
	Freq.	Reading	AF	Cable Loss	Pre-amp	Atten	Filter	Level	Limit	Margin	Mark
	(MHz)	(dBμV)	(dB/m)	(dB)	(dB)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	(P/Q/A)
*	2390.00	64.89	30.13	3.08	43.63	15.21	0.00	69.68	74.00	-4.32	P
*	2390.00	45.41	30.13	3.08	43.63	15.21	0.00	50.20	54.00	-3.80	A

Product Name	Audio Device	Test Date	2022/02/17
Model	HV01	Test By	Ted Huang
Test Mode	IEEE 802.11g TX (CH High)	TEMP& Humidity	23.2°C, 65%

Horizontal

	TX mode / CH High				Measurement Distance at 3m				Horizontal polarity		
	Freq.	Reading	AF	Cable Loss	Pre-amp	Atten	Filter	Level	Limit	Margin	Mark
	(MHz)	(dBμV)	(dB/m)	(dB)	(dB)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	(P/Q/A)
*	2483.50	66.00	30.02	3.14	43.57	15.21	0.00	70.80	74.00	-3.20	P
*	2483.50	45.85	30.02	3.14	43.57	15.21	0.00	50.64	54.00	-3.36	A

Vertical

	TX mode / CH High				Measurement Distance at 3m Vertical polarity						
	Freq.	Reading	AF	Cable Loss	Pre-amp	Atten	Filter	Level	Limit	Margin	Mark
	(MHz)	(dBμV)	(dB/m)	(dB)	(dB)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	(P/Q/A)
*	2483.50	61.86	30.02	3.14	43.57	15.21	0.00	66.66	74.00	-7.34	P
*	2483.50	43.86	30.02	3.14	43.57	15.21	0.00	48.65	54.00	-5.35	A

Product Name	Audio Device	Test Date	2022/02/17
Model	HV01	Test By	Ted Huang
Test Mode	IEEE 802.11n HT20 TX (CH Low)	TEMP& Humidity	23.2°C, 65%

Horizontal

TX mode / CH Low				Measurement Distance at 3m				Horizontal polarity		
Freq.	Reading	AF	Cable Loss	Pre-amp	Atten	Filter	Level	Limit	Margin	Mark
(MHz)	(dBμV)	(dB/m)	(dB)	(dB)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	(P/Q/A)
* 2390.00	65.98	30.13	3.08	43.63	15.21	0.00	70.77	74.00	-3.23	P
* 2390.00	46.02	30.13	3.08	43.63	15.21	0.00	50.81	54.00	-3.19	A

Vertical

TX mode / CH Low				Measurement Distance at 3m				Vertical polarity		
Freq.	Reading	AF	Cable Loss	Pre-amp	Atten	Filter	Level	Limit	Margin	Mark
(MHz)	(dBμV)	(dB/m)	(dB)	(dB)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	(P/Q/A)
* 2390.00	59.37	30.13	3.08	43.63	15.21	0.00	64.16	74.00	-9.84	P
* 2390.00	43.45	30.13	3.08	43.63	15.21	0.00	48.24	54.00	-5.76	A

Product Name	Audio Device	Test Date	2022/02/17
Model	HV01	Test By	Ted Huang
Test Mode	IEEE 802.11n HT20 TX (CH High)	TEMP& Humidity	23.2°C, 65%

Horizontal

TX mode / CH High				Measurement Distance at 3m				Horizontal polarity		
Freq.	Reading	AF	Cable Loss	Pre-amp	Atten	Filter	Level	Limit	Margin	Mark
(MHz)	(dBμV)	(dB/m)	(dB)	(dB)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	(P/Q/A)
* 2483.50	67.79	30.02	3.14	43.57	15.21	0.00	72.59	74.00	-1.41	P
* 2483.50	44.81	30.02	3.14	43.57	15.21	0.00	49.60	54.00	-4.40	A

Vertical

TX mode / CH High				Measurement Distance at 3m				Vertical polarity		
Freq.	Reading	AF	Cable Loss	Pre-amp	Atten	Filter	Level	Limit	Margin	Mark
(MHz)	(dBμV)	(dB/m)	(dB)	(dB)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	(P/Q/A)
* 2483.50	62.49	30.02	3.14	43.57	15.21	0.00	67.29	74.00	-6.71	P
* 2483.50	43.42	30.02	3.14	43.57	15.21	0.00	48.21	54.00	-5.79	A

Product Name	Audio Device	Test Date	2022/02/17
Model	HV01	Test By	Ted Huang
Test Mode	Bluetooth 4.0 TX (CH Low)	TEMP& Humidity	23.2℃, 65%

Horizontal

	TX mode / CH Low				Measurement Distance at 3m				Horizontal polarity		
	Freq.	Reading	AF	Cable Loss	Pre-amp	Atten	Filter	Level	Limit	Margin	Mark
	(MHz)	(dBμV)	(dB/m)	(dB)	(dB)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	(P/Q/A)
*	2390.00	53.16	30.13	3.08	43.63	15.21	0.00	57.95	74.00	-16.05	P
*	2390.00	42.51	30.13	3.08	43.63	15.21	0.00	47.30	54.00	-6.70	A

Vertical

	TX mode / CH Low				Measurement Distance at 3m Vertical polarity						
	Freq.	Reading	AF	Cable Loss	Pre-amp	Atten	Filter	Level	Limit	Margin	Mark
	(MHz)	(dBμV)	(dB/m)	(dB)	(dB)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	(P/Q/A)
*	2390.00	54.83	30.13	3.08	43.63	15.21	0.00	59.63	74.00	-14.37	P
*	2390.00	42.58	30.13	3.08	43.63	15.21	0.00	47.37	54.00	-6.63	A

Product Name	Audio Device	Test Date	2022/02/17
Model	HV01	Test By	Ted Huang
Test Mode	Bluetooth 4.0 TX (CH High)	TEMP& Humidity	23.2℃, 65%

Horizontal

	TX mode / CH Low				Measurement Distance at 3m				Horizontal polarity		
	Freq.	Reading	AF	Cable Loss	Pre-amp	Atten	Filter	Level	Limit	Margin	Mark
	(MHz)	(dBμV)	(dB/m)	(dB)	(dB)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	(P/Q/A)
*	2483.50	53.47	30.02	3.14	43.57	15.21	0.00	58.27	74.00	-15.73	P
*	2483.50	42.91	30.02	3.14	43.57	15.21	0.00	47.71	54.00	-6.29	A

Vertical

	TX mode / CH Low				Measurement Distance at 3m Vertical polarity						
	Freq.	Reading	AF	Cable Loss	Pre-amp	Atten	Filter	Level	Limit	Margin	Mark
	(MHz)	(dBμV)	(dB/m)	(dB)	(dB)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	(P/Q/A)
*	2483.50	53.99	30.02	3.14	43.57	15.21	0.00	58.79	74.00	-15.21	P
*	2483.50	42.71	30.02	3.14	43.57	15.21	0.00	47.50	54.00	-6.50	A

Product Name	Audio Device	Test Date	2022/02/17
Model	HV01	Test By	Ted Huang
Test Mode	Bluetooth 5.0 TX (CH Low)	TEMP& Humidity	23.2°C, 65%

Horizontal

TX mode / CH Low				Measurement Distance at 3m				Horizontal polarity			
Freq.	Reading	AF	Cable Loss	Pre-amp	Atten	Filter	Level	Limit	Margin	Mark	
(MHz)	(dBμV)	(dB/m)	(dB)	(dB)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	(P/Q/A)	
* 2390.00	53.12	30.13	3.08	43.63	15.21	0.00	57.92	74.00	-16.08	P	
* 2390.00	43.13	30.13	3.08	43.63	15.21	0.00	47.92	54.00	-6.08	A	

Vertical

TX mode / CH Low				Measurement Distance at 3m				Vertical polarity			
Freq.	Reading	AF	Cable Loss	Pre-amp	Atten	Filter	Level	Limit	Margin	Mark	
(MHz)	(dBμV)	(dB/m)	(dB)	(dB)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	(P/Q/A)	
* 2390.00	53.26	30.13	3.08	43.63	15.21	0.00	58.05	74.00	-15.95	P	
* 2390.00	43.23	30.13	3.08	43.63	15.21	0.00	48.02	54.00	-5.98	A	

Product Name	Audio Device	Test Date	2022/02/17
Model	HV01	Test By	Ted Huang
Test Mode	Bluetooth 5.0 TX (CH High)	TEMP& Humidity	23.2°C, 65%

Horizontal

TX mode / CH Low				Measurement Distance at 3m				Horizontal polarity			
Freq.	Reading	AF	Cable Loss	Pre-amp	Atten	Filter	Level	Limit	Margin	Mark	
(MHz)	(dBμV)	(dB/m)	(dB)	(dB)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	(P/Q/A)	
* 2483.50	55.97	30.02	3.14	43.57	15.21	0.00	60.76	74.00	-13.24	P	
* 2483.50	45.23	30.02	3.14	43.57	15.21	0.00	50.03	54.00	-3.97	A	

Vertical

TX mode / CH Low				Measurement Distance at 3m				Vertical polarity			
Freq.	Reading	AF	Cable Loss	Pre-amp	Atten	Filter	Level	Limit	Margin	Mark	
(MHz)	(dBμV)	(dB/m)	(dB)	(dB)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	(P/Q/A)	
* 2483.50	53.91	30.02	3.14	43.57	15.21	0.00	58.70	74.00	-15.30	P	
* 2483.50	44.13	30.02	3.14	43.57	15.21	0.00	48.93	54.00	-5.07	A	

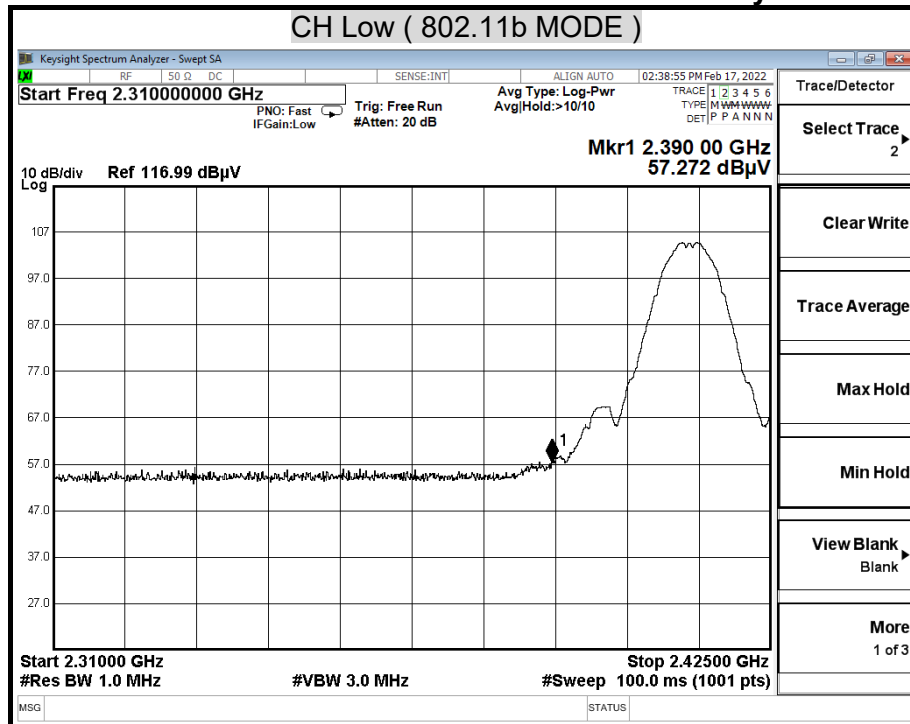
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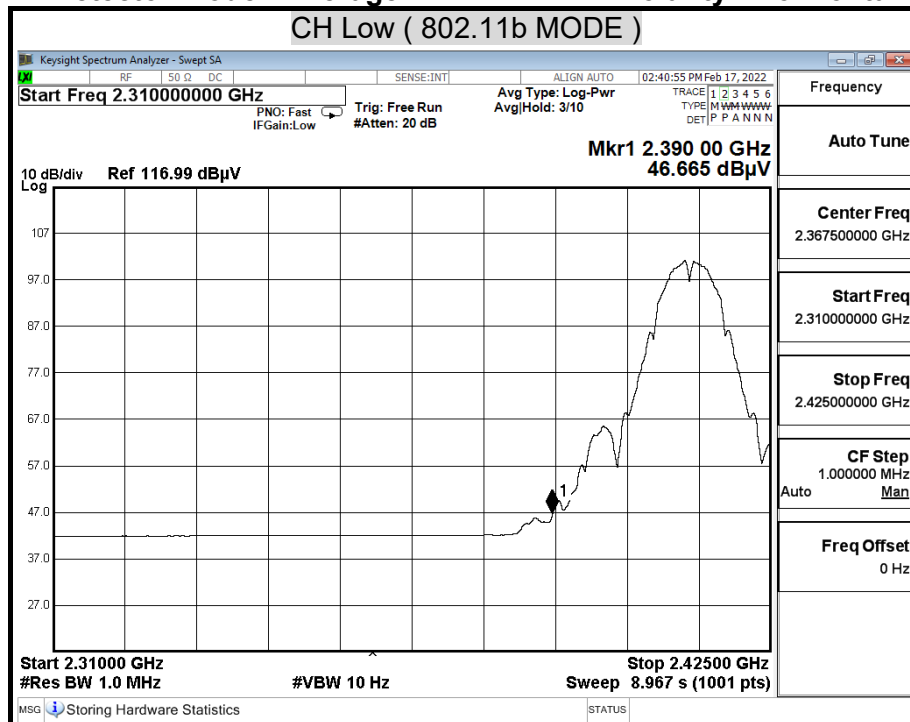
Detector mode : Peak

Polarity : Horizontal



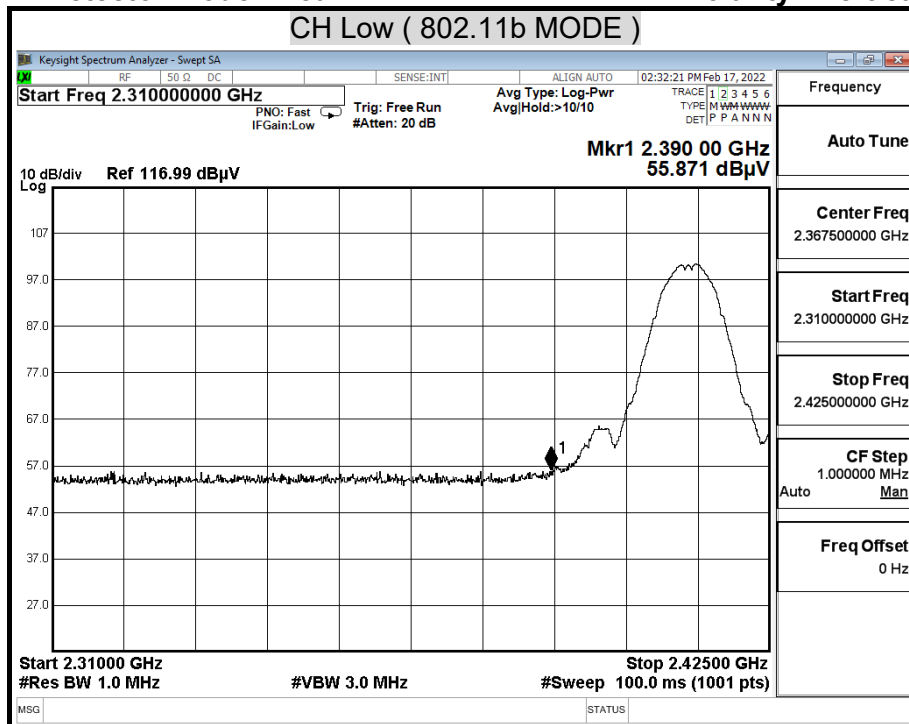
Detector mode : Average

Polarity : Horizontal



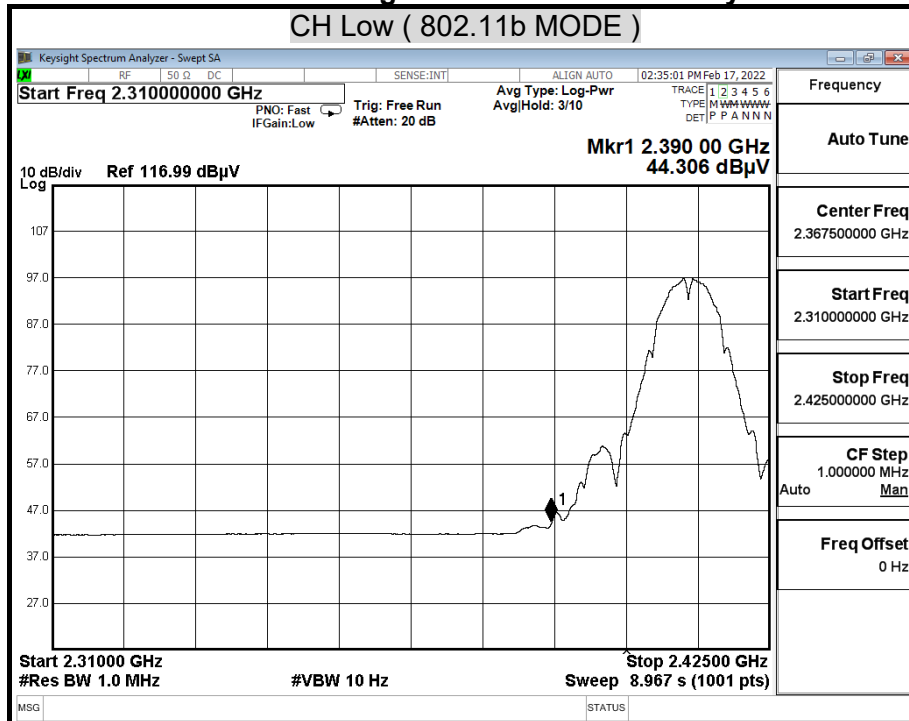
Detector mode : Peak

Polarity : Vertical



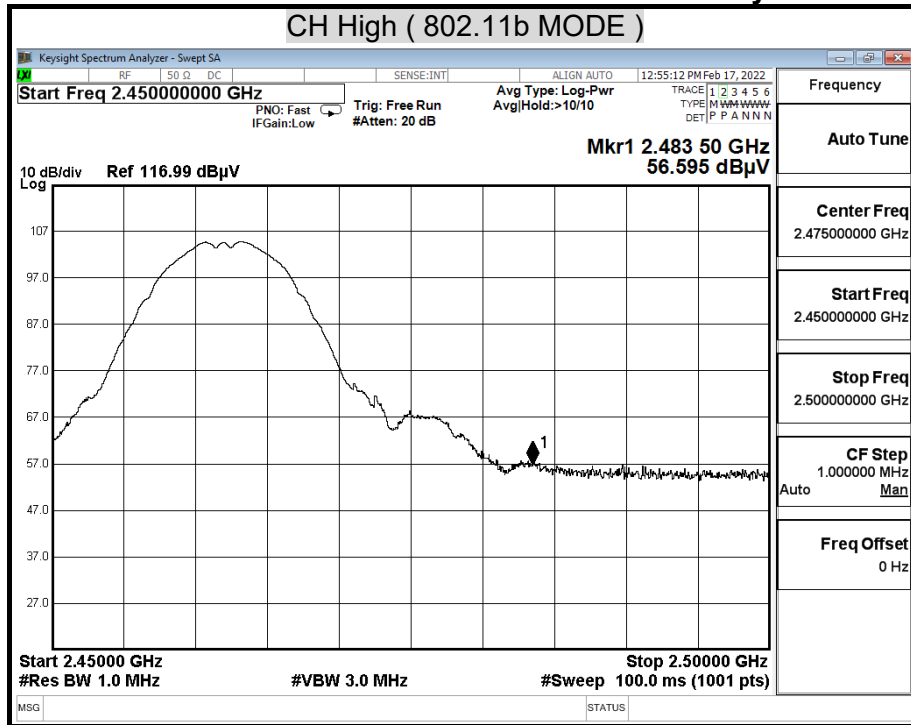
Detector mode : Average

Polarity : Vertical



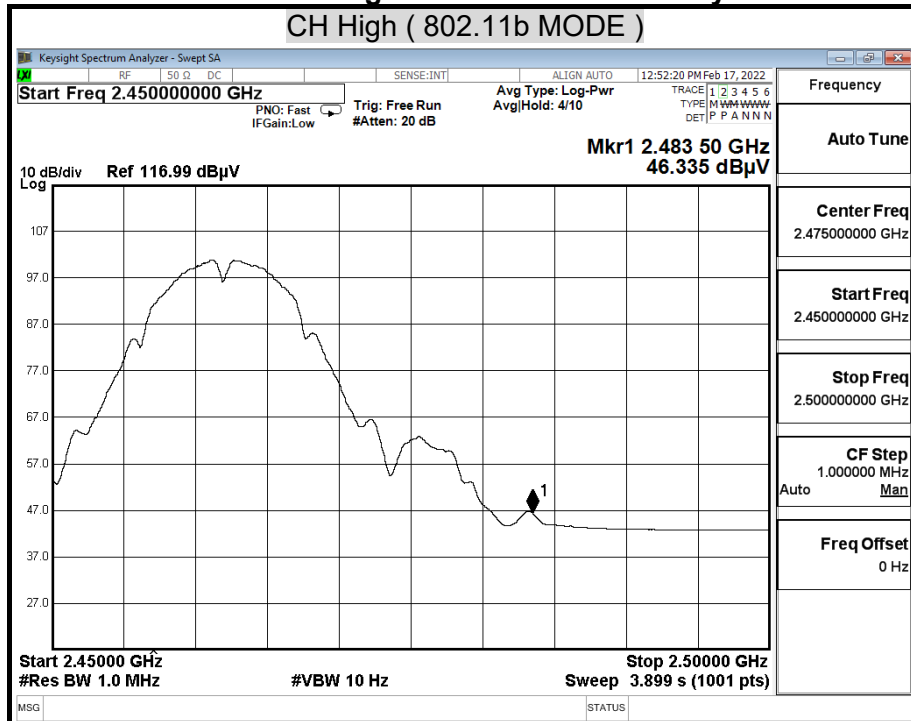
Detector mode : Peak

Polarity : Horizontal



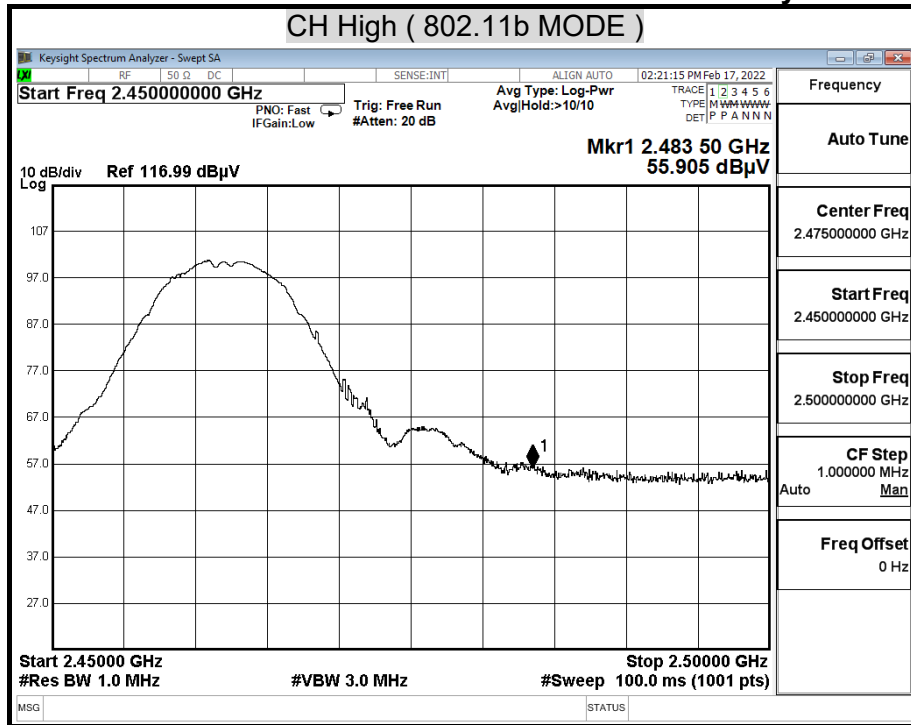
Detector mode : Average

Polarity : Horizontal



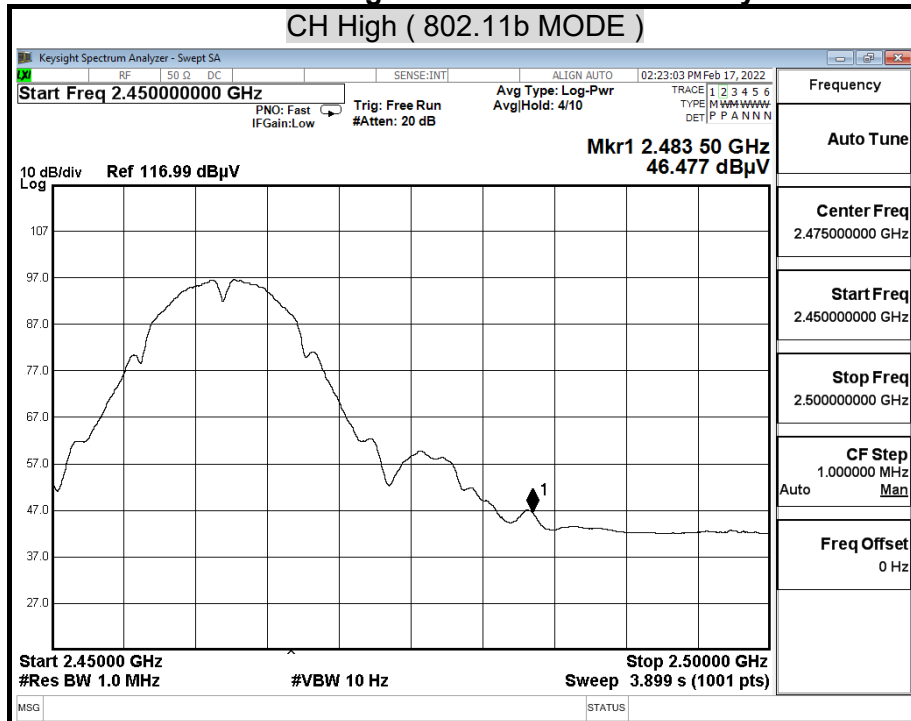
Detector mode : Peak

Polarity : Vertical



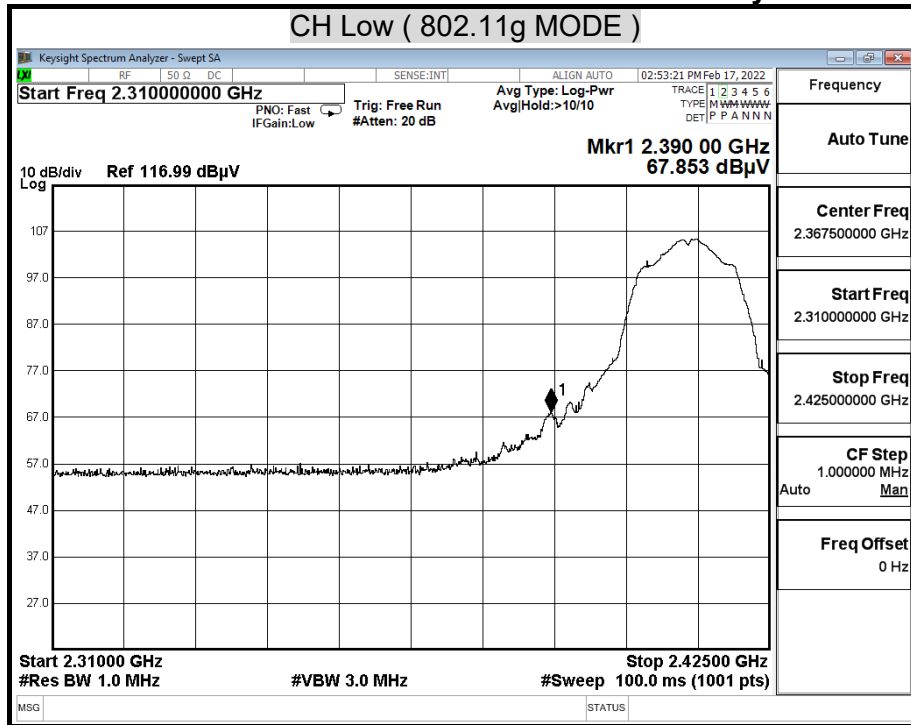
Detector mode : Average

Polarity : Vertical



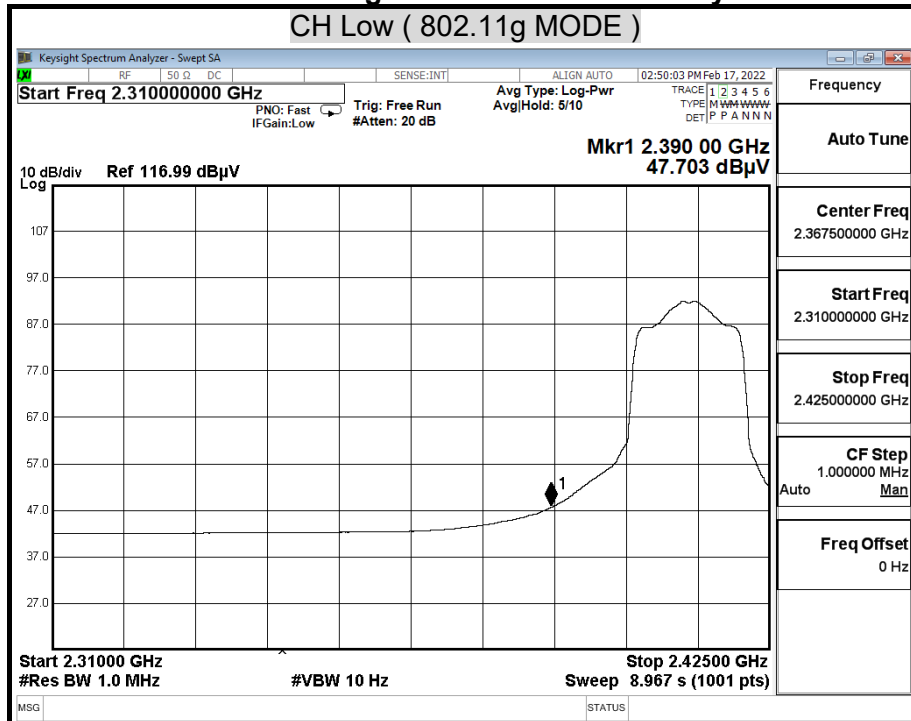
Detector mode : Peak

Polarity : Horizontal



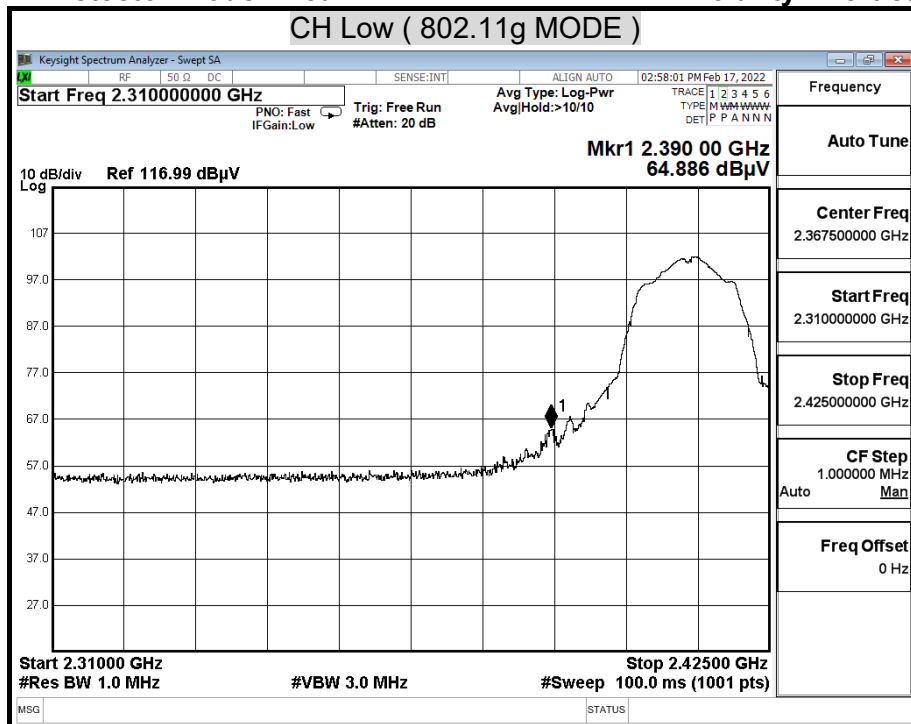
Detector mode : Average

Polarity : Horizontal



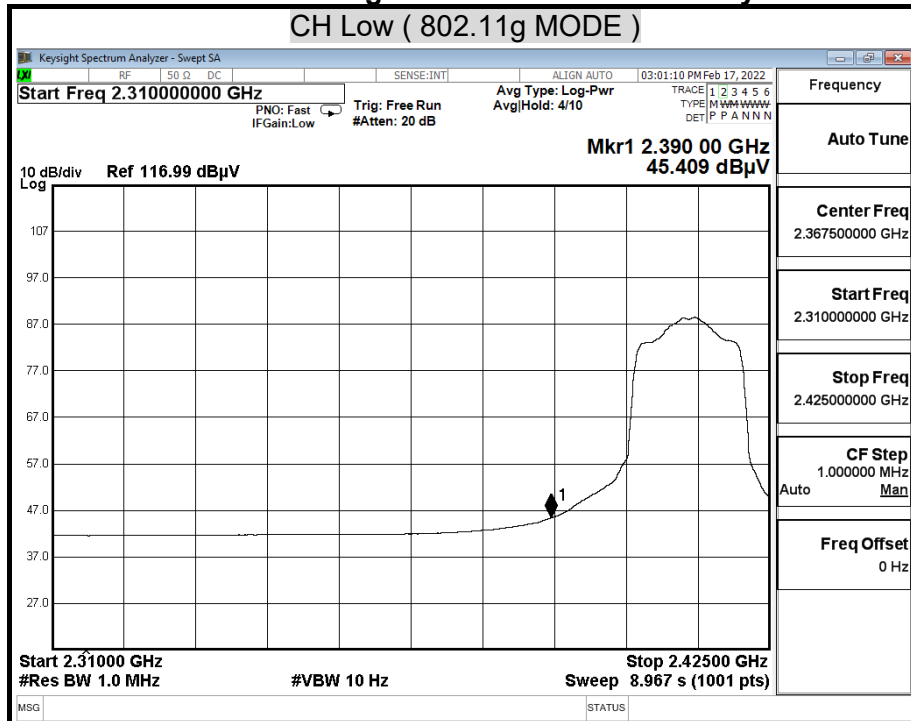
Detector mode : Peak

Polarity : Vertical



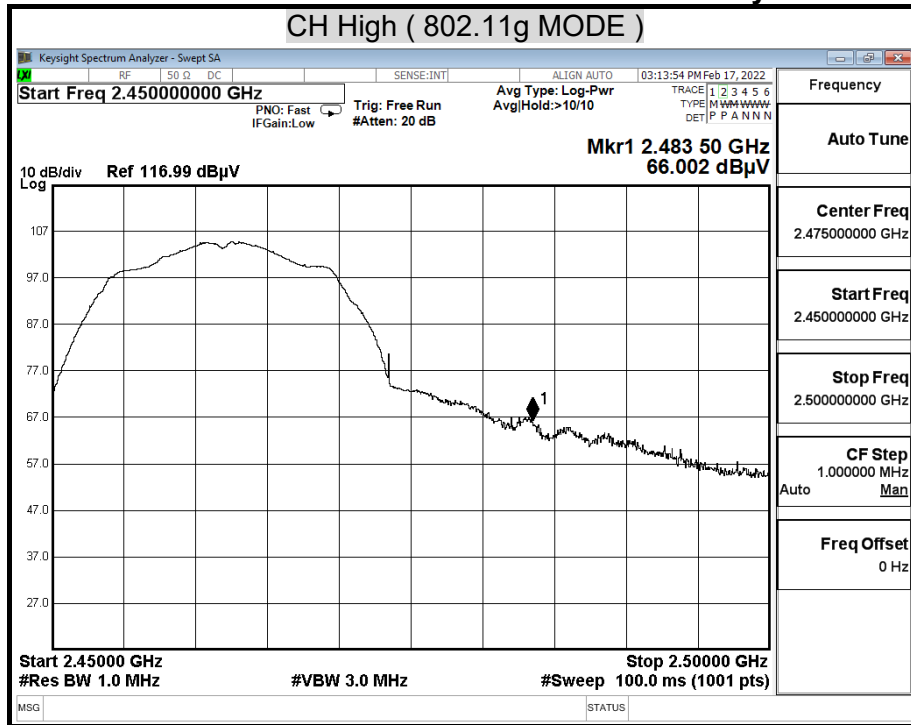
Detector mode : Average

Polarity : Vertical



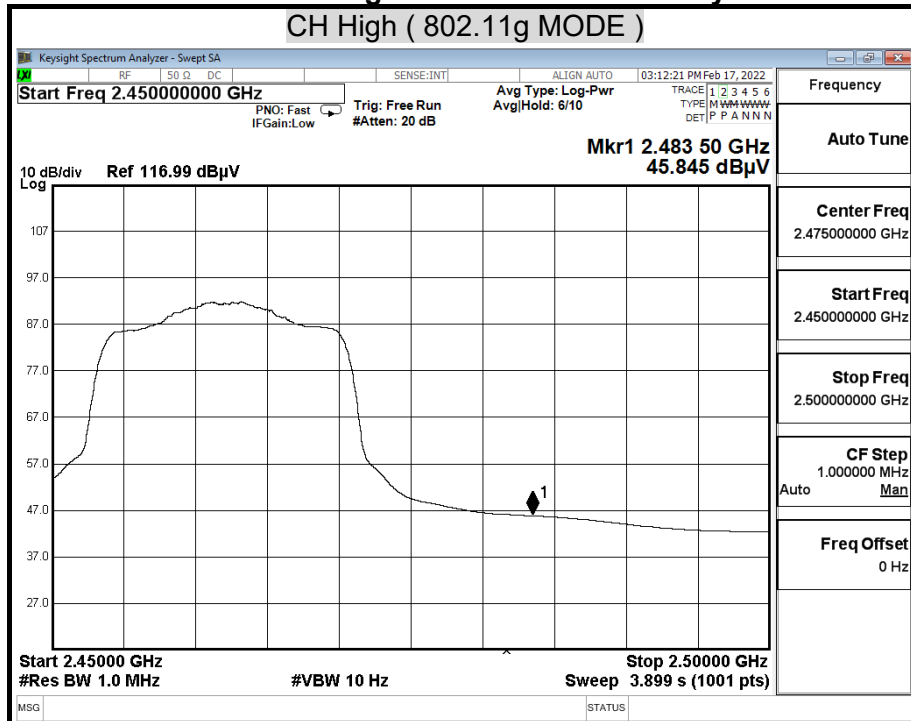
Detector mode : Peak

Polarity : Horizontal



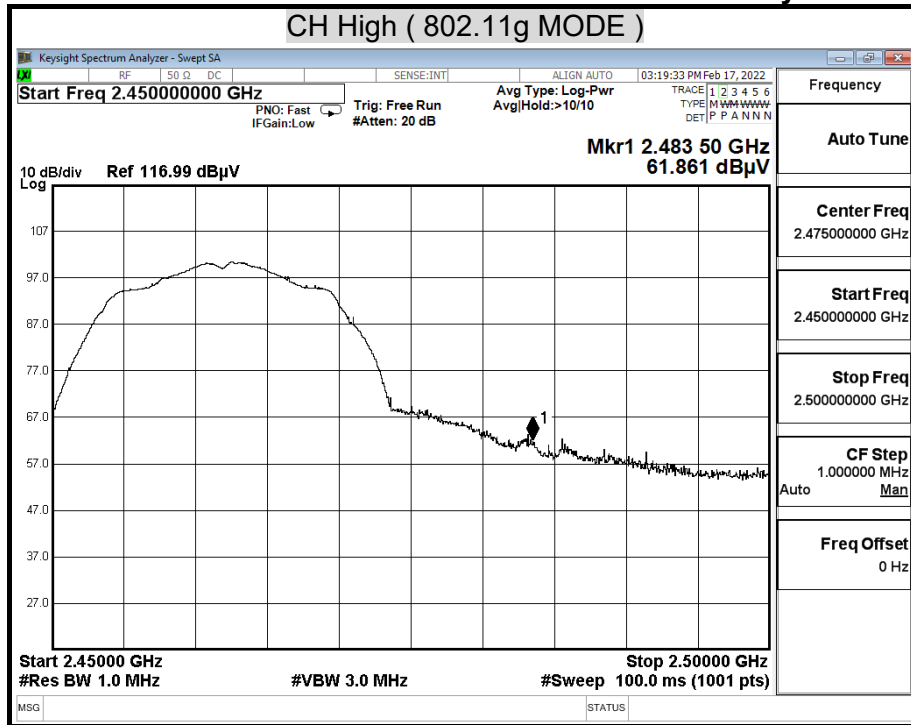
Detector mode : Average

Polarity : Horizontal



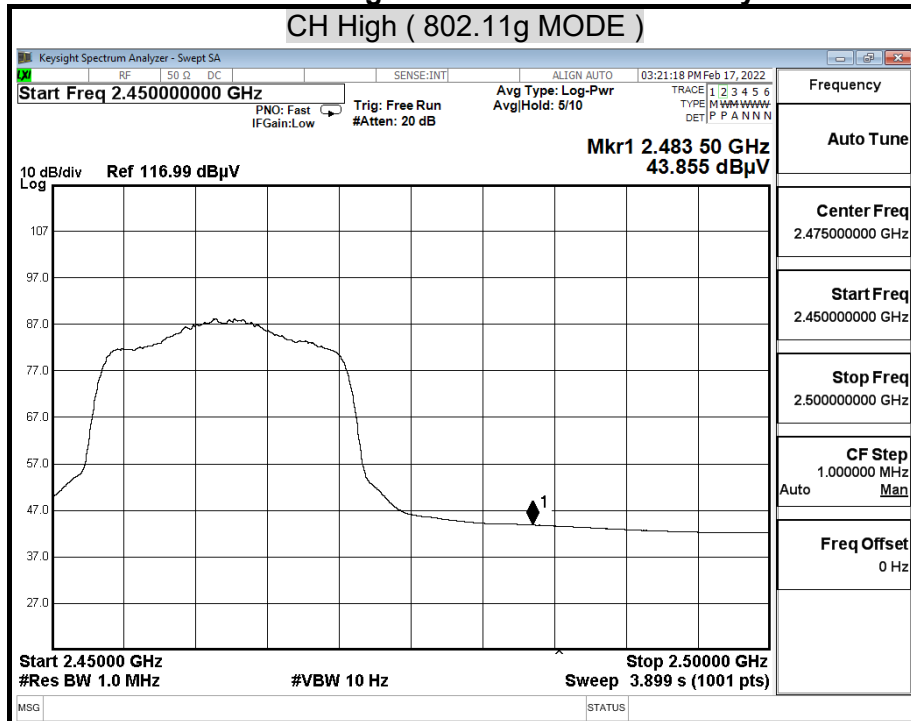
Detector mode : Peak

Polarity : Vertical



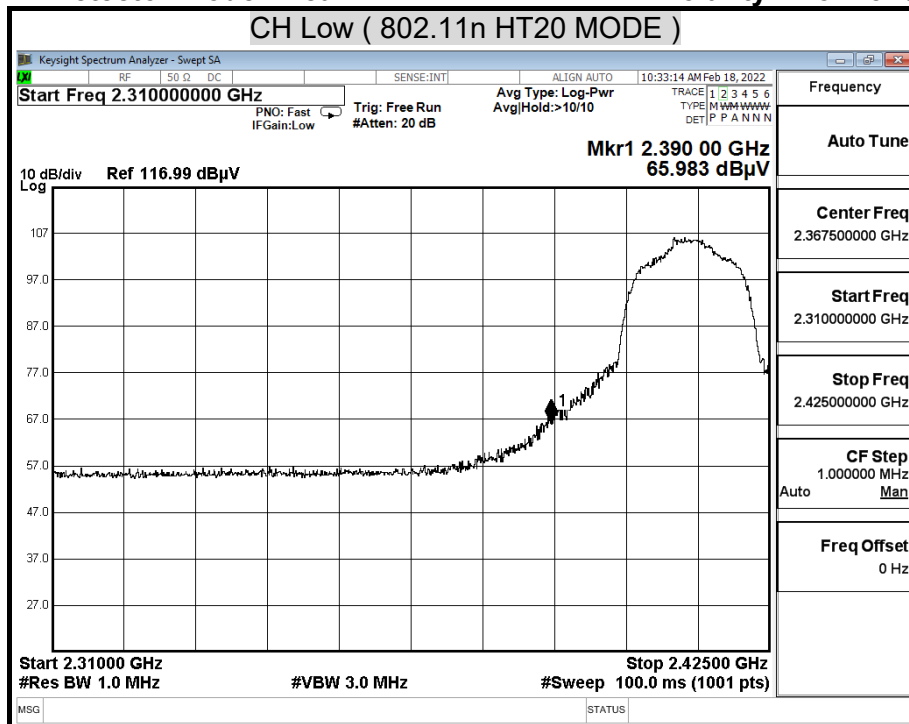
Detector mode : Average

Polarity : Vertical



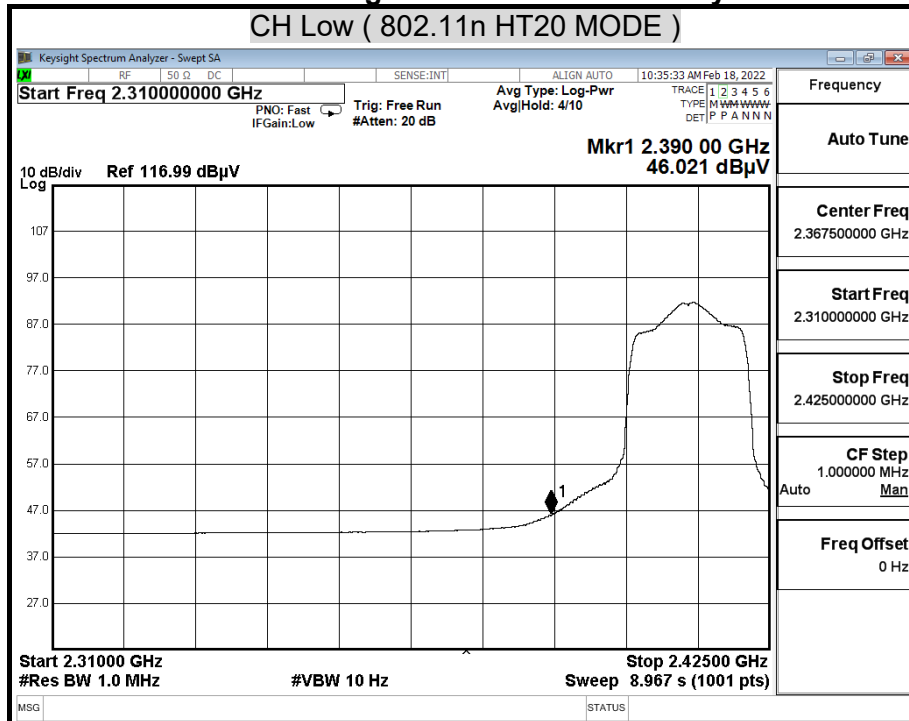
Detector mode : Peak

Polarity : Horizontal



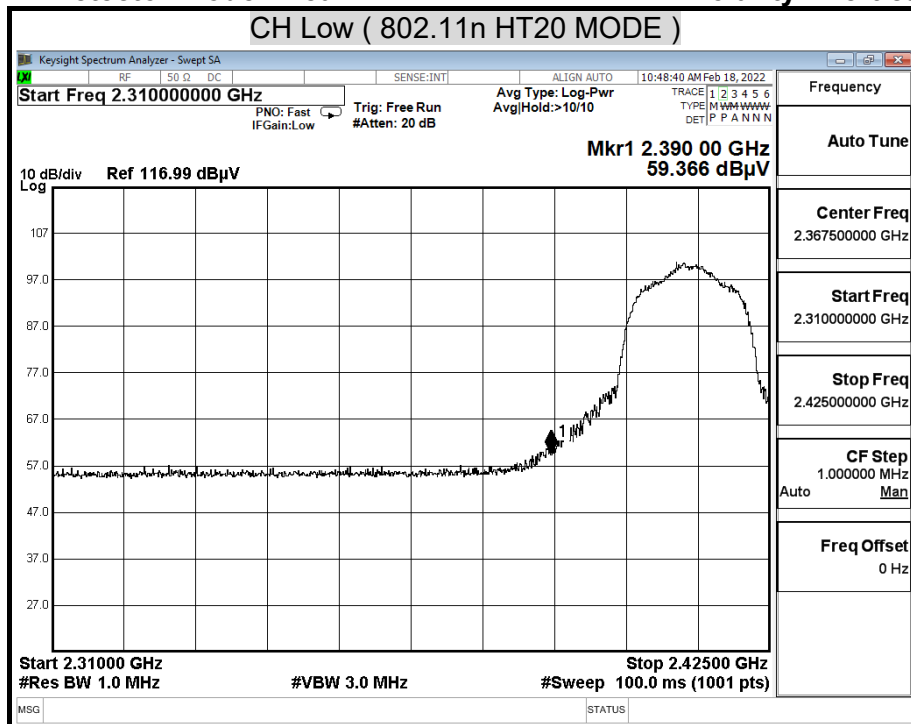
Detector mode : Average

Polarity : Horizontal



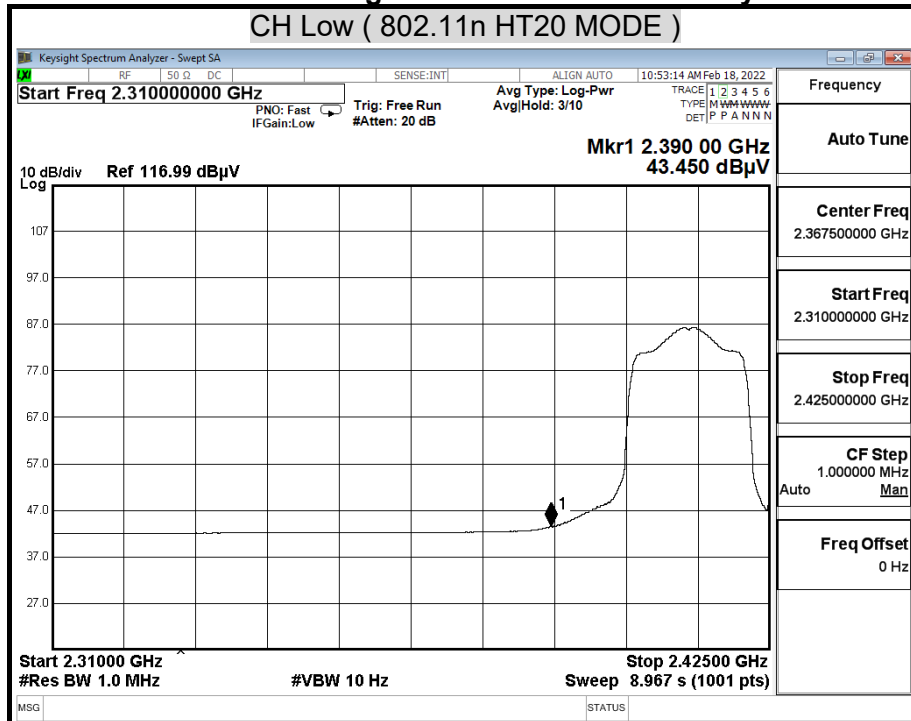
Detector mode : Peak

Polarity : Vertical



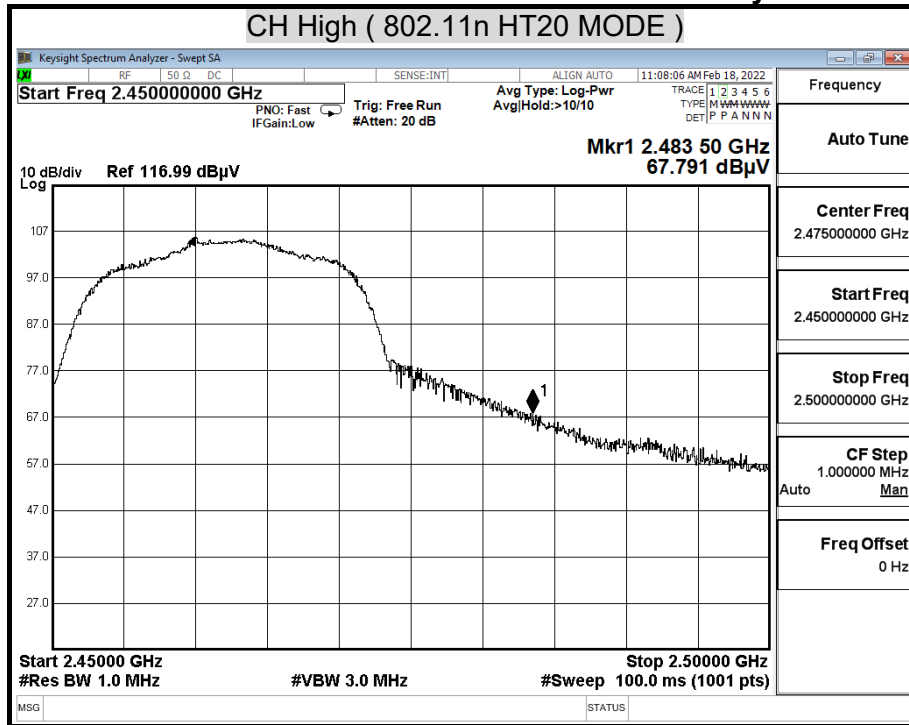
Detector mode : Average

Polarity : Vertical



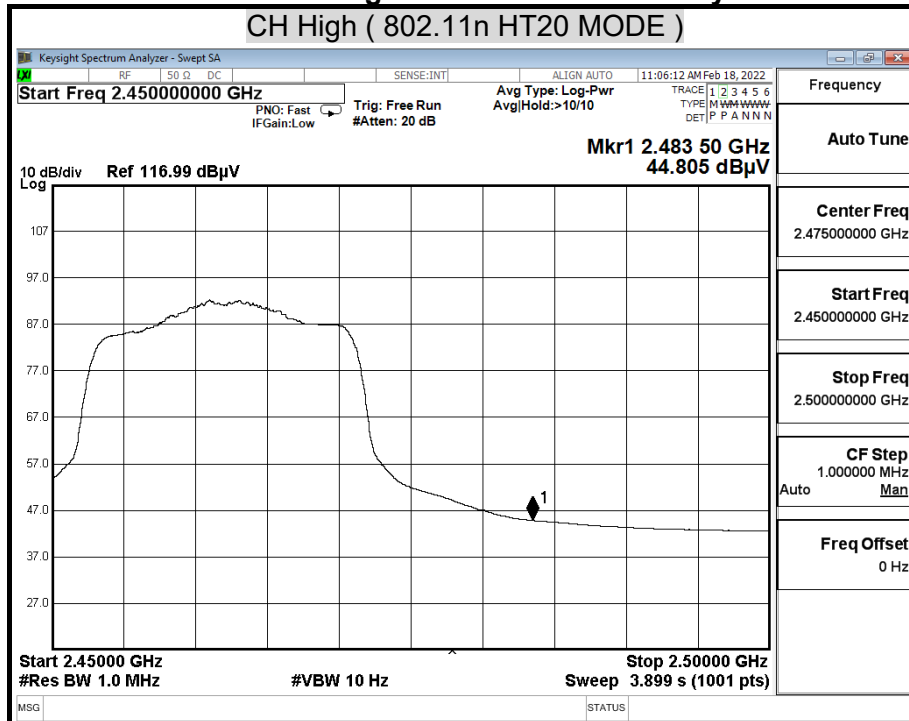
Detector mode : Peak

Polarity : Horizontal



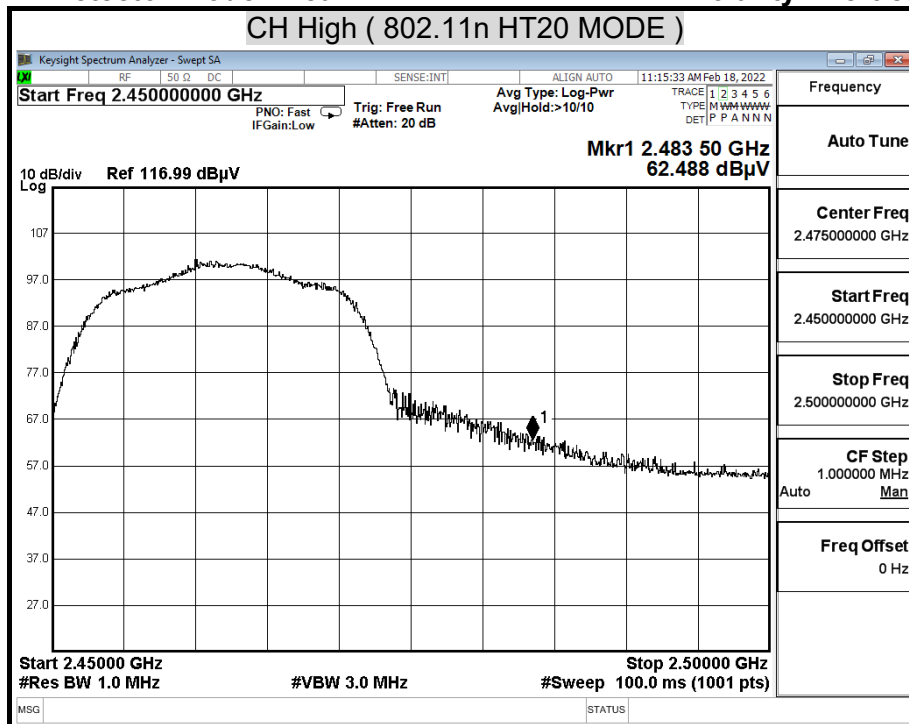
Detector mode : Average

Polarity : Horizontal



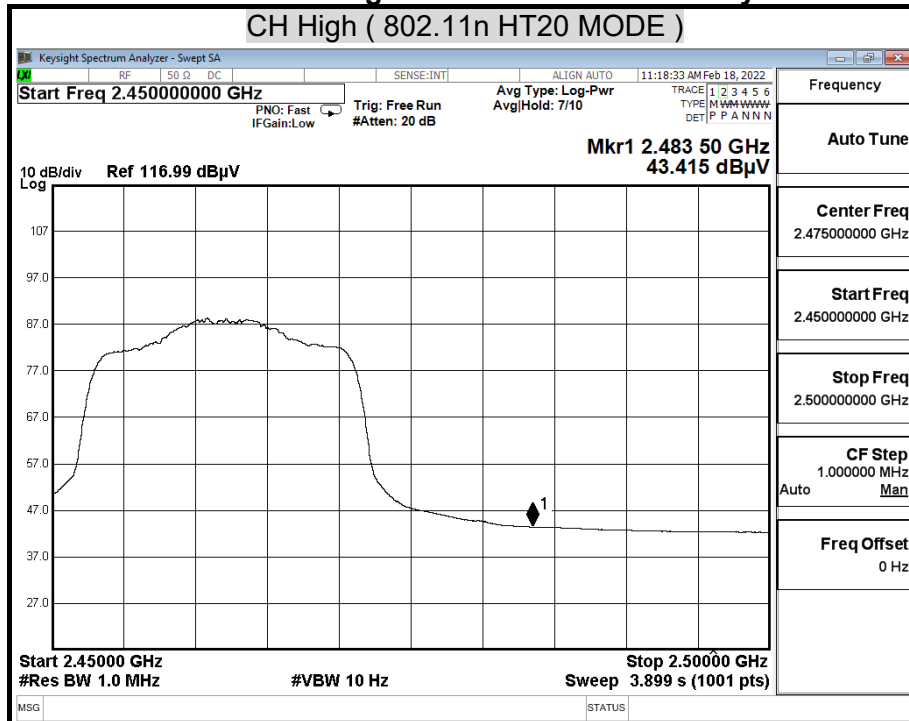
Detector mode : Peak

Polarity : Vertical



Detector mode : Average

Polarity : Vertical

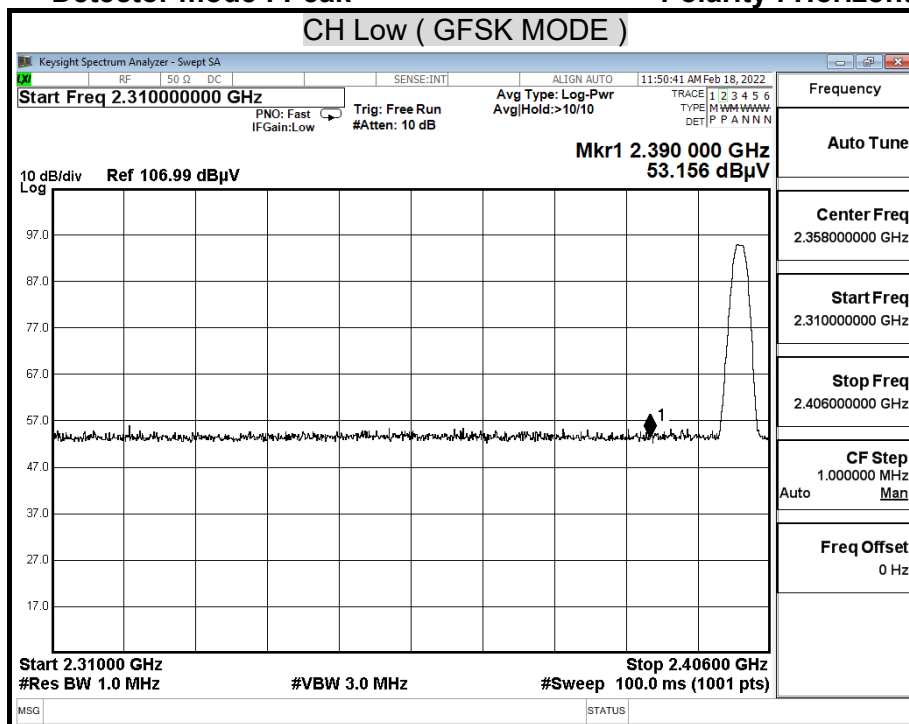


Bluetooth 4.0

Model Name	HV01	Test By	Ted Huang
Temp & Humidity	22.5°C, 68%	Test Date	2022/02/18

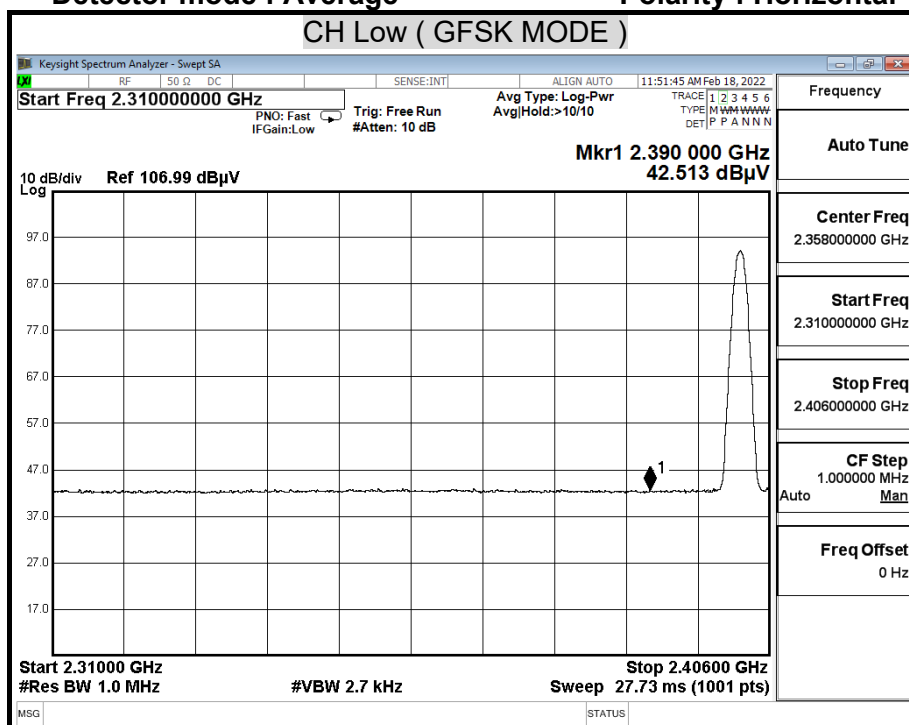
Detector mode : Peak

Polarity : Horizontal



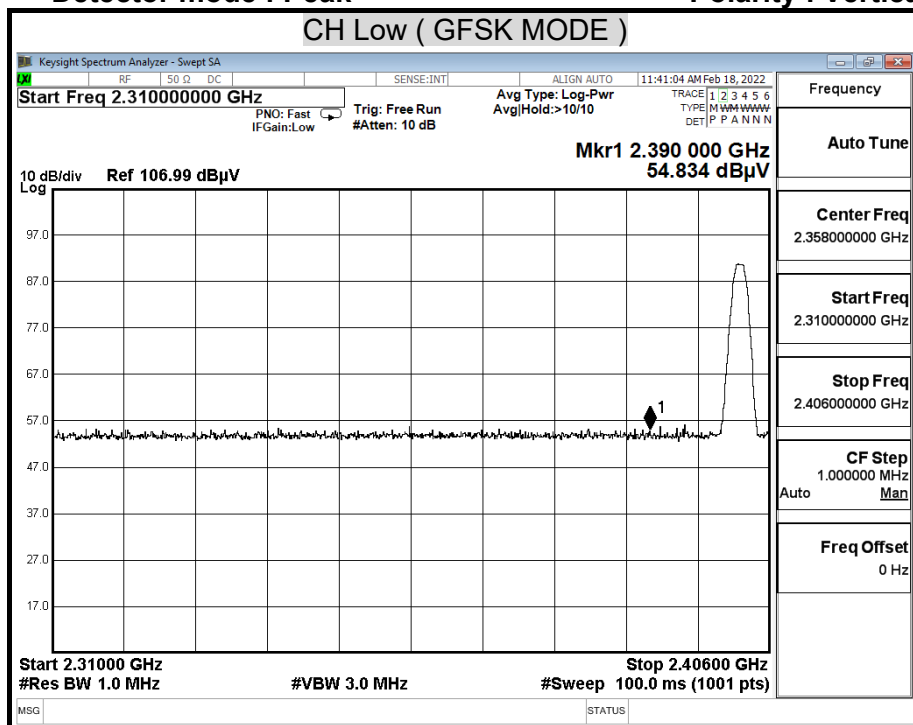
Detector mode : Average

Polarity : Horizontal



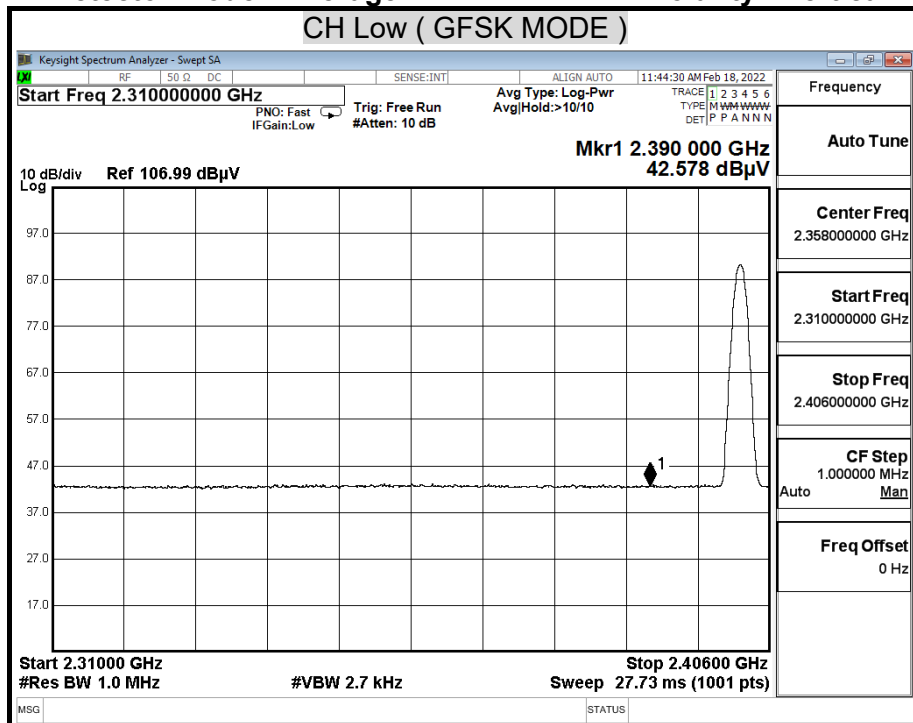
Detector mode : Peak

Polarity : Vertical



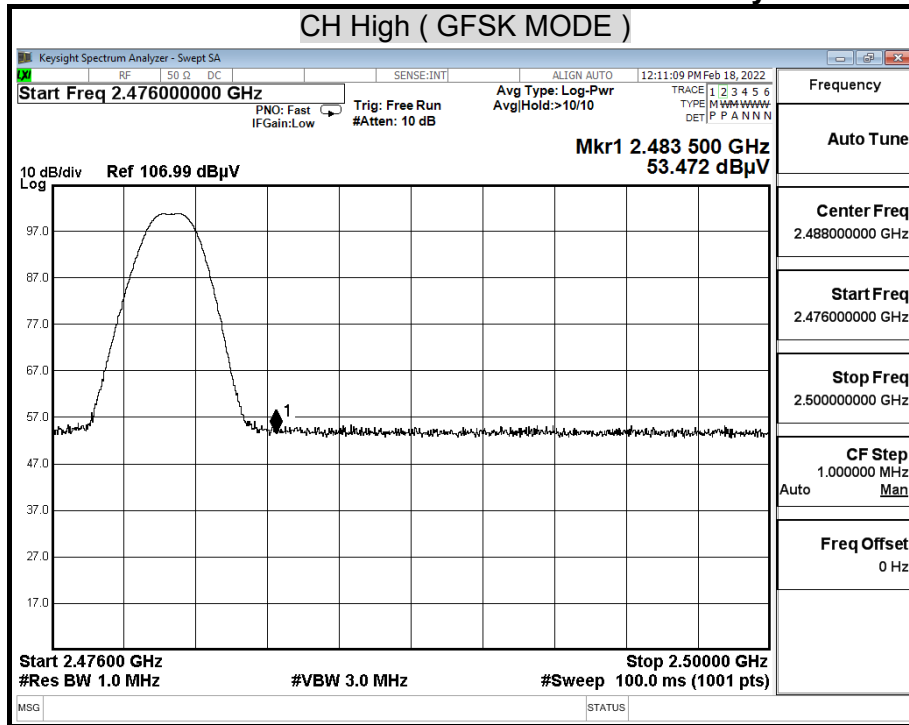
Detector mode : Average

Polarity : Vertical



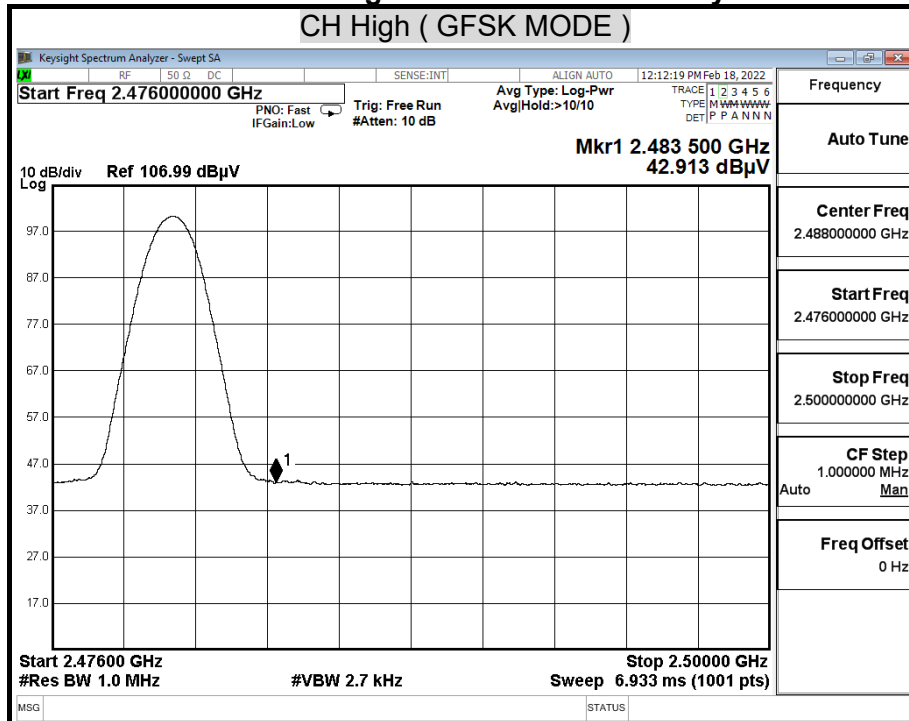
Detector mode : Peak

Polarity : Horizontal



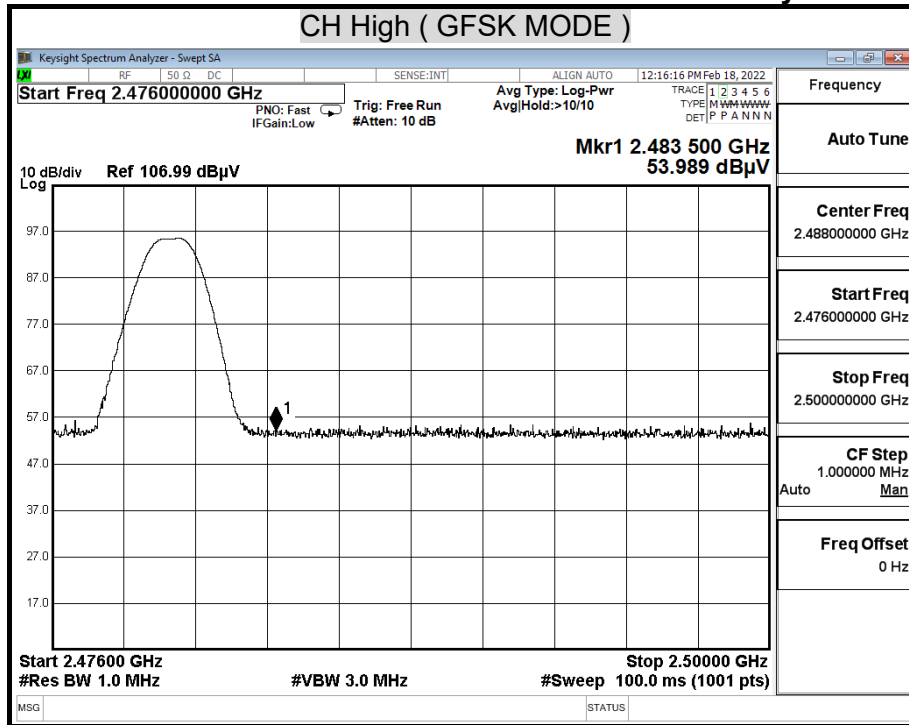
Detector mode : Average

Polarity : Horizontal



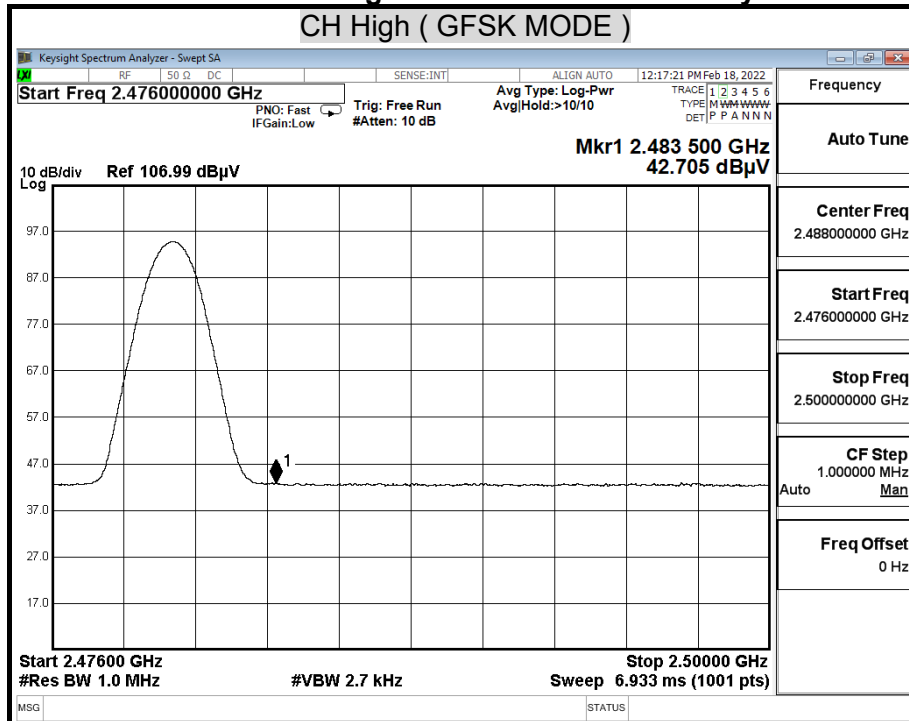
Detector mode : Peak

Polarity : Vertical



Detector mode : Average

Polarity : Vertical

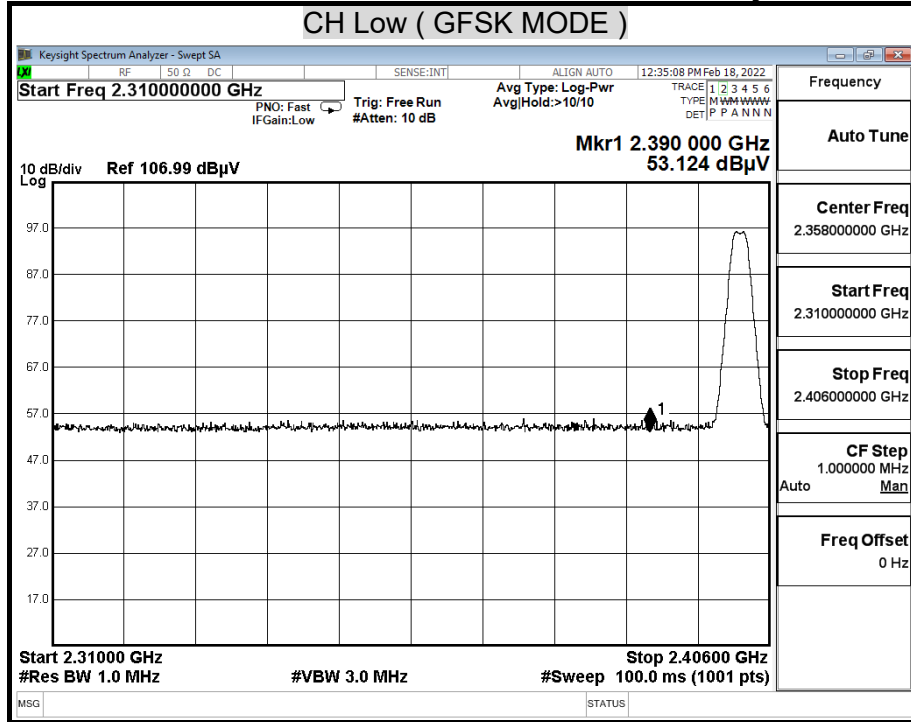


Bluetooth 5.0

Model Name	HV01	Test By	Ted Huang
Temp & Humidity	22.5°C, 68%	Test Date	2022/02/18

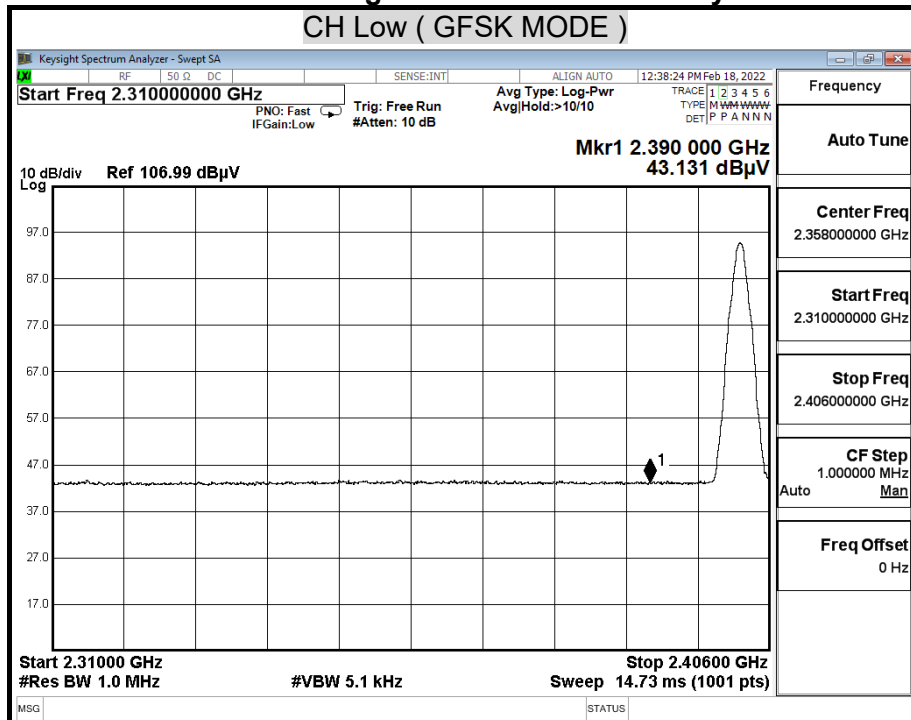
Detector mode : Peak

Polarity : Horizontal



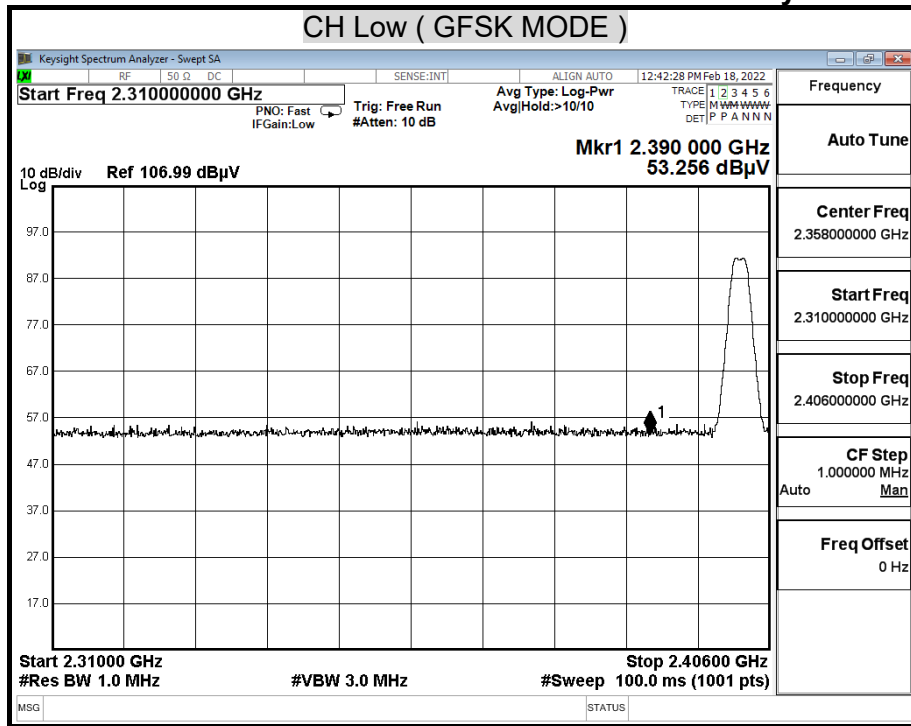
Detector mode : Average

Polarity : Horizontal



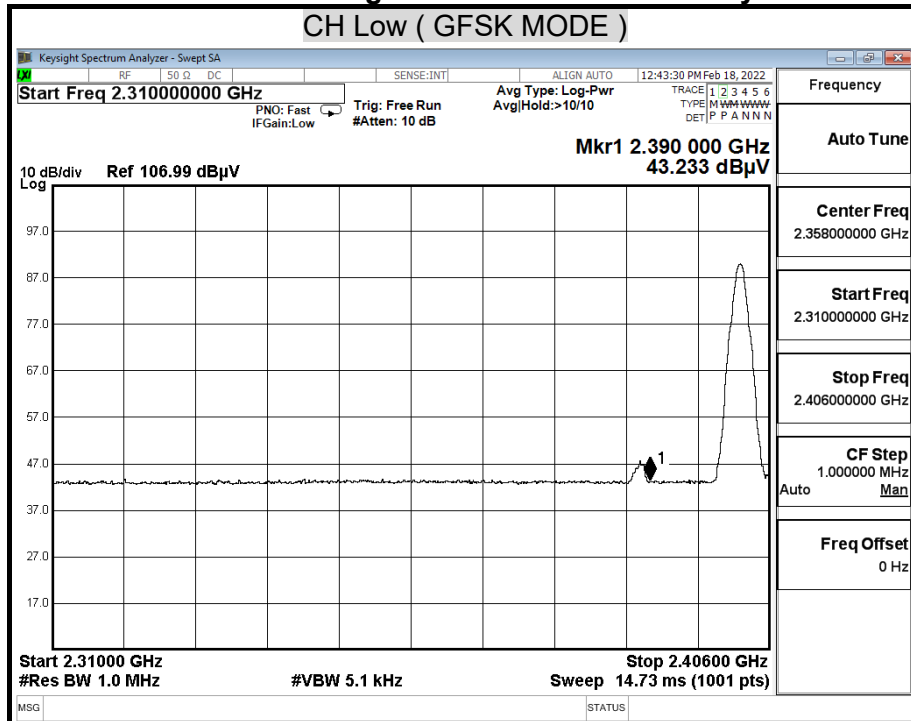
Detector mode : Peak

Polarity : Vertical



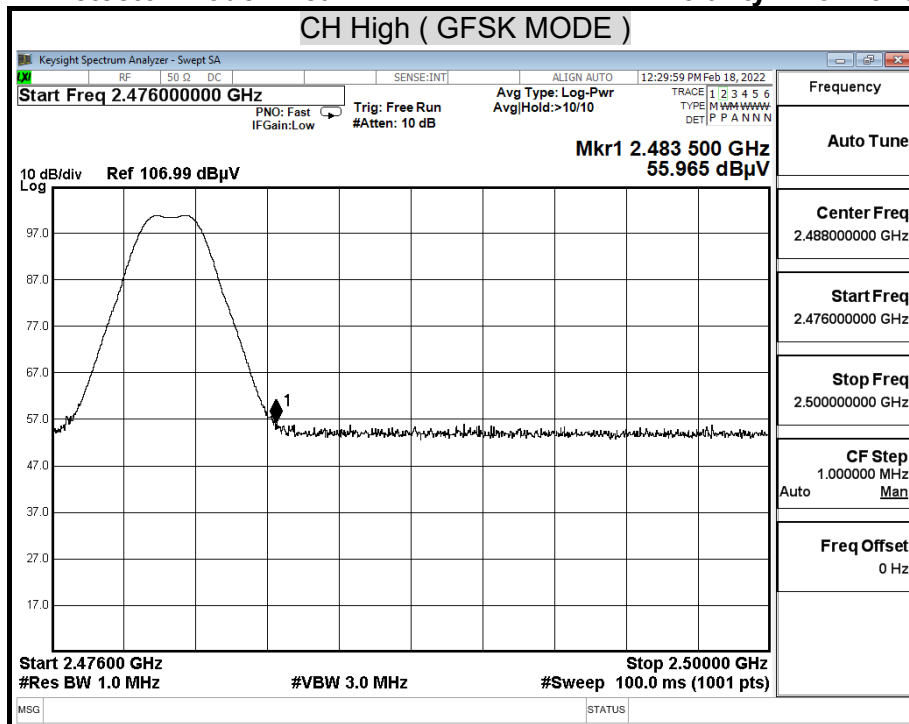
Detector mode : Average

Polarity : Vertical



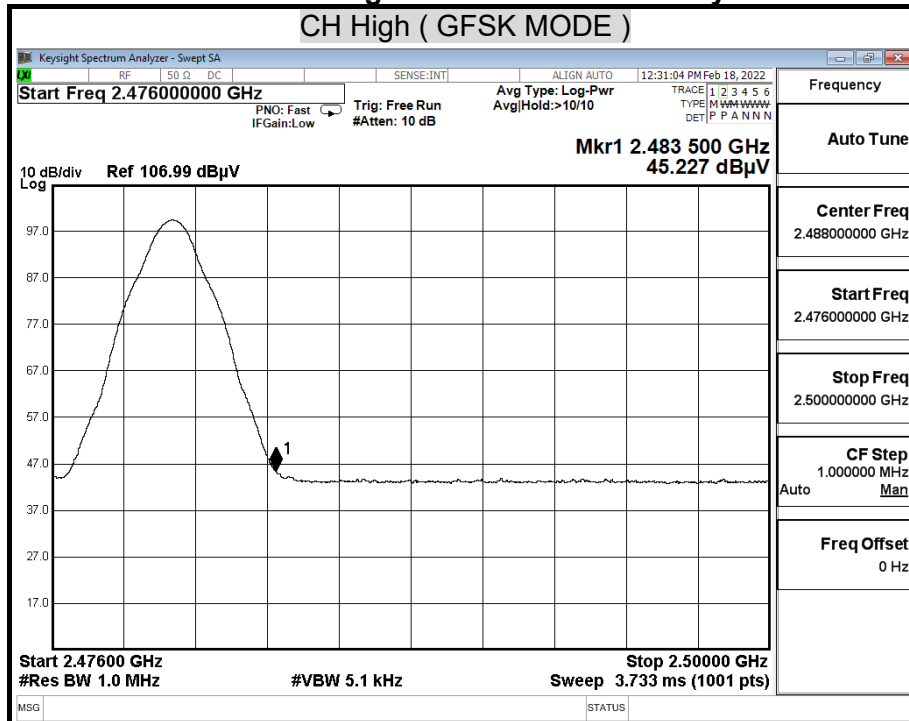
Detector mode : Peak

Polarity : Horizontal



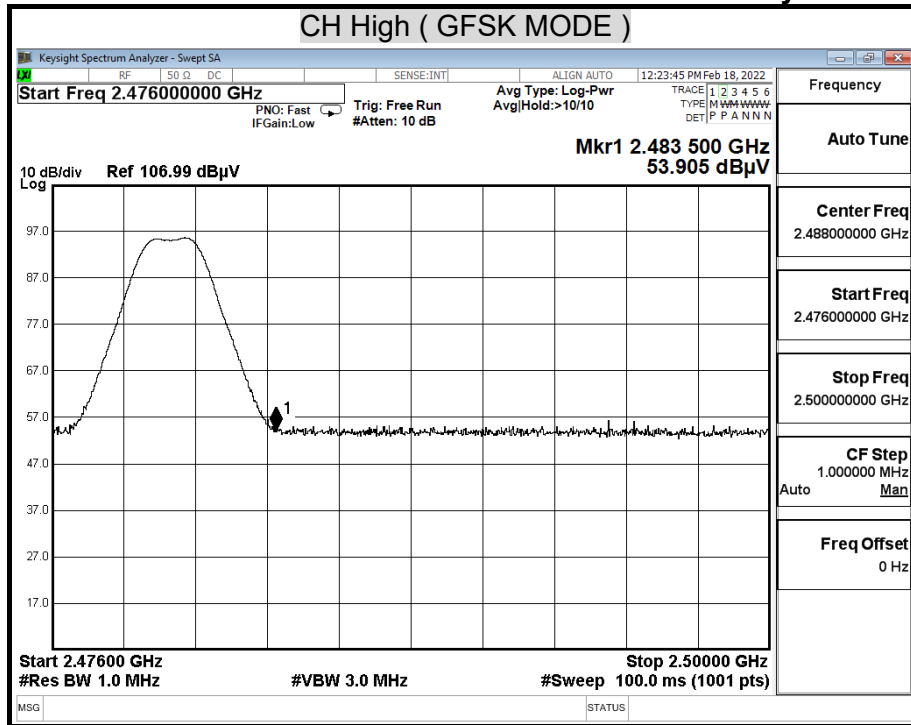
Detector mode : Average

Polarity : Horizontal



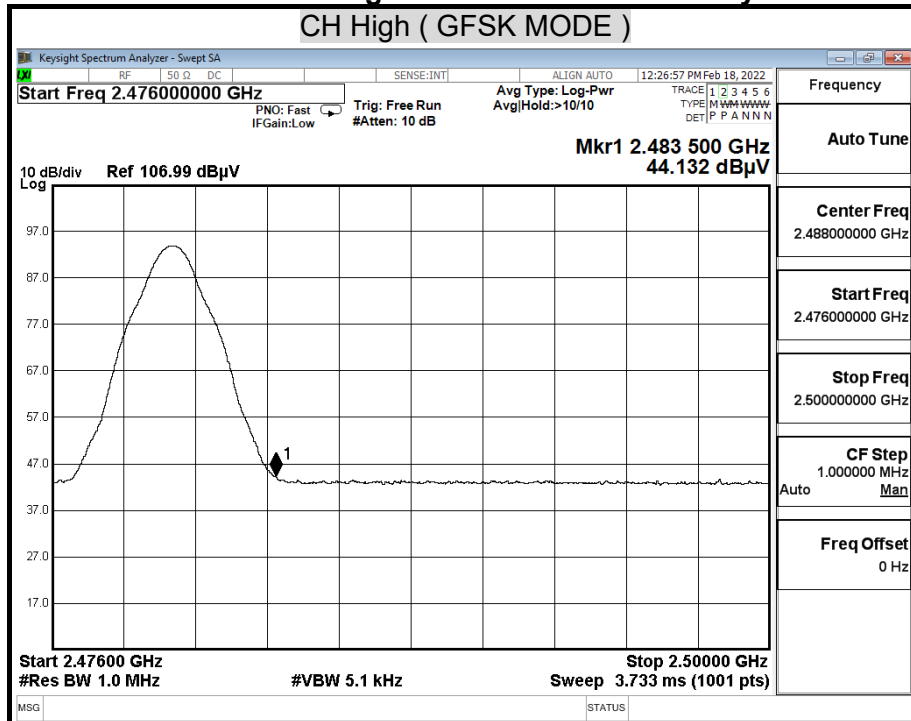
Detector mode : Peak

Polarity : Vertical



Detector mode : Average

Polarity : Vertical



8.7 POWERLINE CONDUCTED EMISSIONS

LIMITS

§ 15.207 (a) Except as shown in paragraph (b) and (c) this section, 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 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50 μ H/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal.

The lower limit applies at the boundary between the frequency ranges.

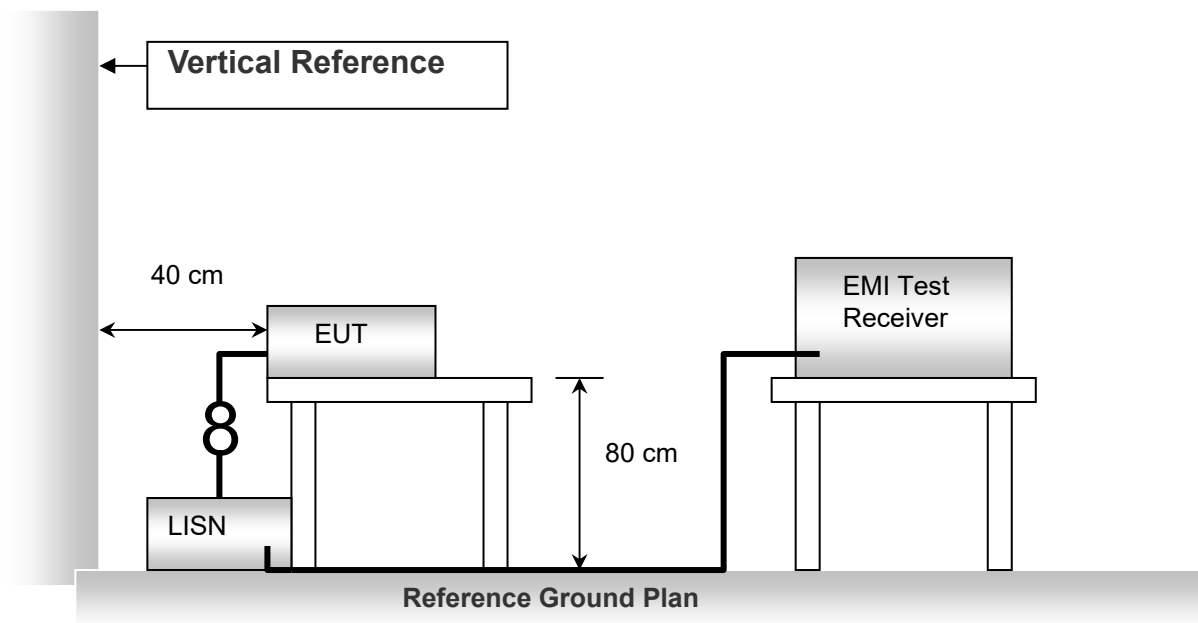
Frequency of Emission (MHz)	Conducted limit (dB μ v)	
	Quasi-peak	Average
0.15 - 0.5	66 to 56	56 to 46
0.5 - 5	56	46
5 - 30	60	50

TEST EQUIPMENTS

The following test equipments are used during the conducted power line tests :

Conducted Emission room #1					
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due
BNC Coaxial Cable	CCS	BNC50	11	01/21/2021	01/20/2022
EMI Test Receiver	R&S	ESCS 30	100348	02/25/2021	02/24/2022
LISN	FCC	FCC-LISN-50-32-2	08009	06/29/2021	06/28/2022
LISN	SCHWARZBECK	NNLK8130	8130124	01/15/2021	01/14/2022
Pulse Limiter	R&S	ESH3-Z2	100116	01/21/2021	01/20/2022
Software	e3(6.101222)				

TEST SETUP



TEST PROCEDURE

The EUT is placed on a non-conducting table 40 cm from the vertical ground plane and 80cm above the horizontal ground plane. The EUT IS CONFIGURED IN ACCORDANCE WITH ANSI C63.10.

The resolution bandwidth is set to 9 kHz for both quasi-peak detection and average detection measurements.

Line conducted data is recorded for both NEUTRAL and LINE.

TEST RESULTS

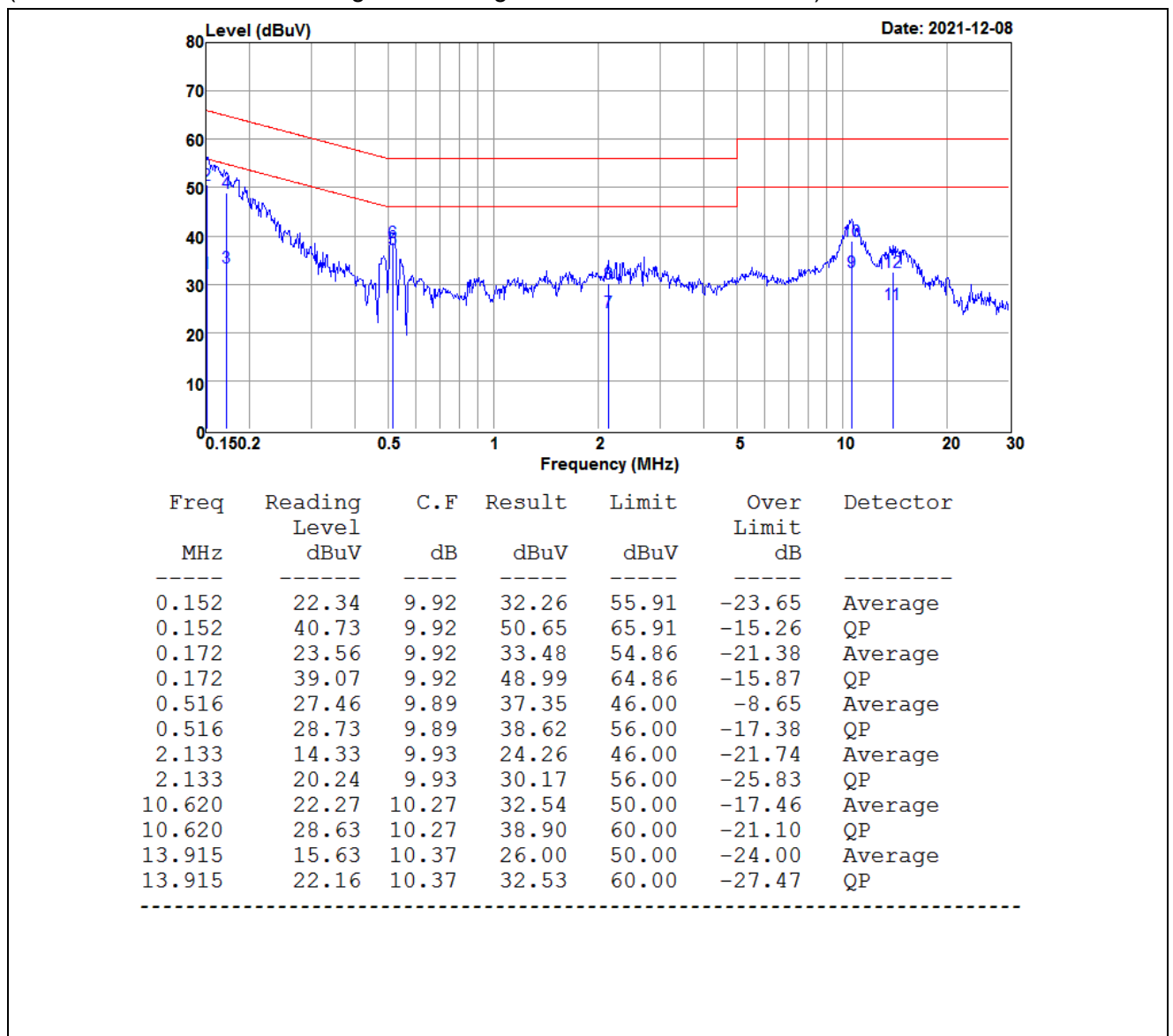
No non-compliance noted.

Test Voltage: AC 120V, 60Hz

Model No.	HV01	Test Mode	Normal Operation
Environmental Conditions	21.2°C, 74% RH	Resolution Bandwidth	9 kHz
Tested by	Oz Ding		

Line

(The chart below shows the highest readings taken from the final data.)



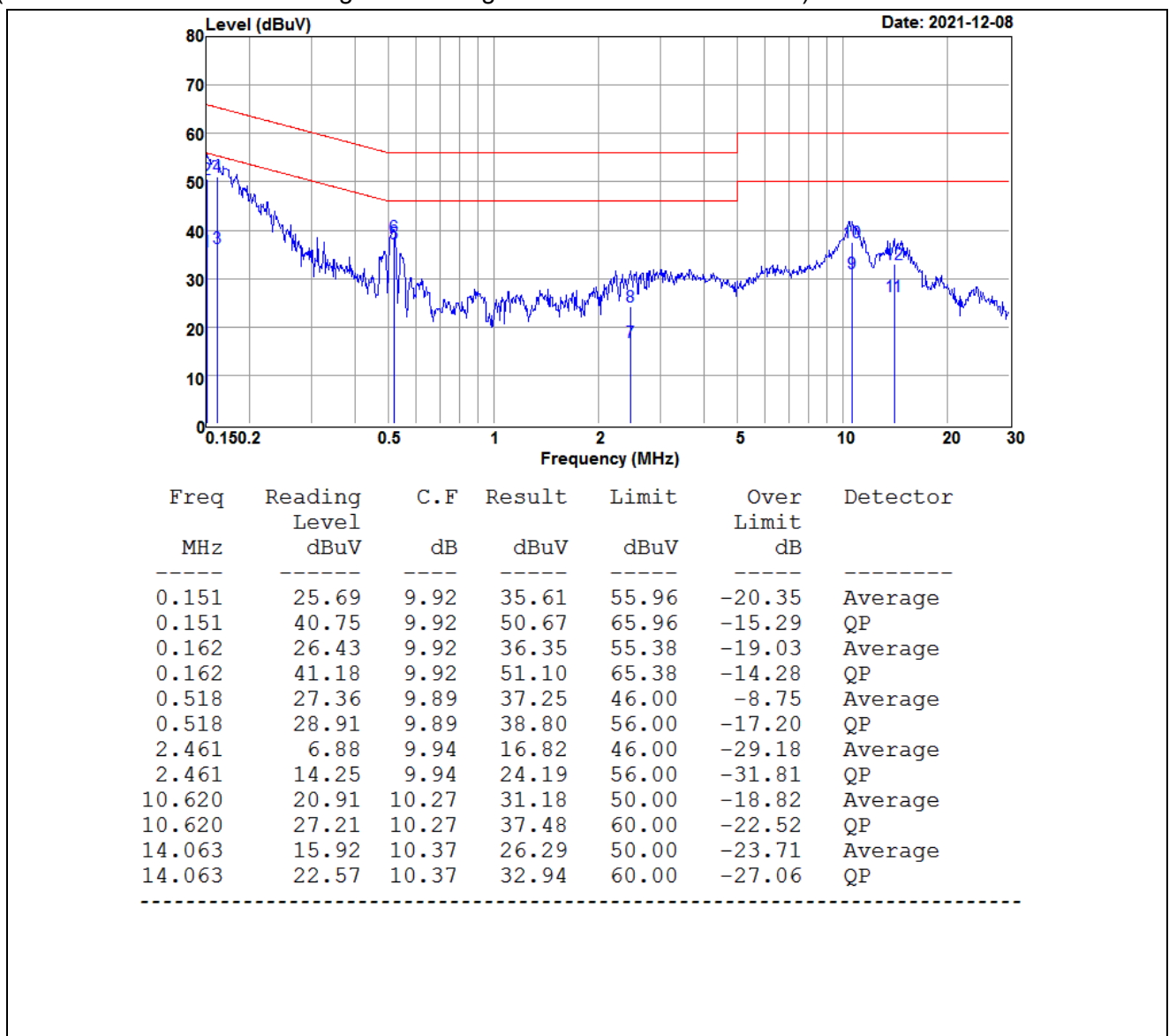
NOTE:

1. Measured Level (dBuV) = LISN Factor (dB) + Cable Loss (dB) + Meter Reading (dBuV)
2. Over Limit (dBuV) = Measured Level (dBuV) - Limits (dBuV)

Model No.	HV01	Test Mode	Normal Operation
Environmental Conditions	21.2°C, 74% RH	Resolution Bandwidth	9 kHz
Tested by	Oz Ding		

Neutral

(The chart below shows the highest readings taken from the final data.)



NOTE:

1. Measured Level (dBuV) = LISN Factor (dB) + Cable Loss (dB) + Meter Reading (dBuV)
2. Over Limit (dBuV) = Measured Level (dBuV) – Limits (dBuV)

9. ANTENNA REQUIREMENT

9.1 STANDARD APPLICABLE

For intentional device, according to FCC 47 CFR Section 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.

And according to FCC 47 CFR Section 15.247 (b), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

9.2 ANTENNA CONNECTED CONSTRUCTION

Type: WLAN EMBEDDED ANTENNA

Model: WLA1EM128-I0300

Manufacturer: BRITO

Gain: 2.0 dBi

=== END of Report ===