5.6. AC Power-Line Conducted Emissions

▣ **Test Requirements and limit, Part 15.207 & RSS-Gen [8.8]**

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 uH/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 frequency ranges.

Frequency Range (MHz)	Conducted Limit (dBuV)	
	Quasi-Peak	Average
0.15 ~ 0.5	66 to 56 *	56 to 46 *
0.5 ~ 5.0	56	46
5 ~ 30	60	50

* Decreases with the logarithm of the frequency

5.6.1. Test Setup

See test photographs for the actual connections between EUT and support equipment.

5.6.2. Test Procedures

Conducted emissions from the EUT were measured according to the ANSI C63.10-2013.

1. The test procedure is performed in a 6.5 m × 3.5 m × 3.5 m (L × W × H) shielded room. The EUT along with its peripherals were placed on a 1.0 m (W) × 1.5 m (L) and 0.8 m in height wooden table and the EUT was adjusted to maintain a 0.4 meter space from a vertical reference plane.
2. The EUT was connected to power mains through a line impedance stabilization network (LISN) which provides 50 ohm coupling impedance for measuring instrument and the chassis ground was bounded to the horizontal ground plane of shielded room.
3. All peripherals were connected to the second LISN and the chassis ground also bounded to the horizontal ground plane of shielded room.
4. The excess power cable between the EUT and the LISN was bundled. The power cables of peripherals were unbundled. All connecting cables of EUT and peripherals were moved to find the maximum emission.

5.6.3. Test Results

Refer to the next page. (The worst case data was reported. The worst data is TM 1 & Lowest)

AC Power-Line Conducted Emissions (Graph)

Results of Conducted Emission

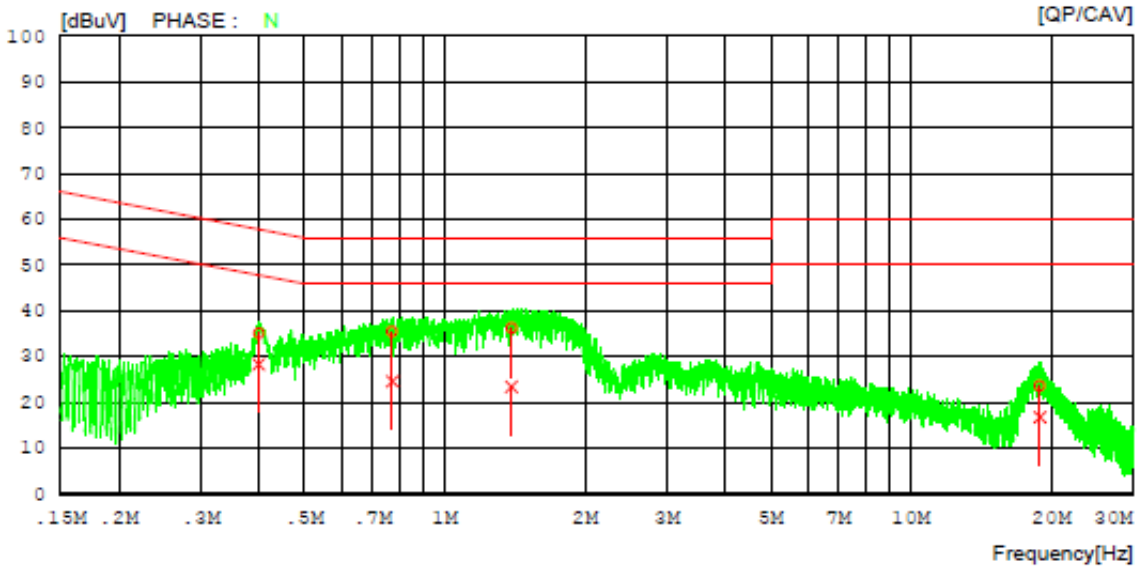
DTNC

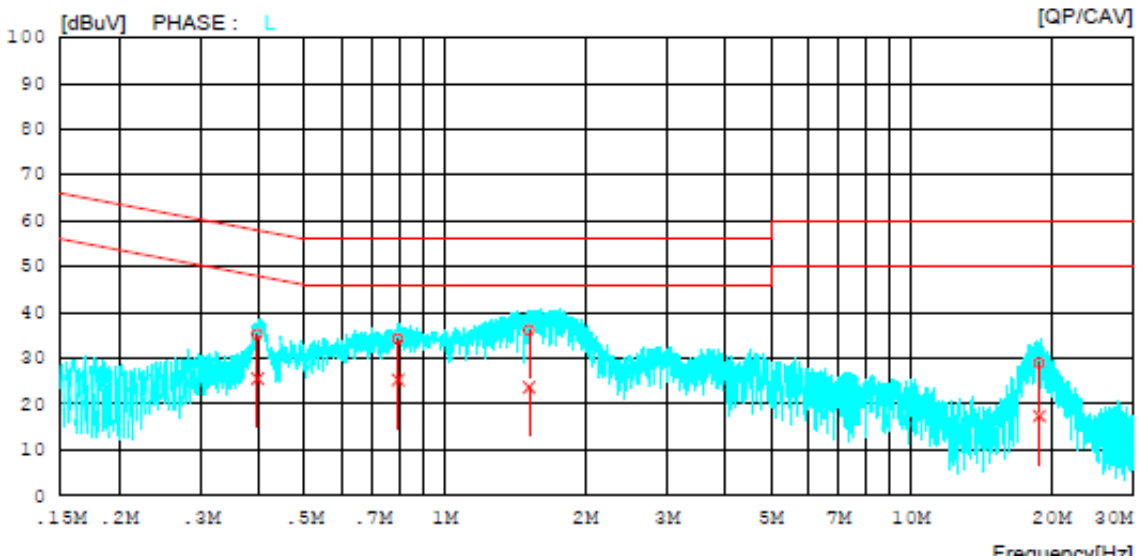
Date 2021-10-08

Order No.		Referrence No.	
Model No.	PM75	Power Supply	
Serial No.		Temp/Humi.	23 'C / 47 %
Test Condition	2.4G_b_2412	Operator	S,M.Gil

Memo

LIMIT : FCC P15.207 QP
FCC P15.207 AV





AC Power-Line Conducted Emissions (List)

Results of Conducted Emission

DTNC

Date 2021-10-08

Order No.		Referrence No.	
Model No.	PM75	Power Supply	
Serial No.		Temp/Humi.	23 'C / 47 %
Test Condition	2.4G_b_2412	Operator	S,M.Gil

Memo

LIMIT : FCC P15.207 QP
FCC P15.207 AV

NO	FREQ	READING QP	READING CAV	C.FACTOR	RESULT QP	RESULT CAV	LIMIT QP	LIMIT CAV	MARGIN QP	MARGIN CAV	PHASE
	[MHz]	[dBuV]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	
1	0.39927	25.13	18.46	9.91	35.04	28.37	57.87	47.87	22.83	19.50	N
2	0.77118	25.53	14.70	9.92	35.45	24.62	56.00	46.00	20.55	21.38	N
3	1.39097	26.13	13.38	10.05	36.18	23.43	56.00	46.00	19.82	22.57	N
4	18.89414	13.20	6.34	10.44	23.64	16.78	60.00	50.00	36.36	33.22	N
5	0.39640	25.21	15.64	9.91	35.12	25.55	57.93	47.93	22.81	22.38	L
6	0.79320	24.29	15.36	9.92	34.21	25.28	56.00	46.00	21.79	20.72	L
7	1.51686	26.04	13.55	10.06	36.10	23.61	56.00	46.00	19.90	22.39	L
8	18.84074	18.46	6.93	10.44	28.90	17.37	60.00	50.00	31.10	32.63	L

5.7. Occupied Bandwidth

▣ **Test Requirements, RSS-Gen [6.7]**

When an occupied bandwidth value is not specified in the applicable RSS, the transmitted signal bandwidth to be reported is to be its 99 % emission bandwidth, as calculated or measured.

5.7.1. Test Setup

Refer to the APPENDIX I.

5.7.2. Test Procedures

The 99 % power bandwidth was measured with a calibrated spectrum analyzer.

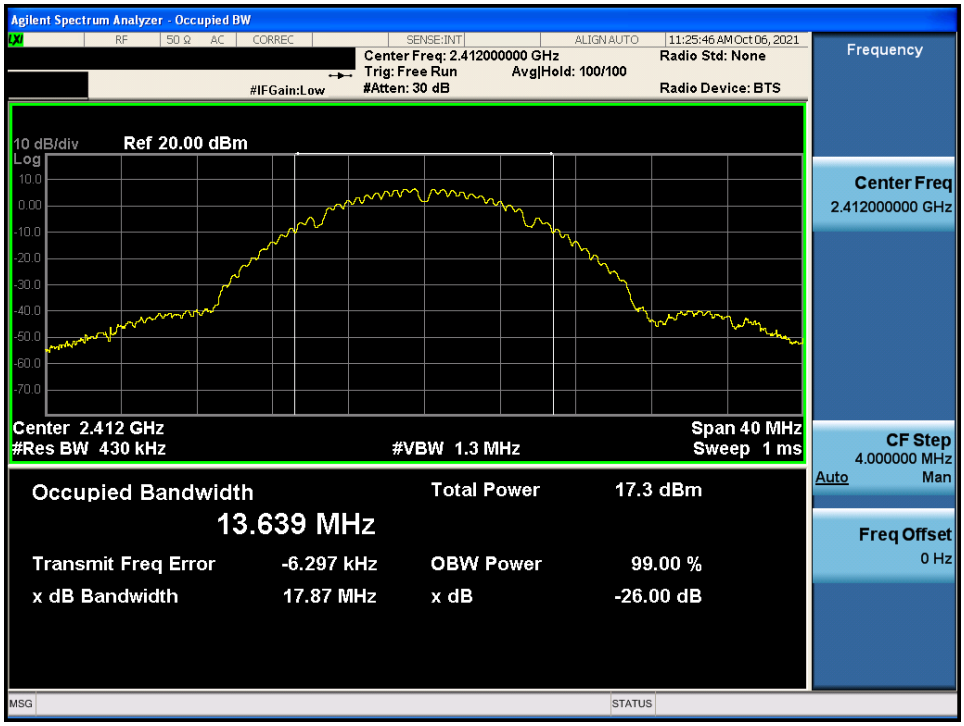
The resolution bandwidth (RBW) shall be in the range of 1 % to 5 % of the occupied bandwidth (OBW) and video bandwidth (VBW) shall be approximately 3 × RBW.

5.7.3. Test Results

Test Mode	Frequency	Test Results (MHz)
TM 1	2 412	13.64
	2 437	13.79
	2 462	13.53
TM 2	2 412	16.94
	2 437	17.03
	2 462	16.93
TM 3	2 412	18.08
	2 437	18.17
	2 462	17.96
TM 4	2 422	36.84
	2 437	37.05
	2 452	36.61

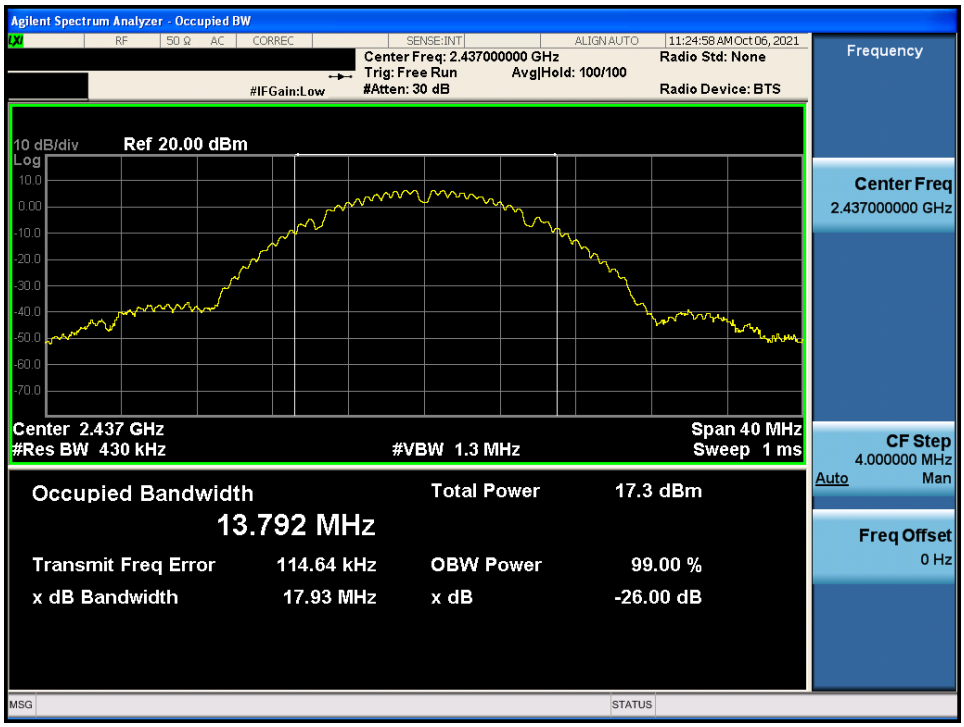
Occupied Bandwidth

TM 1 & 2 412



Occupied Bandwidth

TM 1 & 2 437

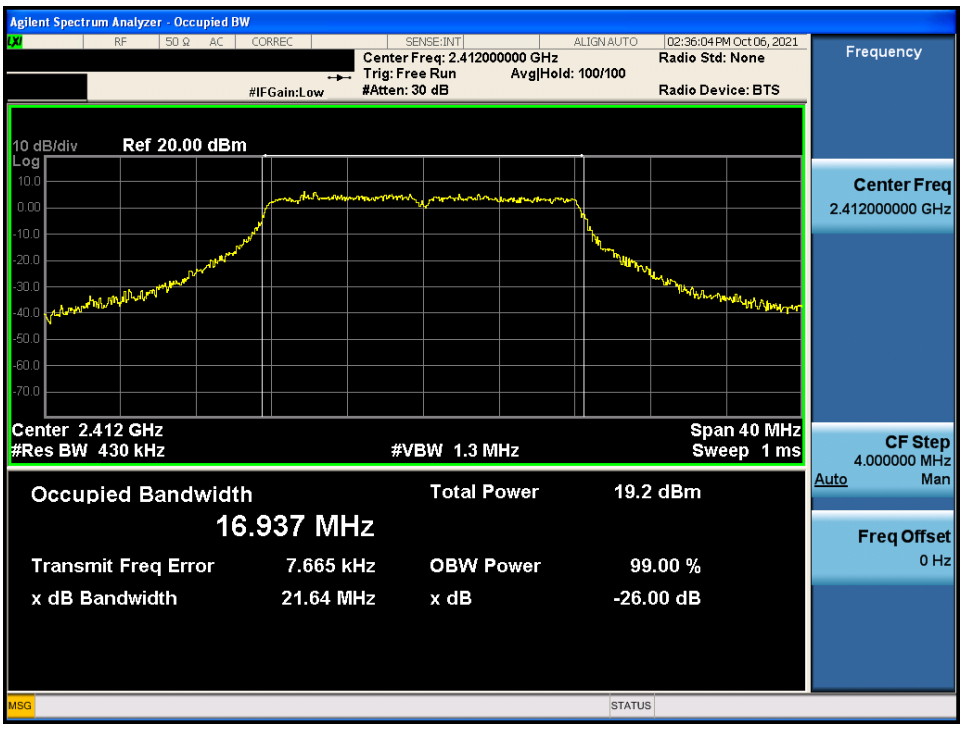


Occupied Bandwidth

TM 1 & 2 462

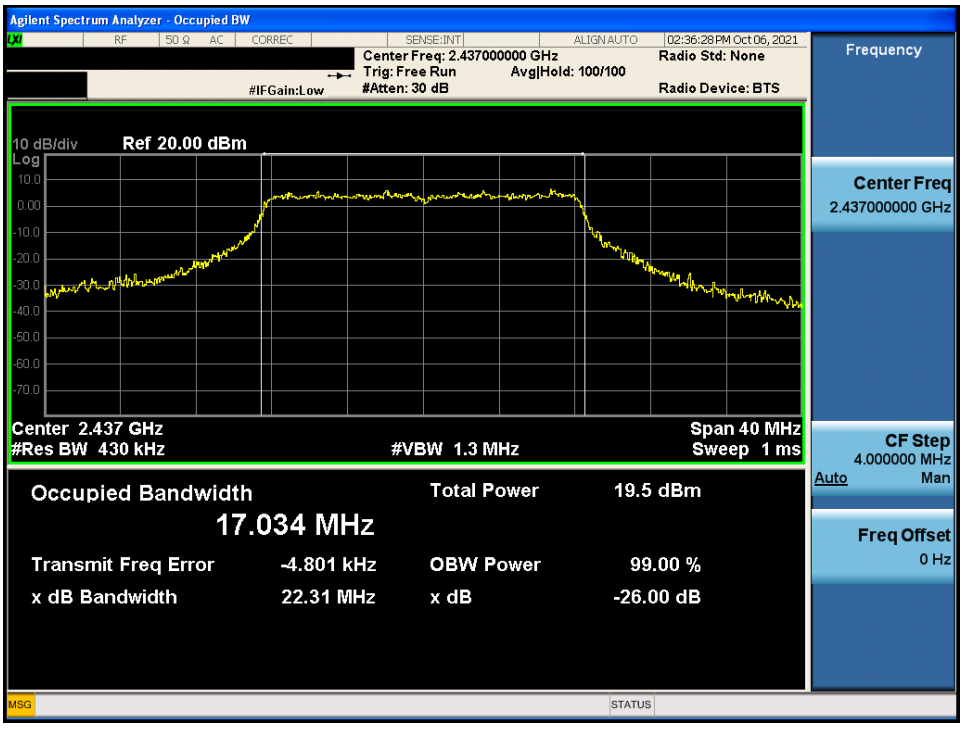
Occupied Bandwidth

TM 2 & 2 412



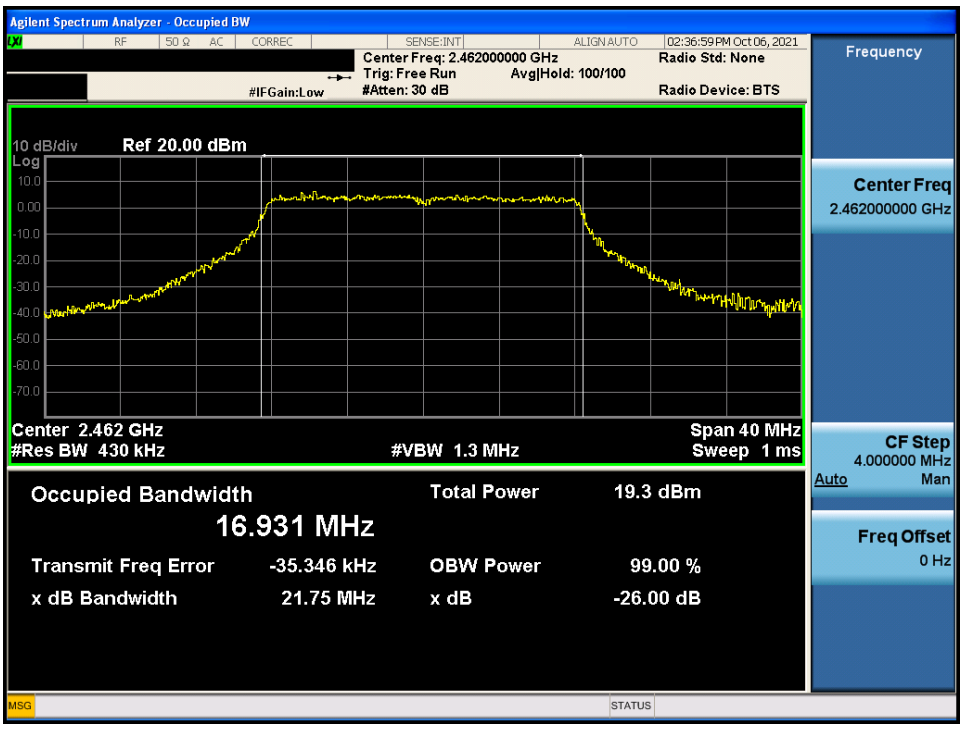
Occupied Bandwidth

TM 2 & 2 437



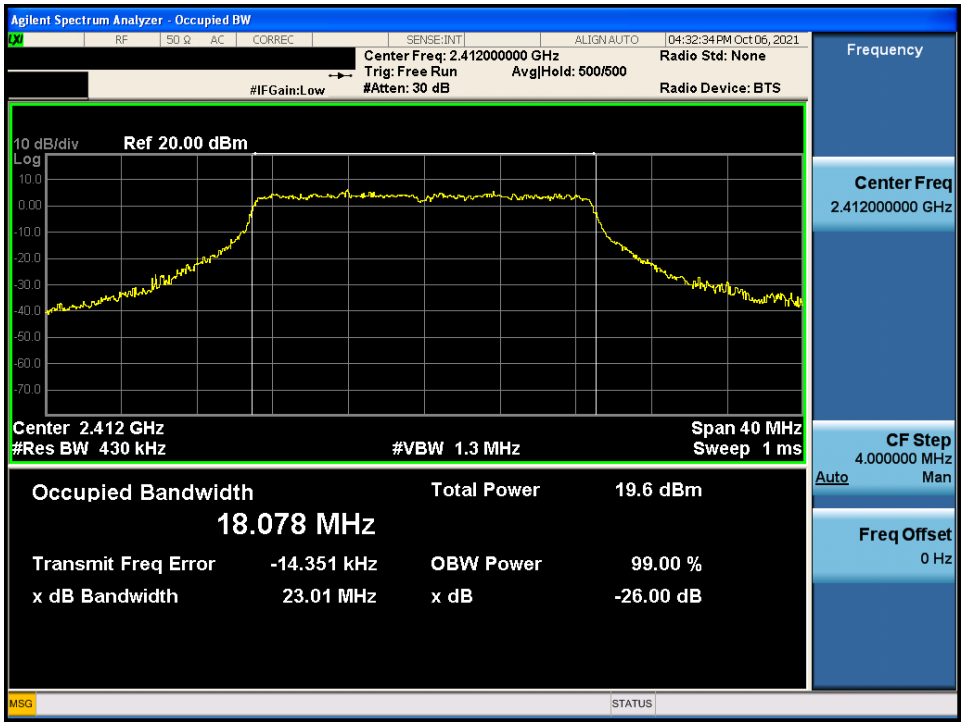
Occupied Bandwidth

TM 2 & 2 462



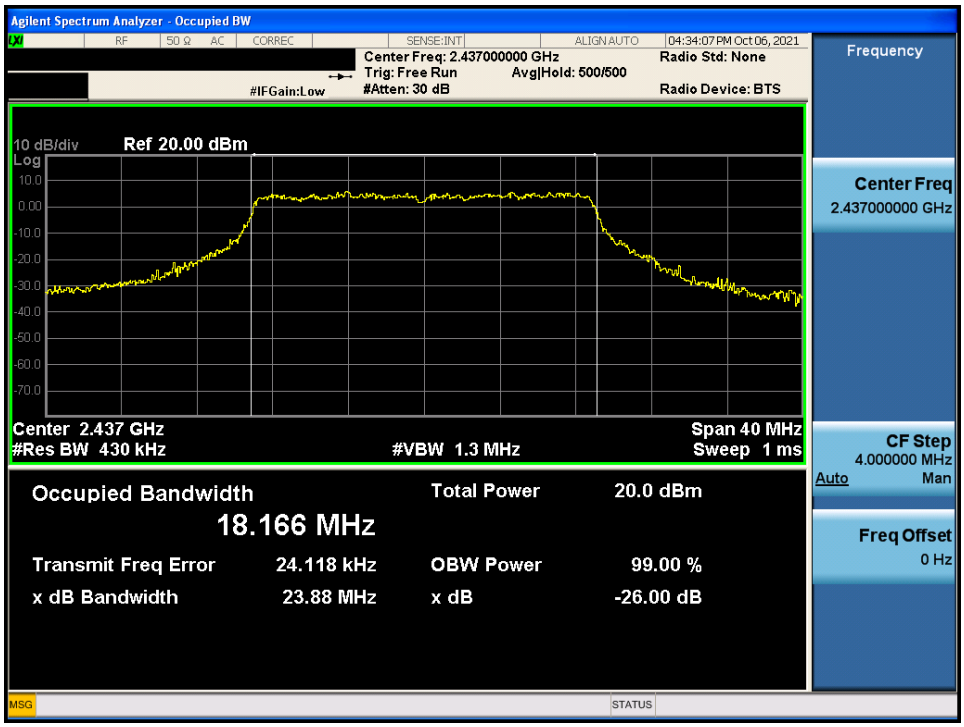
Occupied Bandwidth

TM 3 & 2 412



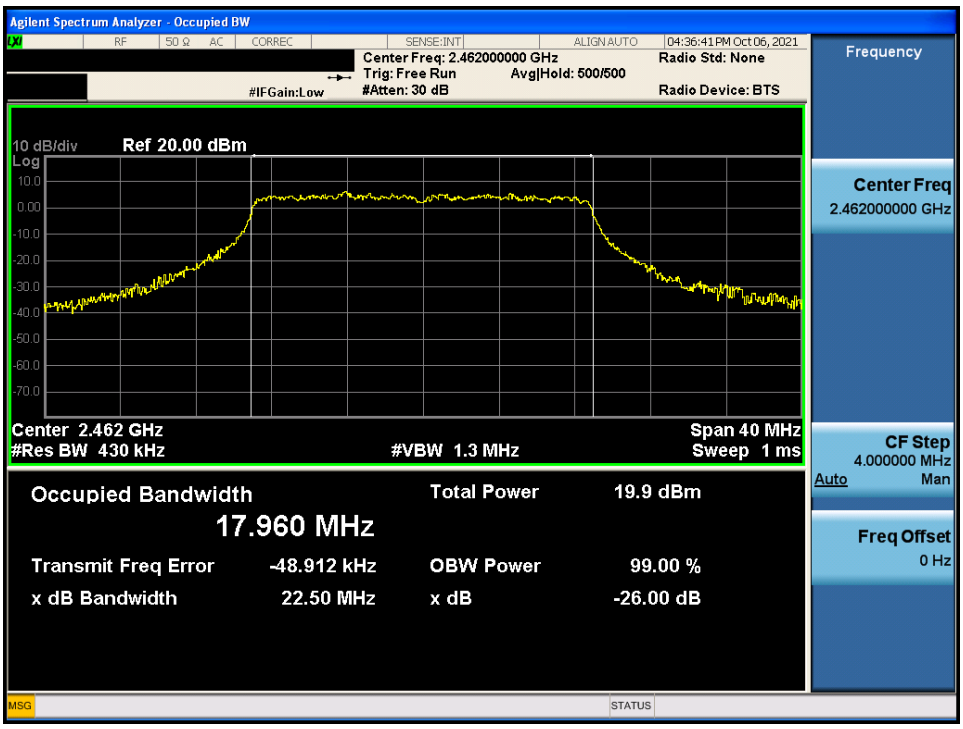
Occupied Bandwidth

TM 3 & 2 437



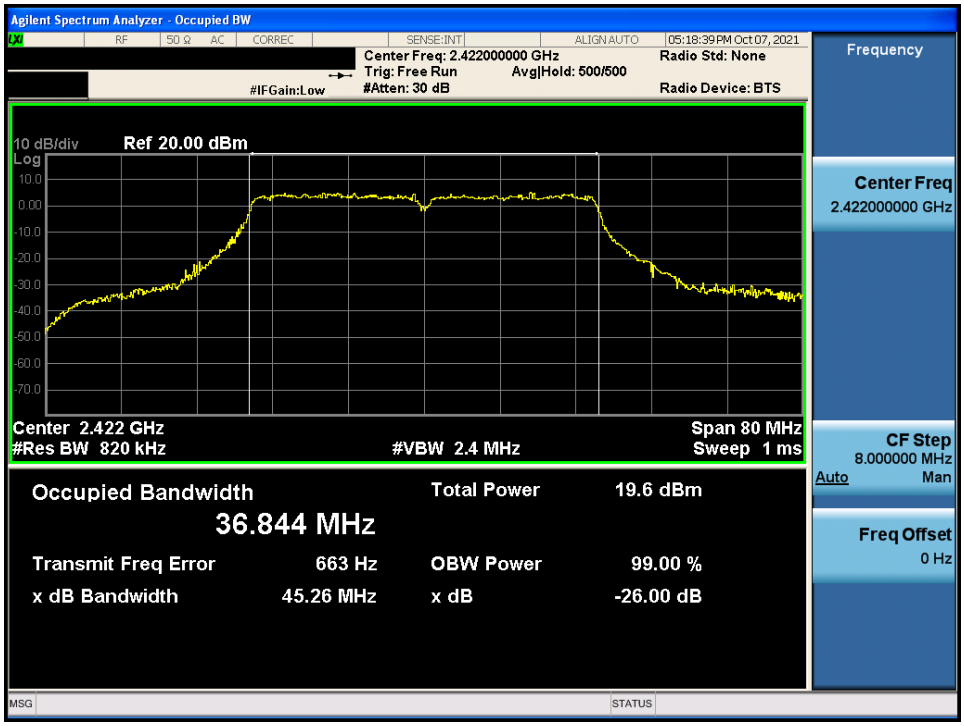
Occupied Bandwidth

TM 3 & 2 462



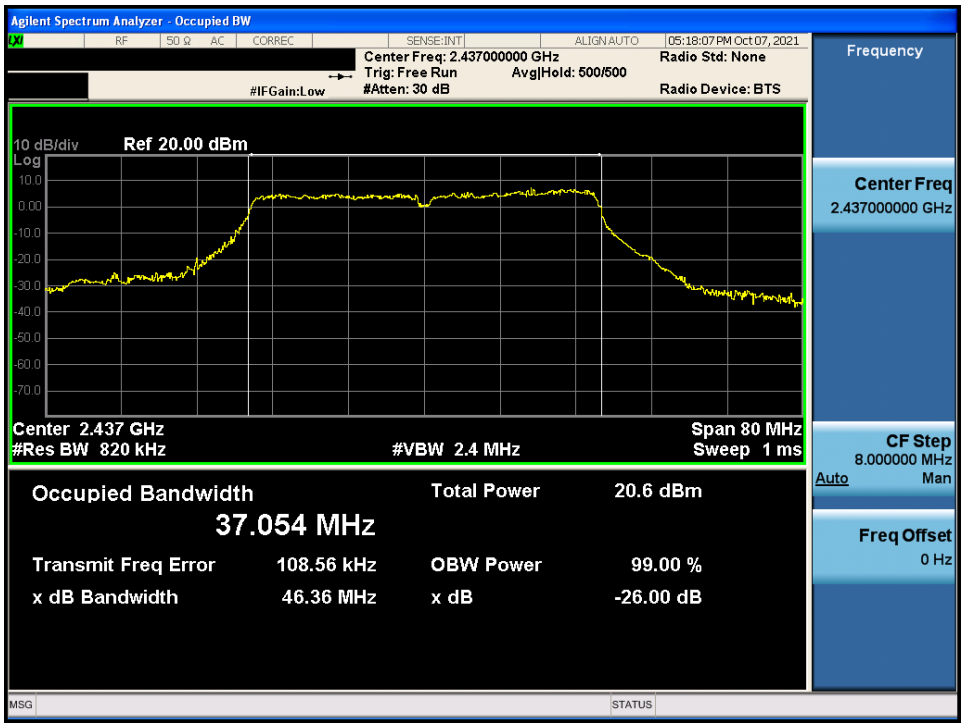
Occupied Bandwidth

TM 4 & 2422



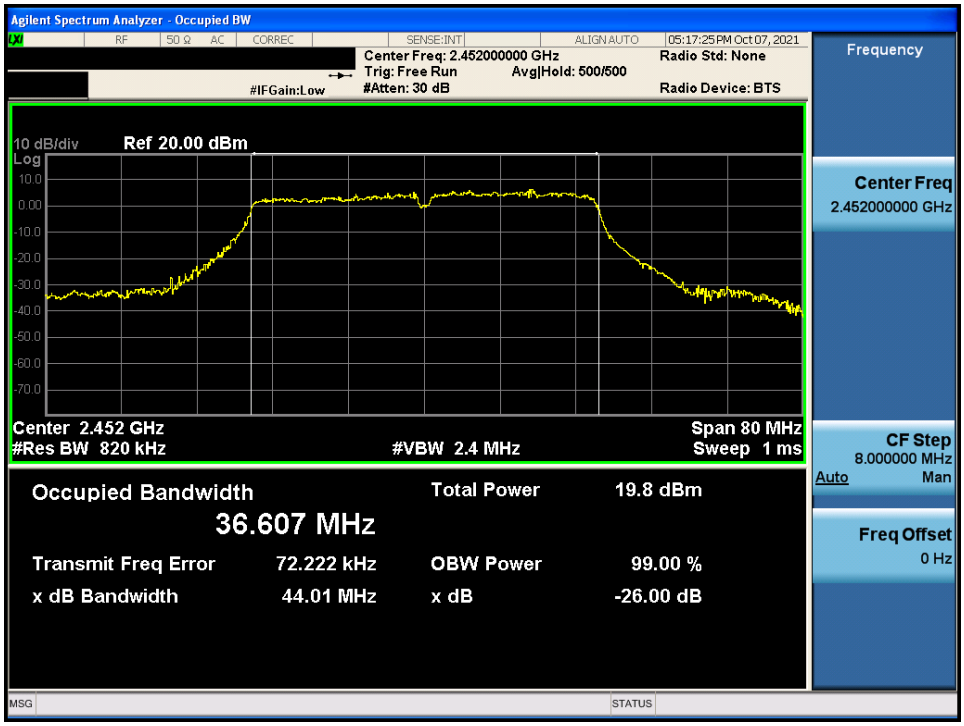
Occupied Bandwidth

TM 4 & 2 437



Occupied Bandwidth

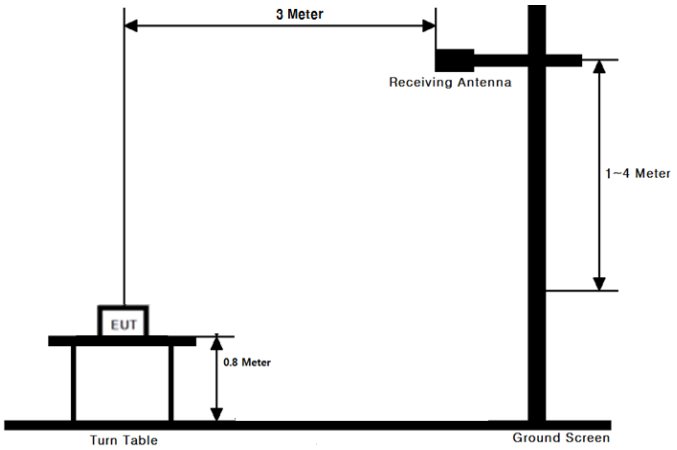
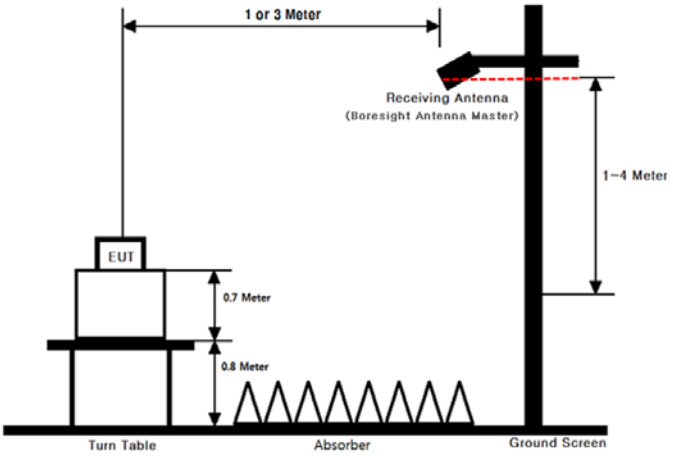
TM 4 & 2 452



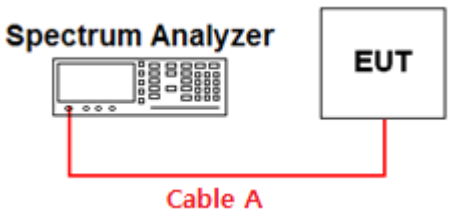
APPENDIX I

Test set up diagrams

- **Radiated Measurement**

Below 1 GHz	Above 1 GHz
	

- **Conducted Measurement**



APPENDIX II

Duty cycle plots

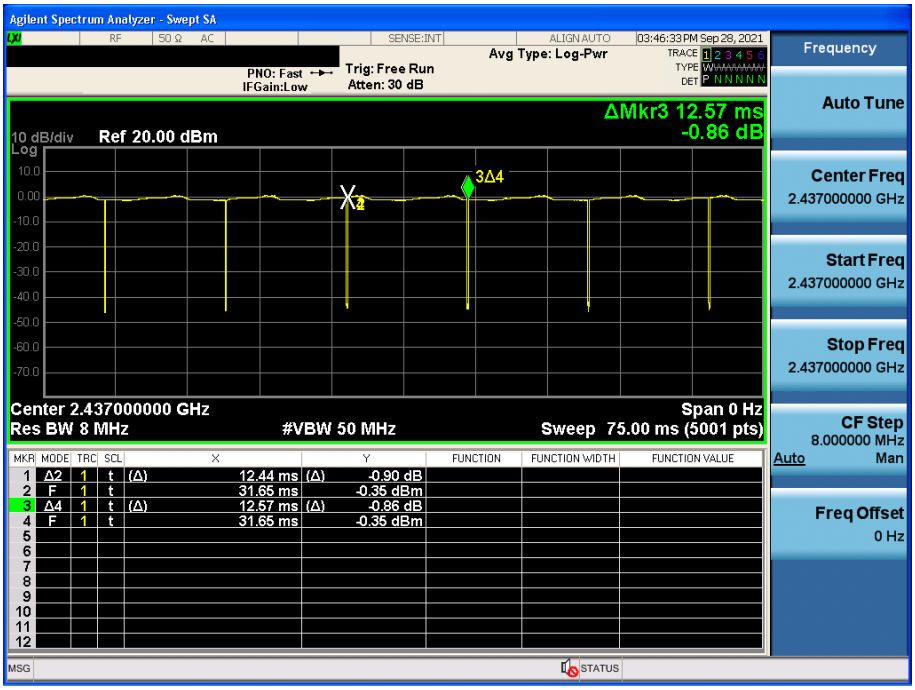
- **Test Procedures**

- KDB558074 D01v05r02 – Section 6

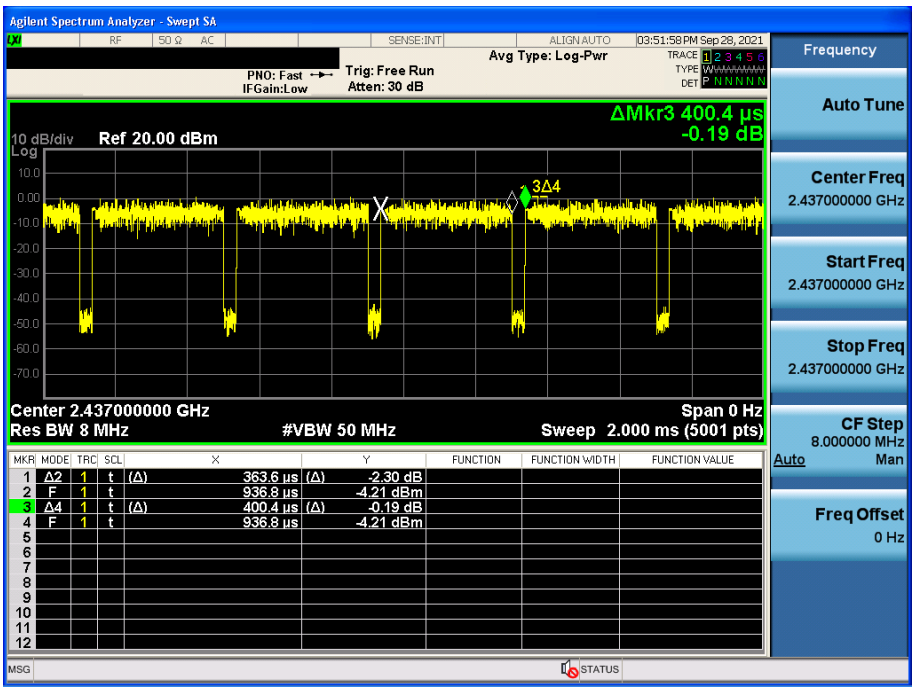
The zero-span mode on a spectrum analyzer or EMI receiver if the response time and spacing between bins on the sweep are sufficient to permit accurate measurements of the on and off times of the transmitted signal. Set the center frequency of the instrument to the center frequency of the transmission. Set RBW ≥ OBW if possible; otherwise, set RBW to the largest available value. Set VBW ≥ RBW. Set detector = peak or average.

The zero-span measurement method shall not be used unless both RBW and VBW are > 50 /T and the number of sweep points across duration T exceeds 100. (For example, if VBW and/or RBW are limited to 3 MHz, then the zero-span method of measuring duty cycle shall not be used if T ≤ 16.7 microseconds.)

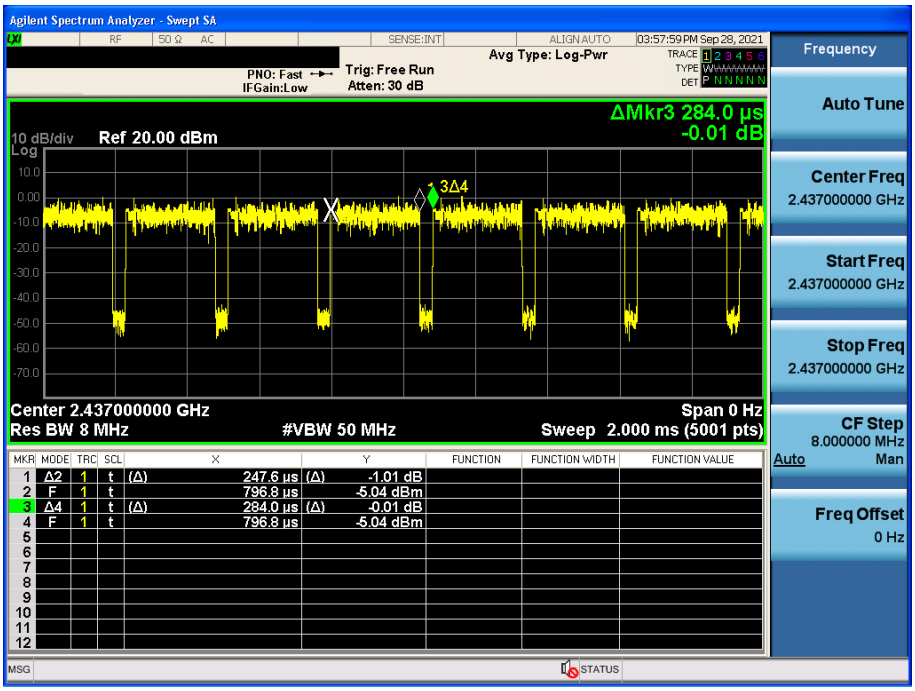
Duty Cycle TM 1 & 2 437 MHz



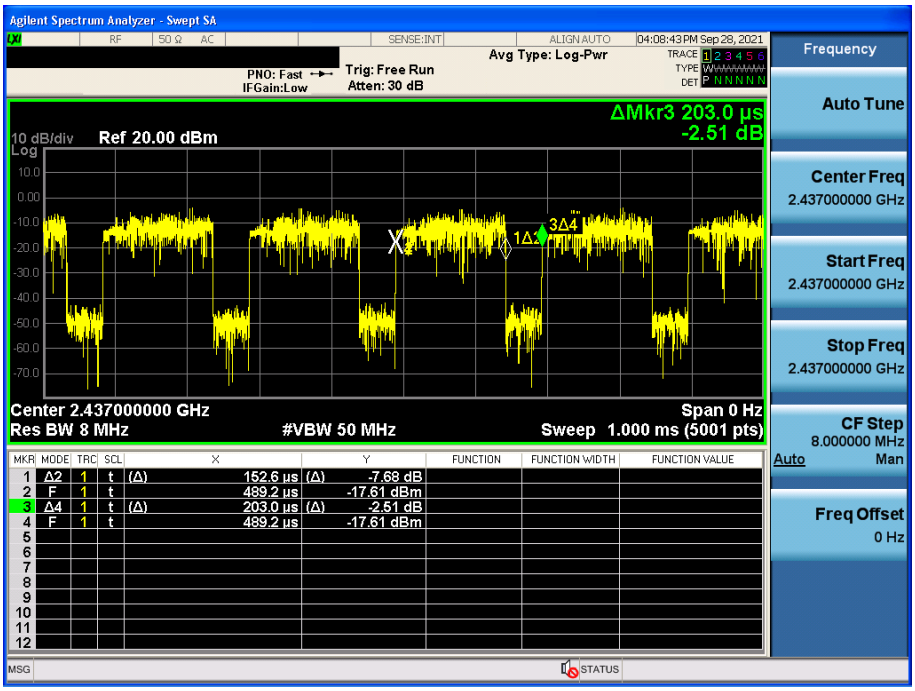
Duty Cycle TM 2 & 2 437 MHz



Duty Cycle TM 3 & 2 437 MHz



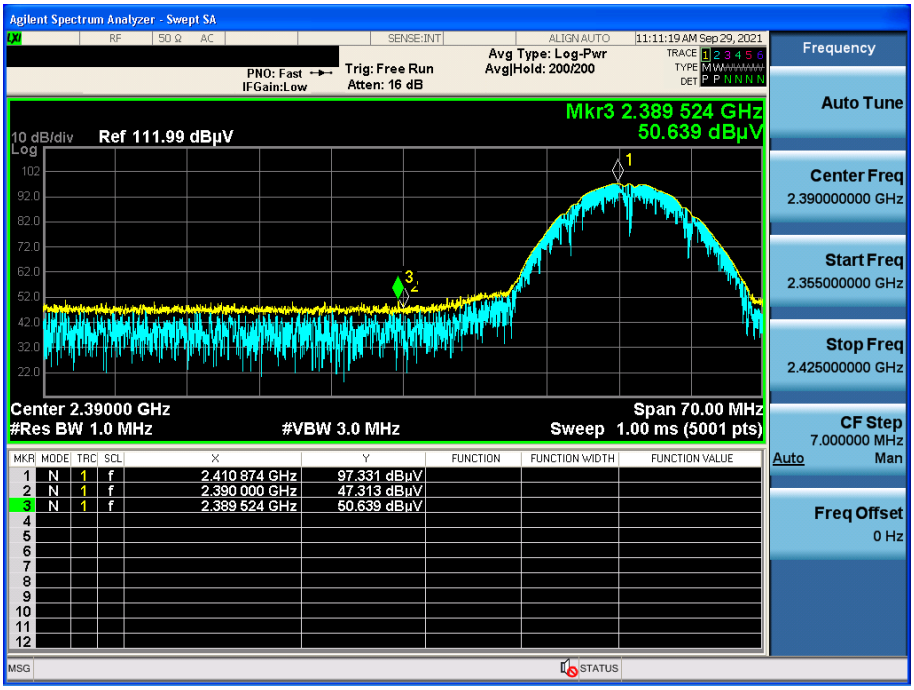
Duty Cycle TM 4 & 2 437 MHz



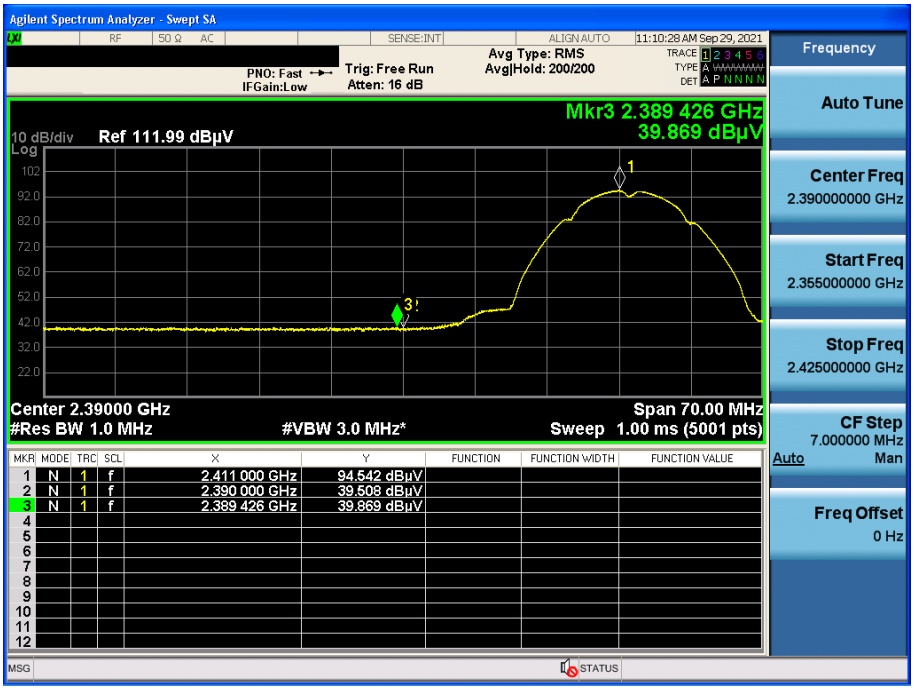
APPENDIX III

Unwanted Emissions (Radiated) Test Plot

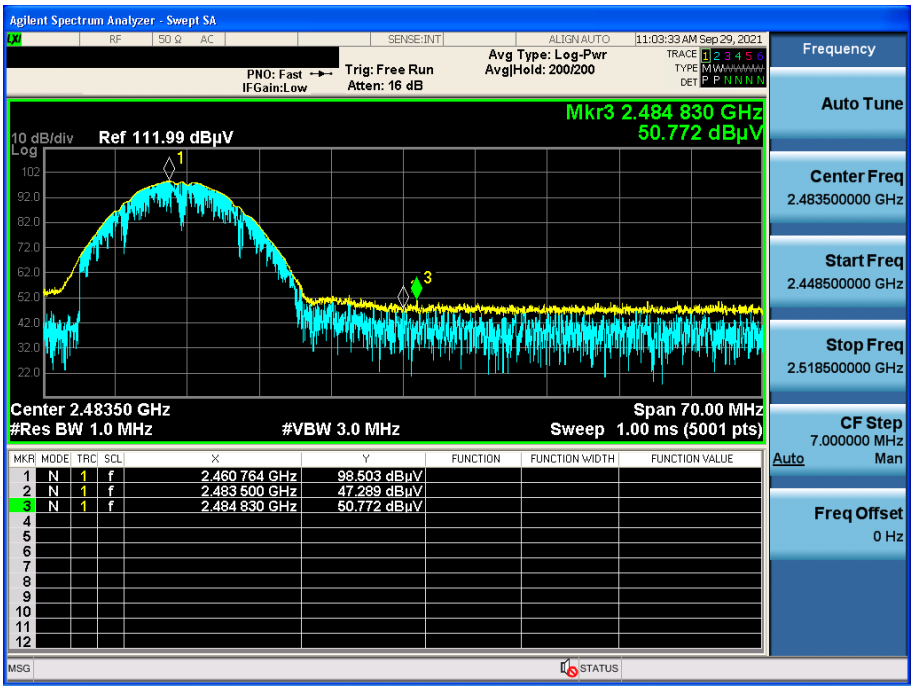
TM 1 & 2 412 & X axis & Hor **Detector Mode : PK**



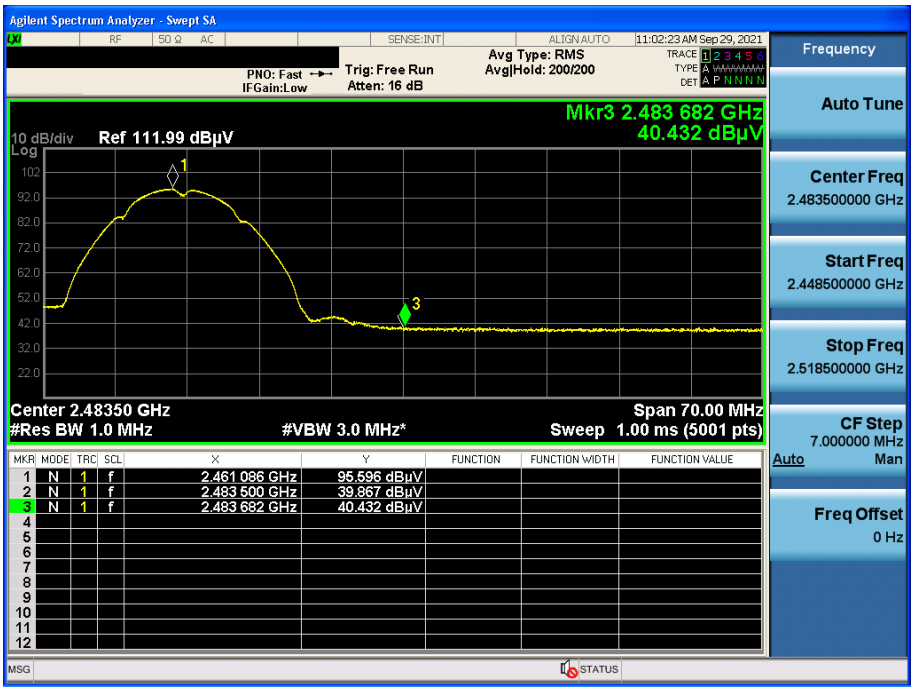
TM 1 & 2 412 & X axis & Hor **Detector Mode : AV**



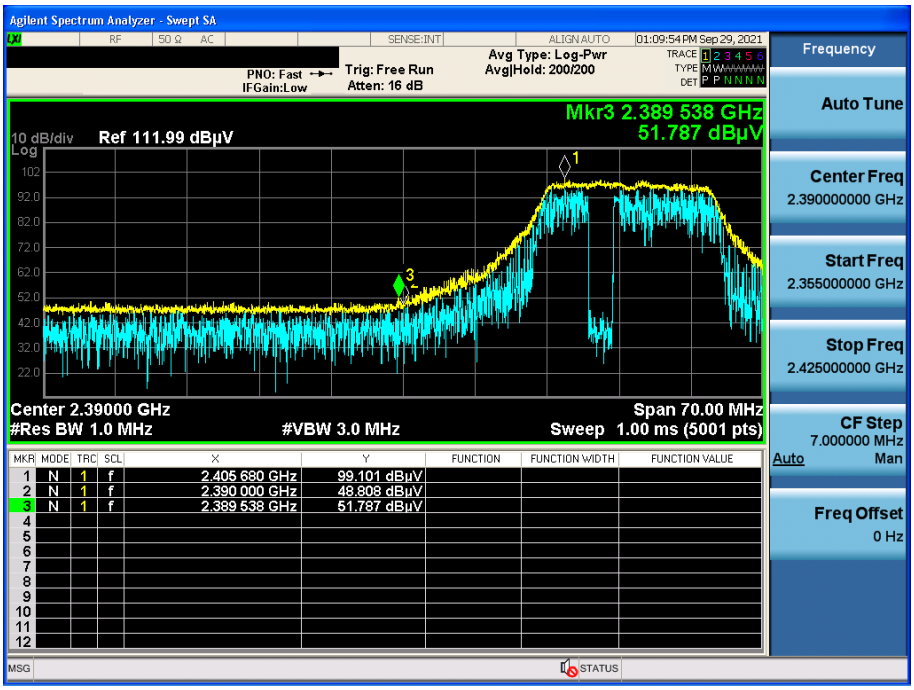
TM 1 & 2 462 & X axis & Hor **Detector Mode : PK**



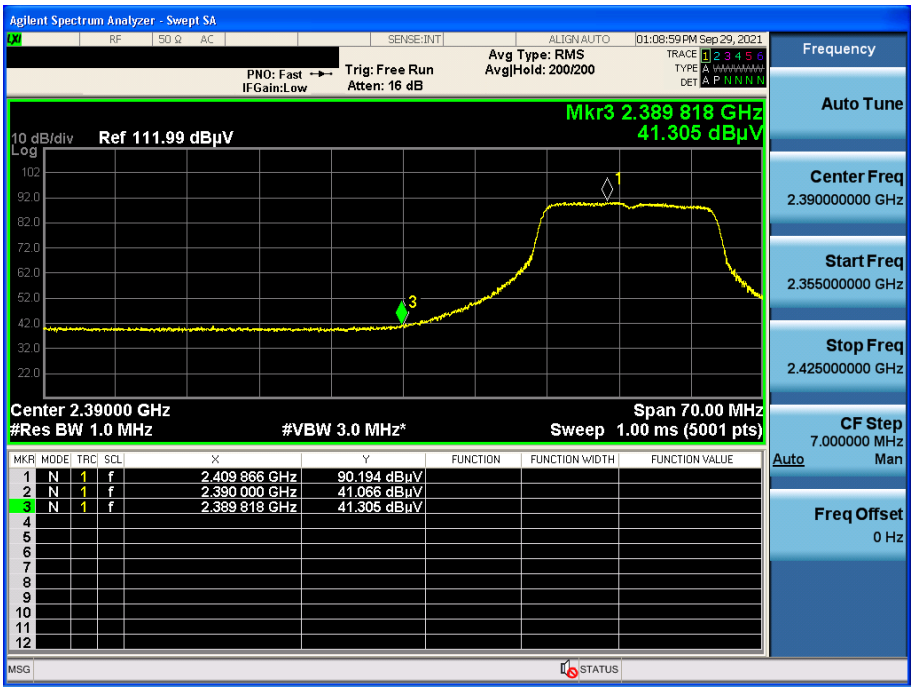
TM 1 & 2 462 & X axis & Hor **Detector Mode : AV**



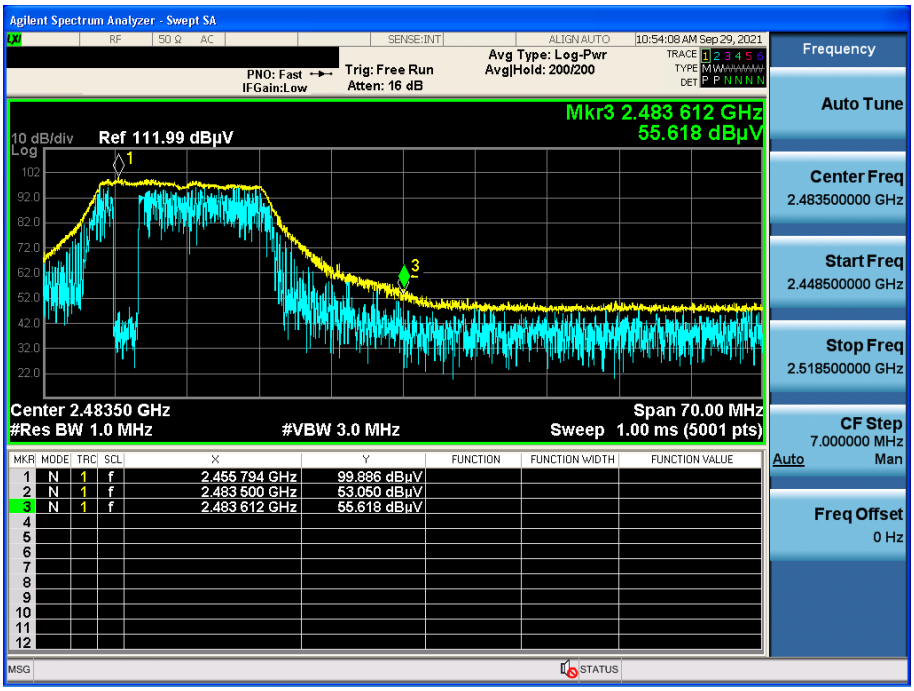
TM 2 & 2 412 & X axis & Hor **Detector Mode : PK**



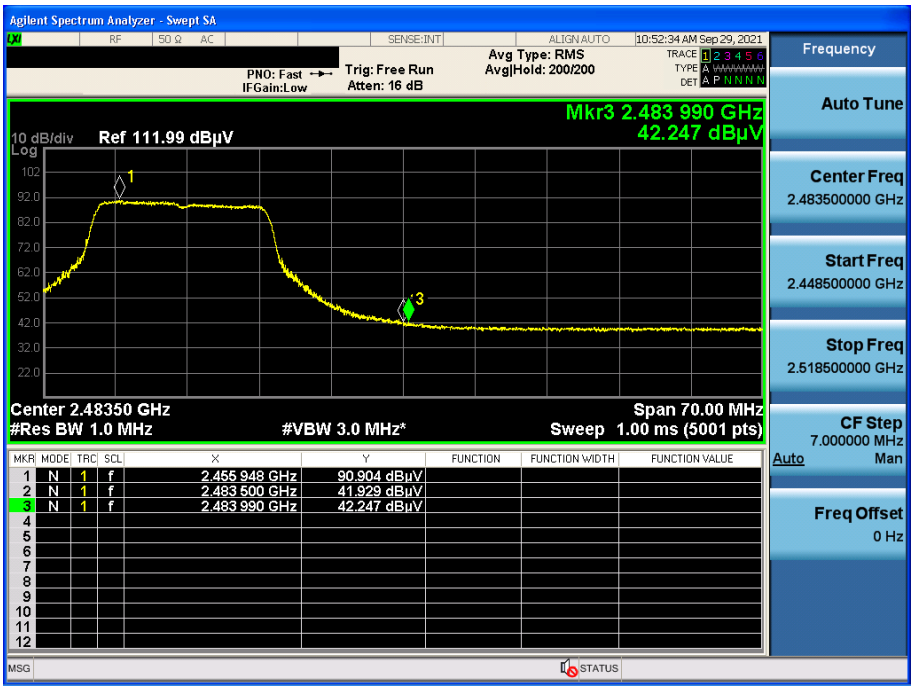
TM 2 & 2 412 & X axis & Hor **Detector Mode : AV**



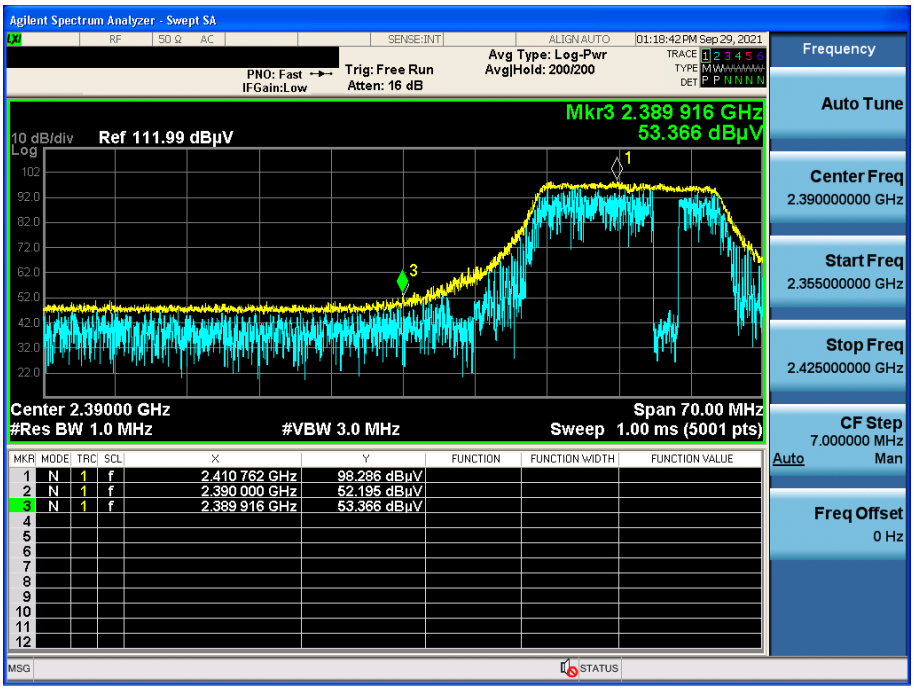
TM 2 & 2 462 & X axis & Hor **Detector Mode : PK**



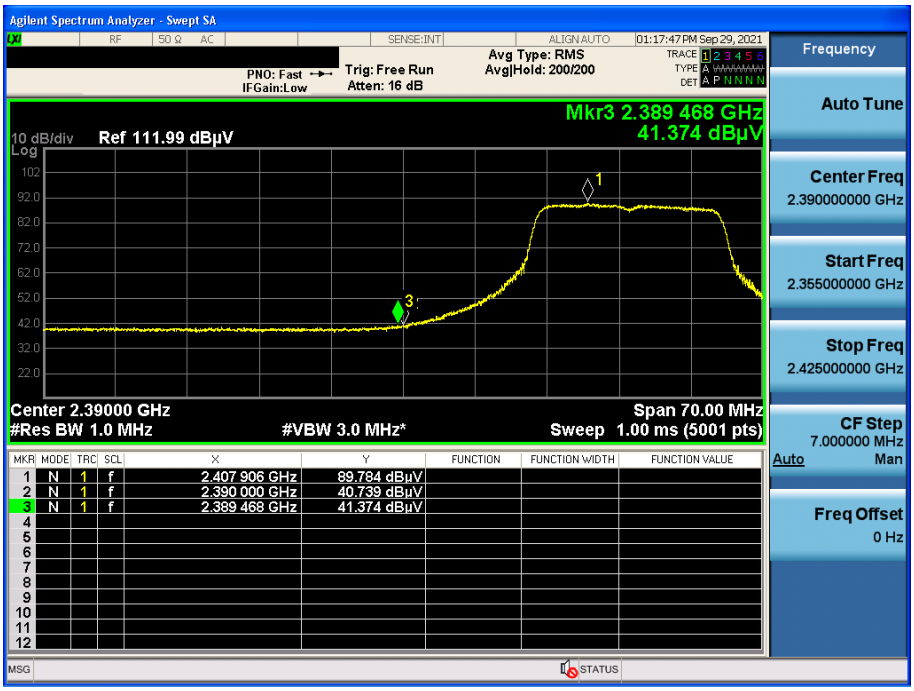
TM 2 & 2 462 & X axis & Hor **Detector Mode : AV**



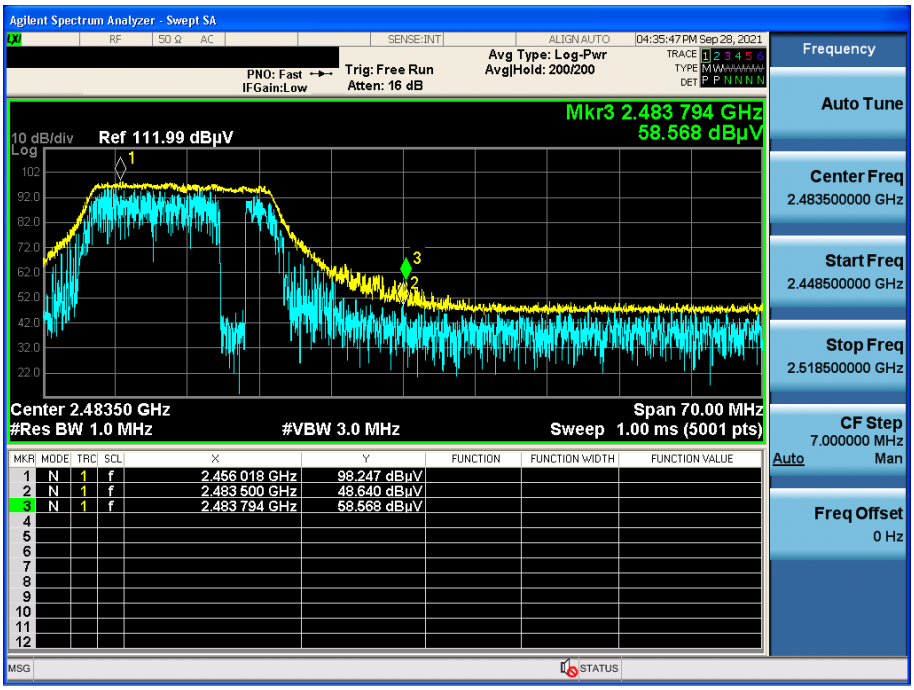
TM 3 & 2 412 & X axis & Hor **Detector Mode : PK**



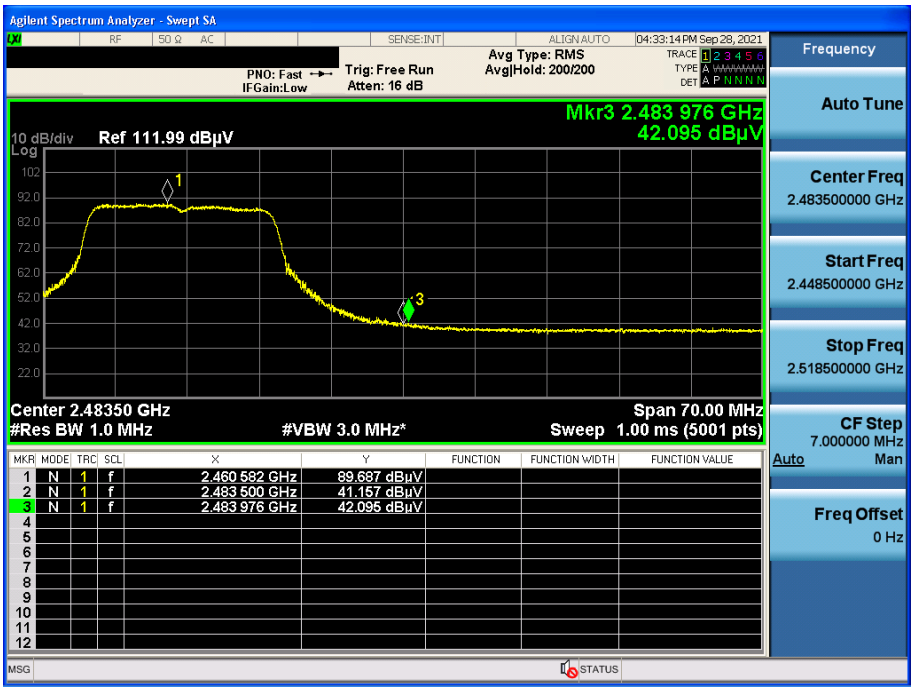
TM 3 & 2 412 & X axis & Hor **Detector Mode : AV**



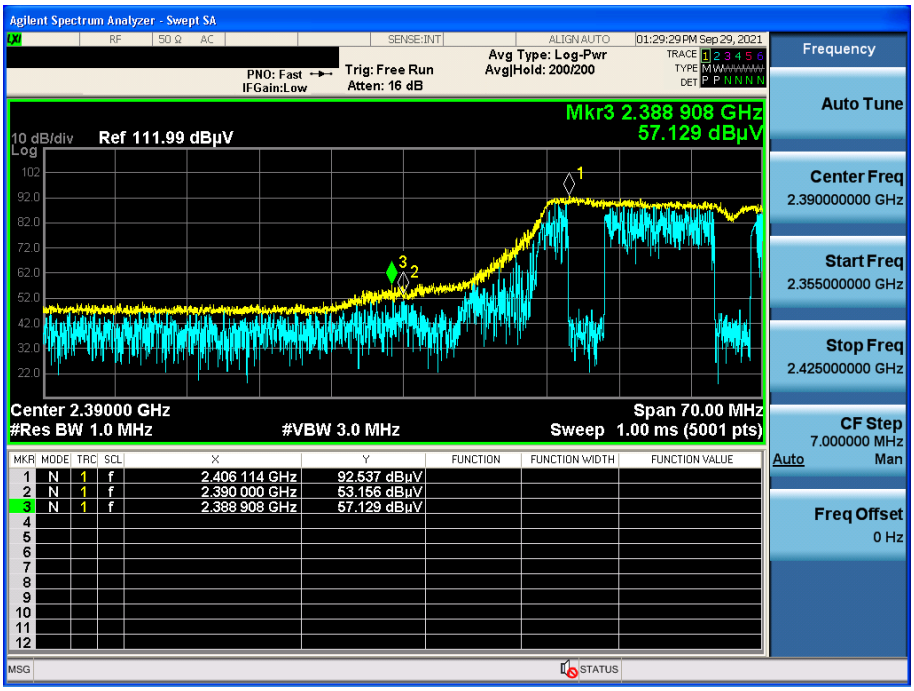
TM 3 & 2 462 & X axis & Hor **Detector Mode : PK**



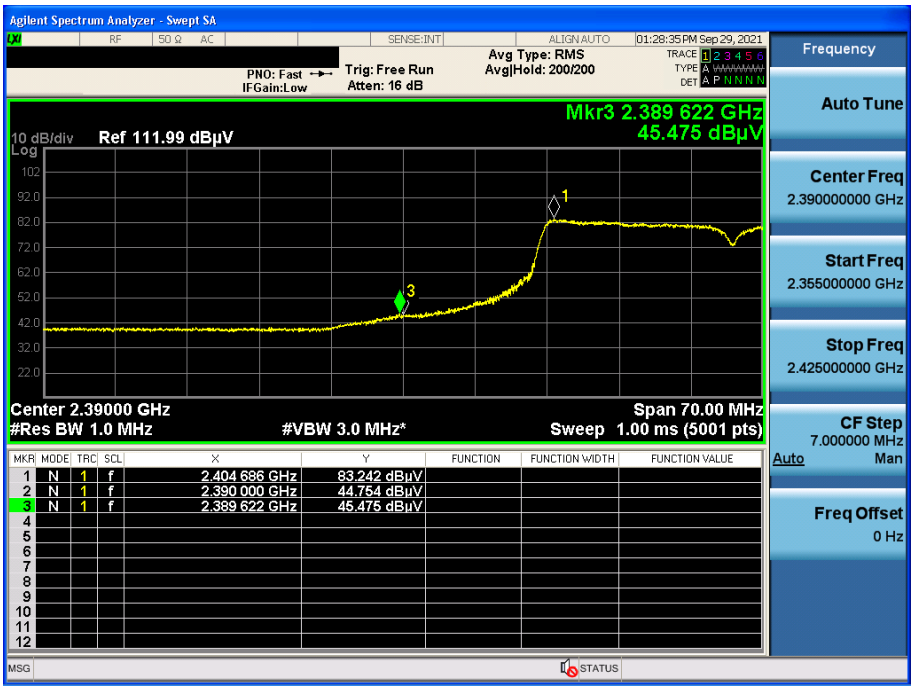
TM 3 & 2 462 & X axis & Hor **Detector Mode : AV**



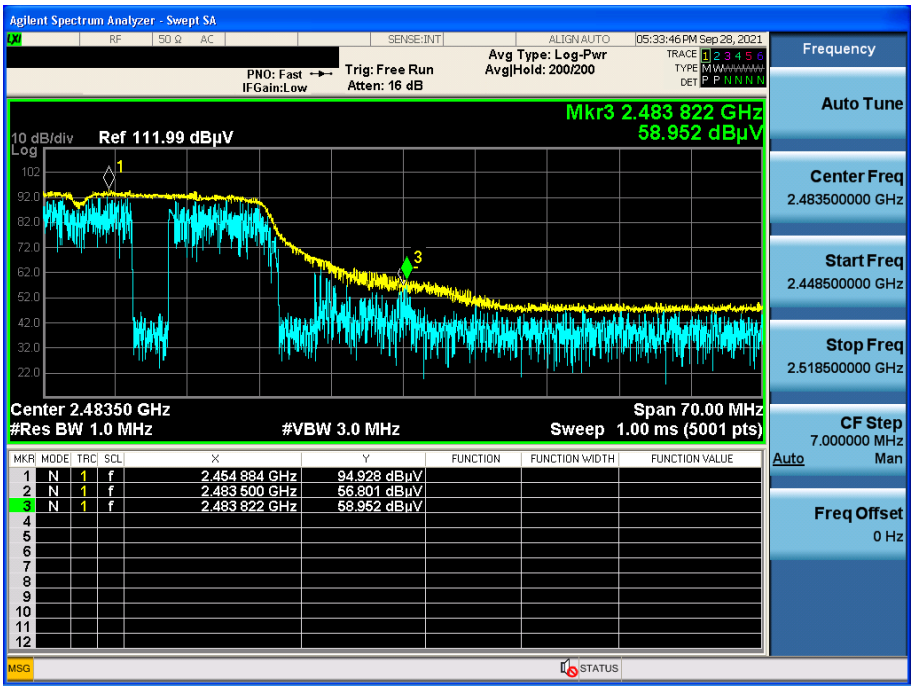
TM 4 & 2 422 & X axis & Hor **Detector Mode : PK**



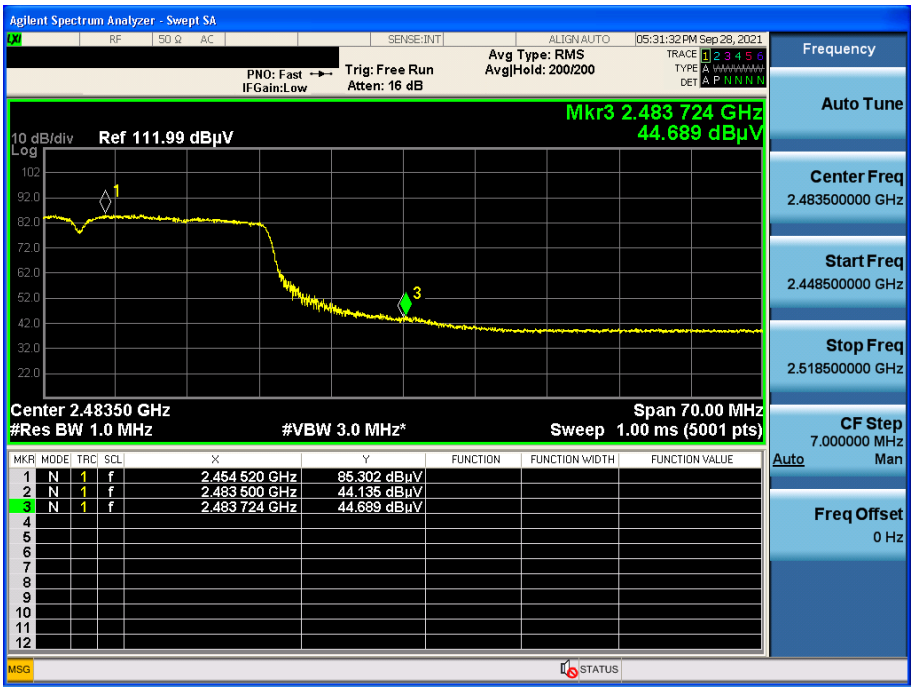
TM 4 & 2 422 & X axis & Hor **Detector Mode : AV**



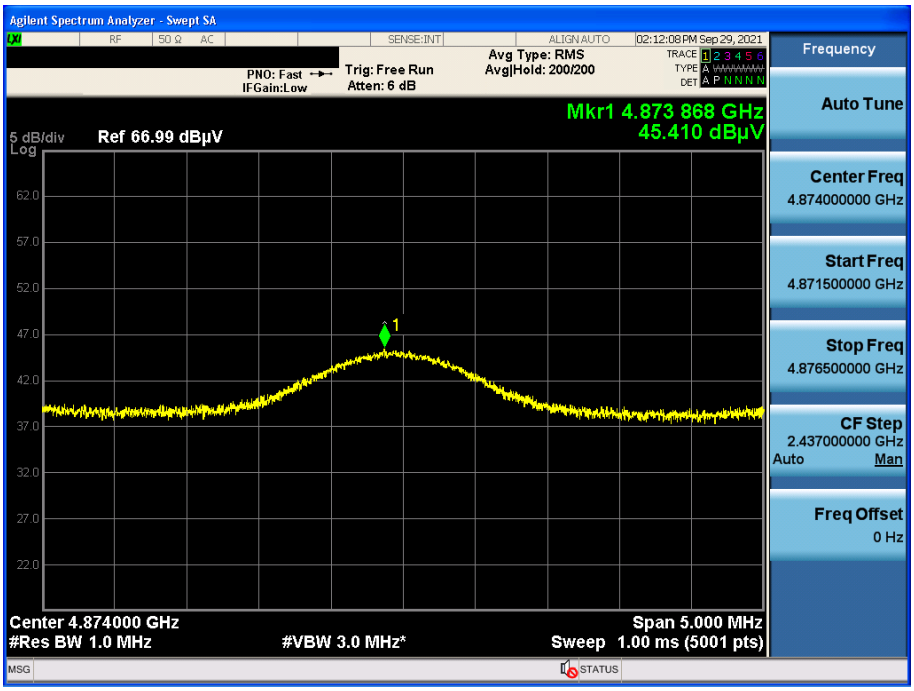
TM 4 & 2 452 & X axis & Hor **Detector Mode : PK**



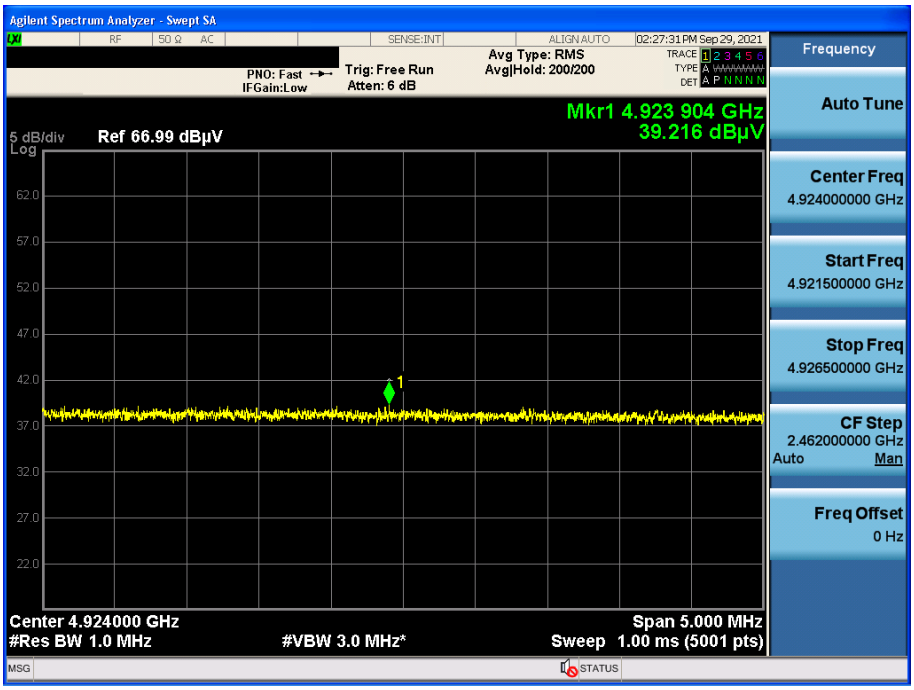
TM 4 & 2 452 & X axis & Hor **Detector Mode : AV**



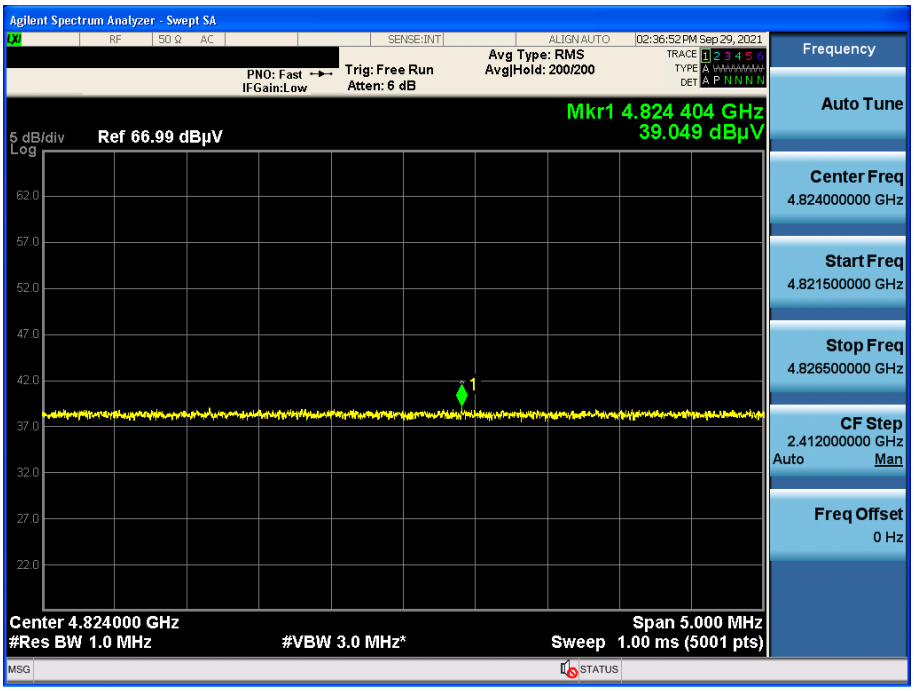
TM 1 & 2 437 & Z axis & Ver **Detector Mode : AV**



TM 2 & 2 462 & Z axis & Ver **Detector Mode : AV**



TM 3 & 2 412 & Z axis & Ver **Detector Mode : AV**



TM 4 & 2 452 & Z axis & Ver **Detector Mode : AV**