



## Appendix for Test report (Bluetooth-Normal Power)



# Appendix A: 20dB Emission Bandwidth (EBW)

## 1 Result Table

EUT Conf.	EBW [MHz]	Limit[MHz]	Verdict
TM1_DH5_Ch0	0.95	---	Pass
TM1_DH5_Ch39	0.94	---	Pass
TM1_DH5_Ch78	0.95	---	Pass
TM2_2DH5_Ch0	1.31	---	Pass
TM2_2DH5_Ch39	1.32	---	Pass
TM2_2DH5_Ch78	1.31	---	Pass
TM3_3DH5_Ch0	1.31	---	Pass
TM3_3DH5_Ch39	1.32	---	Pass
TM3_3DH5_Ch78	1.31	---	Pass

## 2 Test Plot

### 2.1 TM1\_DH5\_Ch0



2.2 TM1\_DH5\_Ch39



### 2.3 TM1\_DH5\_Ch78



### 2.4 TM2\_2DH5\_Ch0



2.5 TM2\_2DH5\_Ch39

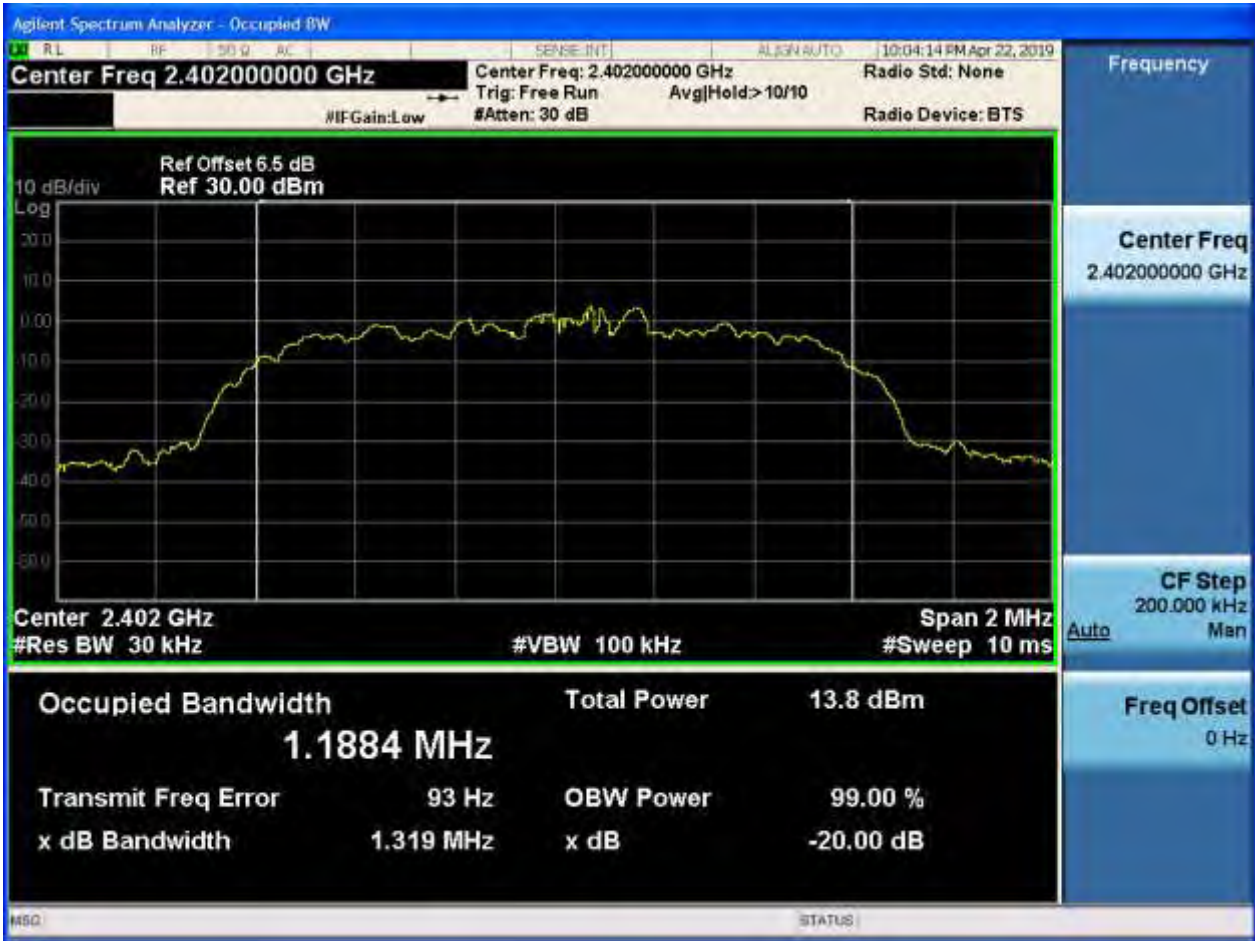




## 2.6 TM2\_2DH5\_Ch78



2.7 TM3\_3DH5\_Ch0



2.8 TM3\_3DH5\_Ch39



2.9 TM3\_3DH5\_Ch78



# Appendix B: Carrier Frequency Separation

## 1 Result Table

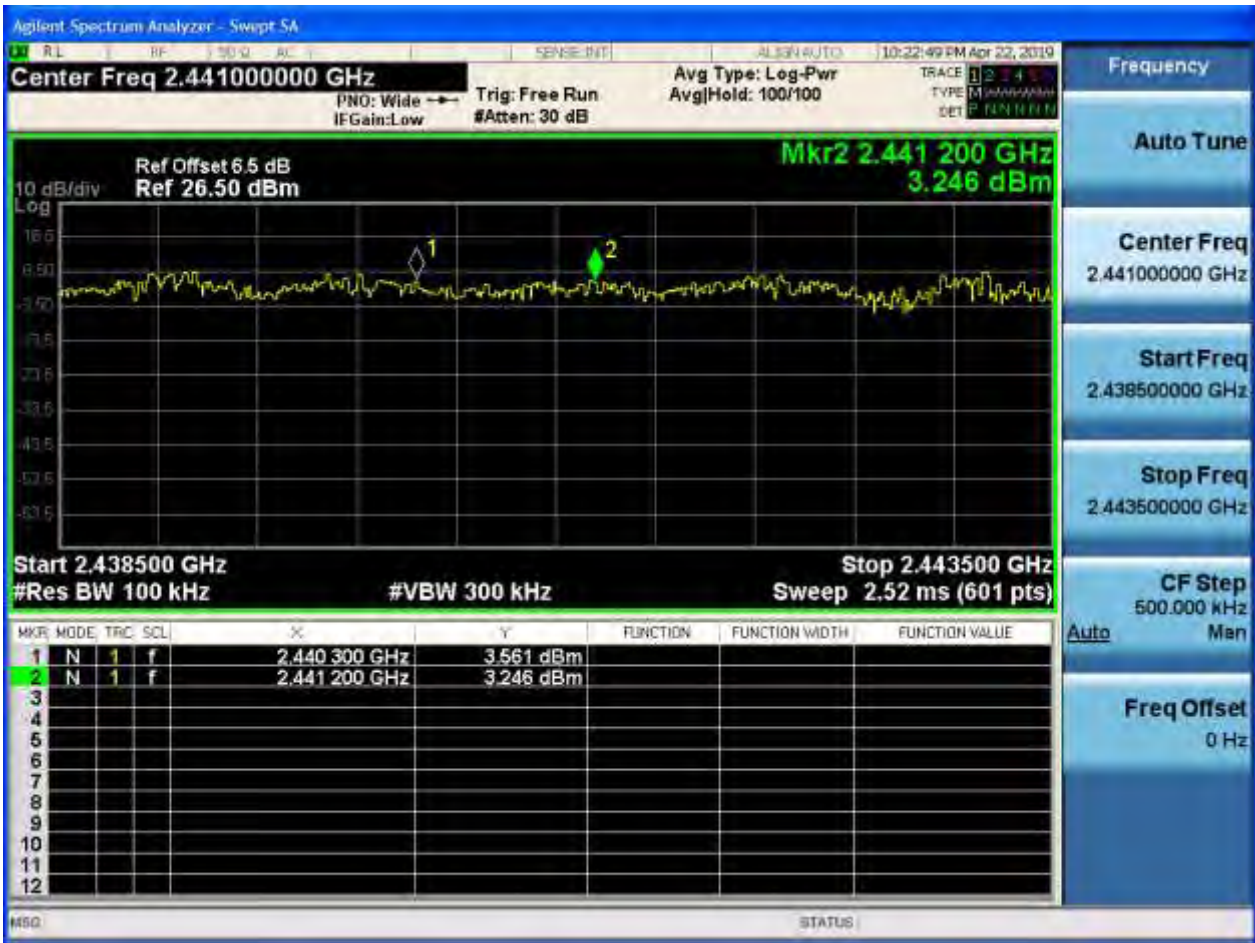
EUT Conf.	Carrier Frequency Separation [MHz]	Limit[MHz]	Verdict
TM1_DH5_Hop	0.95	$\geq 0.633$	Pass
TM2_2DH5_Hop	0.9	$\geq 0.880$	Pass
TM3_3DH5_Hop	1.2	$\geq 0.880$	Pass

## 2 Test Plot

### 2.1 TM1\_DH5\_Hop

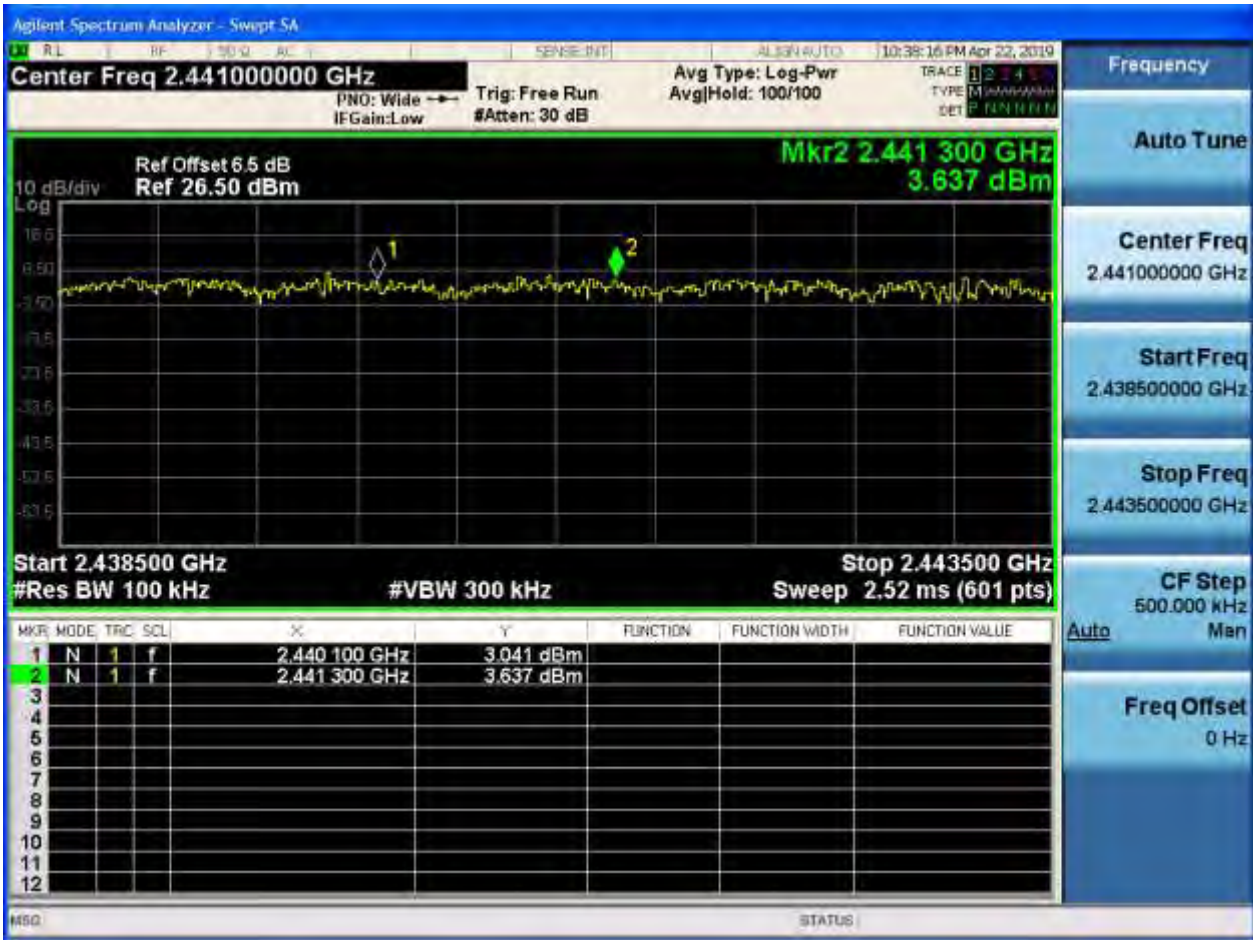


## 2.2 TM2\_2DH5\_Hop





### 2.3 TM3\_3DH5\_Hop





# Appendix C: Number of Hopping Channel

## 1 Result Table

EUT Conf.	Number of Hopping Channel	Limit	Verdict
TM1_DH5_Hop	79	$\geq 15$	Pass
TM2_2DH5_Hop	79	$\geq 15$	Pass
TM3_3DH5_Hop	79	$\geq 15$	Pass

## 2 Test Plot

### 2.1 TM1\_DH5\_Hop





## 2.2 TM2\_2DH5\_Hop



### 2.3 TM3\_3DH5\_Hop





# Appendix D: Time of Occupancy (Dwell Time)

## 1 Result Table

The Dwell Time = Burst Width \* Total Hops. The detailed calculations are showed as follows:

- The duration for dwell time calculation:  $0.4 \text{ [s]} * \text{hopping number} = 0.4 \text{ [s]} * 79 \text{ [ch]} = 31.6 \text{ [s*ch]}$ ;
- The burst width [ms/hop/ch], which is directly measured, refers to the duration on one channel hop.
- The hops per second for all channels: The selected EUT Conf uses a slot type of 5-Tx&1-Rx and a hopping rate of 1600 [ch\*hop/s] for all channels. So the final hopping rate for all channels is  $1600 / 6 = 266.67 \text{ [ch*hop/s]}$ ;
- The hops per second on one channel:  $266.67 \text{ [ch*hop/s]} / 79 \text{ [ch]} = 3.38 \text{ [hop/s]}$ ;
- The total hops for all channels within the dwell time calculation duration:  $3.38 \text{ [hop/s]} * 31.6 \text{ [s*ch]} = 106.67 \text{ [hop*ch]}$ ;
- The dwell time for all channels hopping:  $106.67 \text{ [hop*ch]} * \text{Burst Width [ms/hop/ch]}$ .

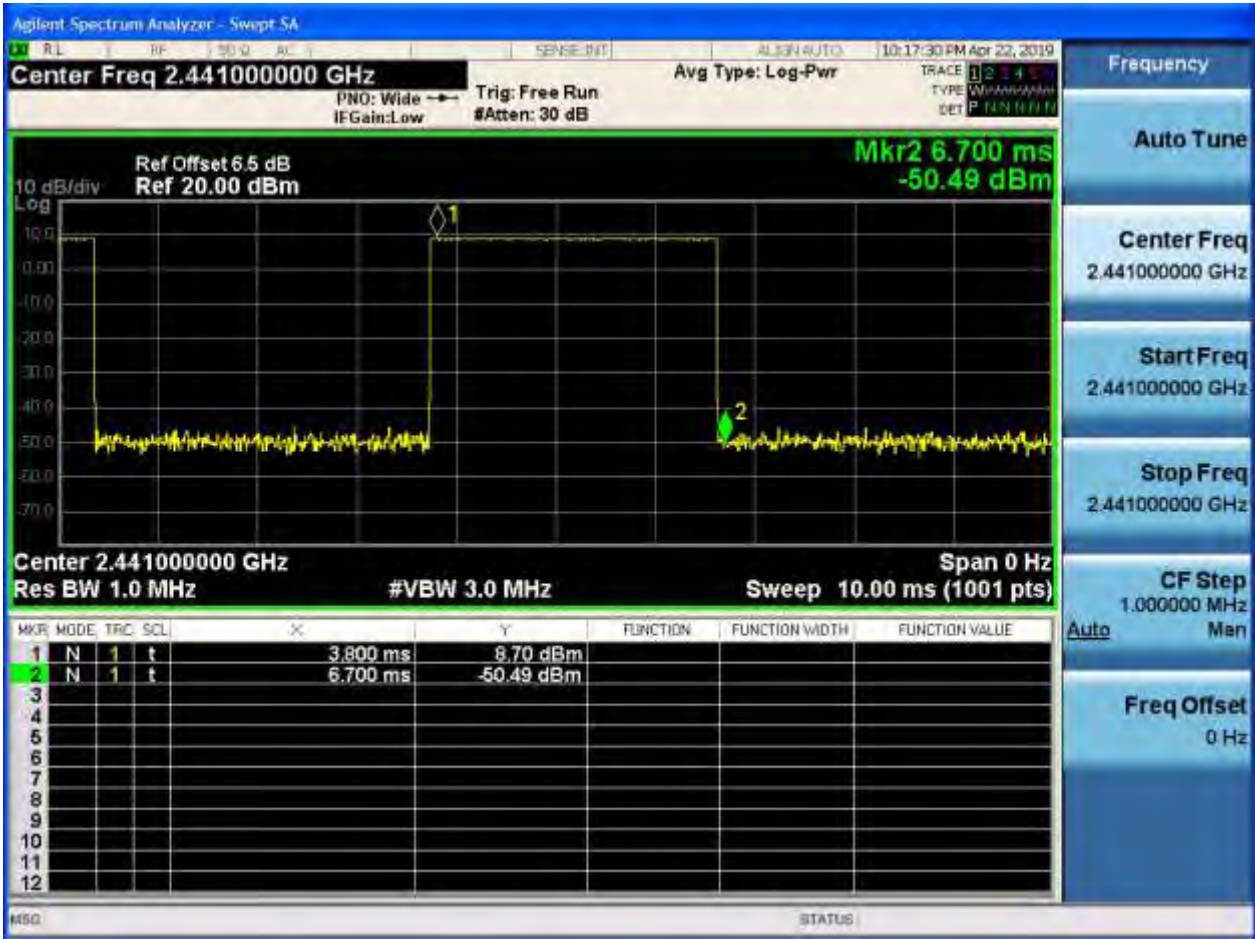
EUT Conf.	Burst Width [s/hop/ch]	Total Hops [hop*ch]	Dwell Time [ms]	Verdict
TM1_DH5_Ch39	0.0029	106.67	0.309	Pass
TM2_2DH5_Ch39	0.0029	106.67	0.309	Pass
TM3_3DH5_Ch39	0.0029	106.67	0.309	Pass



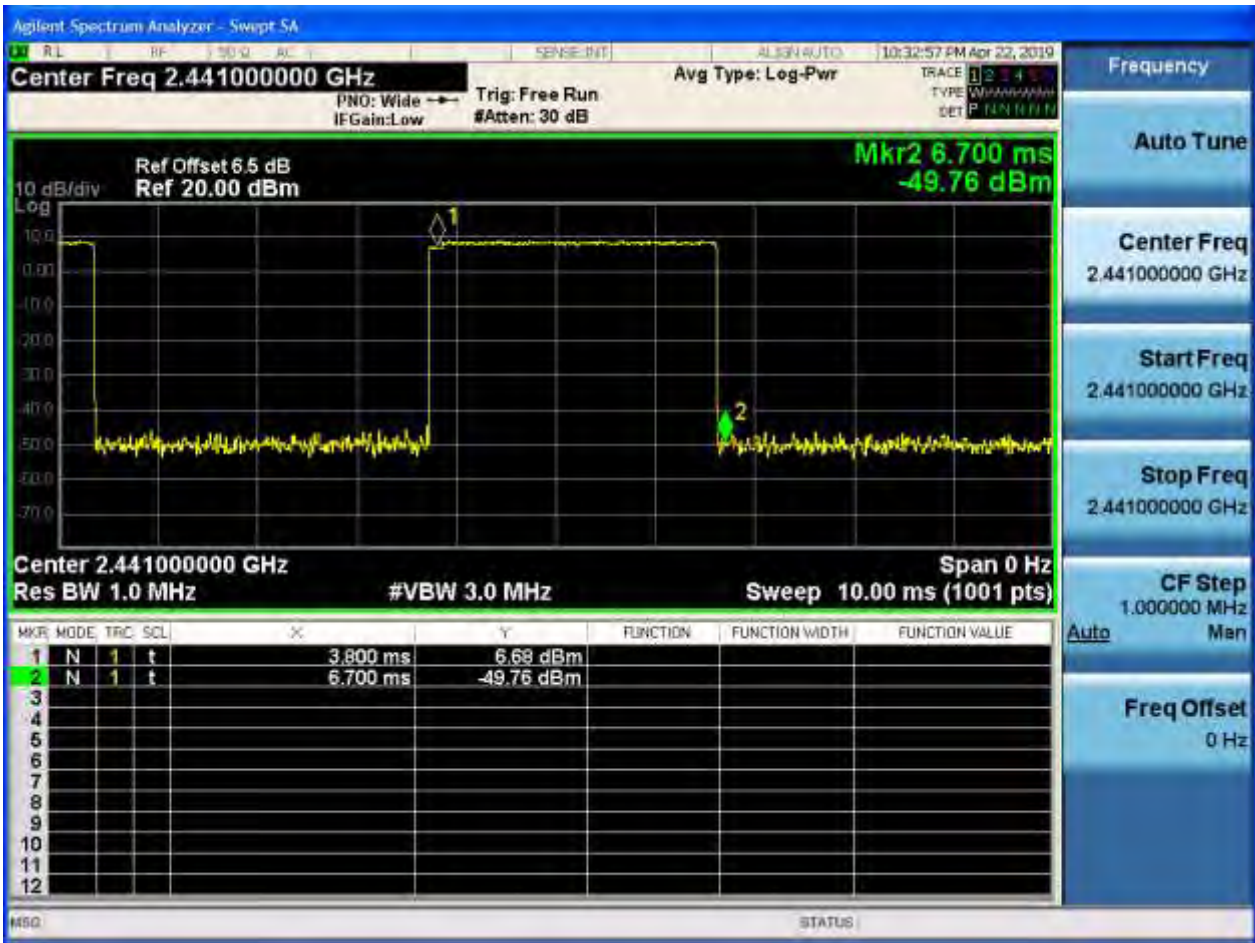
## 2 Test Plot

NOTE: The test plots are only for Burst Width measurements.

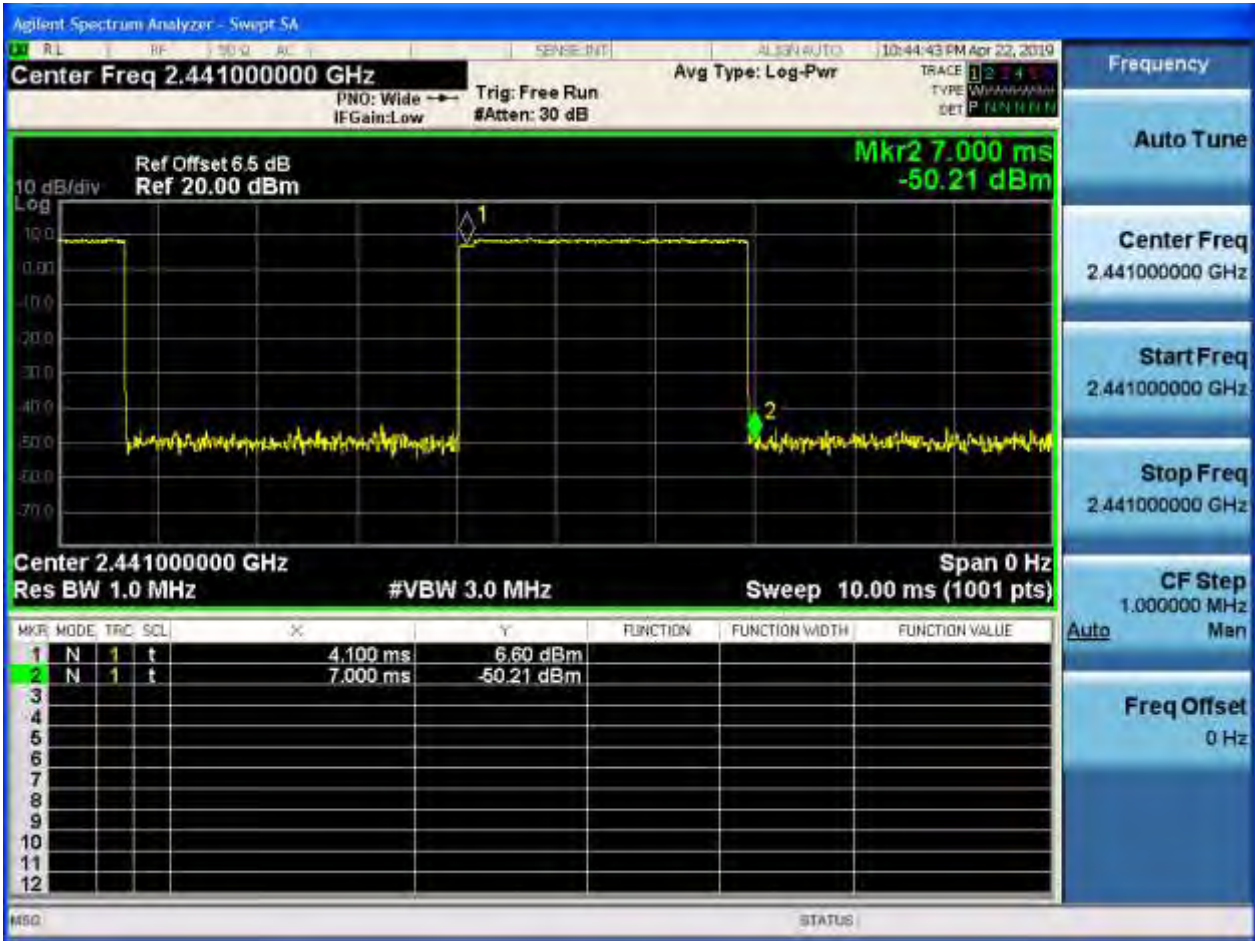
### 2.1 TM1\_DH5\_Ch39



2.2 TM2\_2DH5\_Ch39



2.3 TM3\_3DH5\_Ch39





# Appendix E: Maximum Peak Output Power

## 1 Result Table

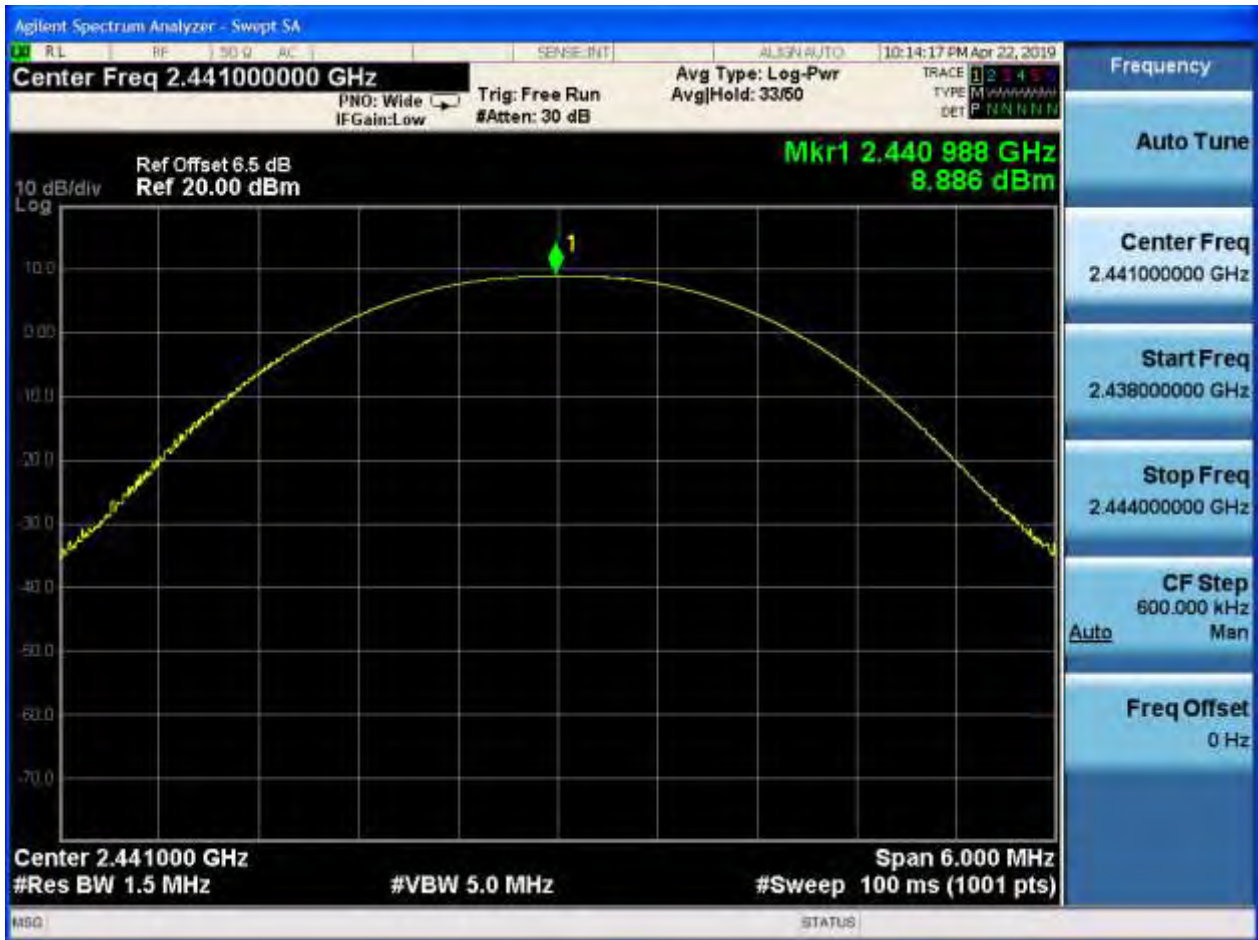
EUT Conf.	Conducted Result[dBm]	Conducted Limit[dBm]	EIRP Result[dBm]	EIRP Result[dBm]	Verdict
TM1_DH5_Ch0	8.375	30	5.815	36	Pass
TM1_DH5_Ch39	8.886	30	6.326	36	Pass
TM1_DH5_Ch78	7.908	30	5.348	36	Pass
TM2_2DH5_Ch0	8.64	30	6.08	36	Pass
TM2_2DH5_Ch39	9.222	30	6.662	36	Pass
TM2_2DH5_Ch78	8.216	30	5.656	36	Pass
TM3_3DH5_Ch0	7.409	30	6.111	36	Pass
TM3_3DH5_Ch39	9.252	30	6.692	36	Pass
TM3_3DH5_Ch78	8.427	30	5.867	36	Pass

## 2 Test Plot

### 2.1 TM1\_DH5\_Ch0



## 2.2 TM1\_DH5\_Ch39





### 2.3 TM1\_DH5\_Ch78







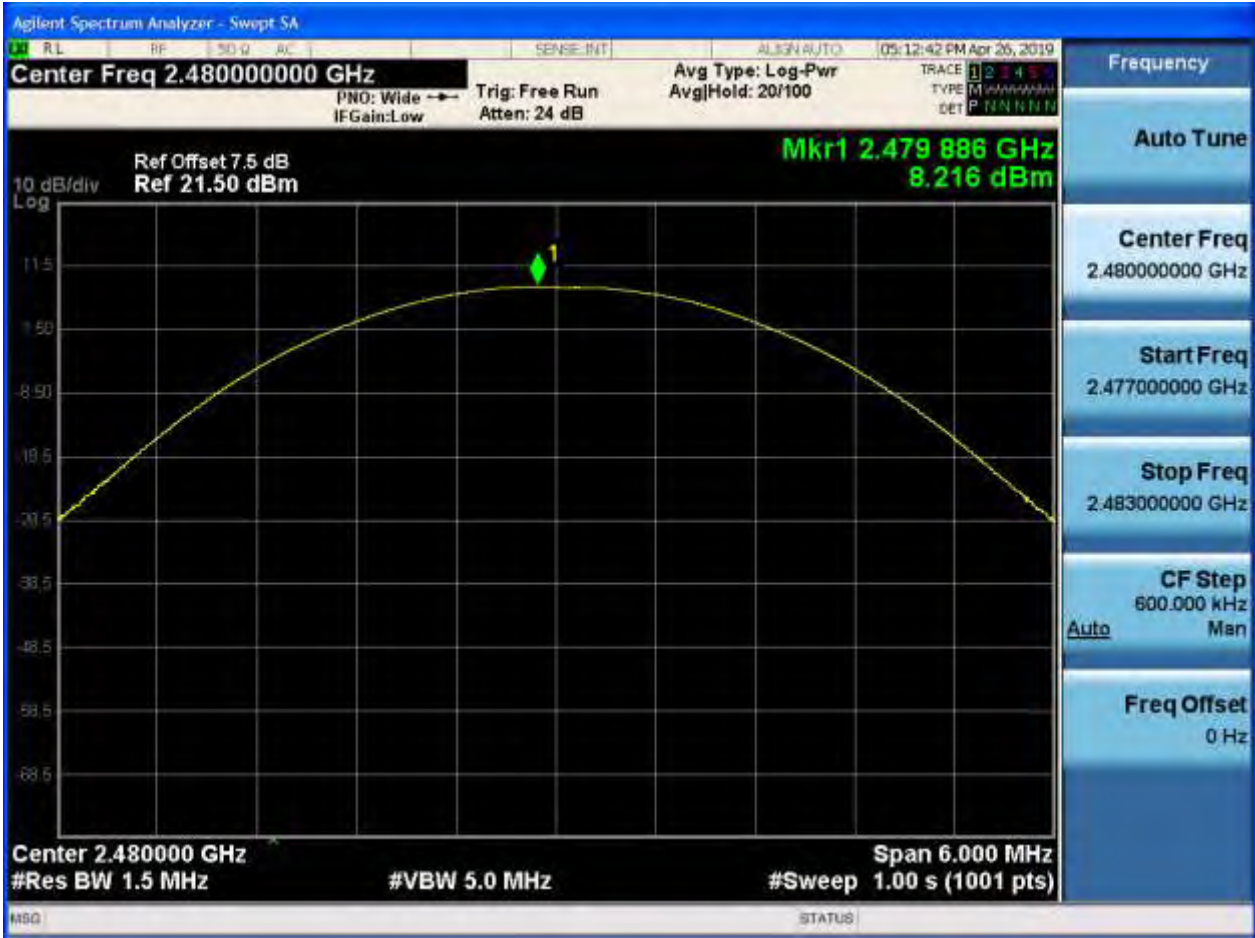
### 2.4 TM2\_2DH5\_Ch0



## 2.5 TM2\_2DH5\_Ch39



2.6 TM2\_2DH5\_Ch78



## 2.7 TM3\_3DH5\_Ch0



## 2.8 TM3\_3DH5\_Ch39



## 2.9 TM3\_3DH5\_Ch78





# Appendix F: Band edge spurious emission

## 1 Result Table

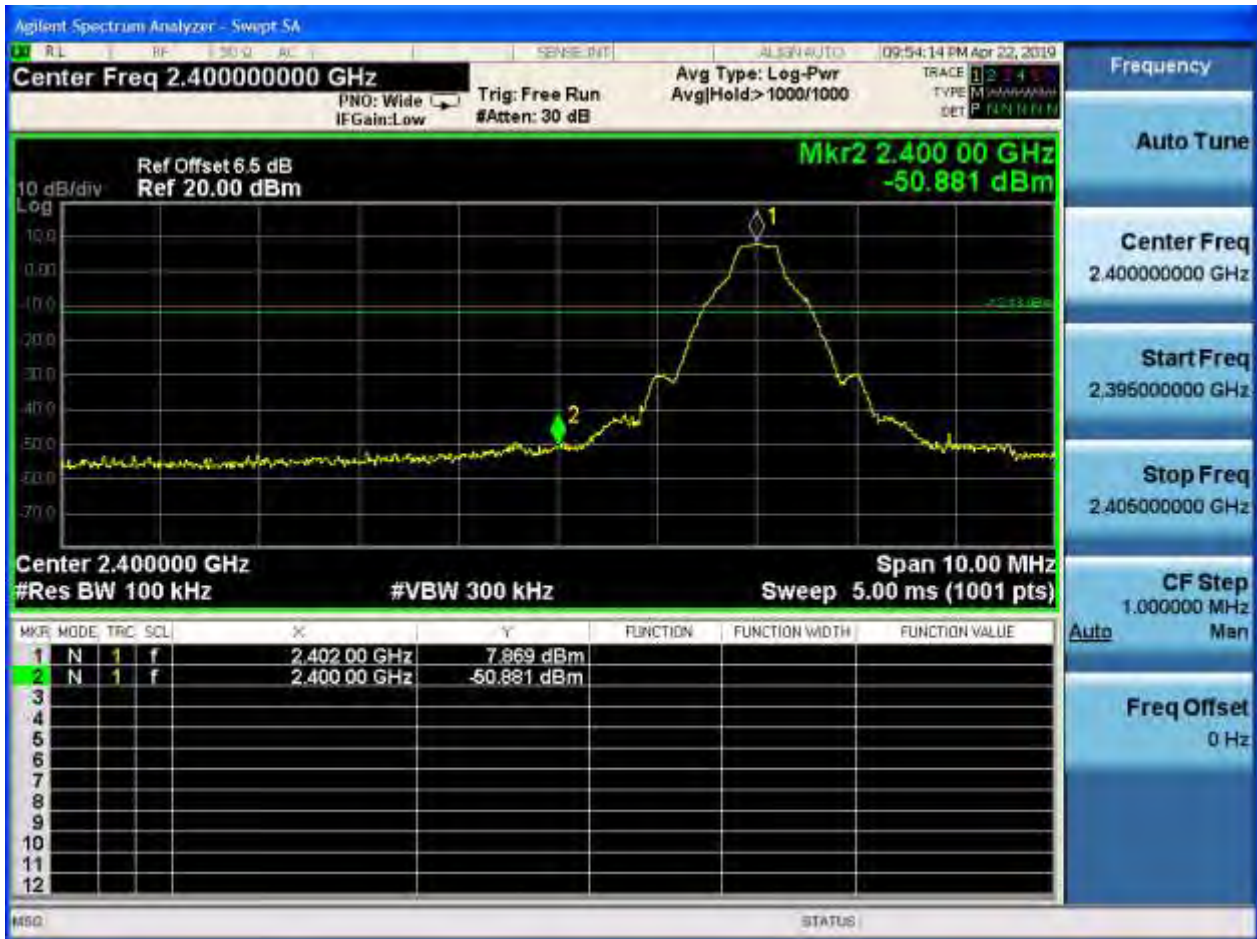
EUT Conf.	Channel No.	Carrier Frequency [MHz]	Max. Spurious Level [dBm]	Frequency Hopping	Carrier Power [dBm]	Limit [dBm]	Result
TM1_DH5_Ch0	0	2402	-50.881	Off	7.869	-12.131	Pass
	-	-	-54.154	On	7.653	-12.347	Pass
TM1_DH5_Ch78	78	2480	-55.83	Off	7.04	-12.96	Pass
	-	-	-56.581	On	6.955	-13.045	Pass
TM2_2DH_5_Ch0	0	2402	-39.979	Off	4.577	-15.423	Pass
	-	-	-44.089	On	4.922	-15.078	Pass
TM2_2DH_5_Ch78	78	2480	-55.216	Off	5.33	-14.67	Pass
	-	-	-55.285	On	3.963	-16.037	Pass
TM3_3DH_5_Ch0	0	2402	-41.218	Off	5.637	-14.363	Pass
	-	-	-42.84	On	5.6	-14.4	Pass
TM3_3DH_5_Ch78	78	2480	-54.872	Off	5.524	-14.476	Pass
	-	-	-57.748	On	3.543	-16.457	Pass



## 2 Test Plot

### 2.1 TM1\_DH5\_Ch0

No hopping

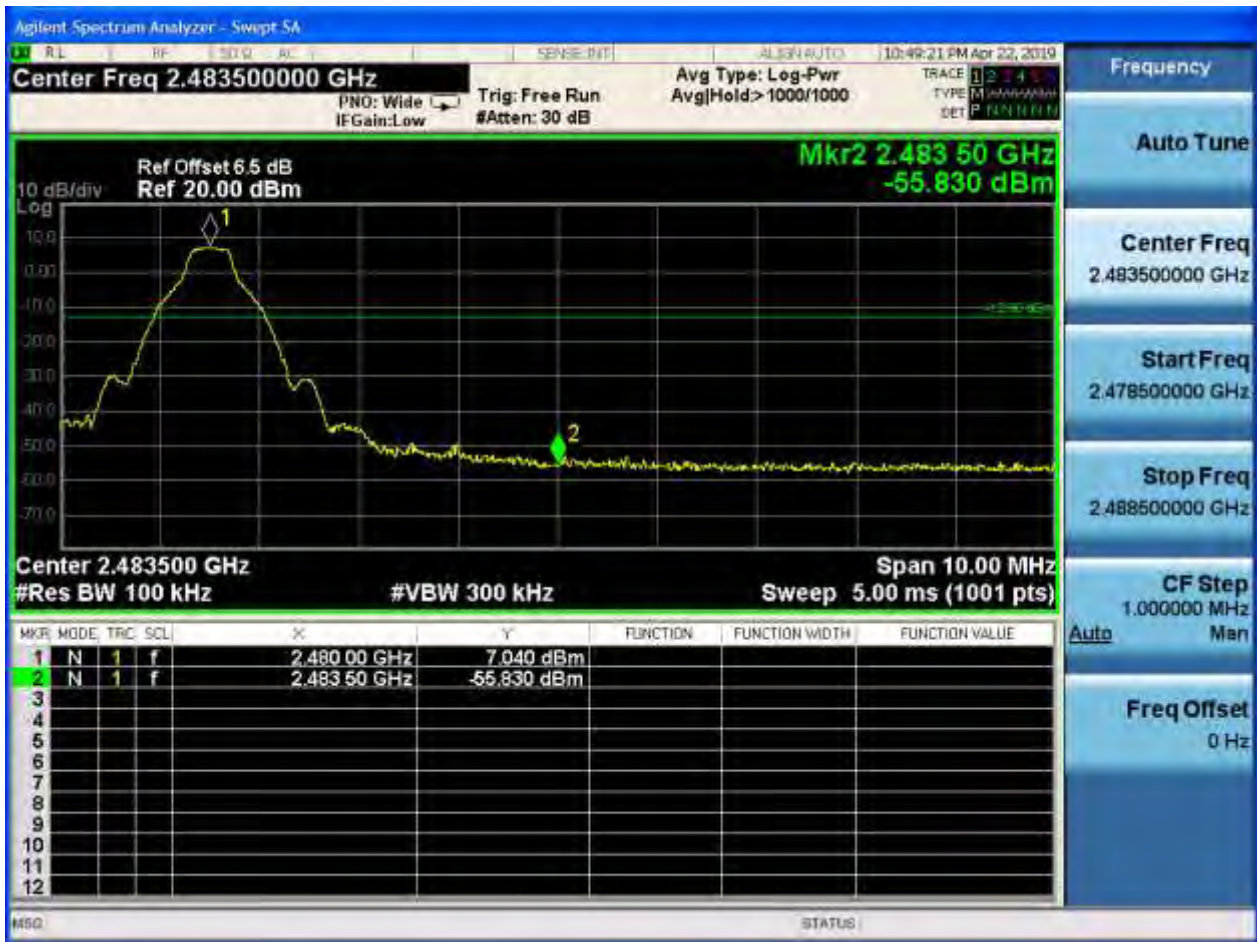


With hopping



## 2.2 TM1\_DH5\_Ch78

No hopping



With hopping



### 2.3 TM2\_2DH5\_Ch0

No hopping



With hopping



2.4 TM2\_2DH5\_Ch78

No hopping



With hopping





## 2.5 TM3\_3DH5\_Ch0

No hopping



With hopping



2.6 TM3\_3DH5\_Ch78

No hopping



With hopping





# Appendix G: Conducted RF Spurious Emission

## 1 Result Table

In this Appendix, the “Pref” refers to the peak power level in any 100 kHz bandwidth within the fundamental emission which is used as the reference level, the “Puw” refers to the maximum emission power in 100 kHz band segments outside of the authorized frequency band.

Considering that the higher ratio of RBW to the span for the frequency ranges below 30 MHz makes the results determination be complicated, a narrower RBW other than 100 kHz is used for these ranges. The measured value should add a RBW correction factor (RBWCF) where  $RBWCF [dB] = 10 \times \lg(100 [kHz]/\text{narrower RBW [kHz]})$ . As to this Appendix, the narrower RBW is 1 kHz and RBWCF is 20 dB for the frequency 9 kHz to 150 kHz, and the narrower RBW is 10 kHz and RBWCF is 10 dB for the frequency 150 kHz to 30 MHz.

In the result table, the “< Limit” denotes that “The Puw [dBm] is less than Pref [dBm] - 20 [dB], see test plots for detailed”.

EUT Conf.	Pref [dBm/100 kHz]	Result[dBm]	Limit[dBm/100kHz]	Verdict
TM1_DH5_Ch0	8.182	< Limit	-11.818	Pass
TM1_DH5_Ch39	8.604	< Limit	-11.396	Pass
TM1_DH5_Ch78	7.503	< Limit	-12.497	Pass
TM2_2DH5_Ch0	6.392	< Limit	-13.608	Pass
TM2_2DH5_Ch39	6.582	< Limit	-13.418	Pass
TM2_2DH5_Ch78	5.534	< Limit	-14.466	Pass
TM3_3DH5_Ch0	6.419	< Limit	-13.581	Pass
TM3_3DH5_Ch39	6.616	< Limit	-13.384	Pass
TM3_3DH5_Ch78	5.53	< Limit	-14.47	Pass

## 2 Test Plot

### 2.1 TM1\_DH5\_Ch0

#### 2.1.1 Pref

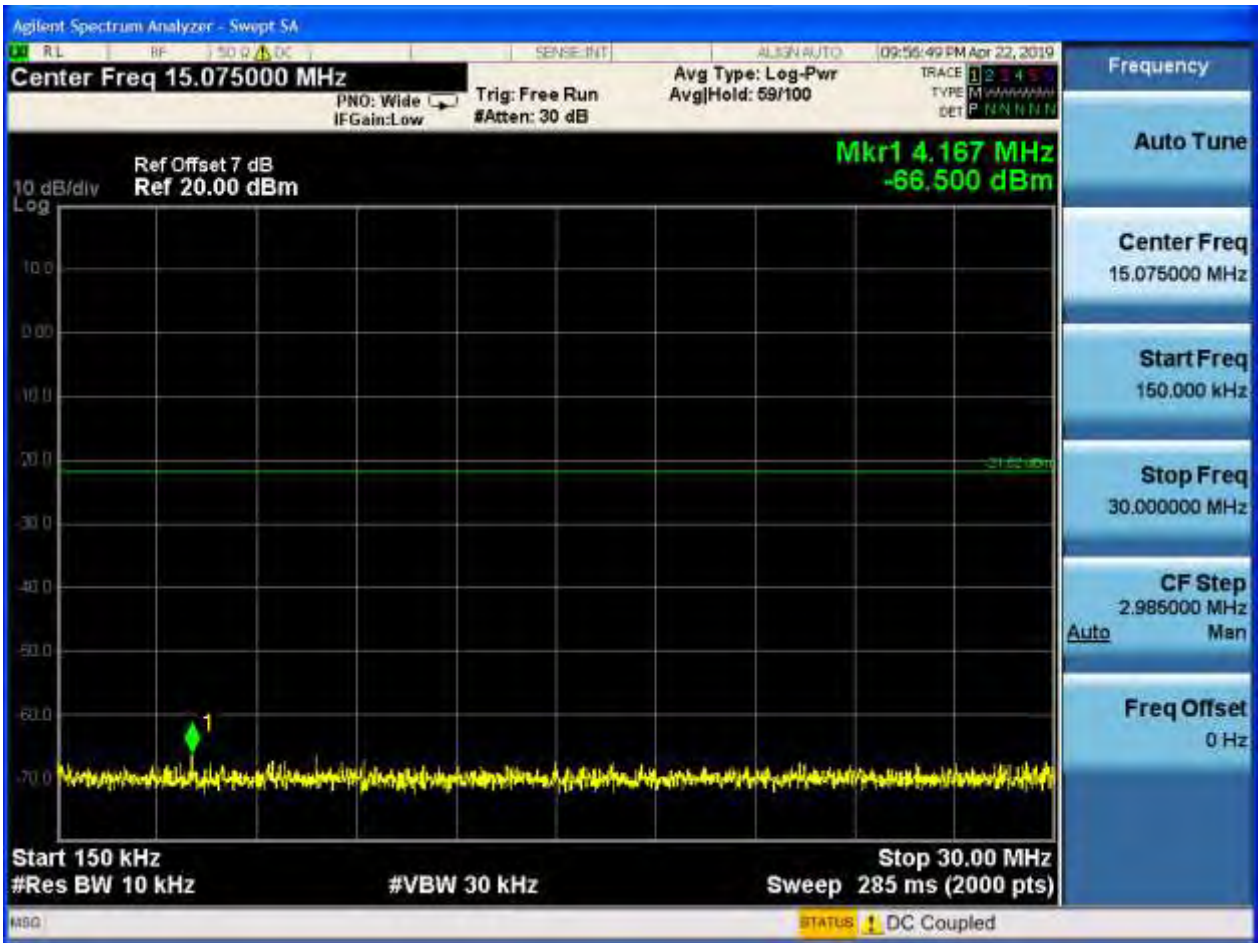


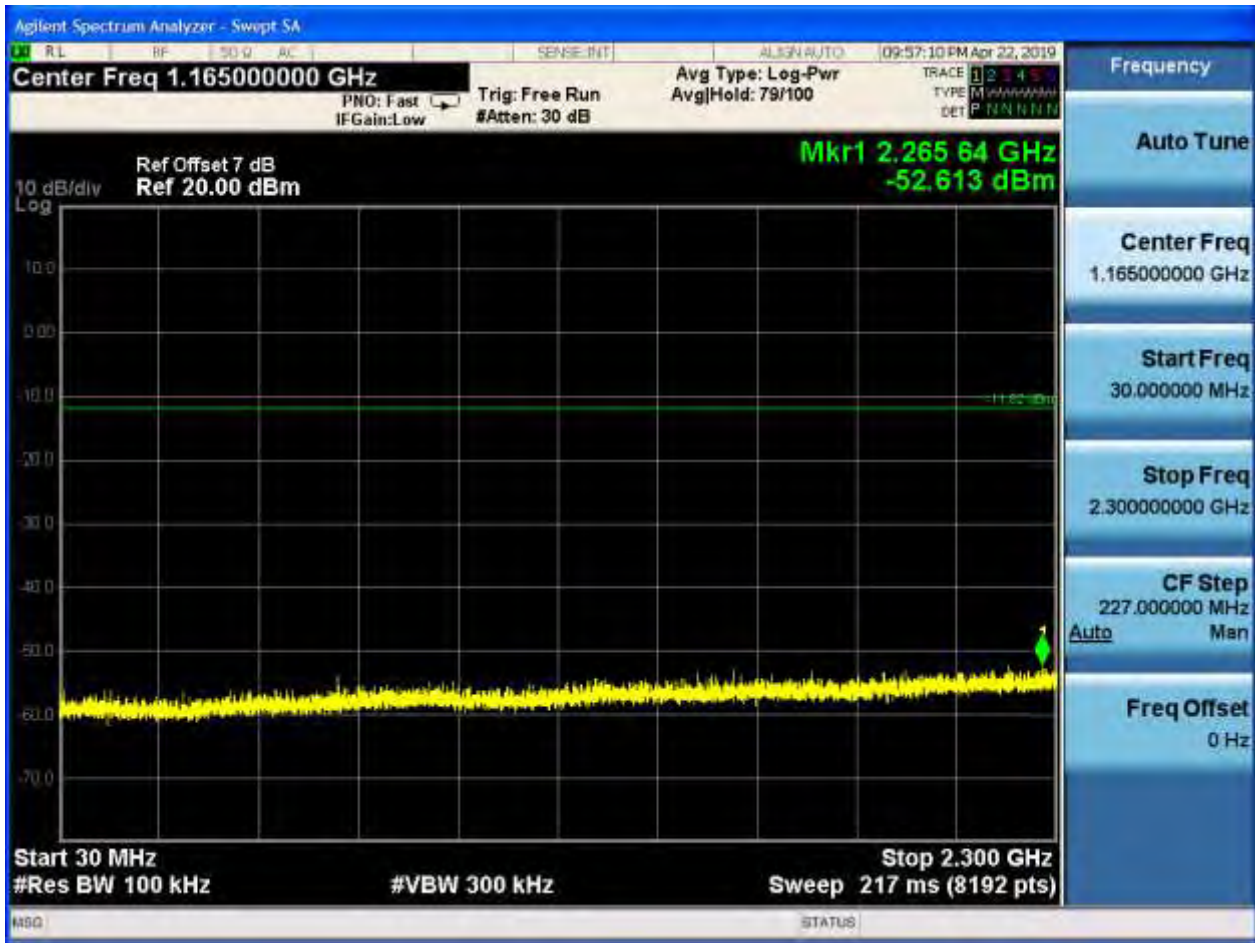


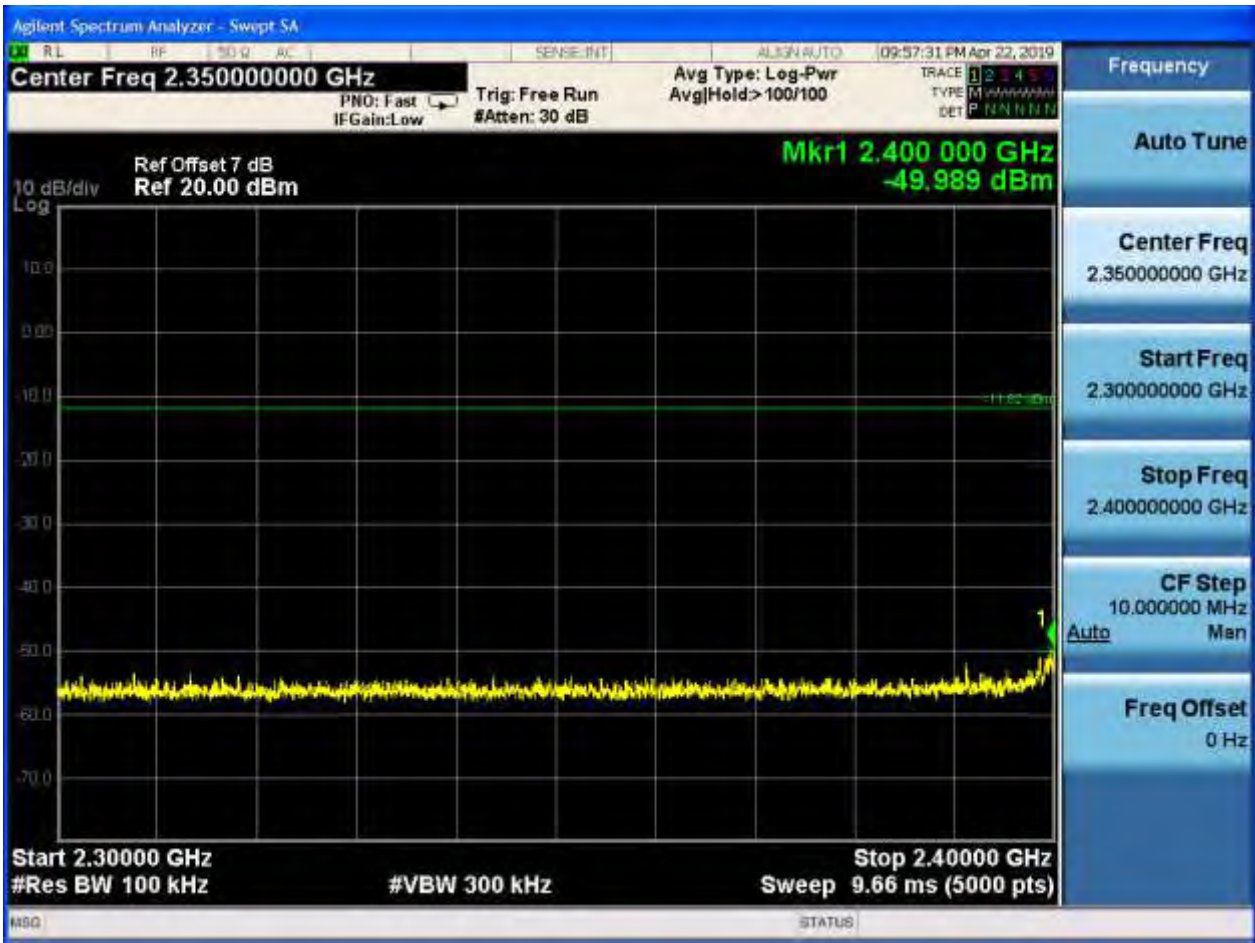
### 2.1.2 Puw













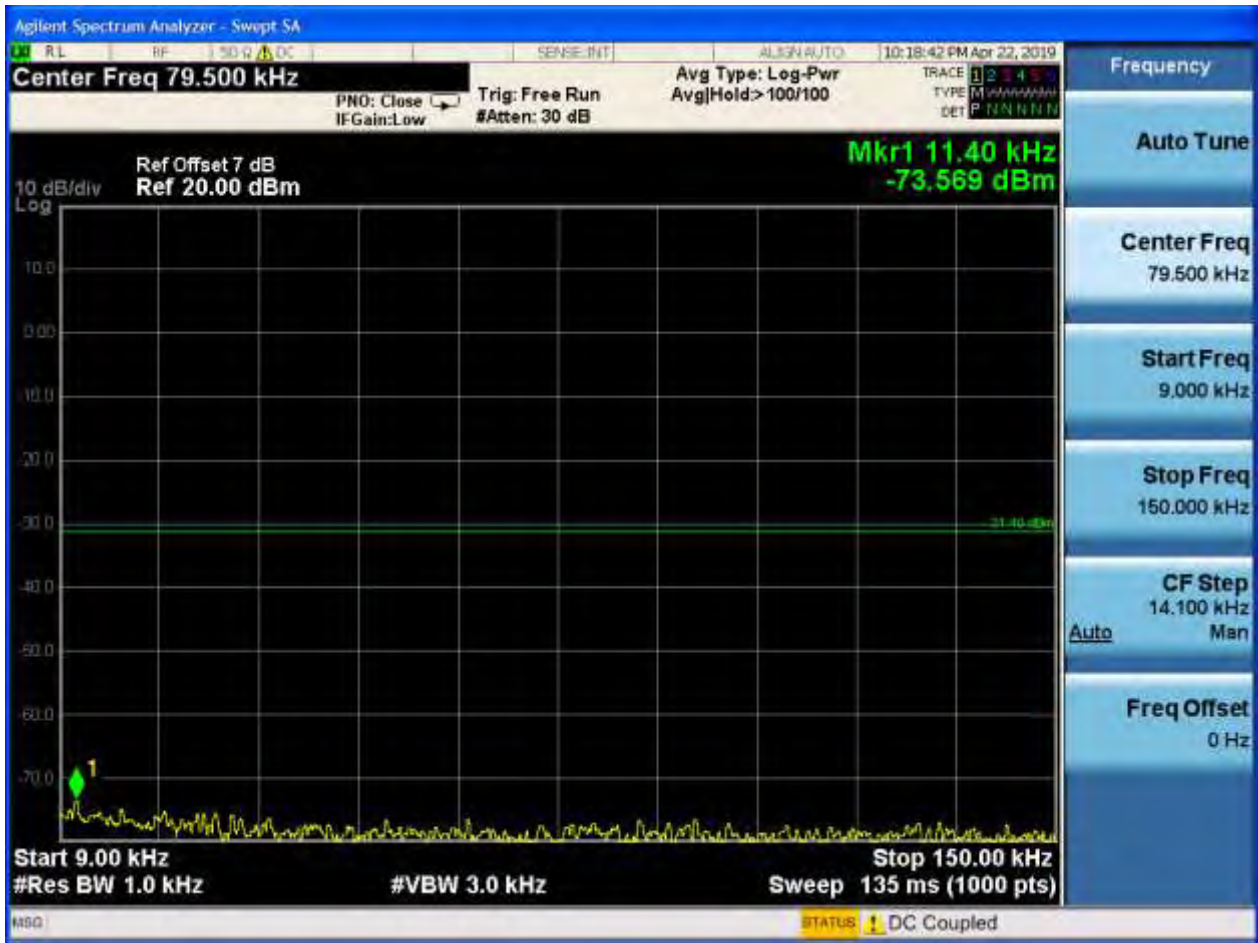


## 2.2 TM1\_DH5\_Ch39

### 2.2.1 Pref

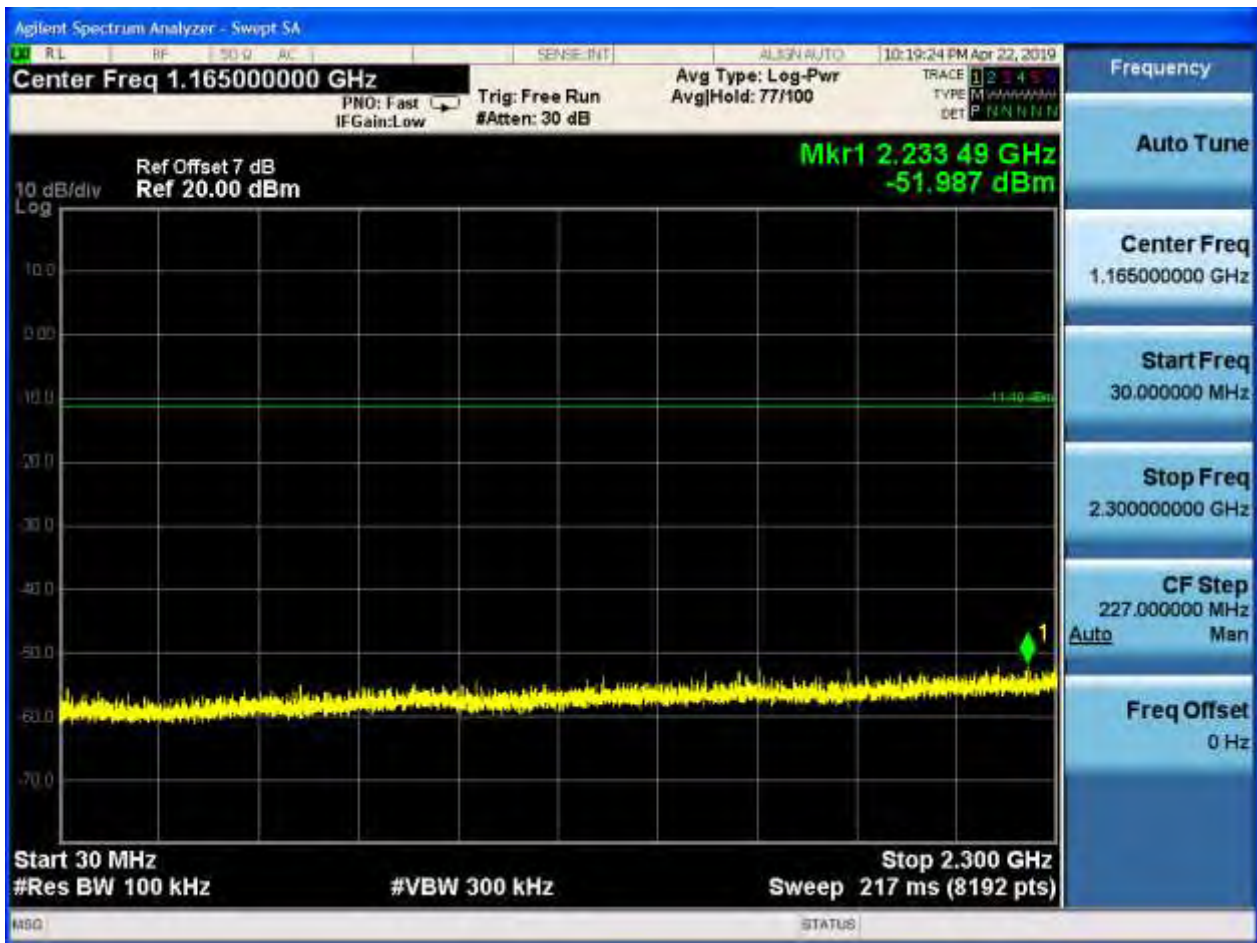


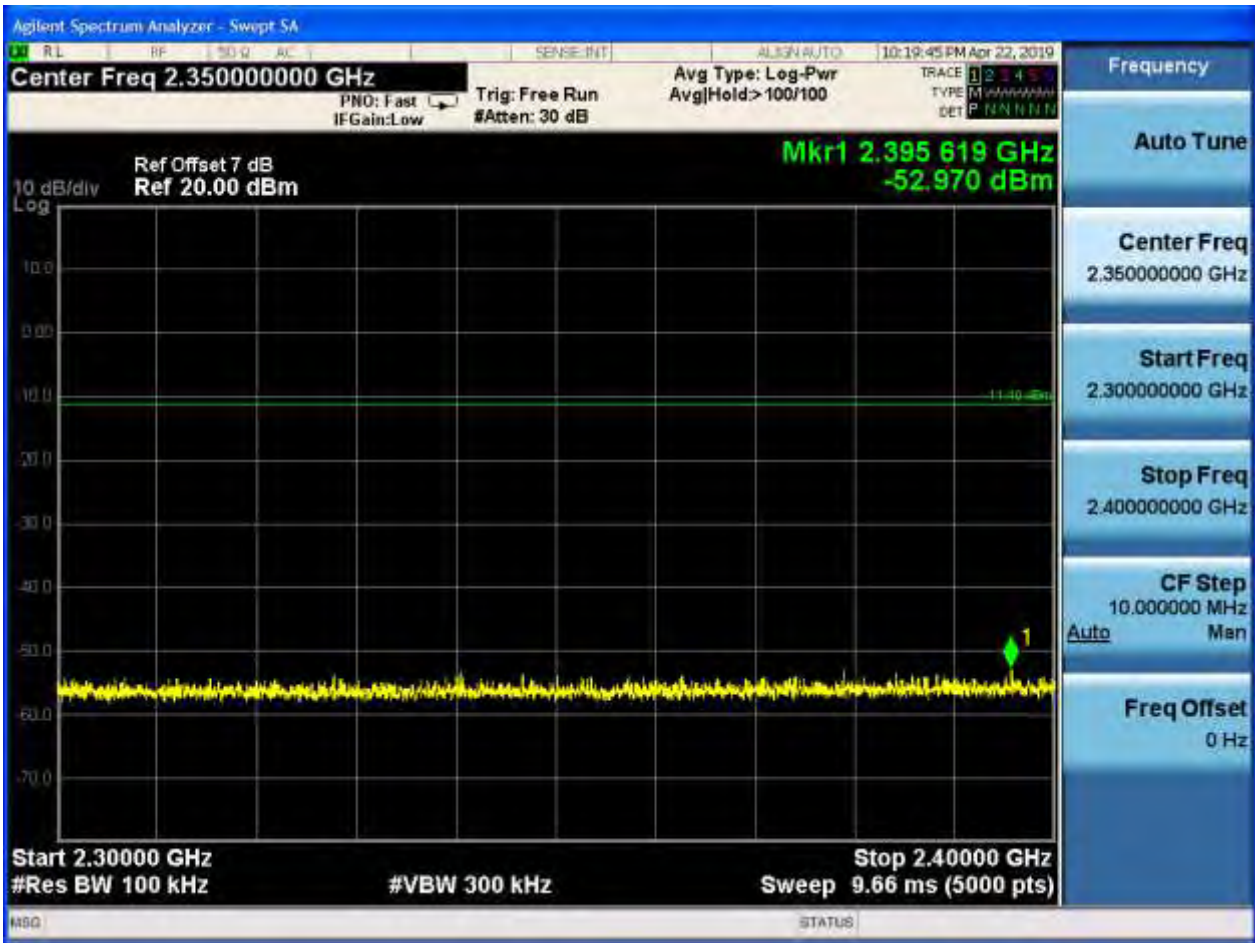
## 2.2.2 P<sub>uw</sub>















### 2.3 TM1\_DH5\_Ch78

#### 2.3.1 Pref

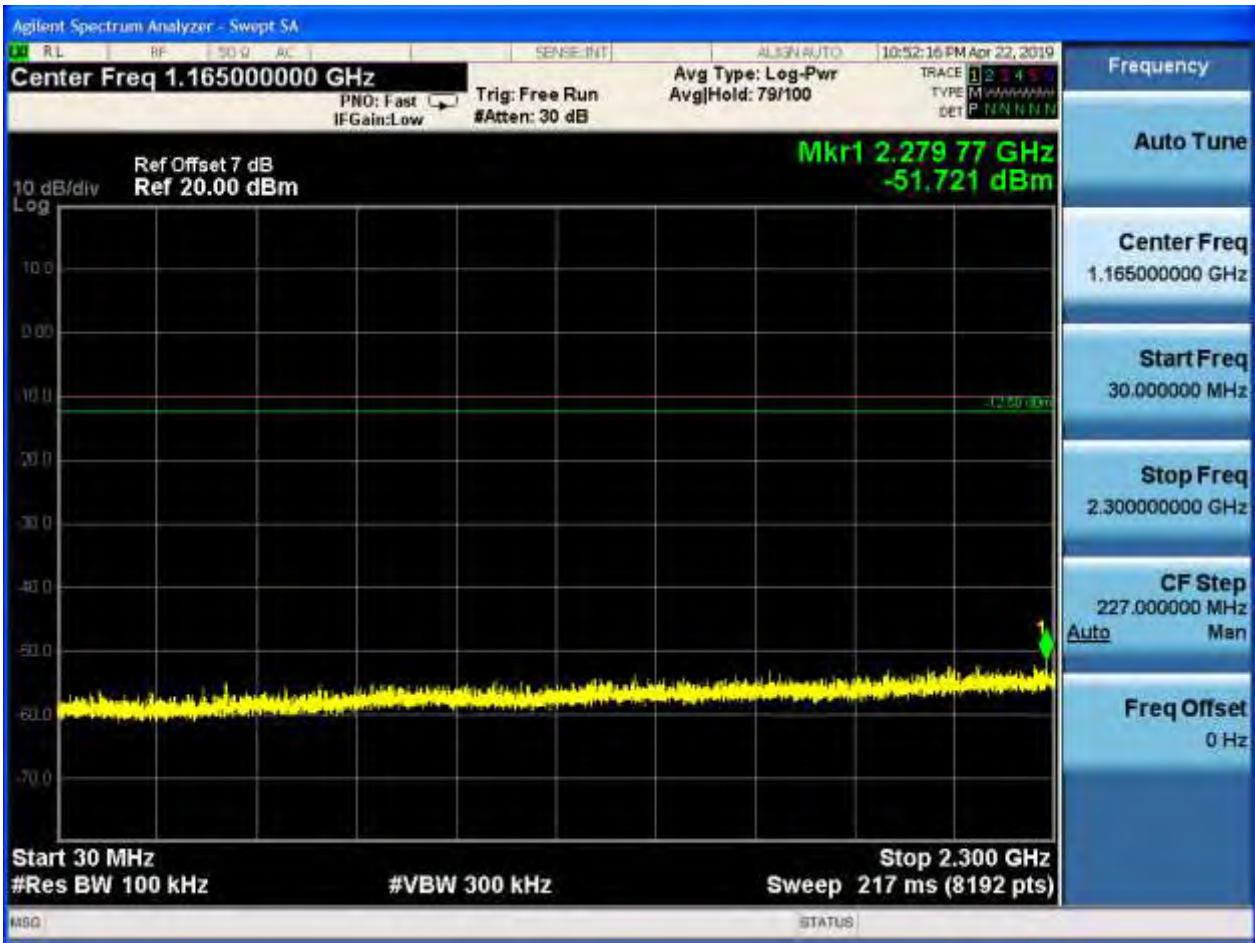




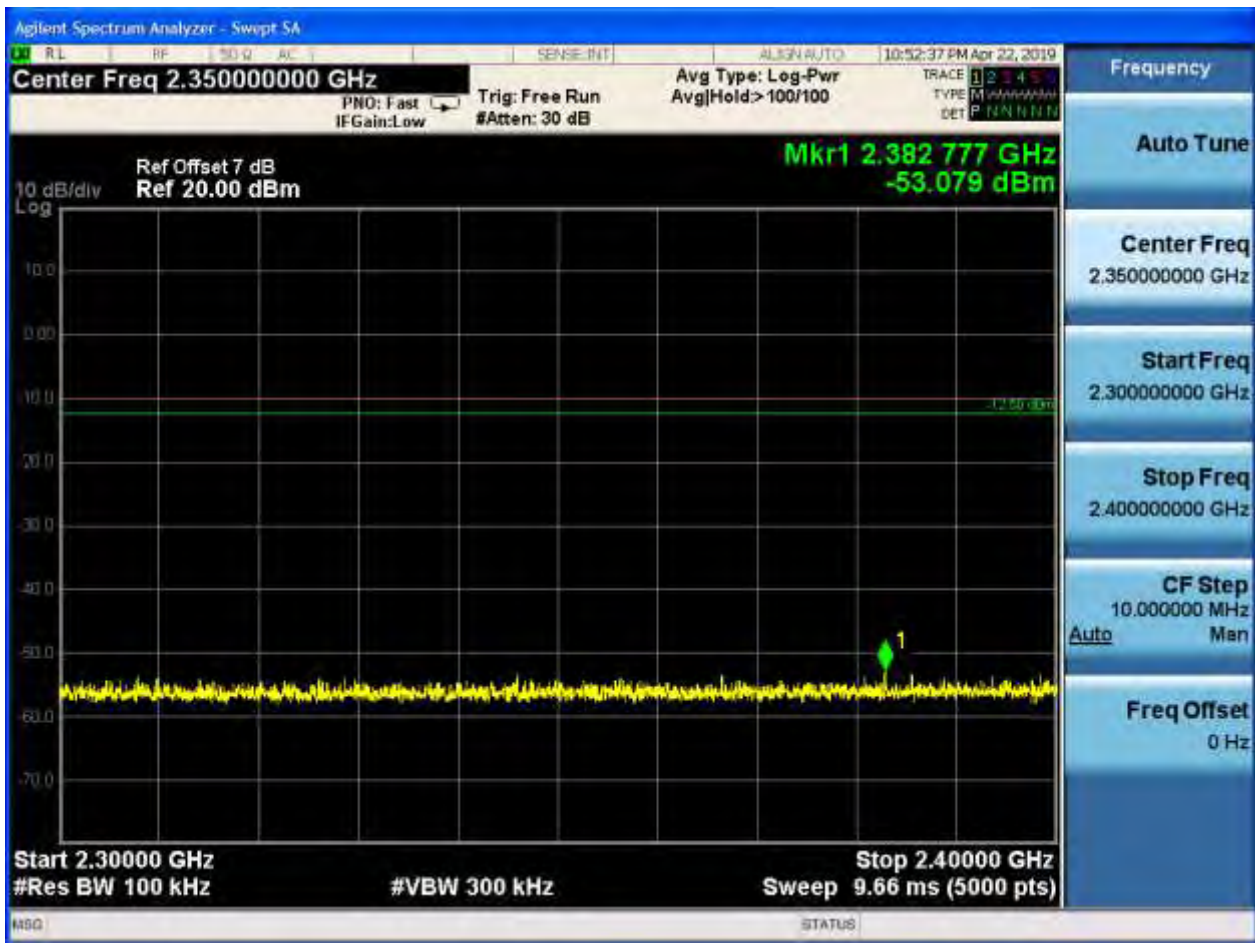
### 2.3.2 Puw















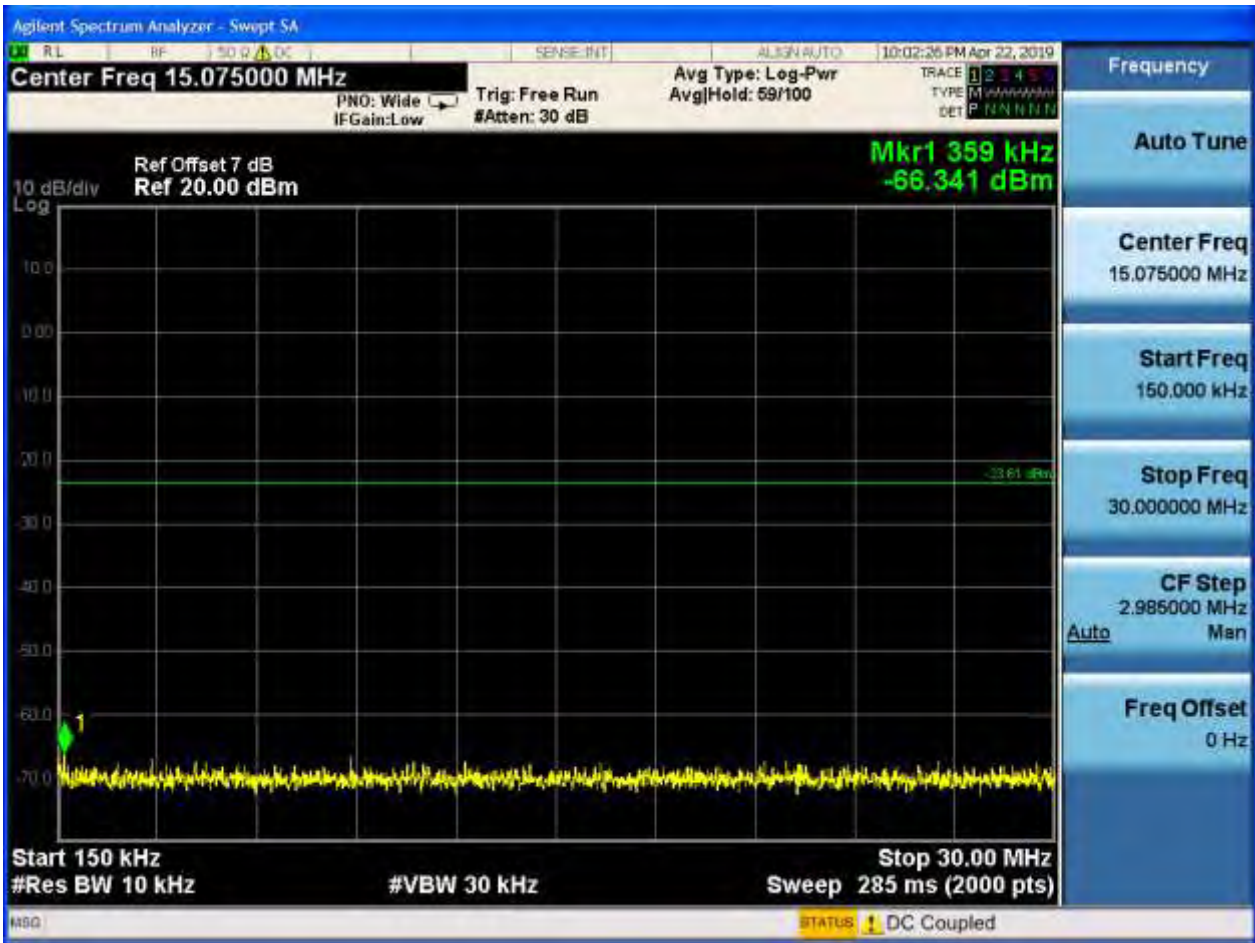
## 2.4 TM2\_2DH5\_Ch0

### 2.4.1 Pref

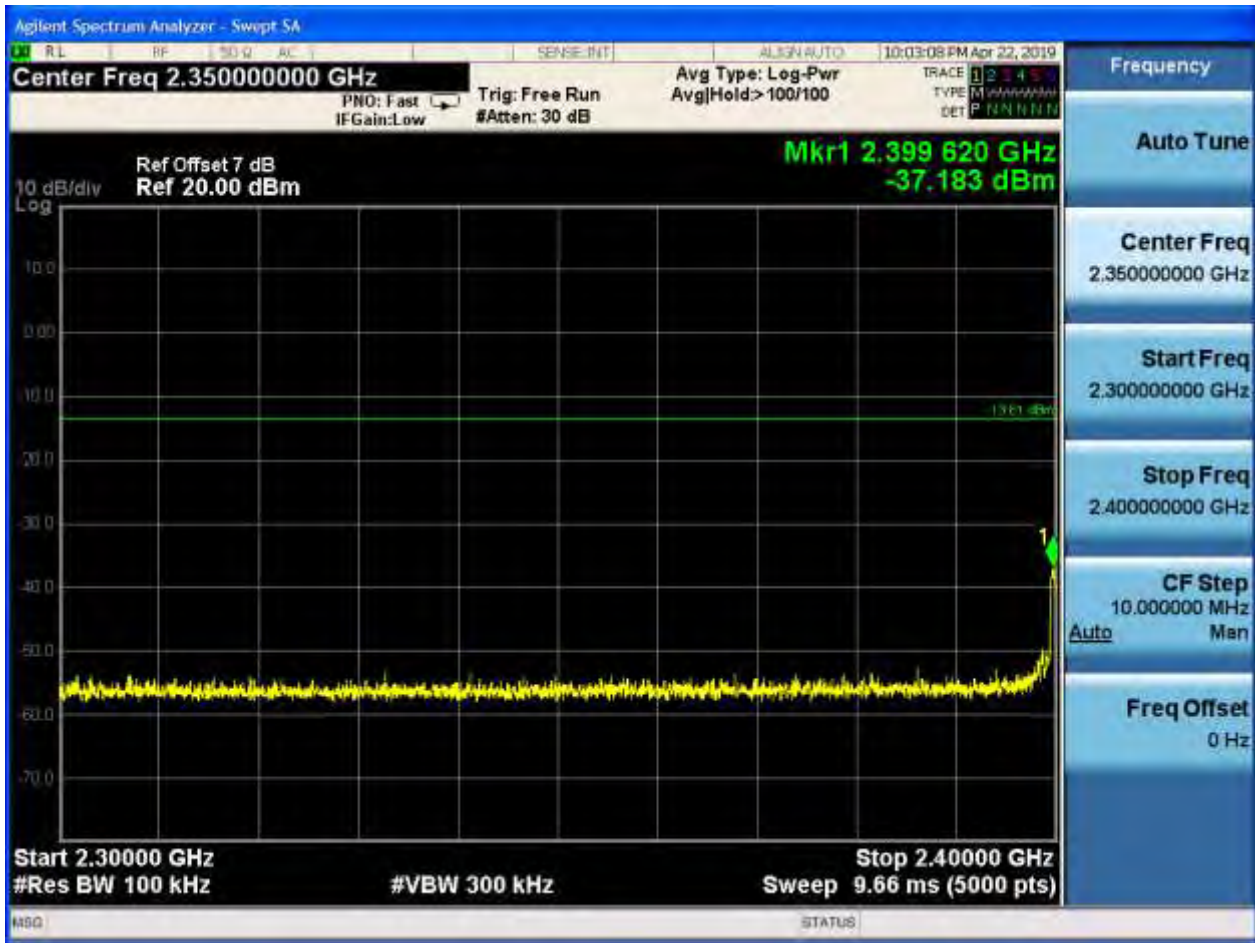


## 2.4.2 Puw

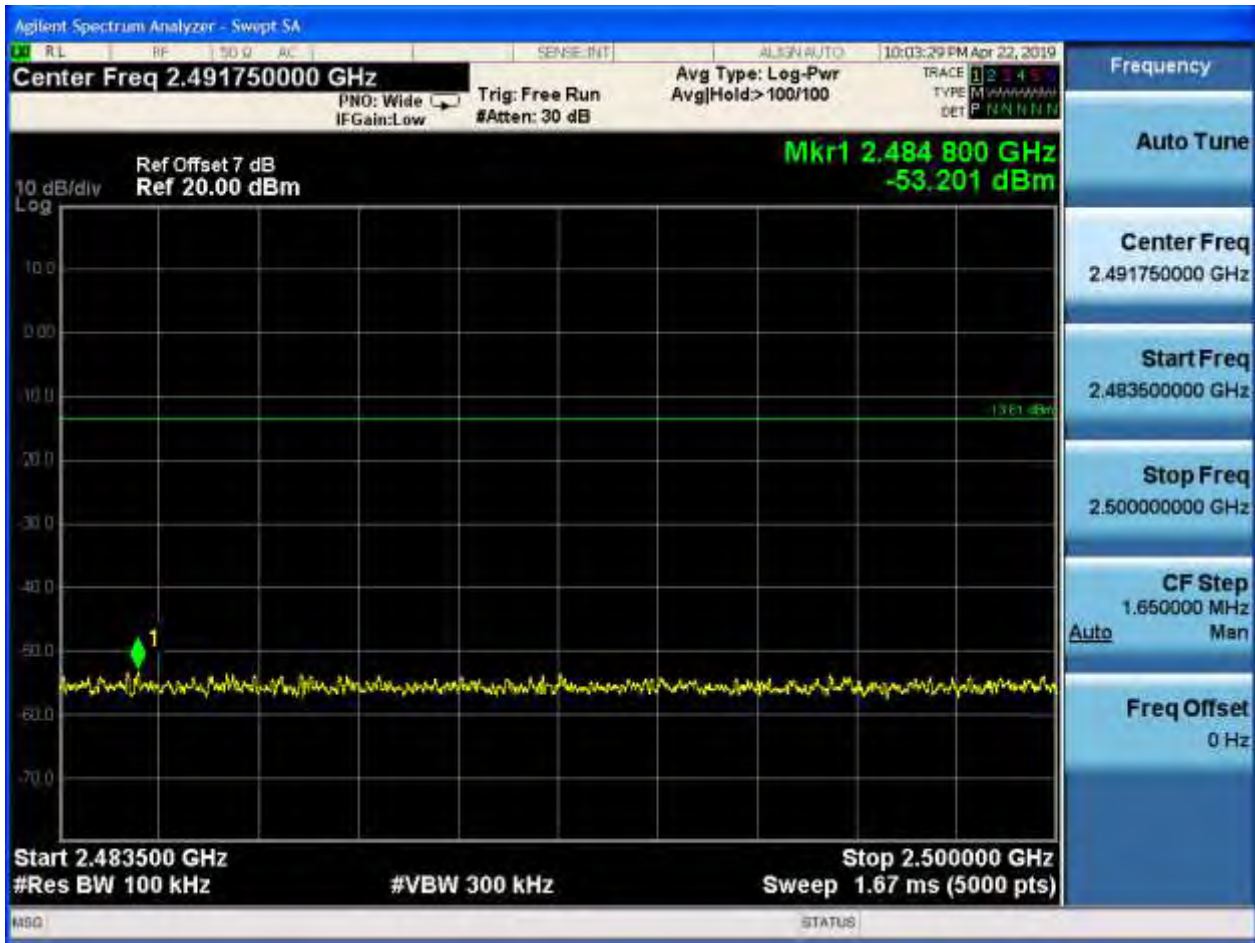














## 2.5 TM2\_2DH5\_Ch39

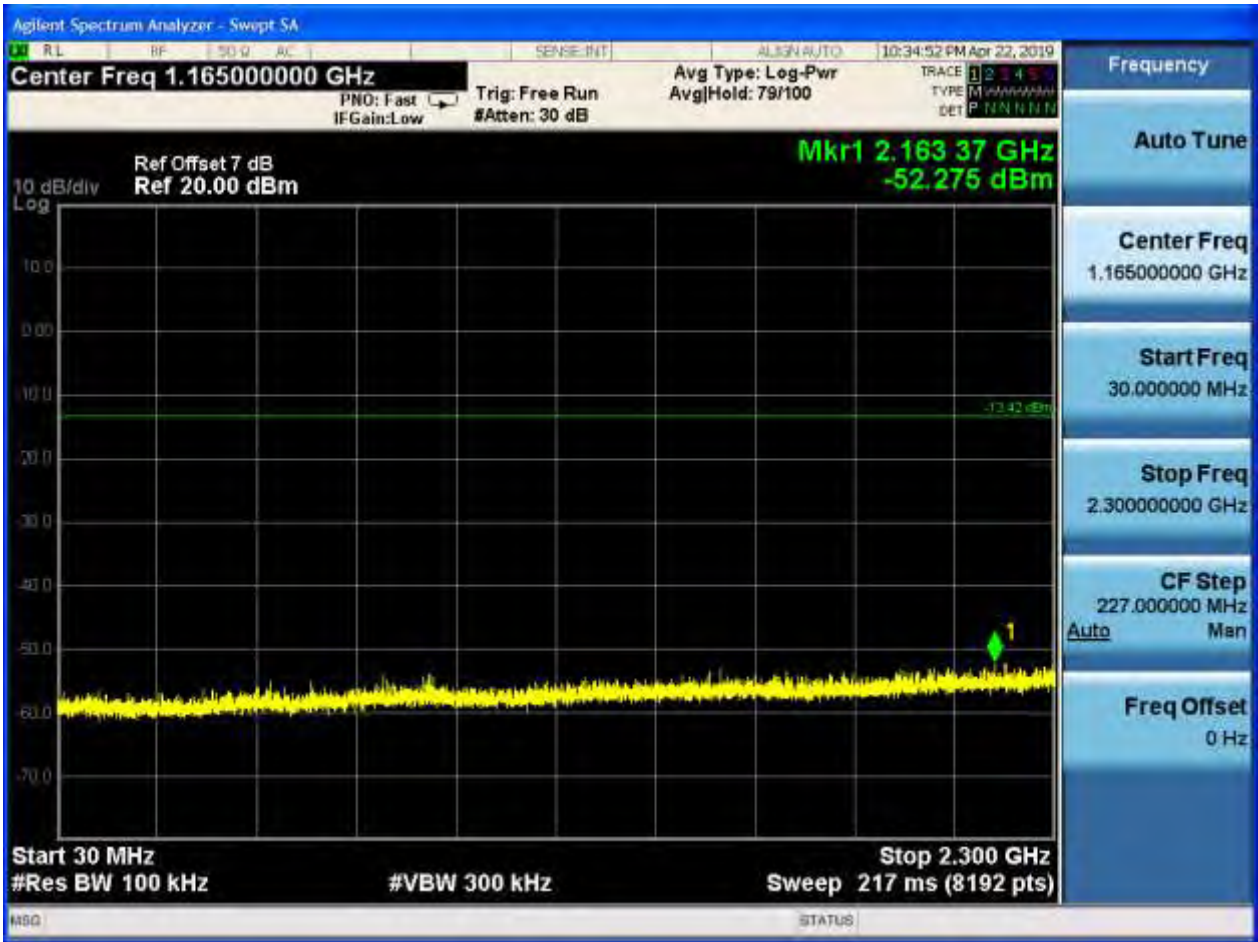
### 2.5.1 Pref



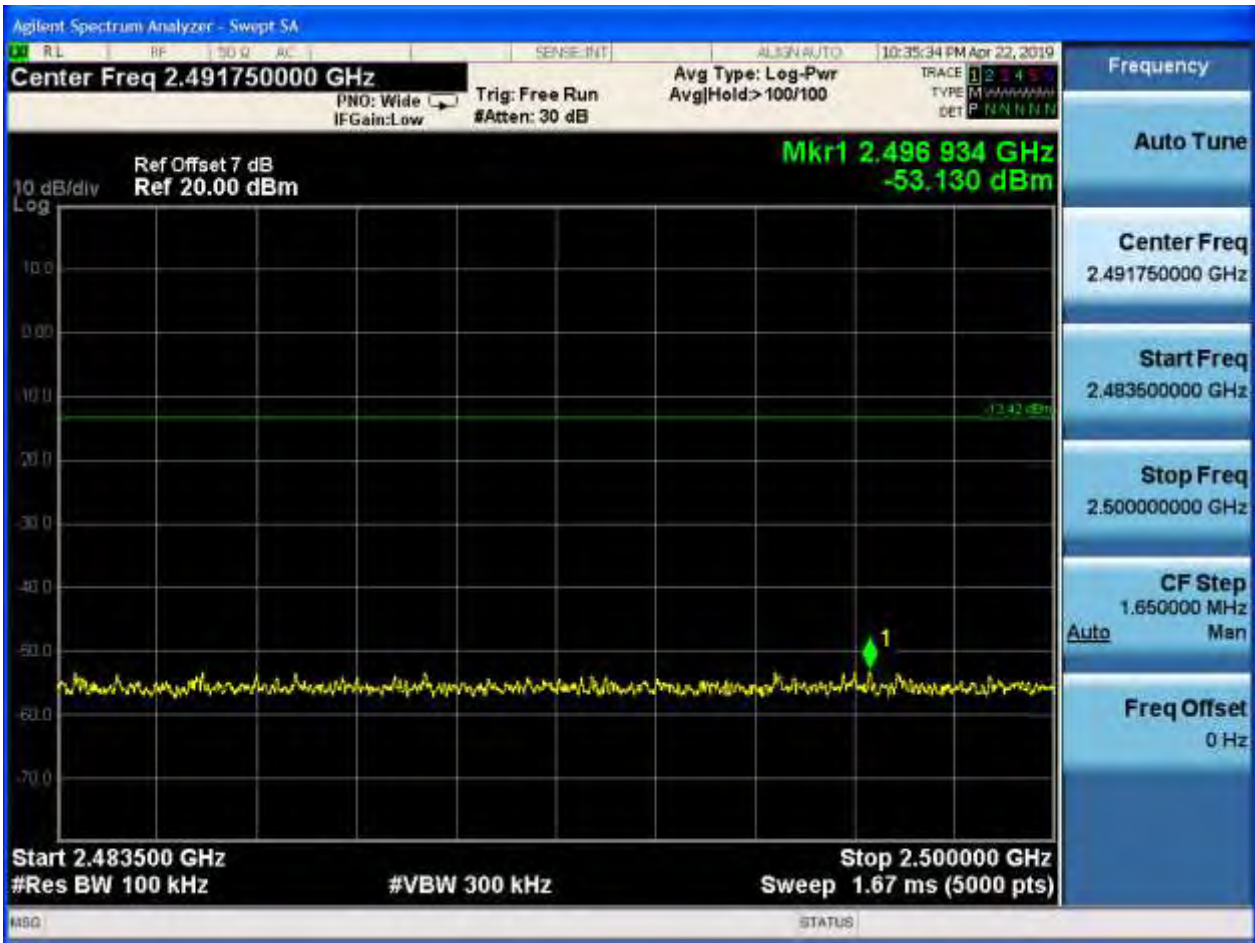
## 2.5.2 P<sub>uw</sub>















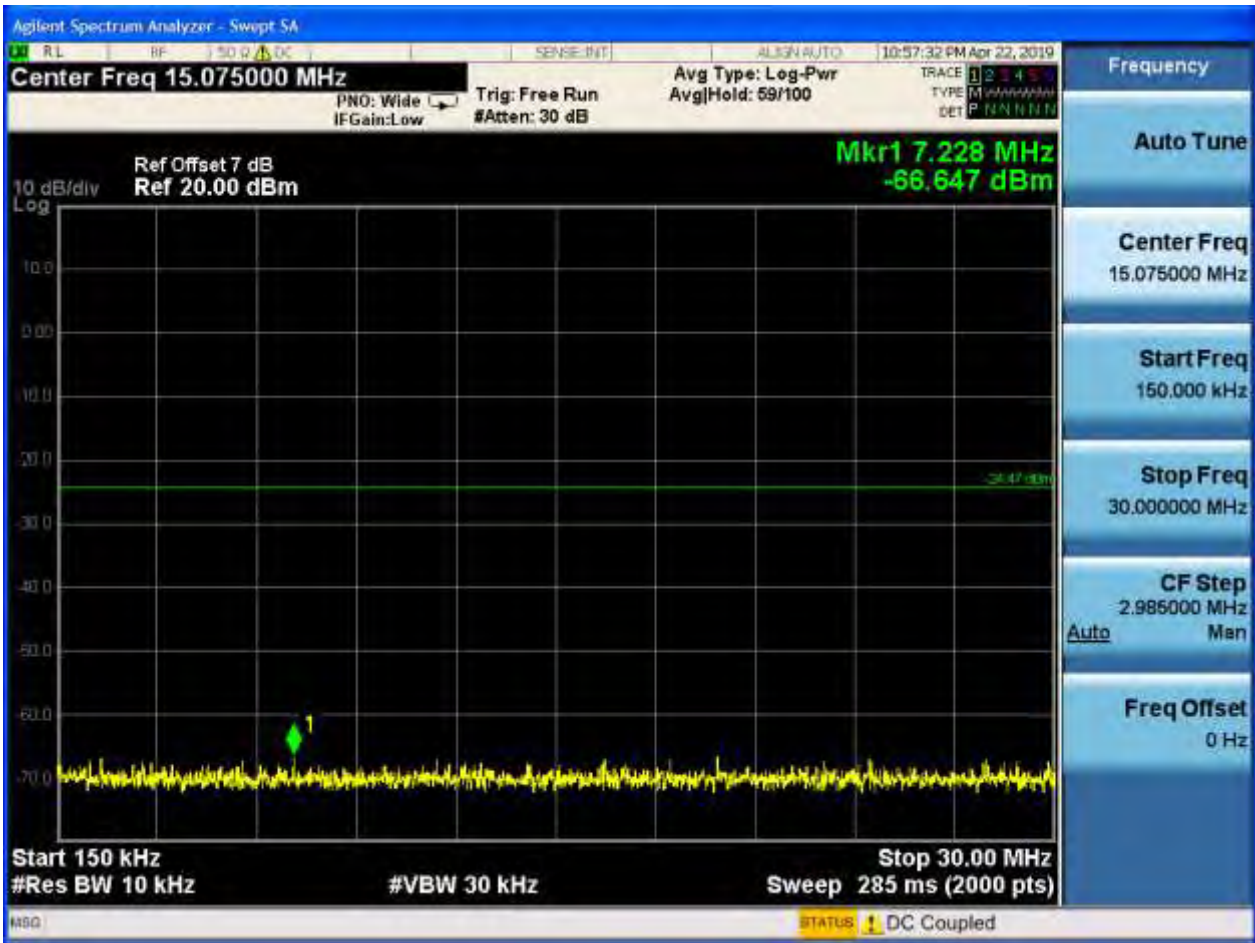
## 2.6 TM2\_2DH5\_Ch78

### 2.6.1 Pref



## 2.6.2 Puw















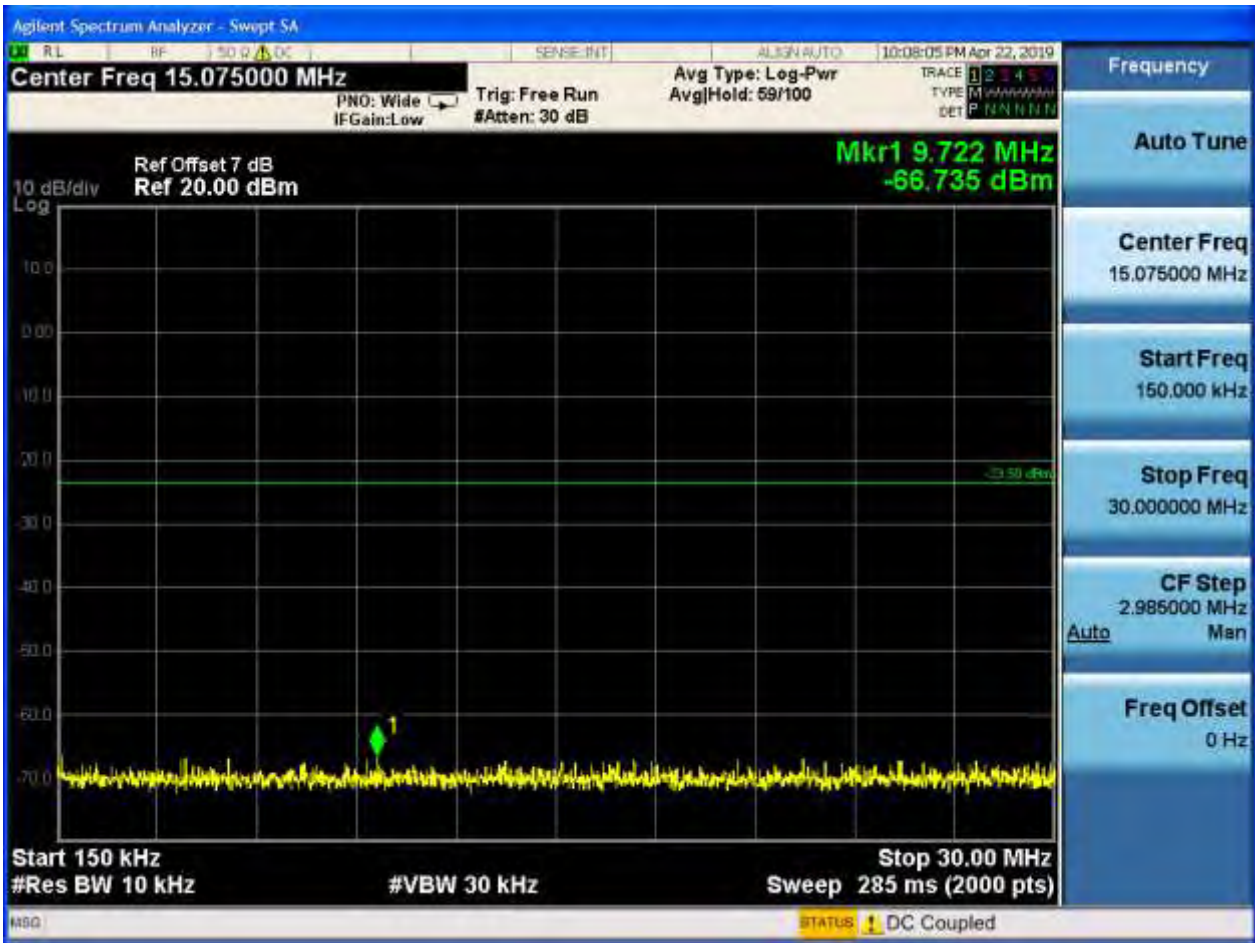
## 2.7 TM3\_3DH5\_Ch0

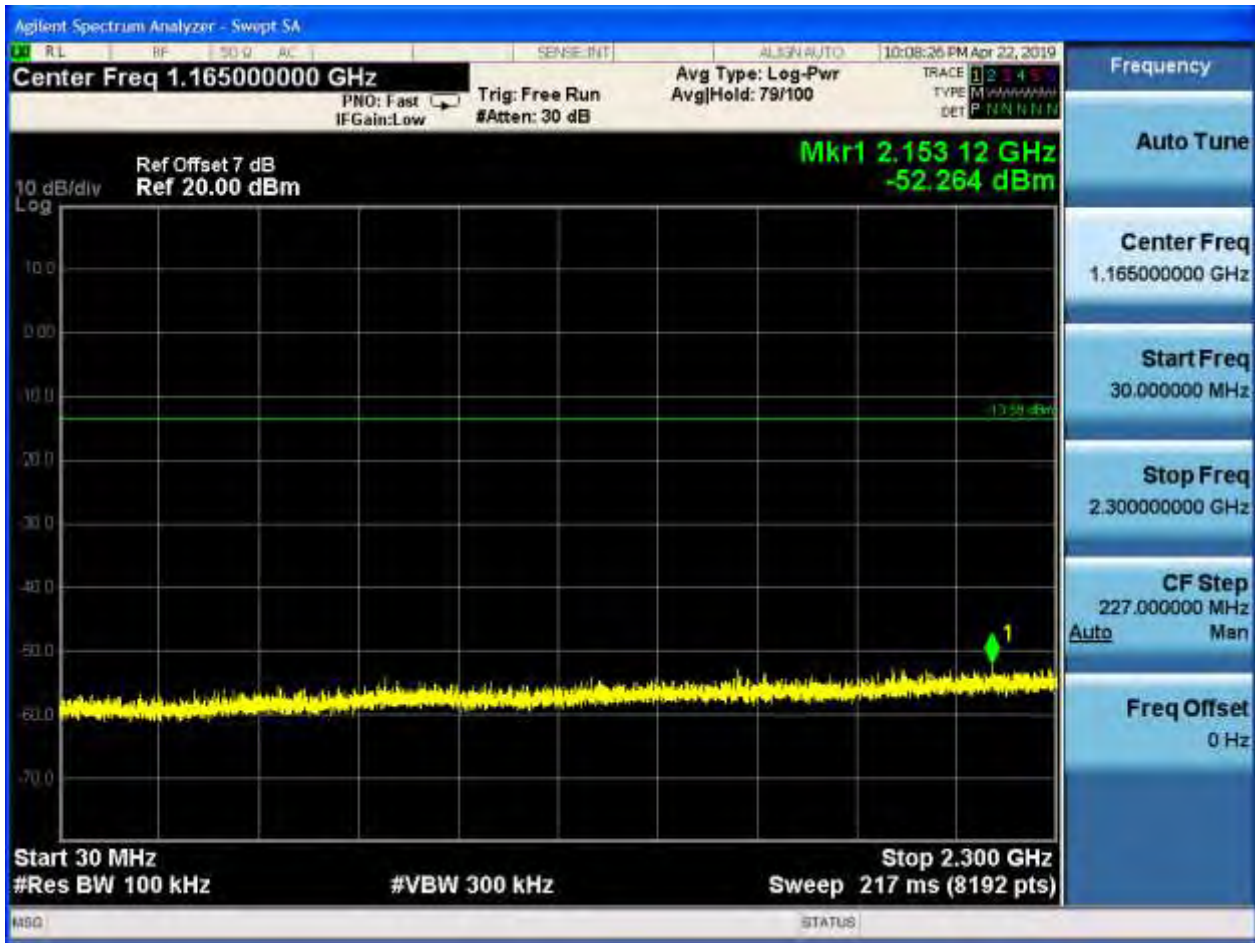
### 2.7.1 Pref

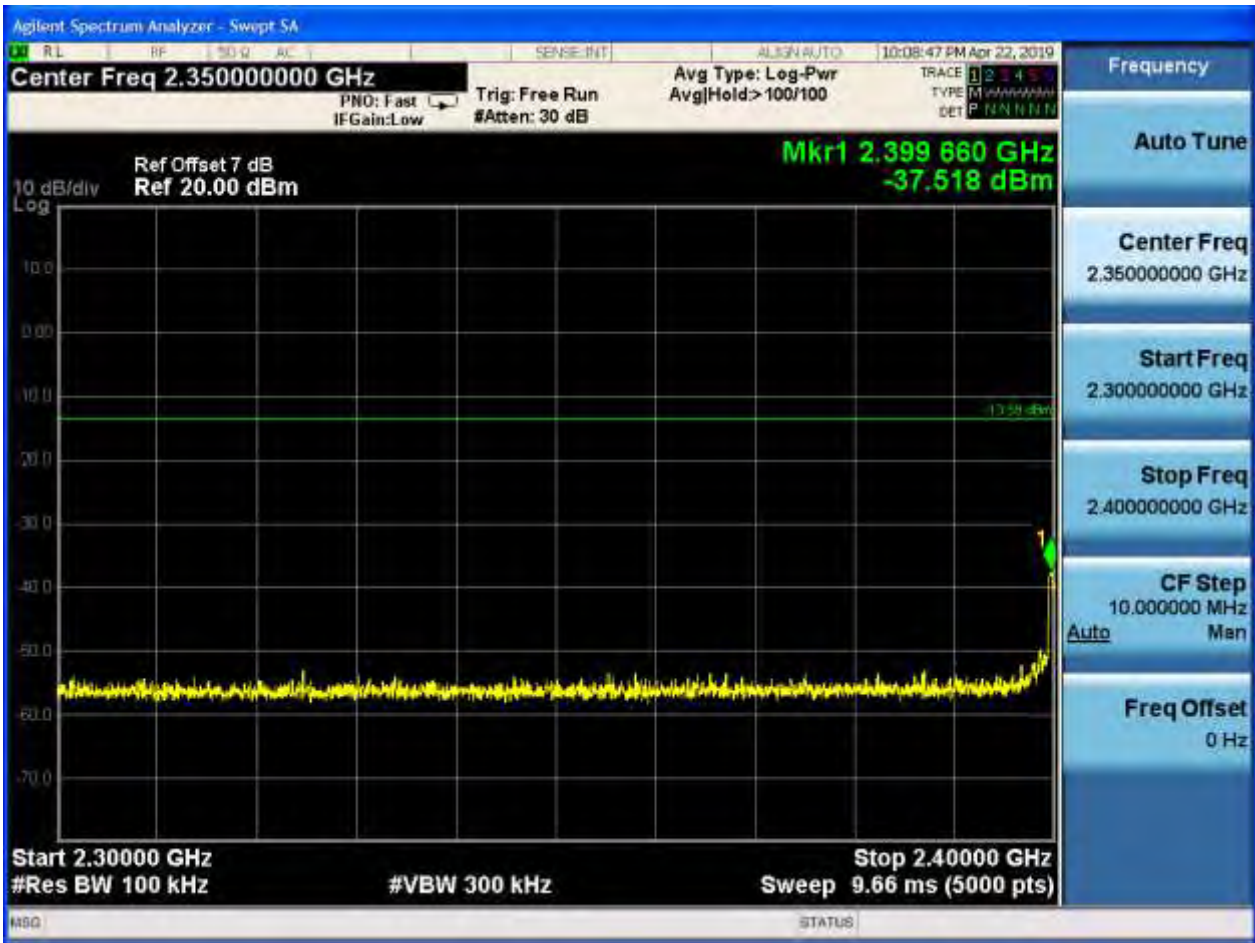


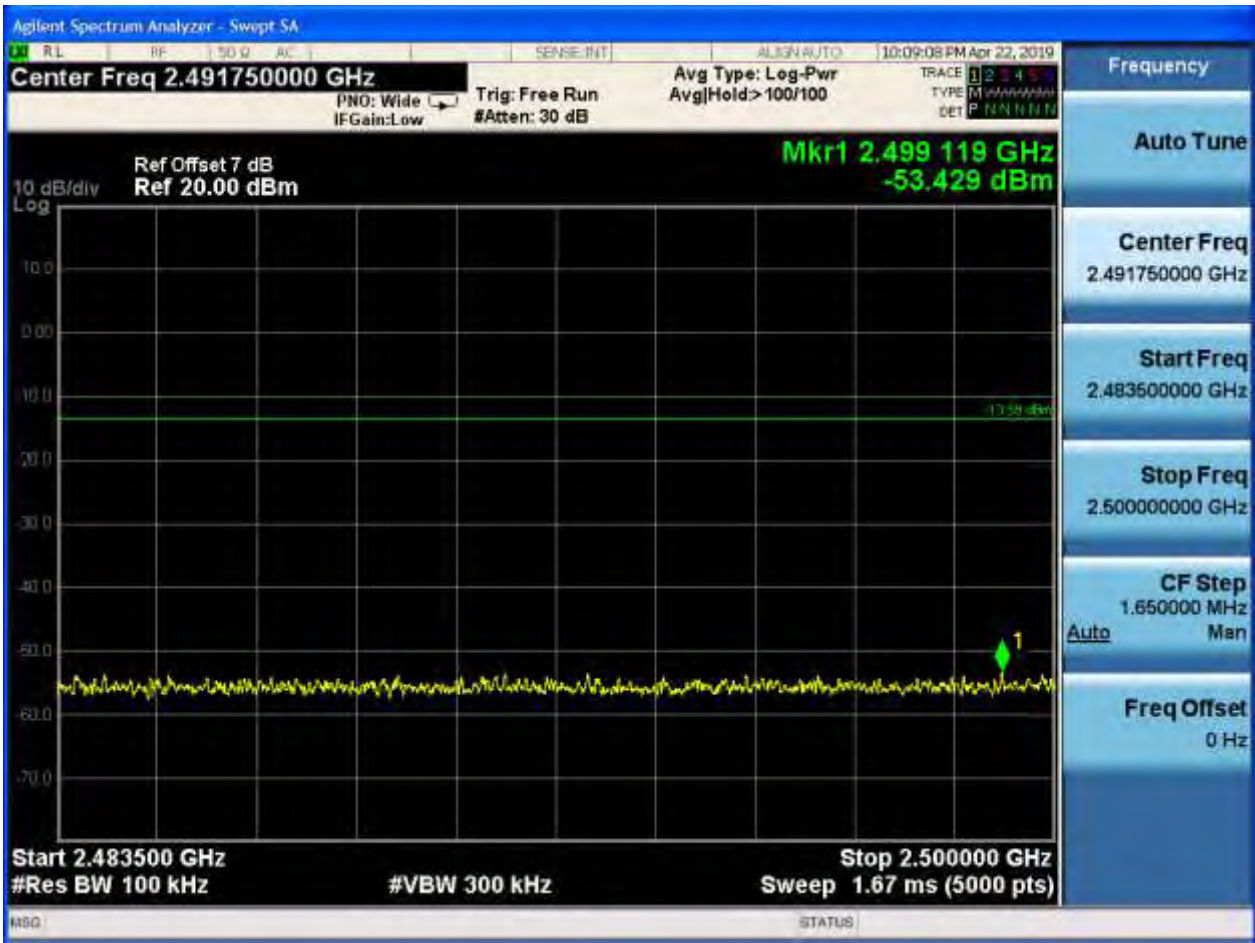
### 2.7.2 Puw











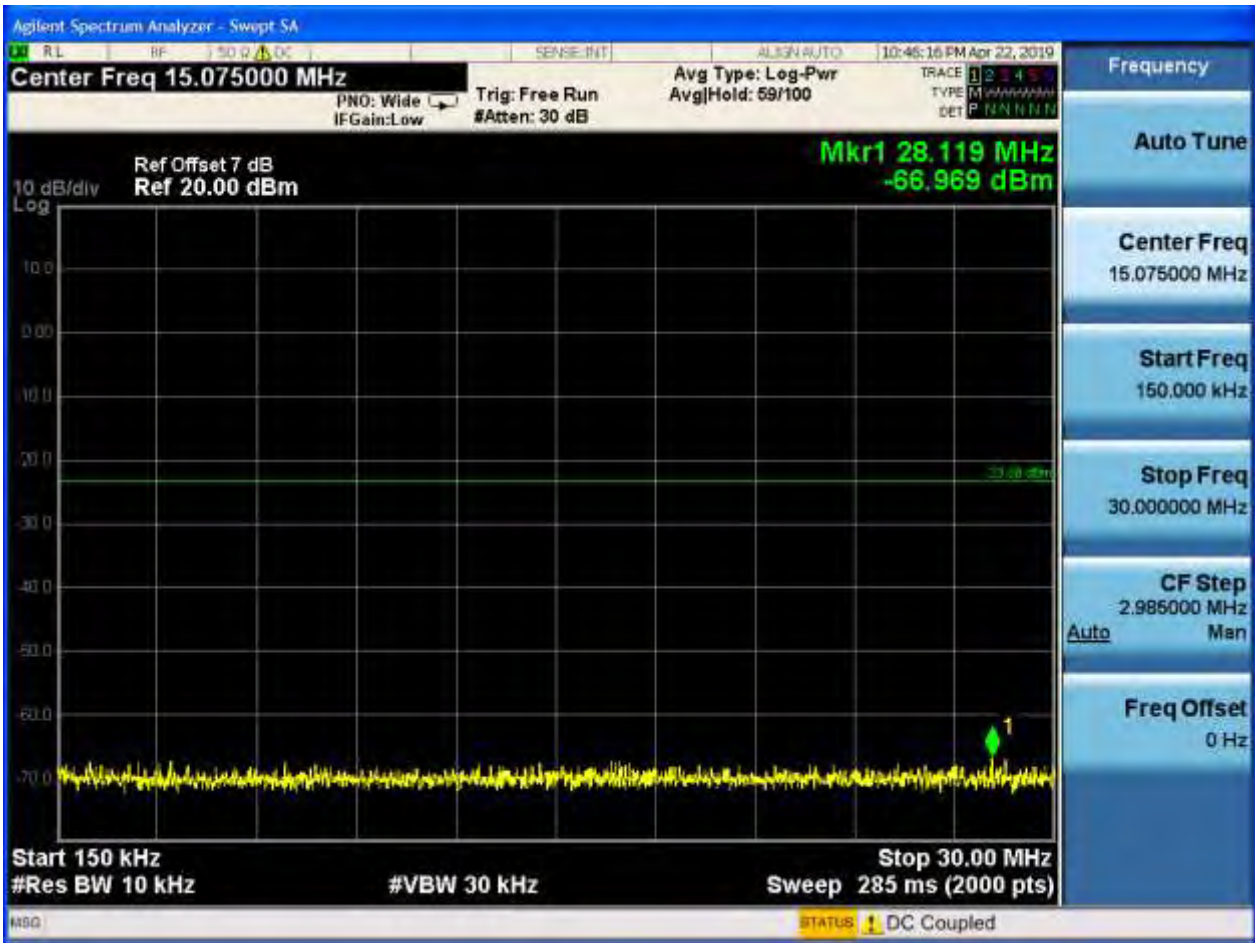






### 2.8.2 P<sub>uw</sub>













## 2.9 TM3\_3DH5\_Ch78

### 2.9.1 Pref

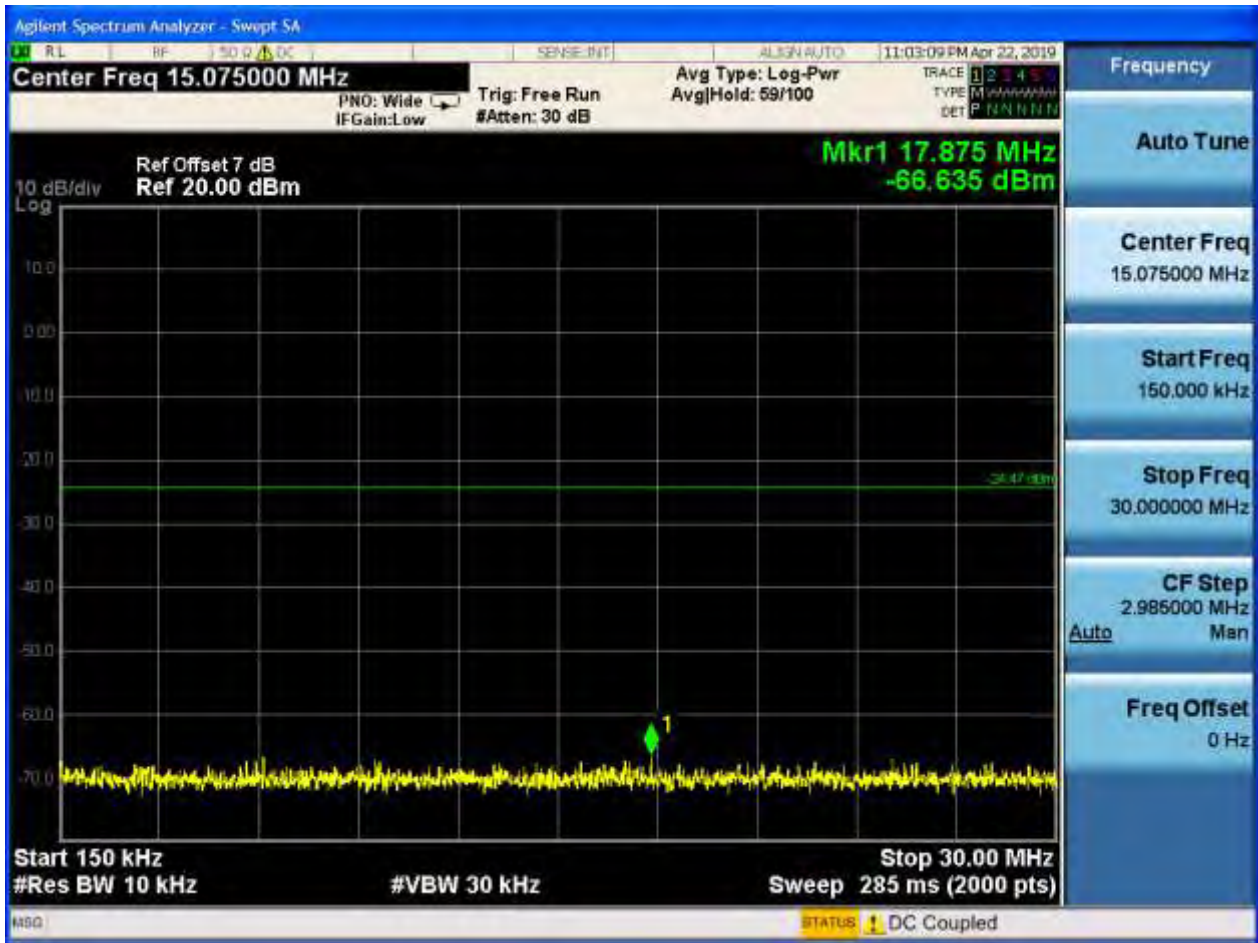


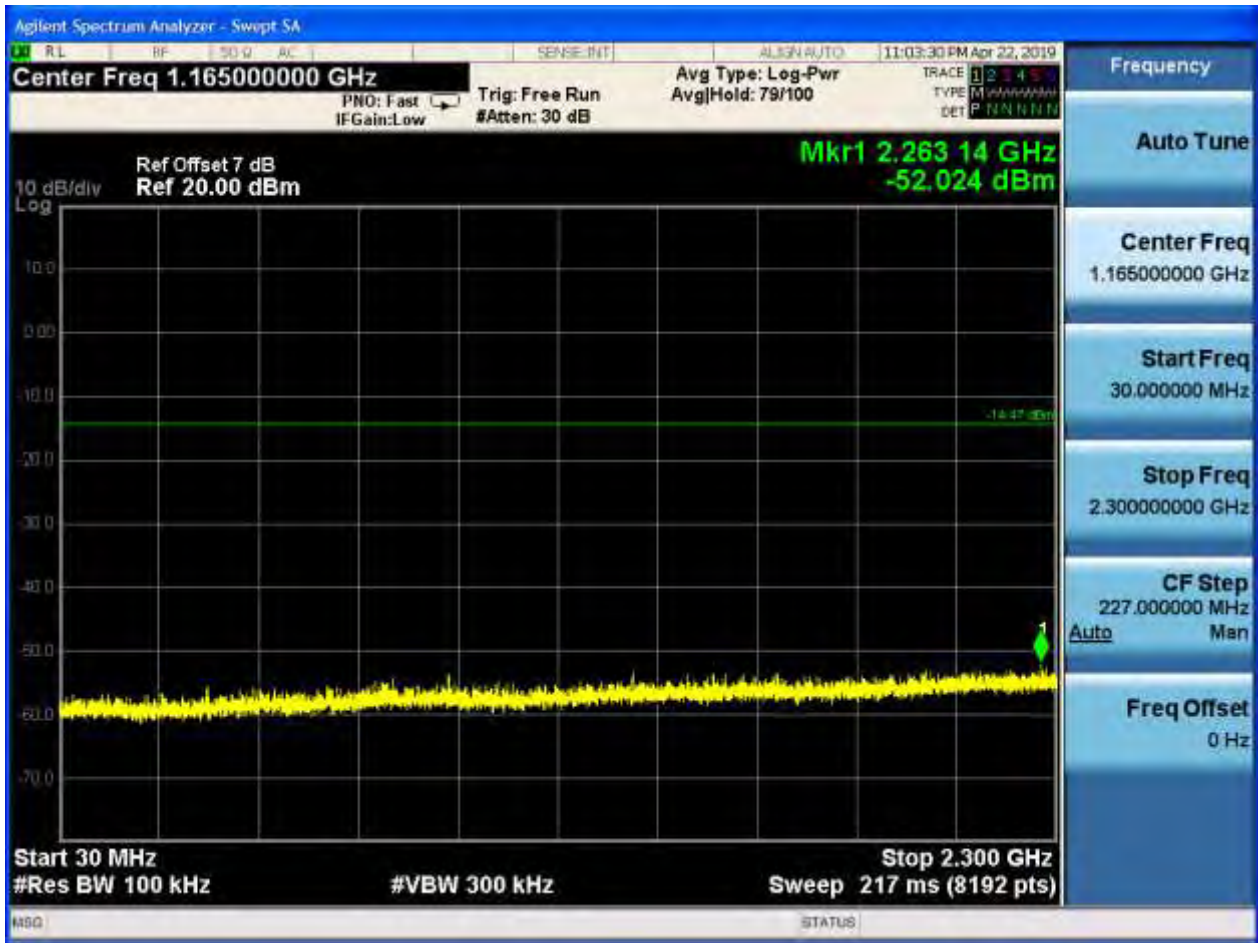


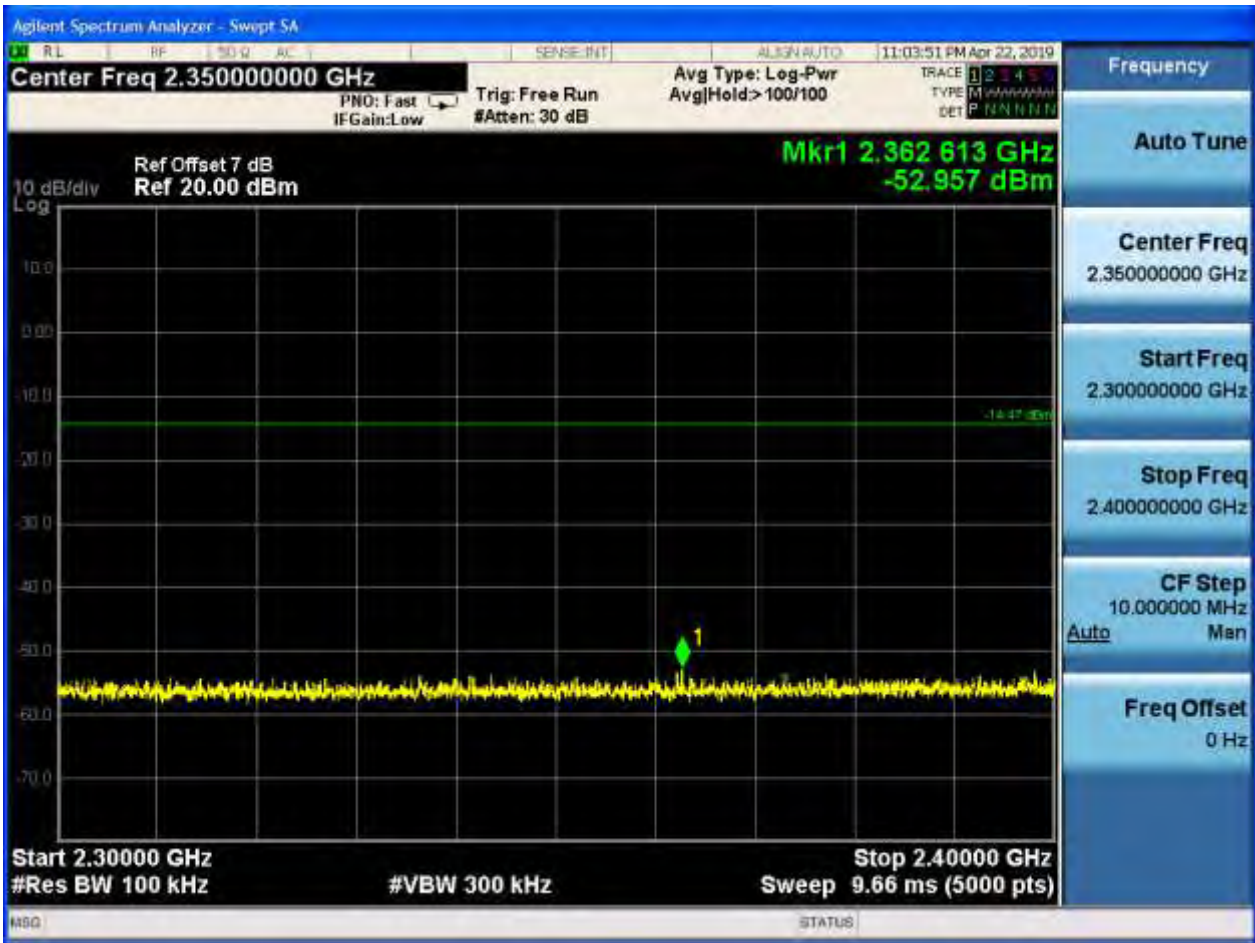
### 2.9.2 Puw

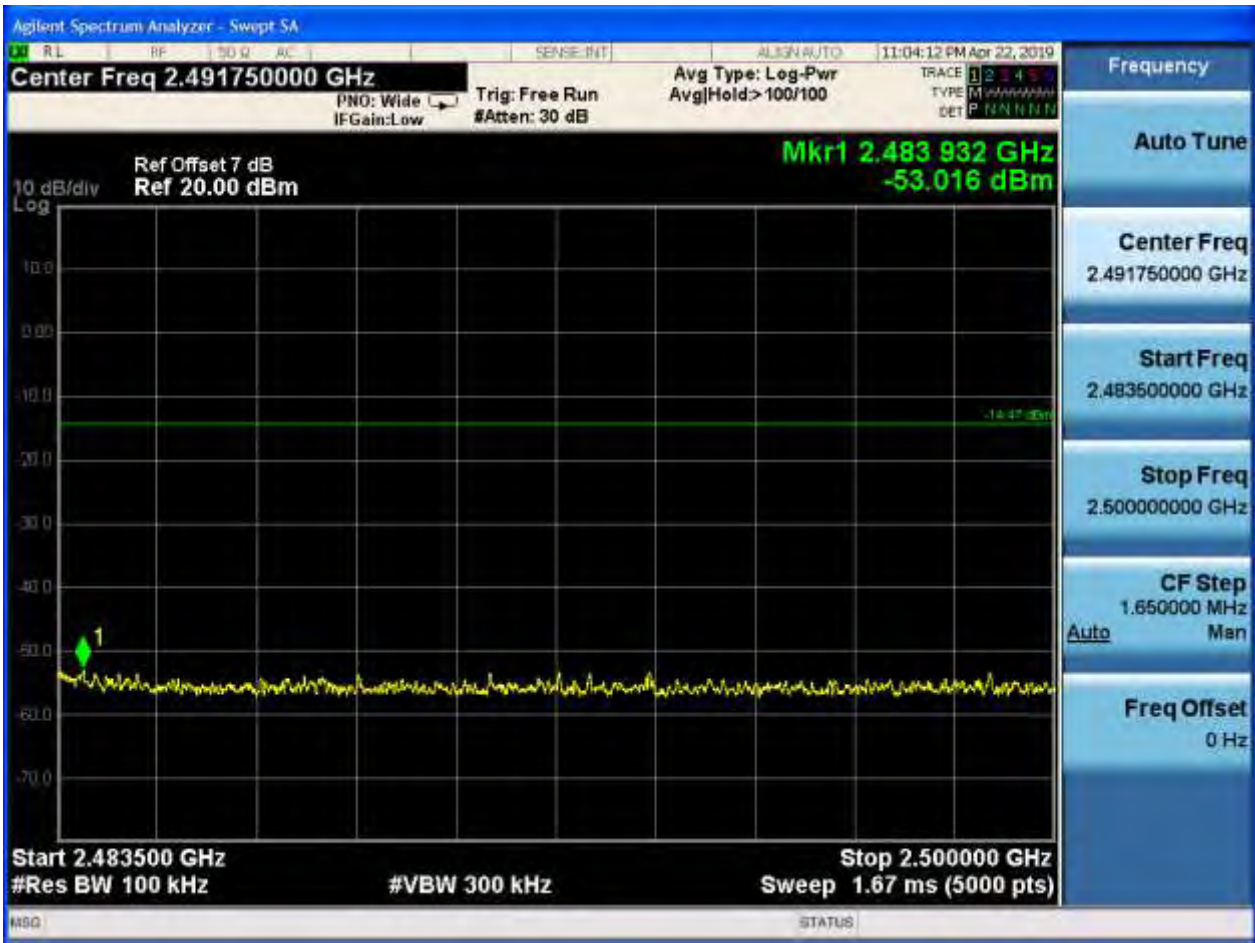
















# Appendix H: Radiated Emissions in the Restricted Bands

## 1 Result Table

The whole testing range is from “30 MHz to 26.5 GHz (10th harmonics)” is divided into 4 parts according to the test site settings, which are:

- (Part 1): Test range of “9 KHz to 30 MHz”,
- (Part 2): Test range of “30 Mhz to 1GHz
- (Part 3): Test range of “1 GHz to 3 GHz”.
- (Part 4): Test range of “3 GHz to 18 GHz”,
- (Part 5): Test range of “18 GHz to 26.5 GHz”.

In this Appendix, only the test results and plots under the worst case can be reported. In the result table, the “< Limit” denotes that “Not found obvious spikes or see marked spikes on plots and listed emissions records”.

Test Range	EUT Conf.	Emissions	Verdict
30 MHz to 1 GHz	TM1_DH5_Ch0 (Worst Conf.)	< Limit	Pass
1 GHz to 3 GHz	TM1_DH5_Ch0 (Worst Conf.)	< Limit	Pass
	TM1_DH5_Ch78 (Worst Conf.)	< Limit	Pass
3 GHz to 18 GHz	TM1_DH5_Ch0 (Worse Conf.)	< Limit	Pass
18 GHz to 26.5 GHz	TM1_DH5_Ch0 (Worst Conf.)	< Limit	Pass

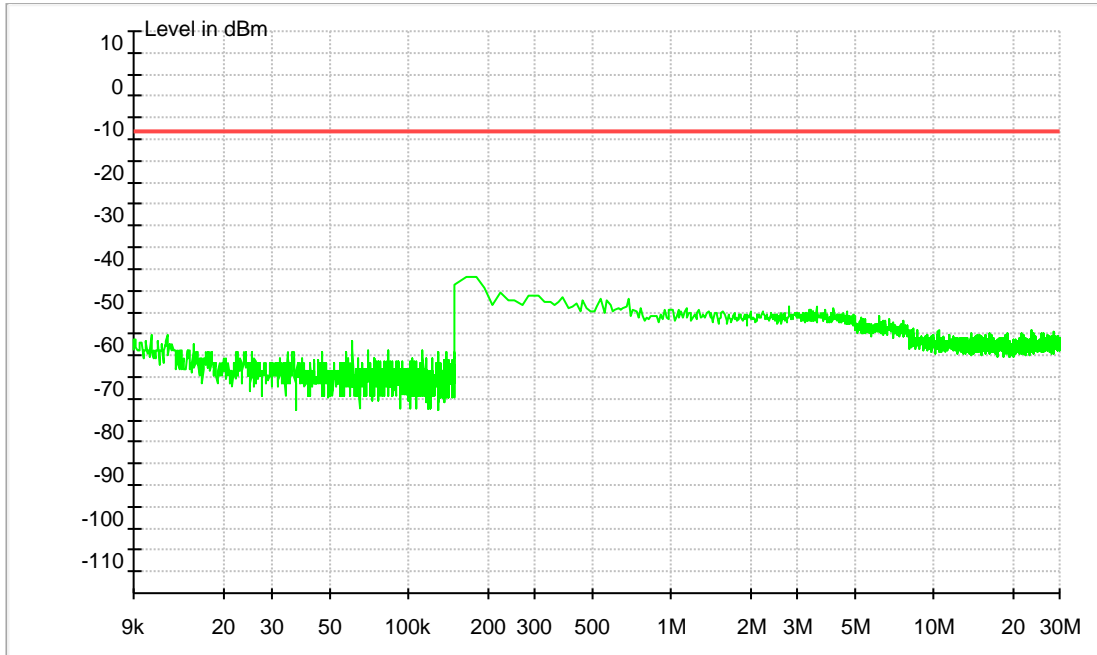
Note1: We tested all modes, but the data presented below is the worst case.

Note2: For Wireless charging protective case we only tested the RSE of the worst case.

## 2 Result Plot

### Part 1: Testing Range of “9 kHz to 30MHz”

Note 1: The test results and plot for testing range of “9 KHz to 30 MHz” showed as below is the WORST case for all Test Modes and Channels. This range will not be presented for each Test Mode and each Channel.

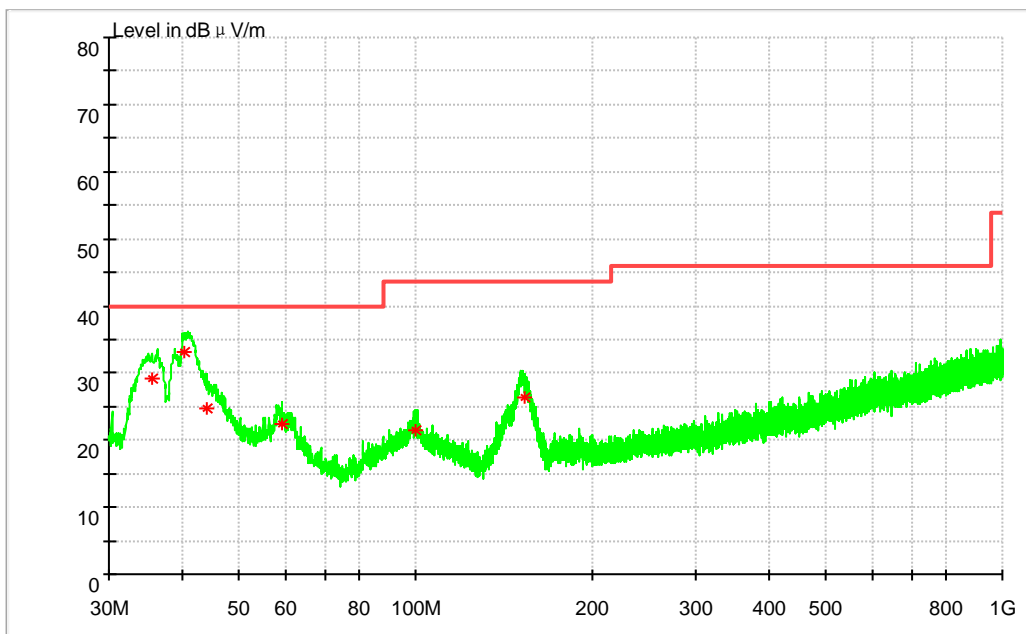




**Part 2: Testing Range of “30 MHz to 1 GHz”**

Note 1: The test results and plot for testing range of “30 MHz to 1 GHz” showed as below is the WORST case for all Test Modes and Channels. This range will not be presented for each Test Mode and each Channel.

Note 2: The emissions in this range are mainly from the Platform Device (Notepad PC and its ancillary components).



**MEASUREMENT RESULT: QP Detector**

Frequency (MHz)	Level (dB μV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Trans d. (dB)
35.659020	29.12	40.00	10.88	101.0	V	30.0	13.2
40.219160	33.20	40.00	6.80	101.0	V	42.0	14.4
44.067120	24.65	40.00	15.35	101.0	V	192.0	14.0
59.333260	22.46	40.00	17.54	101.0	V	4.0	13.2
99.733720	21.55	43.50	21.95	101.0	V	60.0	14.0
152.847900	26.45	43.50	17.05	101.0	V	204.0	9.3

Note:

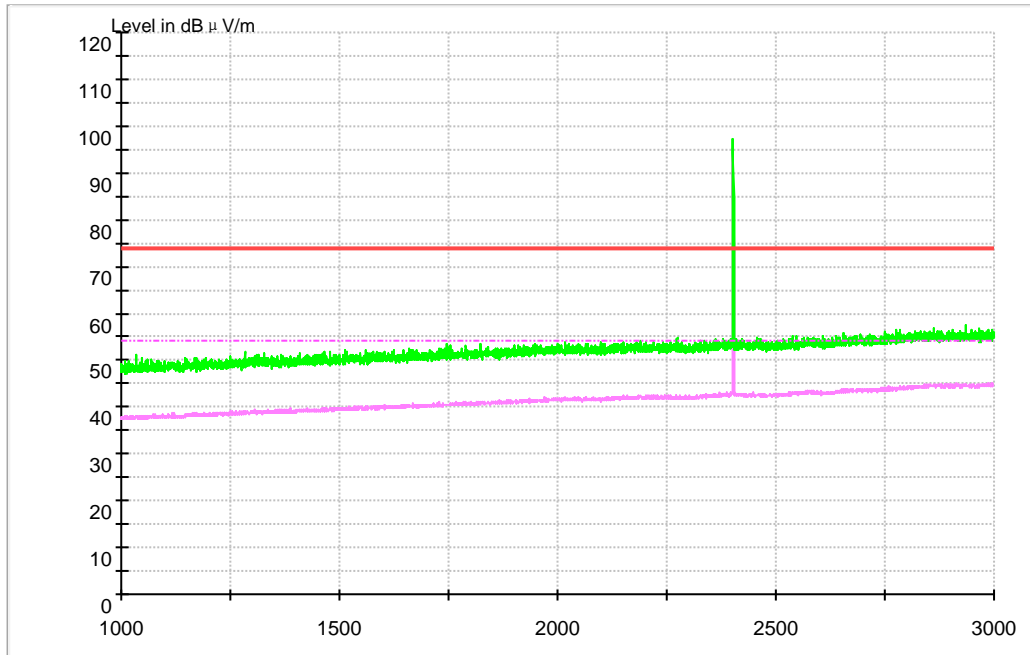
1, Level =Reading level by receiver + Transd (Antenna factor + cable loss – preamplifier gain)

The reading level is calculated by software which is not shown in the sheet.

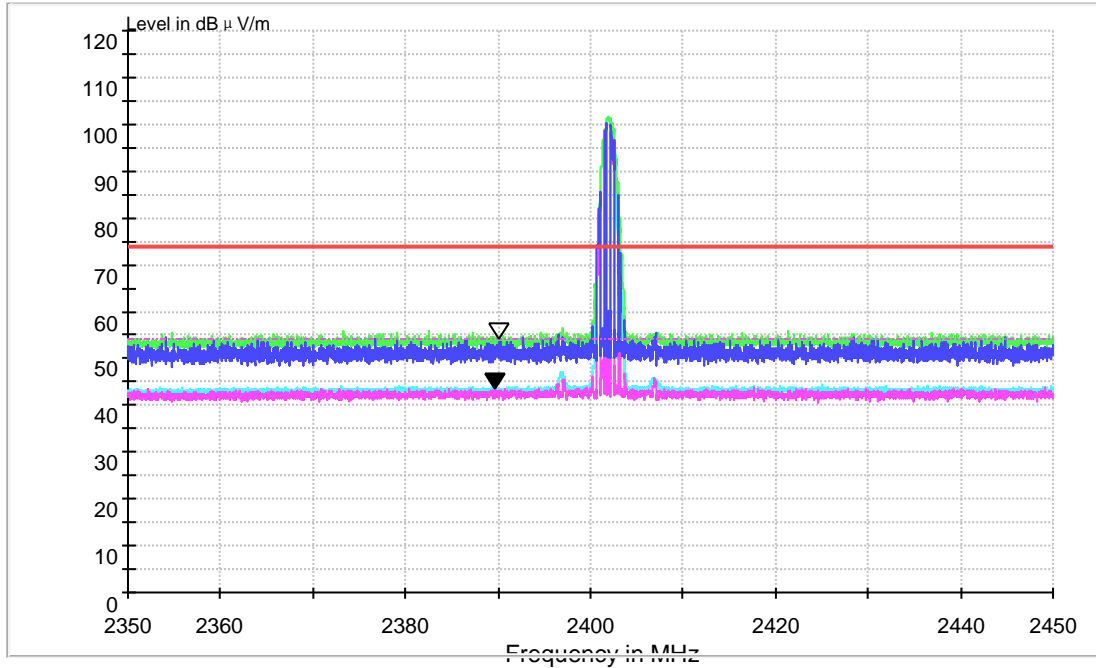
2, Margin=Limit - Level

### Part 3: Testing Range of “1GHz to 3GHz”

- Note 1: The testing range of “1 GHz to 3 GHz” is for checking radiated emissions located in restricted bands near the EUT operating bands.
- Note 2: Two limits are required in the testing range above 1 GHz, that is Peak limit (74 dB $\mu$ V/m) and Average Limit (54 dB $\mu$ V/m).
- Note 3: The peak spike exceeds the limit line is EUT’s operating frequency.



**Channel 0**



MEASUREMENT RESULT: PK Detector

Frequency (MHz)	Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Transd . (dB)
2390.1	54.59	74.00	19.41	150.0	H	211.0	-9.3

MEASUREMENT RESULT: AV Detector

Frequency (MHz)	Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Trans d.
2389.6	43.79	54.00	10.21	150.0	H	135.0	-9.3

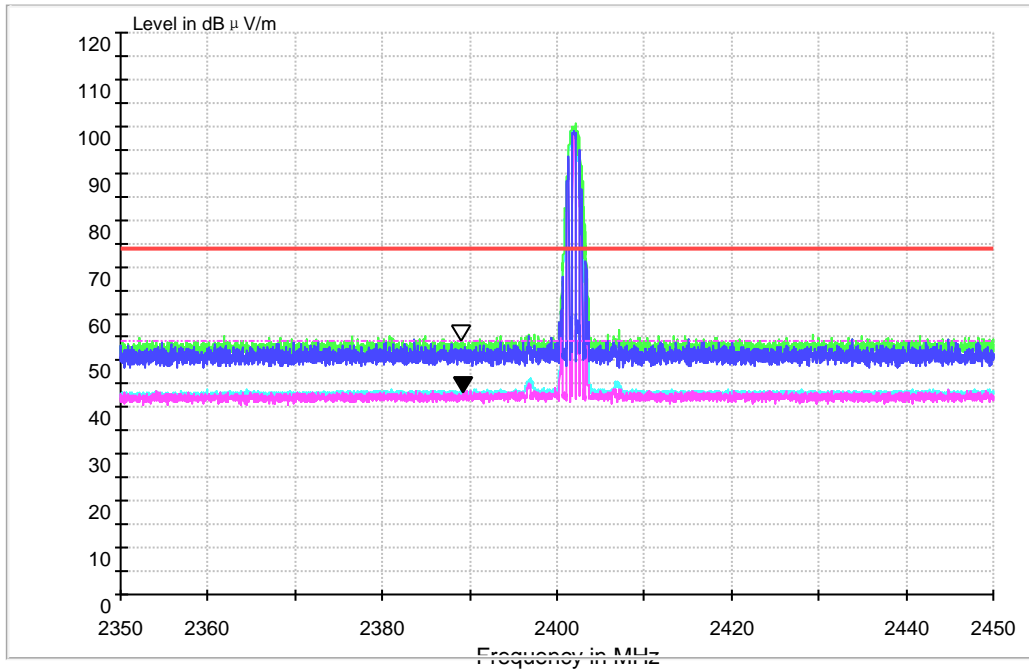
Note:

1, Level =Reading level by receiver + Transd (Antenna factor + cable loss – preamplifier gain)

The reading level is calculated by software which is not shown in the sheet.

2, Margin=Limit - Level

**Channel 0 (adaptor + Wireless Charging Case) worst case**



MEASUREMENT RESULT: PK Detector

Frequency (MHz)	Level (dB μV/m)	Limit (dB μV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Transd. (dB)
2389.08	54.44	74.00	19.56	150.0	H	68.0	-9.3

MEASUREMENT RESULT: AV Detector

Frequency (MHz)	Level (dB μV/m)	Limit (dB μV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Transd.
2389.18	43.57	54.00	10.43	150.0	H	75.0	-9.3

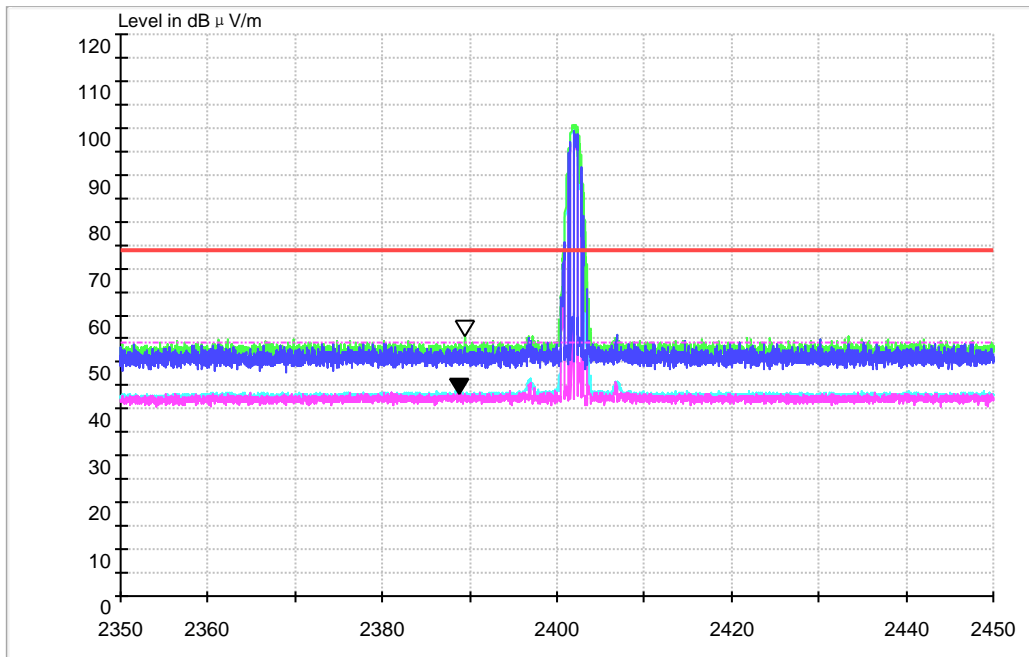
Note:

1, Level =Reading level by receiver + Transd (Antenna factor + cable loss – preamplifier gain)

The reading level is calculated by software which is not shown in the sheet.

2, Margin=Limit - Level

**Channel 0 (adaptor + Wireless charging charger+ Wireless Charging Case) worst case**



MEASUREMENT RESULT: PK Detector

Frequency (MHz)	Level (dB μV/m)	Limit (dB μV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Transd. (dB)
2389.54	55.79	74.00	18.21	150.0	H	126.0	-9.3

MEASUREMENT RESULT: AV Detector

Frequency (MHz)	Level (dB μV/m)	Limit (dB μV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Transd.
2388.8	43.45	54.00	10.55	150.0	H	91.0	-9.3

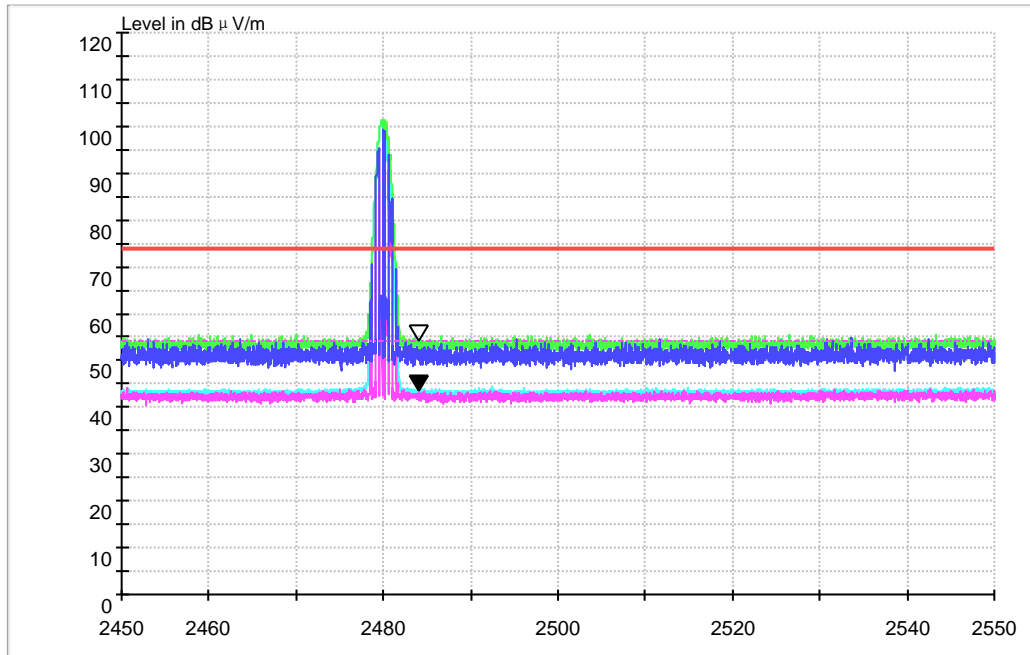
Note:

1, Level =Reading level by receiver + Transd (Antenna factor + cable loss – preamplifier gain)

The reading level is calculated by software which is not shown in the sheet.

2, Margin=Limit - Level

**Channel 78**



MEASUREMENT RESULT: PK Detector

Frequency (MHz)	Level (dB μV/m)	Limit (dB μV/m)	Margin (dB)	Height (cm)	Pol	Azimuth h (deg)	Transd. (dB)
2484.1	54.40	74.00	19.60	150.0	H	73.0	-9.6

MEASUREMENT RESULT: AV Detector

Frequency (MHz)	Level (dB μV/m)	Limit (dB μV/m)	Margin (dB)	Height (cm)	Pol	Azimuth h	Transd. (dB)
2484.1	43.78	54.00	10.22	150.0	H	133.0	-9.6

Note:

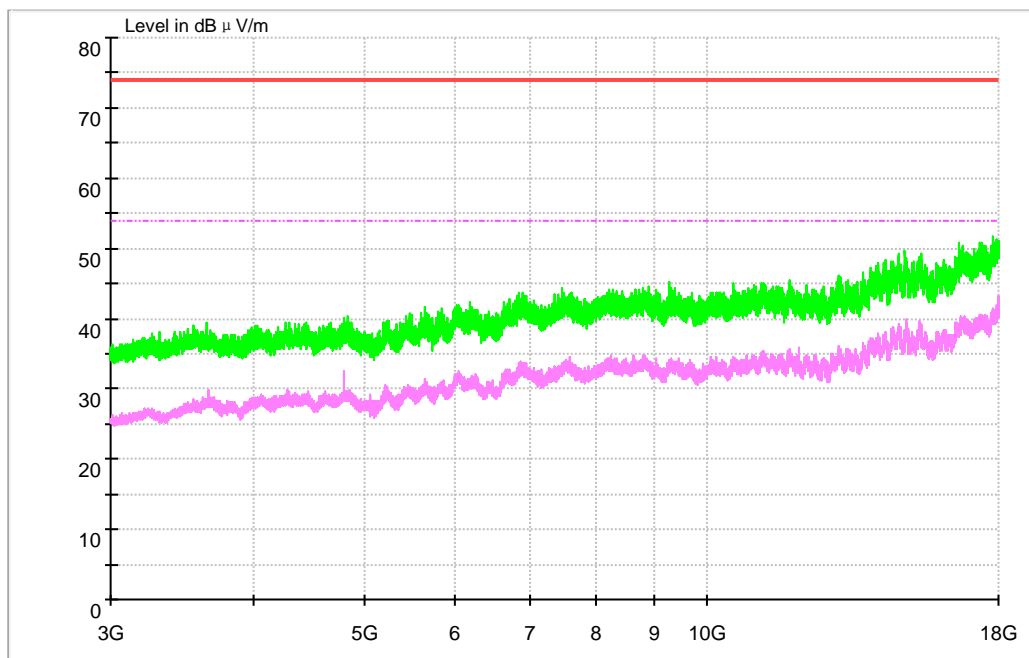
1, Level =Reading level by receiver + Transd (Antenna factor + cable loss – preamplifier gain)

The reading level is calculated by software which is not shown in the sheet.

2, Margin=Limit - Level

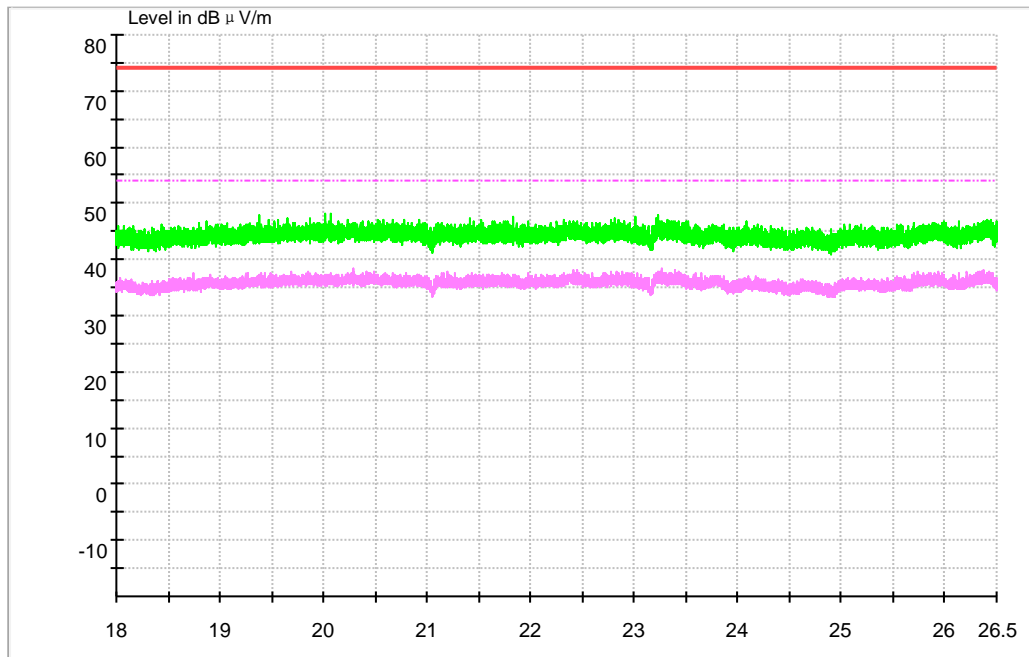
#### Part 4: Testing Range of “3 GHz to 18 GHz”

- Note 1: The test results and plot for testing range of “3 GHz to 18 GHz” showed as below is the WORST case for all Test Modes and Channels. This range will not be presented for each Test Mode and each Channel.
- Note 2: The testing range of “3 GHz to 18 GHz” is for checking radiated emissions located in restricted bands faraway from the EUT operating bands.
- Note 3: Two limits are required in the testing range above 1 GHz, that is Peak limit (74 dB $\mu$ V/m) and Average Limit (54 dB $\mu$ V/m).



### Part 5: Testing Range of “18 GHz to 26.5 GHz”

- Note 1: The test results and plot for testing range of “18 GHz to 26.5 GHz” showed as below is the WORST case for all Test Modes and Channels. This range will not be presented for each Test Mode and each Channel.
- Note 2: The testing range of “18 GHz to 26.5 GHz” is for checking radiated emissions located in restricted bands faraway from the EUT operating bands.
- Note 3: Two limits are required in the testing range above 1 GHz, that is Peak limit (74 dB $\mu$ V/m) and Average Limit (54 dB $\mu$ V/m).







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# Appendix I: Conducted Emission at Power Port

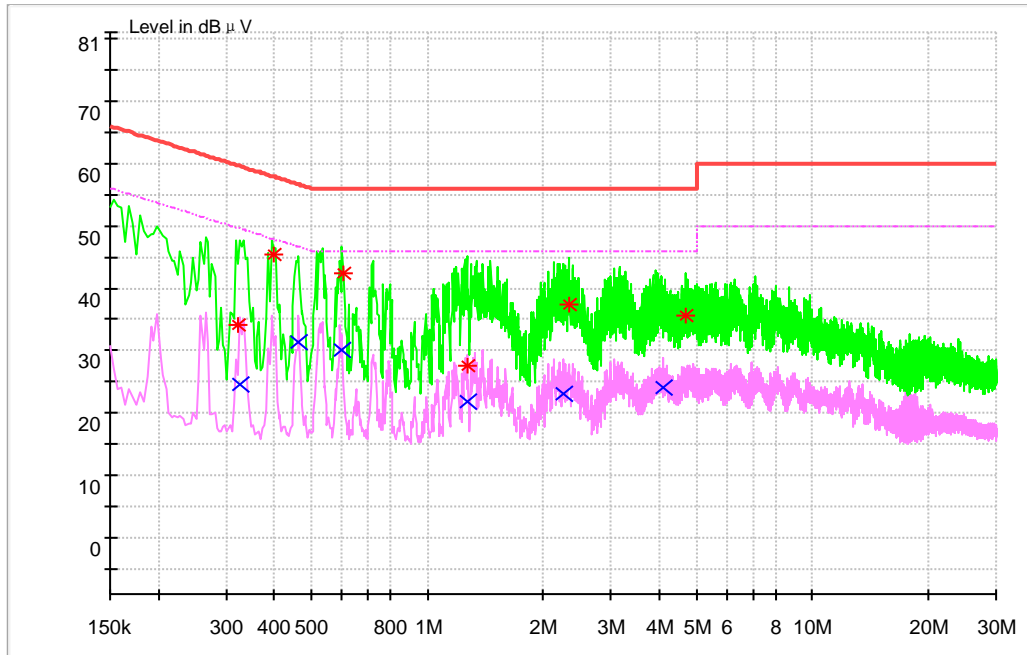
## 1 Result Table

In this Appendix, only the test results and plots under the worst case can be reported.

EUT Conf.	Maximum Emissions	Verdict
TM1_DH5_Ch0	Not found obvious spikes or see marked spikes on plots and listed emissions records.	Pass

2 Result Plot

# Channel 0



**MEASUREMENT RESULT: PK Detector**

Frequency (MHz)	Level (dB μV)	Limit (dB μV)	Transd. (dB)	Margin (dB)	Line	PE
0.320613	34.21	59.69	9.7	25.48	N	FLO
0.398749	45.34	57.88	9.7	12.54	N	FLO
0.603526	42.32	56	9.7	13.68	N	FLO
1.265851	27.61	56	9.7	28.39	N	FLO
2.324542	37.36	56	9.7	18.64	N	FLO
4.686986	35.55	56	9.8	20.45	N	FLO

**MEASUREMENT RESULT: AV Detector**

Frequency (MHz)	Level (dB μV)	Limit (dB μV)	Transd. (dB)	Margin (dB)	Line	PE
0.327143	24.49	49.52	9.7	25.03	N	FLO
0.461964	31.33	46.66	9.7	15.33	N	FLO
0.596731	30.03	46	9.7	15.97	N	FLO
1.26772	21.77	46	9.7	24.23	N	FLO
2.265449	23.03	46	9.7	22.97	N	FLO
4.085948	24.15	46	9.8	21.85	N	FLO



Note:

1, Level =Reading level by receiver + Transd (Antenna factor + cable loss – preamplifier gain)

The reading level is calculated by software which is not shown in the sheet.

2, Margin=Limit - Level

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END