

# FCC Test Report

## Part 15 subpart C

### Client Information:

Applicant : Guangzhou Advansolution Corp.  
Applicant add.: RM 2105, 2nd F, No. 30, Wuxian Bridge St., Guangzhou Dadao BeiLu,  
Tianhe District, Guangzhou, China

### EUT Information:

EUT Name : ACTIVITY TRACKER  
Model No. : 13V2S  
Brand Name : Keepproduct  
FCC ID : 2AC2H-13V2S

### Prepared By:

#### Asia Institute Technology (Dongguan) Limited

Add. : No. 22, JinQianLing Street 3, JiTiGang Village HuangJiang Town, DongGuan,  
GuangDong, China.

Date of Receipt: Mar. 20, 2015

Date of Test: Mar. 20~25, 2015

Date of Issue: Mar. 26, 2015

Test Result: **Pass**

### Test procedure used: ANSI C63.4-2009

This device described above has been tested by Asia Institute Technology (Dongguan) Limited, and the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.

\*This test report must not be used by the client to claim product endorsement by any agency of the U.S. government.

Reviewed by:



Seal.Chen

Approved by:



Jackie.Deng

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## 2 Test Summary

### 2.1 Compliance with FCC Part 15 subpart C

Test	Test Requirement	Standard Paragraph	Result
Antenna Requirement	FCC Part 15 C:2013	Section 15.247(c)	<b>PASS</b>
Conduction Emissions	FCC Part 15 C:2013	Section 15.207(a)	<b>PASS</b>
Radiated Emissions	FCC Part 15 C:2013	Section 15.247(d)	<b>PASS</b>
Occupied Bandwidth	FCC Part 15 C:2013	Section 15.247(a)(2)	<b>PASS</b>
Peak power density	FCC Part 15 C:2013	Section 15.247(e)	<b>PASS</b>
Maximum Peak Output Power	FCC Part 15 C:2013	Section 15.247(b)(1)	<b>PASS</b>
Band edge	FCC Part 15 C:2013	Section 15.247(d)	<b>PASS</b>
Conducted Spurious Emissions	FCC Part 15 C:2013	Section 15.247(d)	<b>PASS</b>
Note: Reference to the KDB 558074 D01 DTS Meas Guidance v03r02			

## 2.2 Measurement Uncertainty

All measurements involve certain levels of uncertainties, The following measurements uncertainty Levels have estimated based on ANSI C63.4:2009, the maximum value of the uncertainty as below

No.	Item	Uncertainty
1	Conducted Emission Test	1.20dB
2	Radiated Emission Test	3.30dB

### 3 Test Facility

**The test facility is recognized, certified or accredited by the following organizations:**

**.CNAS- Registration No: L6177**

Dongguan Yaxu (AiT) technology Limited is accredited to ISO/IEC 17025:2005 general Requirements for the competence of testing and calibration laboratories (CNAS-CL01 Accreditation Criteria for the competence of testing and calibration laboratories) on Apr. 18, 2013

**.FCC- Registration No: 248337**

The 3m Semi-Anechoic Chamber, 3m/10m Open Area Test Site and Shielding Room of Asia Institute Technology (Dongguan) Limited have been registered by Federal Communications Commission (FCC) on Dec.19, 2012.

**.Industry Canada(IC)-Registration No: IC6819A-1 & IC6819A-2**

The 3m Semi-Anechoic Chamber and 3m/10m Open Area Test Site of Asia Institute Technology (Dongguan) Limited have been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing on Jun. 12, 2013.

**.VCCI- Registration No: 2705**

The 3m/10m Open Area Test Site, Shielding Room and 3m Chamber of Asia Institute Technology (Dongguan) Limited have been registered by Voluntary Control Council for Interference on Nov. 21, 2012. The Telecommunication Ports Conducted Disturbance Measurement of Asia Institute Technology (Dongguan) Limited have been registered by Voluntary Control Council for Interference on Sep. 06, 2011.

**.TUV NORD**

Asia Institute Technology (Dongguan) Limited has been assessed on Jun. 13, 2013 that it can carry out EMC tests by order and under supervision of TUV NORD.

**.ITS- Registration No: TMPSHA031**

Asia Institute Technology (Dongguan) Limited has been assessed and included in Intertek Shanghai TMP Program regarding Laboratory facilities and test equipment on Jul.22, 2012.

#### 3.1 Deviation from standard

None

#### 3.2 Abnormalities from standard conditions

None

## 4 General Information

### 4.1 General Description of EUT

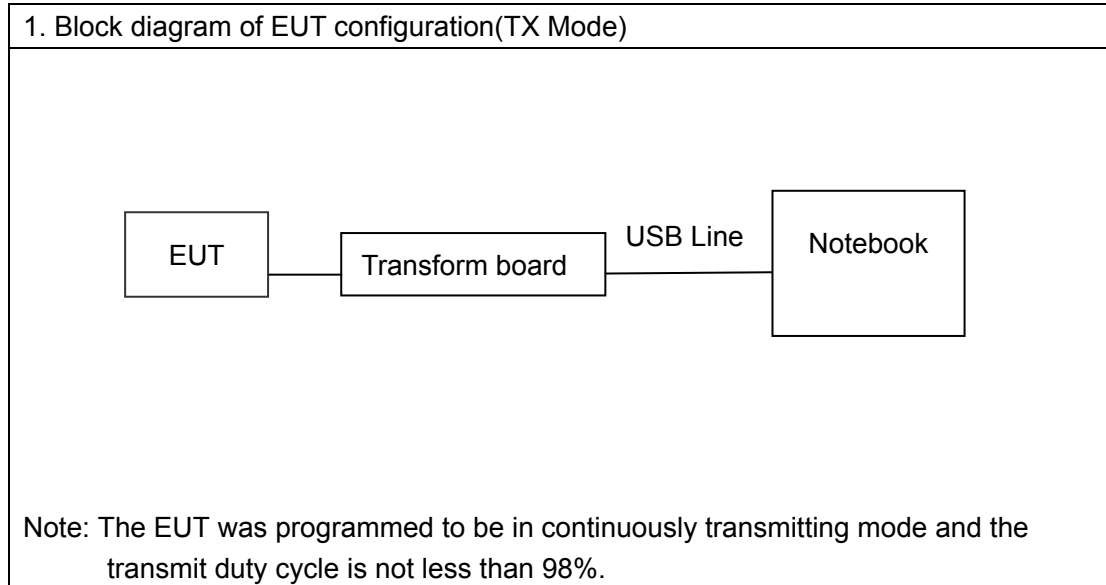
Manufacturer:	Shenzhen Pinda Technologies Limited
Manufacturer Address:	2nd Floor, 9th Building, 1st Area, Huaide Cuihai Industrial Base, Fengtang Road, Fuyong, Bao'an, Shenzhen
EUT Name:	ACTIVITY TRACKER
Model No:	13V2S
Operation frequency:	2402 MHz to 2480 MHz
NUMBER OF CHANNEL:	40
Modulation Technology:	GFSK(1Mbps)
Bluetooth version:	BT4.0 low energy mode
Antenna Type:	SMD
Antenna Gain:	max 1.0dBi
Brand Name:	Keepproduct
H/W No.:	NT-334-02V
S/W No.:	GNC_20150313_v1.2.8
Serial No:	N/A
Power Supply Range:	DC 5.0V from PC or DC 3.7V from battery
Power Supply:	DC 5.0V from PC or DC 3.7V from battery
Power Cord:	N/A
Output power (max) :	-7.35dBm
Note:	
1.	For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.
2.	This device is charged via USB cable, can not transmit data.

Description of Channel:			
Channel	Frequency (MHz)	Channel	Frequency (MHz)
00	2402	20	2442
01	2404	21	2444
02	2406	22	2446
03	2408	23	2448
04	2410	24	2450
05	2412	25	2452
06	2414	26	2454
07	2416	27	2456
08	2418	28	2458
09	2420	29	2460
10	2422	30	2462
11	2424	31	2464
12	2426	32	2466
13	2428	33	2468
14	2430	34	2470
15	2432	35	2472
16	2434	36	2474
17	2436	37	2476
18	2438	38	2478
19	2440	39	2480



## 4.2 Description of Test conditions

- (1) EUT was tested in normal configuration (Please See following Block diagram)



- (2) E.U.T. test conditions:

15.31(e): For intentional radiators, measurements of the variation of the input power or the adiated signal level of the fundamental frequency component of the emission, as appropriate, shall be performed with the supply voltage varied between 85% and 115% of the nominal rated supply voltage. For battery operated equipment, the equipment tests shall be performed using a new battery.

- (3) Test frequencies:

According to the 15.31(m) Measurements on intentional radiators or receivers, other than TV broadcast receivers, shall be performed and. If required reported for each band in which the device can be operated with the device operating at the number of frequencies in each band specified in the following table:

Frequency range over which device operates	Number of frequencies	Location in the range of operation
1 MHz or less	1	Middle
1 to 10 MHz	2	1 near top and 1 near bottom
More than 10 MHz	3	1 near top, 1 near middle and 1 near bottom

- (4) Frequency range of radiated measurements:

According to the 15.33, the test range will be up to the tenth harmonic of the highest fundamental frequency.

### 4.3 EUT Peripheral List

No.	Equipment	Manufacturer	Model No.	Serial No.	Power cord	signal cable
1	USB line	N/A	N/A	N/A	0.3m/shielded /undetachable	N/A

### 4.4 Test Peripheral List

No.	Equipment	Manufacturer	EMC Compliance	Model No.	Serial No.	Power cord	signal cable
1	Notebook	OLEVIA	CE 、 FCC	X101	NBPNS1010801 00006	N/A	N/A
2	AC Adapter	OLEVIA	CE	AD6110	PK100001420-A 00-096P-00613	2.1m/unshielded	N/A

## 5 Equipments List for All Test Items

No	Test Equipment	Manufacturer	Model No	Serial No	Cal. Date	Cal. Due Date
1	Spectrum Analyzer	ADVANTEST	R3182	150900201	2014.06.27	2015.06.26
2	EMI Measuring Receiver	R&S	ESR	101660	2014.12.01	2015.11.30
3	Low Noise Pre Amplifier	Tsj	MLA-10K01-B01-27	1205323	2014.06.27	2015.06.26
4	Low Noise Pre Amplifier	Tsj	MLA-0120-A02-34	2648A04738	2014.12.02	2015.12.01
5	TRILOG Super Broadband test Antenna	SCHWARZBECK	VULB9160	9160-3206	2014.12.03	2015.12.02
6	Broadband Horn Antenna	SCHWARZBECK	BBHA9120D	452	2014.12.03	2015.12.02
7	SHF-EHF Horn	SCHWARZBECK	BBHA9170	BBHA9170367	2014.12.03	2015.12.02
8	50Ω Coaxial Switch	Anritsu	MP59B	6200264416	2014.09.26	2015.09.25
9	EMI Test Receiver	R&S	ESCI	100124	2014.06.20	2015.06.19
10	LISN	Kyoritsu	KNW-242	8-837-4	2014.06.20	2015.06.19
11	LISN	Kyoritsu	KNW-407	8-1789-3	2014.06.20	2015.06.19
12	50Ω Coaxial Switch	Anritsu	MP59B	6200264417	2014.09.25	2015.09.24
13	Loop Antenna	ARA	PLA-1030/B	1029	2014.03.19	2015.03.18
14	Power Meter	R&S	NRVS	101336	2014.06.27	2015.06.26
15	Power Sensor	R&S	URV5-Z7	100077	2014.06.27	2015.06.26
16	Radiated Cable 1# (30MHz-1GHz)	FUJIKURA	5D-2W	01	2015.01.04	2016.01.03
17	Radiated Cable 2# (1GHz -25GHz)	FUJIKURA	10D2W	02	2014.12.25	2015.12.24
18	Conducted Cable 1#(9KHz-30MHz)	FUJIKURA	1D-2W	01	2015.01.04	2016.01.03
19	SMA Antenna connector	Dosin	Dosin-SMA	N/A	N/A	N/A

## **6 Test Result**

### **6.1 Antenna Requirement**

#### **6.1.1 Standard requirement**

15.203 requirement: For intentional device, according to 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.

15.247(c) (1)(i) requirement: (i) Systems operating in the 2400-2483.5 MHz band that is used exclusively for fixed. Point-to-point operations may employ transmitting antennas with directional gain greater than 6dBi provided the maximum conducted output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6dBi.

#### **6.1.2 EUT Antenna**

The antenna is SMD type and fixed in the EUT and no consideration of replacement. Antenna gain is Max1.0dBi from 2.4GHz to 2.5GHz.

## 6.2 Conduction Emissions Measurement

### 6.2.1 Applied procedures / Limit

Frequency of Emission (MHz)	Conducted Limit (dB $\mu$ V)	
	Quasi-peak	Average
0.15-0.5	66 to 56 *	56 to 46 *
0.5-5	56	46
5-30	60	50

\*Note: Decreases with the logarithm of the frequency.

### 6.2.2 Test procedure

EUT was placed upon a wooden test table 0.8m above the horizontal metal reference plane and 0.4m from the vertical ground plane, and it was connected to an AMN. The closest distance between the boundary of the EUT and the surface of the AMN is 0.8m. All peripherals were connected to another AMN, and placed at a distance of 10cm from each other. A spectrum and receiver was connected to the RF output port of the AMN. Both average and quasi-peak value were detected.

## 6.2.3 Test results

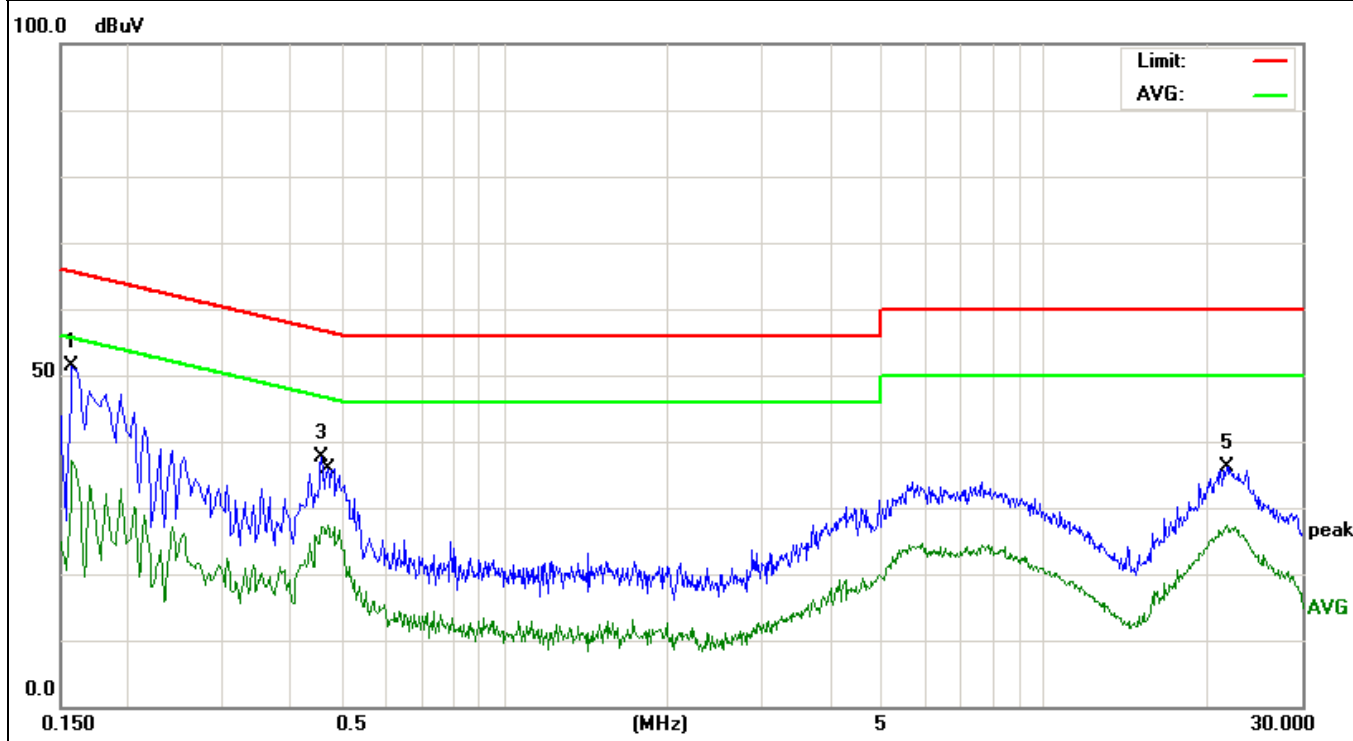
EUT:	ACTIVITY TRACKER	Model Name. :	13V2S
Temperature:	26 °C	Relative Humidity:	54%
Pressure:	1010hPa	Test Date :	2015-03-20
Test Mode:	TX CH39 (worst case)	Phase :	Line
<b>Test Voltage :</b>	DC 5.0V from PC, AC 120V/60Hz for PC		

Frequency (MHz)	Meter Reading (dBμV)	Factor(dB)	Emission Level (dBμV)	Limits (dBμV)	Margin (dB)	Detector
*0.1580	39.51	11.75	51.26	65.56	-14.30	Quasi-Peak
0.1580	25.33	11.75	37.08	55.56	-18.48	Average
0.4580	27.69	10.02	37.71	56.73	-19.02	Quasi-Peak
0.4700	17.44	10.01	27.45	46.51	-19.06	Average
21.7460	34.35	1.87	36.22	60.00	-23.78	Quasi-Peak
21.7460	25.40	1.87	27.27	50.00	-22.73	Average

Remark:

1. Factor = Insertion Loss + Cable Loss + Pulse limit.

2. '\*' means the worst case.

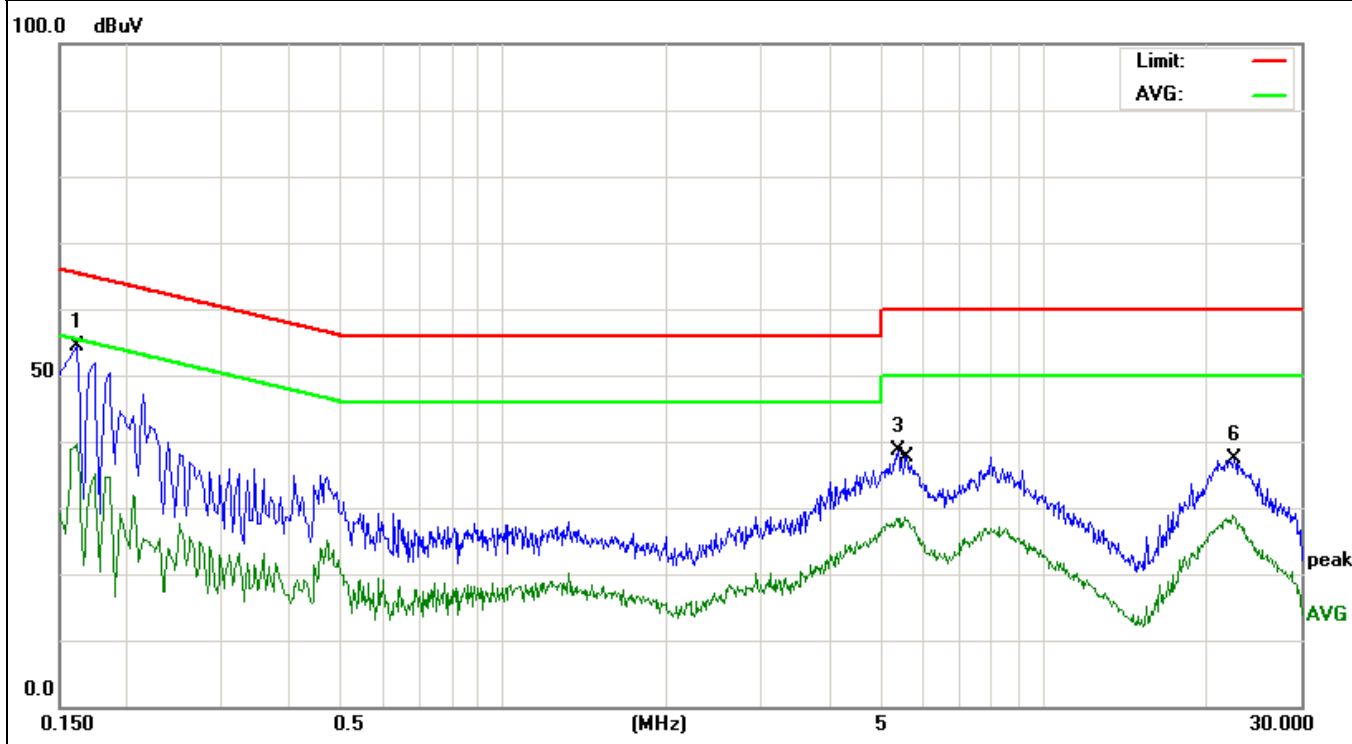


EUT:	ACTIVITY TRACKER	Model Name. :	13V2S
Temperature:	26 °C	Relative Humidity:	54%
Pressure:	1010hPa	Test Date :	2015-03-20
Test Mode:	TX CH39 (worst case)	Phase :	Neutral
<b>Test Voltage :</b>	DC 5.0V from PC, AC 120V/60Hz for PC		

Frequency (MHz)	Meter Reading (dBμV)	Factor(dB)	Emission Level (dBμV)	Limits (dBμV)	Margin (dB)	Detector
*0.1620	42.80	11.68	54.48	65.36	-10.88	Quasi-Peak
0.1620	27.87	11.68	39.55	55.36	-15.81	Average
5.3700	28.57	10.06	38.63	60.00	-21.37	Quasi-Peak
5.5300	18.47	10.06	28.53	50.00	-21.47	Average
22.5419	35.39	1.95	37.34	60.00	-22.66	Quasi-Peak
22.3380	27.03	1.93	28.96	50.00	-21.04	Average

Remark:

- Factor = Insertion Loss + Cable Loss + Pulse limit.
- '\*' means the worst case.



## 6.3 Radiated Emissions Measurement

### 6.3.1 Applied procedures / Limit

15.247(d) In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated 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 band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

Frequency of Emission (MHz)	Field Strength		Measurement Distance (meters)
	$\mu\text{V/m}$	$\text{dB}\mu\text{V/m}$	
0.009-0.49	$2400/F(\text{kHz})$		300
0.49-1.705	$24000/F(\text{kHz})$		30
1.705-30	30		30
30-88	100	40	3
88-216	150	43.5	3
216-960	200	46	3
Above 960	500	54	3

### 6.3.2 Test procedure

EUT was placed upon a wooden test table which was placed on the turn table 0.8m above the horizontal metal ground plane, and operating in the mode as mentioned above. A receiving antenna was placed 3m away from the EUT. During testing, turn around the turn table and move the antenna from 1m to 4m to find the maximum field-strength reading. All peripherals were placed at a distance of 10cm between each other. Both horizontal and vertical antenna polarities were tested and performed pretest to three orthogonal axis. The worst case emissions were reported.



### 6.3.3 Test Result

#### Radiated Emissions Test Data Below 30MHz

EUT:	ACTIVITY TRACKER	Model Name :	13V2S
Temperature:	25 °C	Test Data	2015-03-23
Pressure:	1005 hPa	Relative Humidity:	60%
Test Mode :	TX(1Mbps)	Test Voltage :	DC 3.7V from battery
Measurement Distance	3 m	Frenqucy Range	9KHz to 30MHz
RBW/VBW	9KHz~150KHz/RB 200Hz for QP, 150KHz~30MHz/RB 9KHz for QP		

No emission found between lowest internal used/generated frequencies to 30MHz.

## Radiated Emissions Test Data Below 1GHz

EUT:	ACTIVITY TRACKER	Model Name :	13V2S
Temperature:	25 °C	Test Data	2015-03-23
Pressure:	1010 hPa	Relative Humidity:	60%
Test Mode :	TX(1Mbps) CH39 (worst case)	Test Voltage :	DC 3.7V from battery
Measurement Distance	3 m	Frenqucy Range	30MHz to 1GHz
RBW/VBW	100KHz / 300KHz for spectrum, RBW=120KHz for receiver.		

### (a) Antenna polarization: Horizontal

Frequency (MHz)	Reading Level (dBuV)	Correct Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector Type
50.0566	28.82	-14.22	14.60	40.00	-25.40	QUASIPeAK
107.5101	31.14	-15.48	15.66	43.50	-27.84	QUASIPeAK
183.2005	28.75	-10.48	18.27	43.50	-25.23	QUASIPeAK
286.9823	29.87	-9.95	19.92	46.00	-26.08	QUASIPeAK
435.5898	29.51	-6.63	22.88	46.00	-23.12	QUASIPeAK
<b>*694.4174</b>	<b>30.60</b>	<b>0.03</b>	<b>30.63</b>	<b>46.00</b>	<b>-15.37</b>	<b>QUASIPeAK</b>

### (b) Antenna polarization: vertical

Frequency (MHz)	Reading Level (dBuV)	Correct Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector Type
37.1550	28.71	-16.72	11.99	40.00	-28.01	QUASIPeAK
101.2885	30.41	-13.88	16.53	43.50	-26.97	QUASIPeAK
196.5098	37.92	-14.79	23.13	43.50	-20.37	QUASIPeAK
449.5558	33.68	-6.89	26.79	46.00	-19.21	QUASIPeAK
582.7425	30.55	-2.48	28.07	46.00	-17.93	QUASIPeAK
<b>*798.9797</b>	<b>29.01</b>	<b>3.44</b>	<b>32.45</b>	<b>46.00</b>	<b>-13.55</b>	<b>QUASIPeAK</b>

Note: '\*' means the worst case

Measurement Level = Reading Level + Factor

Factor= Ant Factor + Cable Loss - Pre-amplifier

## Radiated Emissions Test Data Above 1GHz

EUT:	ACTIVITY TRACKER	Model Name :	13V2S
Temperature:	25 °C	Test Data	2015-03-23
Pressure:	1010 hPa	Relative Humidity:	60%
Test Mode :	TX(1Mbps)	Test Voltage :	DC 3.7V from battery
Measurement Distance	3 m	Frenqucy Range	1GHz to 25GHz
RBW/VBW	1MHz/1MHz for Peak, 1MHz/10Hz for Average.		

### (a) Antenna polarization: Horizontal

Frequency (MHz)	Reading Level (dBuV)	Correct Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector Type
2400.000	46.55	-5.70	40.85	74.00	-33.15	PEAK
2400.000	36.03	-5.70	30.33	54.00	-23.67	AVERAGE
4804.000	48.73	5.06	53.79	74.00	-20.21	PEAK
<b>*4804.000</b>	<b>35.25</b>	<b>5.06</b>	<b>40.31</b>	<b>54.00</b>	<b>-13.69</b>	<b>AVERAGE</b>
7206.000	43.74	7.03	50.77	74.00	-23.23	PEAK
7206.000	30.99	7.03	38.02	54.00	-15.98	AVERAGE

### (b) Antenna polarization: Vertical

Frequency (MHz)	Reading Level (dBuV)	Correct Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector Type
2400.000	48.03	-5.70	42.33	74.00	-31.67	PEAK
2400.000	37.66	-5.70	31.96	54.00	-22.04	AVERAGE
4804.000	49.22	5.06	54.28	74.00	-19.72	PEAK
<b>*4804.000</b>	<b>34.67</b>	<b>5.06</b>	<b>39.73</b>	<b>54.00</b>	<b>-14.27</b>	<b>AVERAGE</b>
7206.000	44.37	7.03	51.40	74.00	-22.60	PEAK
7206.000	32.02	7.03	39.05	54.00	-14.95	AVERAGE

Note: '\*' means the worst case

**8~25GHz at least have 20dB margin. No recording in the test report.**

Measurement Level = Reading Level + Factor

Factor= Ant Factor + Cable Loss - Pre-amplifier

Low Channel 00: 2402 MHz

Data rate: 1Mbps

(a) Antenna polarization: Horizontal

Frequency (MHz)	Reading Level (dBuV)	Correct Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector Type
4880.000	48.08	5.14	53.22	74.00	-20.78	PEAK
<b>*4880.000</b>	<b>35.29</b>	<b>5.14</b>	<b>40.43</b>	<b>54.00</b>	<b>-13.57</b>	<b>AVERAGE</b>
7320.000	43.64	7.52	51.16	74.00	-22.84	PEAK
7320.000	31.20	7.52	38.72	54.00	-15.28	AVERAGE

(b) Antenna polarization: Vertical

Frequency (MHz)	Reading Level (dBuV)	Correct Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector Type
4880.000	48.89	5.14	54.03	74.00	-19.97	PEAK
<b>*4880.000</b>	<b>35.25</b>	<b>5.14</b>	<b>40.39</b>	<b>54.00</b>	<b>-13.61</b>	<b>AVERAGE</b>
7320.000	43.69	7.52	51.21	74.00	-22.79	PEAK
7320.000	32.04	7.52	39.56	54.00	-14.44	AVERAGE

Note: '\*' means the worst case

**8~25GHz at least have 20dB margin. No recording in the test report.**

Measurement Level = Reading Level + Factor

Factor= Ant Factor + Cable Loss - Pre-amplifier

Middle Channel 19: 2440 MHz

Data rate: 1Mbps

(a) Antenna polarization: Horizontal

Frequency (MHz)	Reading Level (dBuV)	Correct Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector Type
2483.500	45.28	-4.98	40.30	74.00	-33.70	PEAK
2483.500	34.98	-4.98	30.00	54.00	-24.00	AVERAGE
4960.000	47.69	5.22	52.91	74.00	-21.09	PEAK
<b>*4960.000</b>	<b>34.37</b>	<b>5.22</b>	<b>39.59</b>	<b>54.00</b>	<b>-14.41</b>	<b>AVERAGE</b>
7440.000	41.43	8.06	49.49	74.00	-24.51	PEAK
7440.000	30.01	8.06	38.07	54.00	-15.93	AVERAGE

(b) Antenna polarization: Vertical

Frequency (MHz)	Reading Level (dBuV)	Correct Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector Type
2483.500	45.99	-4.98	41.01	74.00	-32.99	PEAK
2483.500	35.78	-4.98	30.80	54.00	-23.20	AVERAGE
4960.000	48.62	5.22	53.84	74.00	-20.16	PEAK
<b>*4960.000</b>	<b>35.93</b>	<b>5.22</b>	<b>41.15</b>	<b>54.00</b>	<b>-12.85</b>	<b>AVERAGE</b>
7440.000	43.05	8.06	51.11	74.00	-22.89	PEAK
7440.000	31.67	8.06	39.73	54.00	-14.27	AVERAGE

Note: '\*' means the worst case

**8~25GHz at least have 20dB margin. No recording in the test report.**

Measurement Level = Reading Level + Factor

Factor= Ant Factor + Cable Loss - Pre-amplifier

Low Channel 39: 2480 MHz

Data rate: 1Mbps

### 6.3.4 TEST RESULTS (Restricted Bands Requirements)

EUT:	ACTIVITY TRACKER	Model Name :	13V2S
Temperature:	25 °C	Test Data	2015-03-23
Pressure:	1010 hPa	Relative Humidity:	60%
Test Mode :	TX(1Mbps)	Test Voltage :	DC 3.7V from battery
Note:	1. The transmitter was setup to transmit at the lowest channel. Then the field strength was measured at 2310-2390 MHz. 2. The transmitter was setup to transmit at the highest channel. Then the field strength was measured at 2483.5-2500 MHz. 3. The data of 2390MHz and 2483.5MHz was the worst.		

Test Mode	Ant.Pol. H/V	Freq. (MHz)	Reading		Ant/CF CF(dB)	Act		Limit	
			Peak (dBuv)	AV (dBuv)		Peak (dBuv/m)	AV (dBuv/m)	Peak (dBuv/m)	AV (dBuv/m)
TX Data rate 1Mbps	H	2390.00	44.55	34.05	-5.79	38.76	28.26	74.00	54.00
	V	2390.00	46.00	35.66	-5.79	40.21	29.87	74.00	54.00
	H	2483.50	45.28	34.98	-4.98	40.30	30.00	74.00	54.00
	V	2483.50	45.99	35.78	-4.98	41.01	30.80	74.00	54.00

## 6.4 BANDWIDTH TEST

### 6.4.1 Applied procedures / Limit

15.247(a) (2) Systems using digital modulation techniques may operate in the 902 - 928 MHz, 2400 - 2483.5 MHz, and 5725 - 5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.

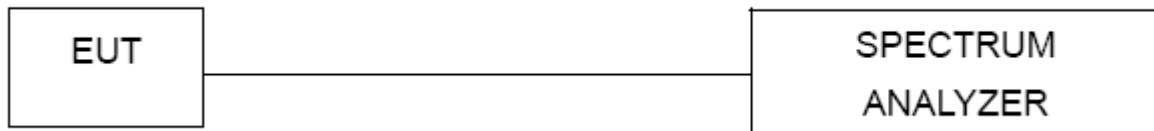
### 6.4.2 Test procedure

- The testing follows FCC KDB publication No. 558074 D01 DTS Meas. Guidance v03r02
- The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below.
- Spectrum Setting: RBW= 100KHz, VBW  $\geq 3 \times$  RBW, Sweep time = Auto.

### 6.4.3 Deviation from standard

No deviation.

### 6.4.4 Test setup



#### 6.4.5 Test results

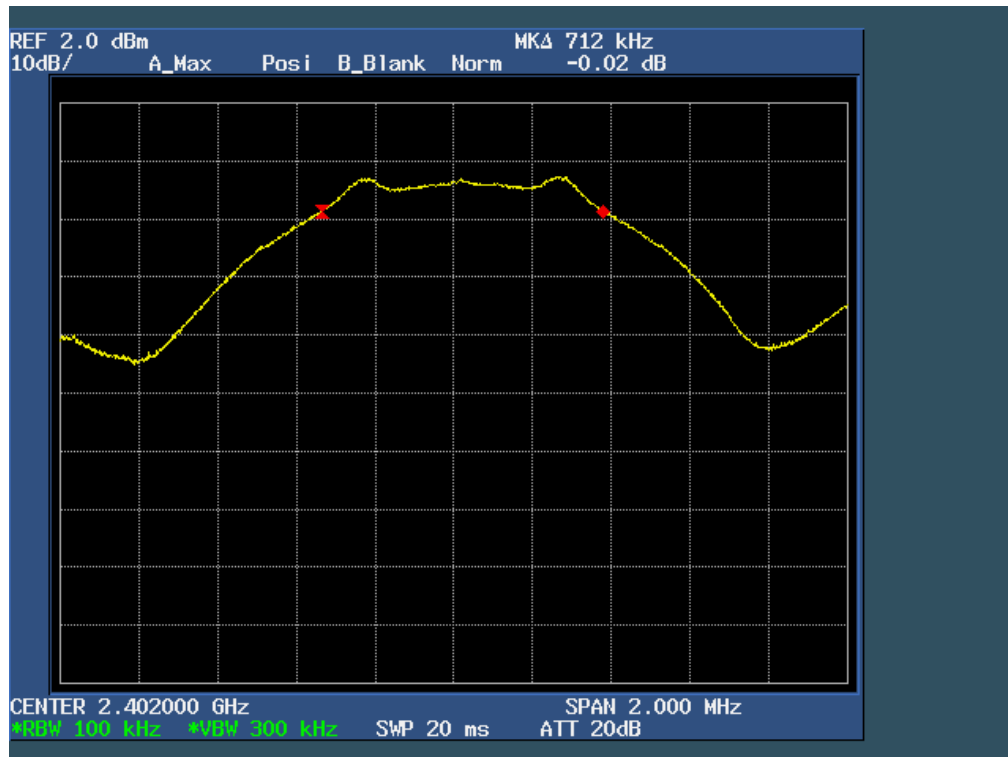
EUT:	ACTIVITY TRACKER	Model Name :	13V2S
Temperature:	26 °C	Relative Humidity:	53%
Pressure:	1010 hPa	Test Power :	DC 3.7V from battery
Test Mode :	TX(1Mbps)		

Test Mode	Test Channel	Frequency (MHz)	6 dB Bandwidth (KHz)	Limit (kHz)
Data rate 1Mbps	CH00	2402	712	$\geq 500$
	CH19	2440	714	$\geq 500$
	CH39	2480	714	$\geq 500$



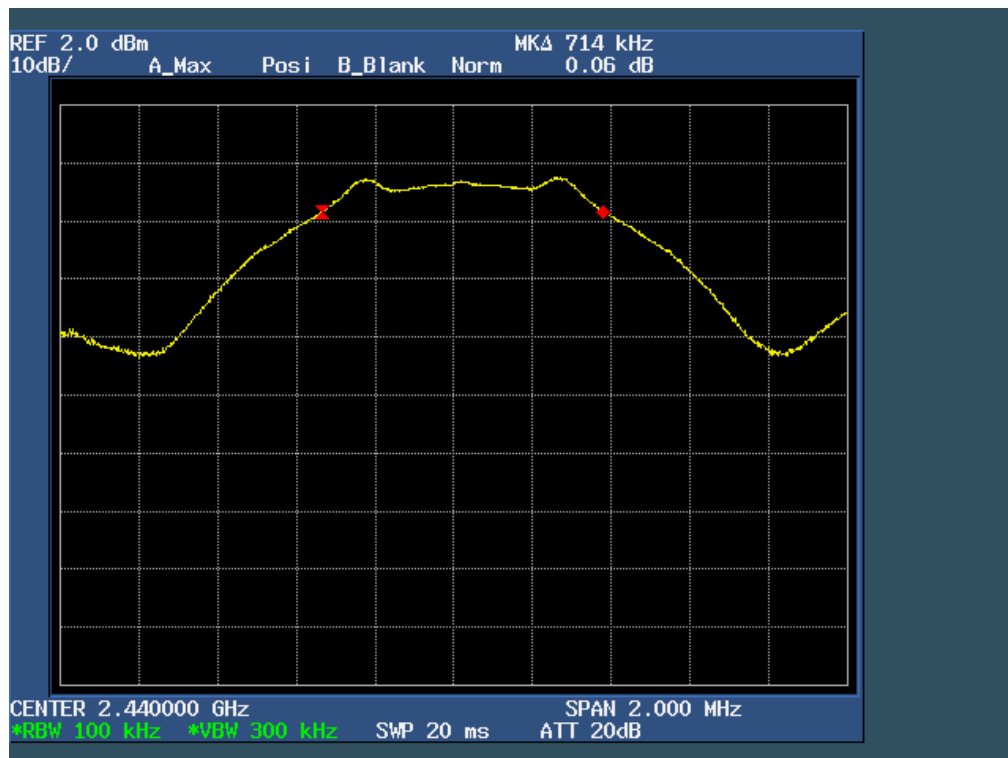
(1Mbps)

The Lowest Channel 00: 2402 MHz

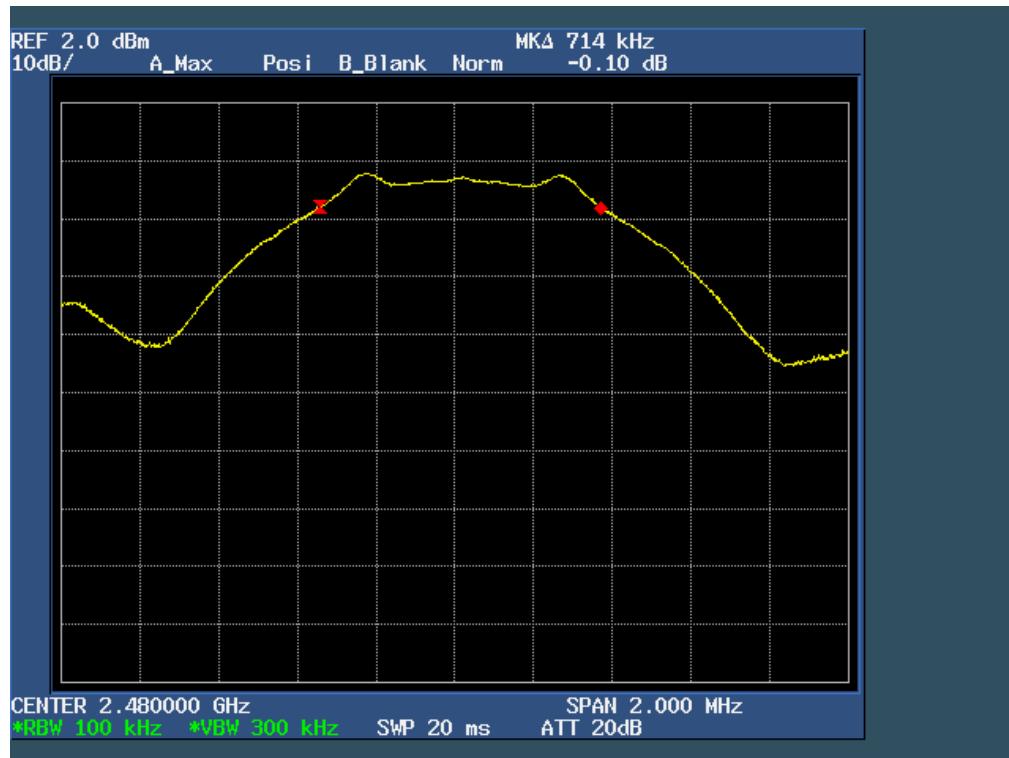


(1Mbps)

The Middle Channel 19: 2440 MHz



(1Mbps)  
The High Channel 39: 2480MHz



## 6.5 Peak Power Density

### 6.5.1 Applied procedures / Limit

15.247(a) (e) For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission. This power spectral density shall be determined in accordance with the provisions of paragraph (b) of this section. The same method of determining the conducted output power shall be used to determine the power spectral density.

### 6.5.2 Test procedure

- a. The testing follows Measurement procedure 10.2 Method PKPSD of FCC KDB publication No. 558074 D01 DTS Meas. Guidance v03r02
- b. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below.
- c. Connected the antenna port to the Spectrum Analyzer, set the Spectrum Analyzer as  $3\text{kHz} \leq \text{RBW} \leq 100\text{kHz}$ ,  $\text{VBW} \geq 3 \times \text{RBW}$  kHz, Sweep time=Auto.

### 6.5.3 Deviation from standard

No deviation.

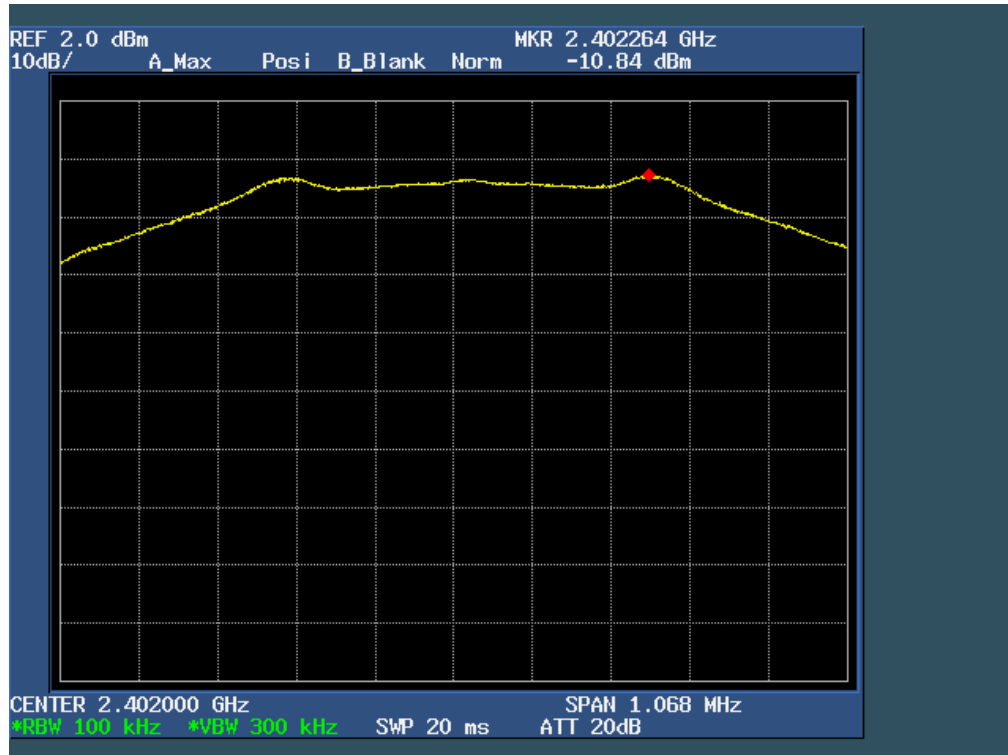
#### 6.5.4 Test results

EUT:	ACTIVITY TRACKER	Model Name :	13V2S
Temperature:	24 °C	Relative Humidity:	53%
Pressure:	1010 hPa	Test Power :	DC 3.7V from battery
Test Mode :	TX(1Mbps)		

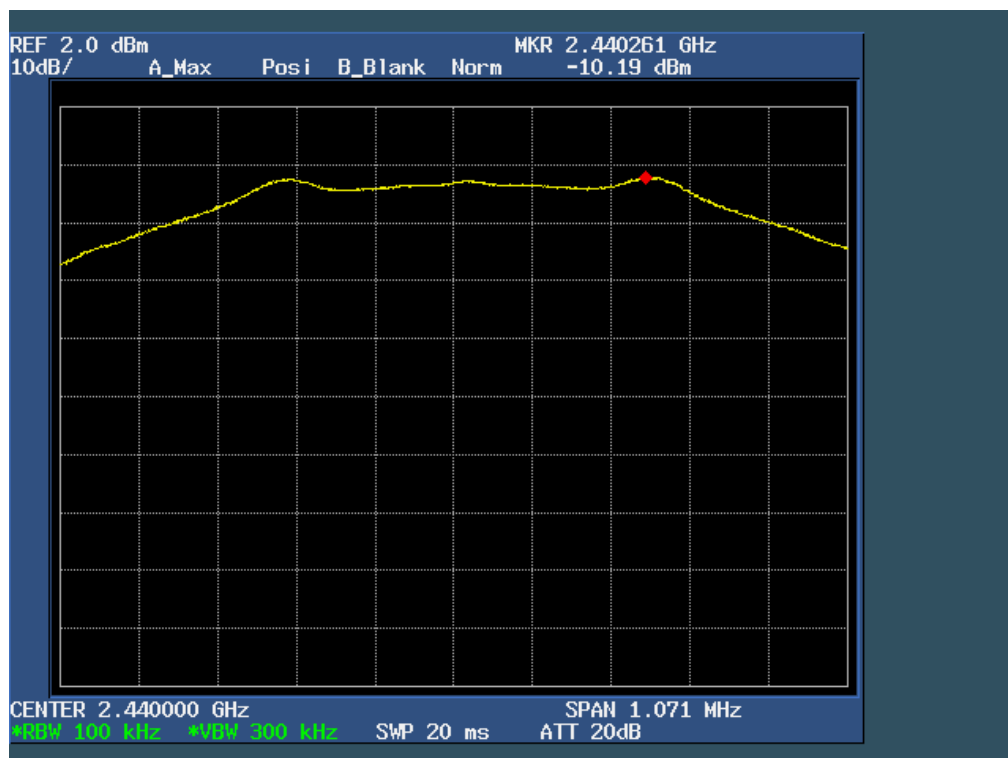
Test Mode	Channel frequency (MHz)	Power Density	Limit (dBm/3kHz)	Result
		PSD 100kHz (dBm/100kHz)		
TX (1Mbps)	2402	-10.84	8	Pass
	2440	-10.19	8	Pass
	2480	-9.83	8	Pass

**Note: The cable loss is 2.0dB**

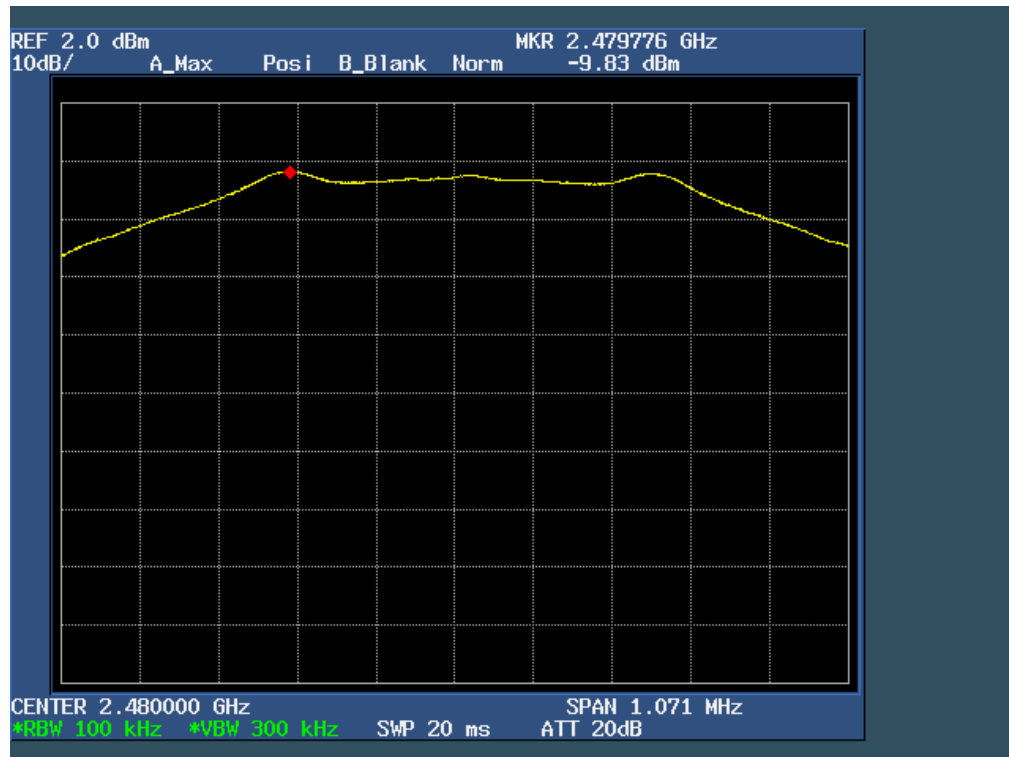
**PSD 100kHz (1Mbps)**  
**The Lowest Channel 00: 2402MHz**



**PSD 100kHz (1Mbps)**  
**The Middle Channel 19: 2440MHz**



**PSD 100kHz (1Mbps)**  
**The High Channel 39: 2480MHz**



## 6.6 Maximum Peak Output Power

### 6.6.1 Applied procedures / Limit

15.247(b) (3) For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 Watt. As an alternative to a peak power measurement, compliance with the one Watt limit can be based on a measurement of the maximum conducted output power. Maximum Conducted Output Power is defined as the total transmit power delivered to all antennas and antenna elements averaged across all symbols in the signaling alphabet when the transmitter is operating at its maximum power control level. Power must be summed across all antennas and antenna elements. The average must not include any time intervals during which the transmitter is off or is transmitting at a reduced power level. If multiple modes of operation are possible (e.g., alternative modulation methods), the maximum conducted output power is the highest total transmit power occurring in any mode.

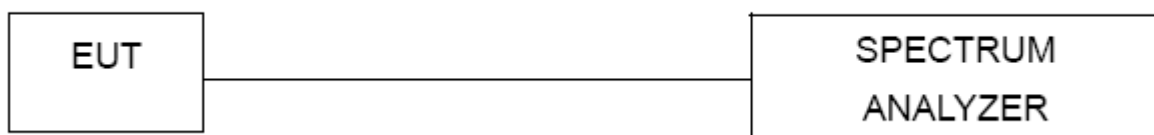
### 6.6.2 Test procedure

- a. The testing follows FCC KDB publication No. 558074 D01 DTS Meas. Guidance v03r02
- b. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below.
- c. Spectrum Setting:  $RBW \geq \text{Bandwidth}$ ,  $VBW \geq 3 \times RBW$ , Sweep time = Auto, Span  $\geq 3 \times RBW$ ,

### 6.6.3 Deviation from standard

No deviation.

### 6.6.4 Test setup



### 6.6.5 Test results

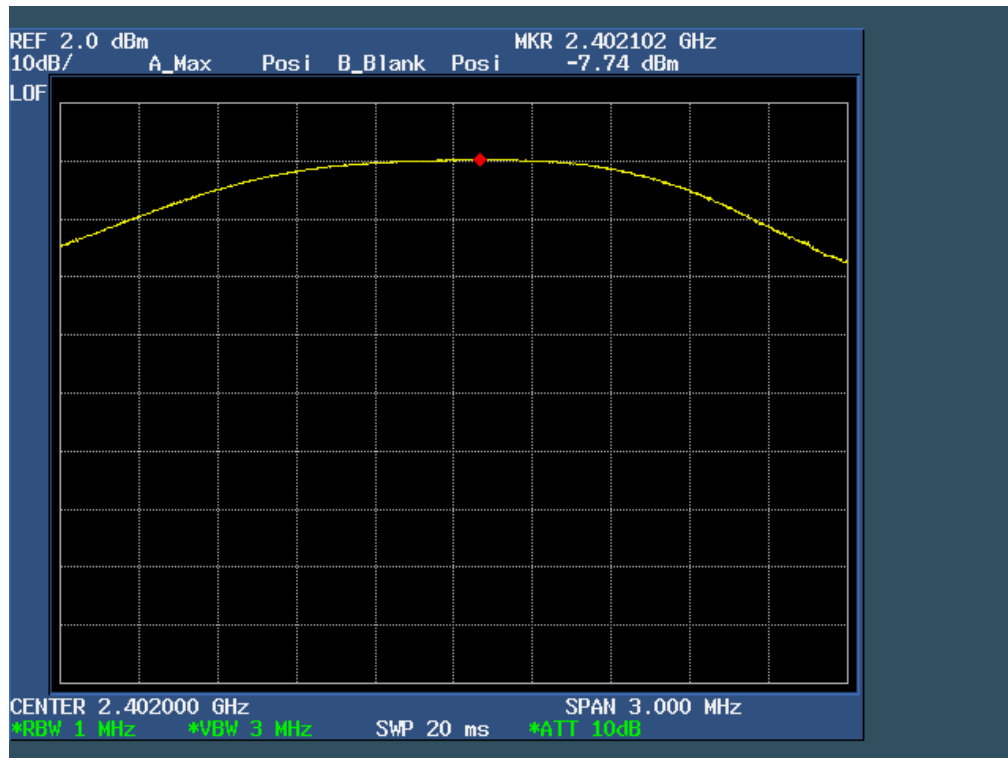
EUT:	ACTIVITY TRACKER	Model Name :	13V2S
Temperature:	26 °C	Relative Humidity:	60%
Pressure:	1010 hPa	Test Voltage :	DC 3.7V from battery
Test Mode :	TX (1Mbps)		
Note: N/A			

Test Mode	Frequency	Peak Output Power (dBm)	Limit (dBm)	Result
Data rate 1Mbps	2402 MHz	-7.74	30	Pass
	2440 MHz	-7.44	30	Pass
	2480 MHz	-7.35	30	Pass

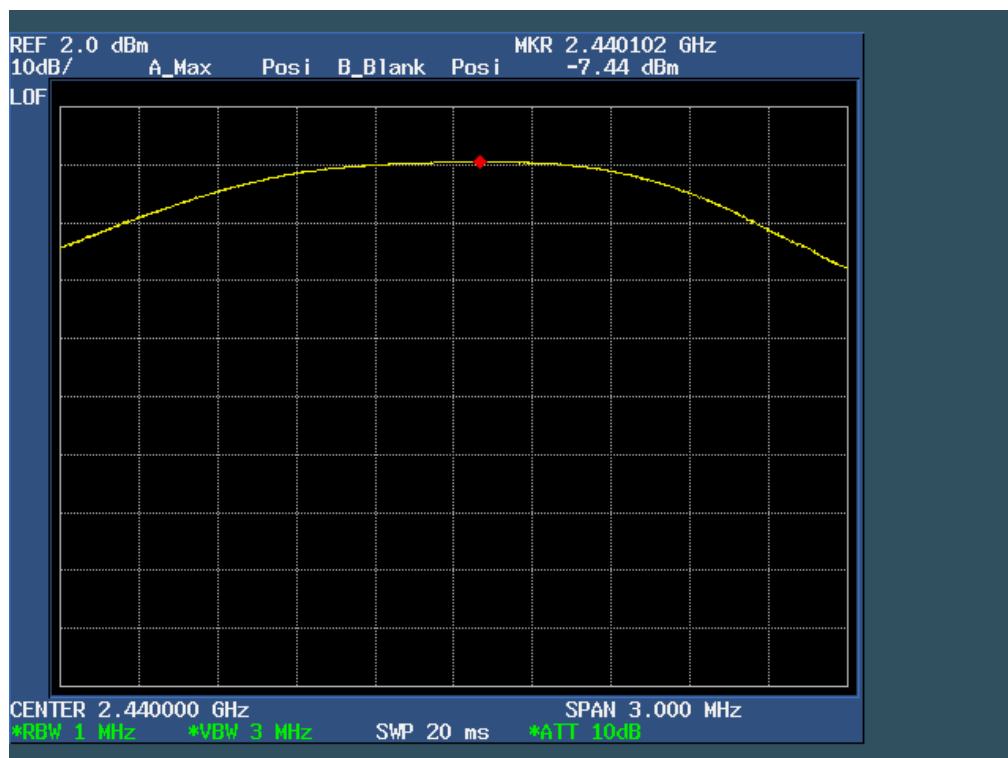
**Note: The cable loss is 2.0dB**



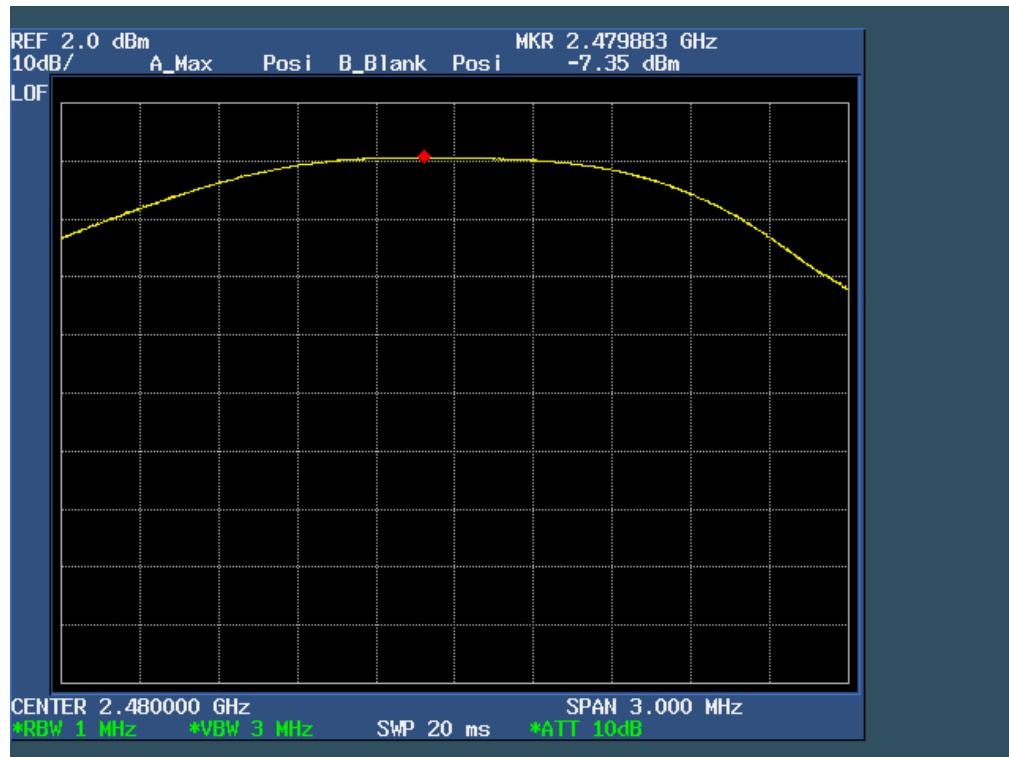
(1Mbps)  
The Lowest Channel 00: 2402MHz



(1Mbps)  
The Middle Channel 19: 2440MHz



(1Mbps)  
The High Channel 39: 2480MHz



## 6.7 Band edge

### 6.7.1 Applied procedures / Limit

15.247(d) In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated 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 band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

### 6.7.2 Test procedure

- a. The testing follows FCC KDB publication No. 558074 D01 DTS Meas. Guidance v03r02
- b. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below.
- c. Spectrum Setting: RBW=100kHz, VBW  $\geq$  300kHz, Sweep time=Auto, Detector Function=Peak.

### 6.7.3 Deviation from standard

No deviation.

### 6.7.4 Test setup

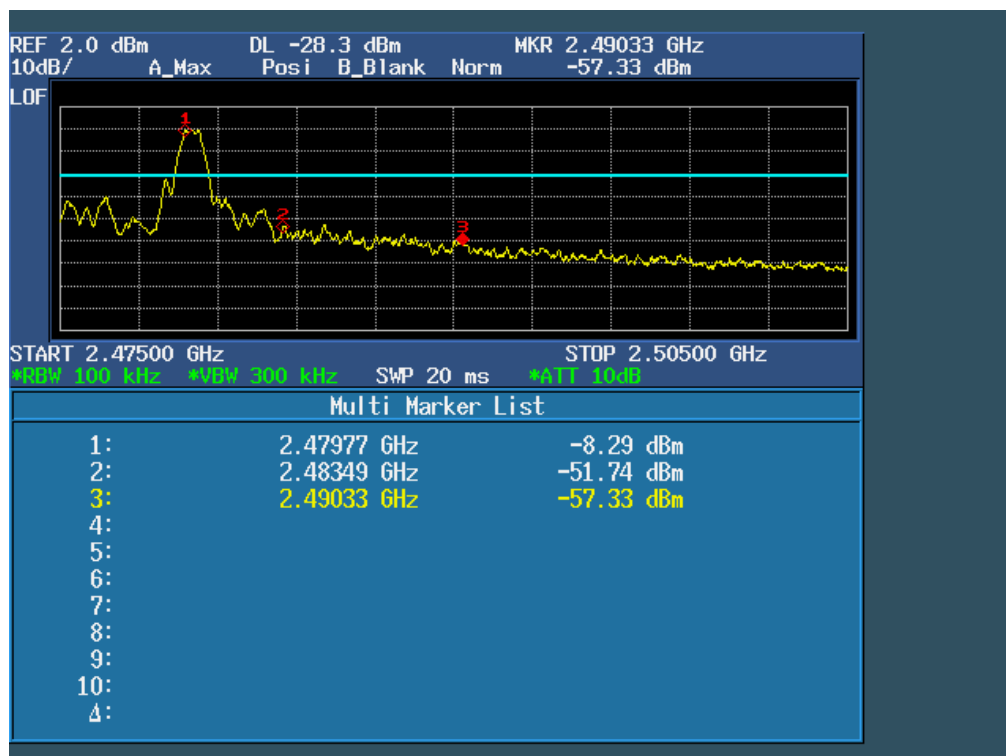


## 6.7.5 Test results

### (1Mbps) The Lowest Channel 00: 2402MHz



### (1Mbps) The High Channel 39: 2480MHz



## 6.8 Conducted Spurious Emissions

### 6.8.1 Applied procedures / Limit

15.247(d) In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated 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 band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

### 6.8.2 Test procedure

- The testing follows FCC KDB publication No. 558074 D01 DTS Meas. Guidance v03r02
- The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below.
- Spectrum Setting: RBW=100kHz, VBW=300kHz, Sweep time=Auto, Detector Function=Peak, sweep points  $\geq$  investigated frequency range/RBW.

### 6.8.3 Deviation from standard

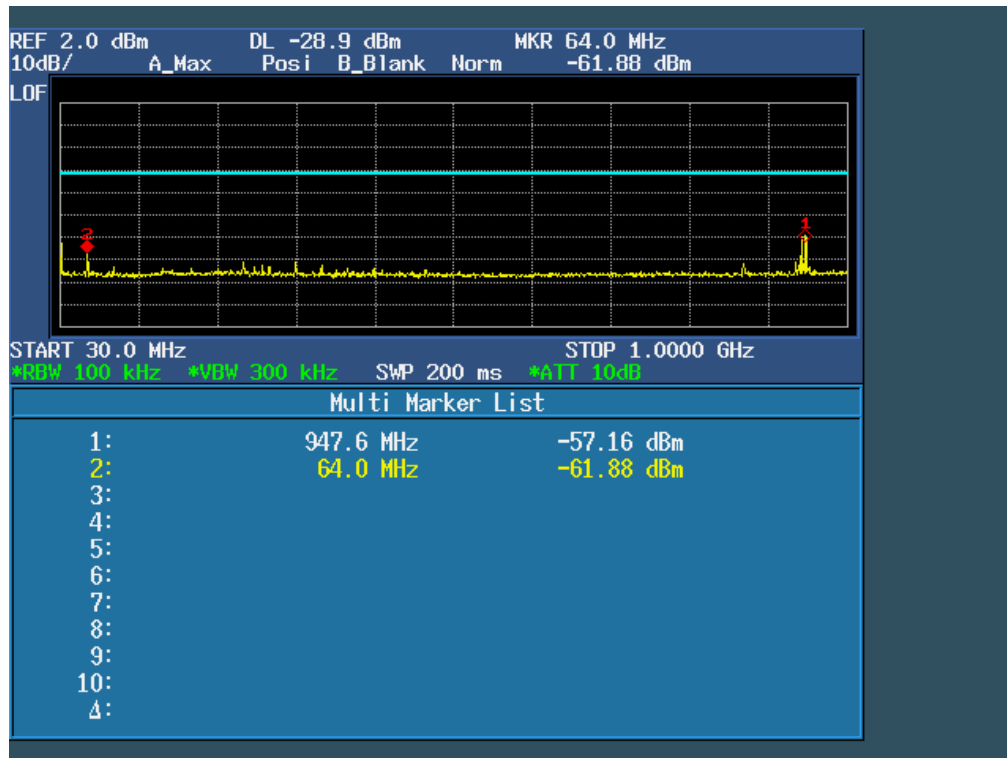
No deviation.

### 6.8.4 Test setup

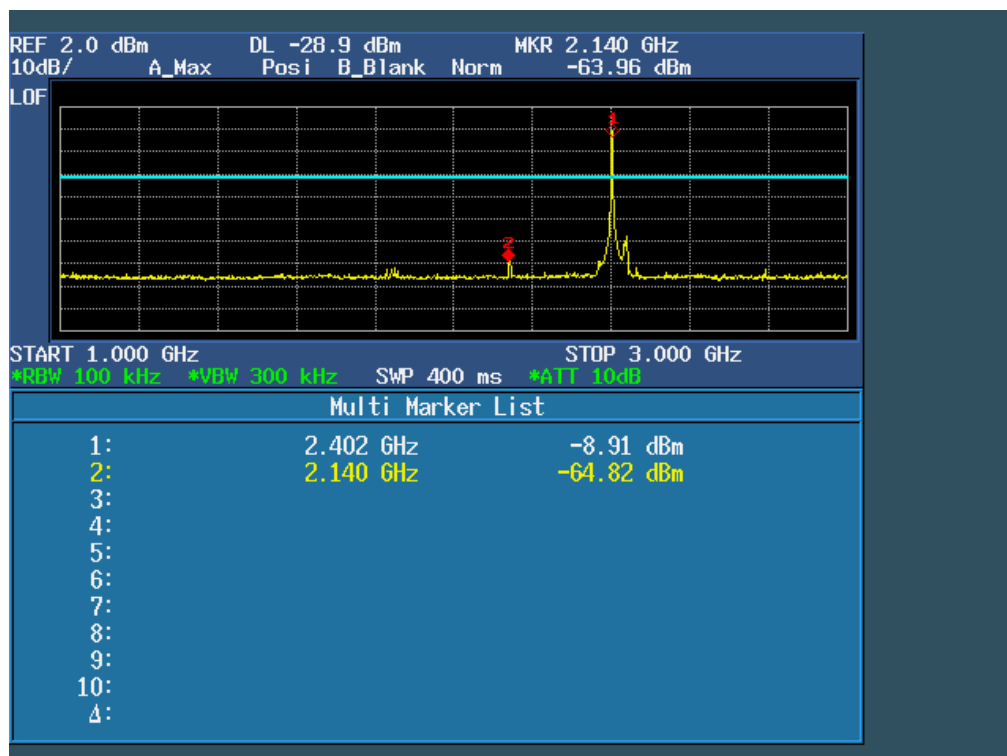


## 6.8.5 Test results

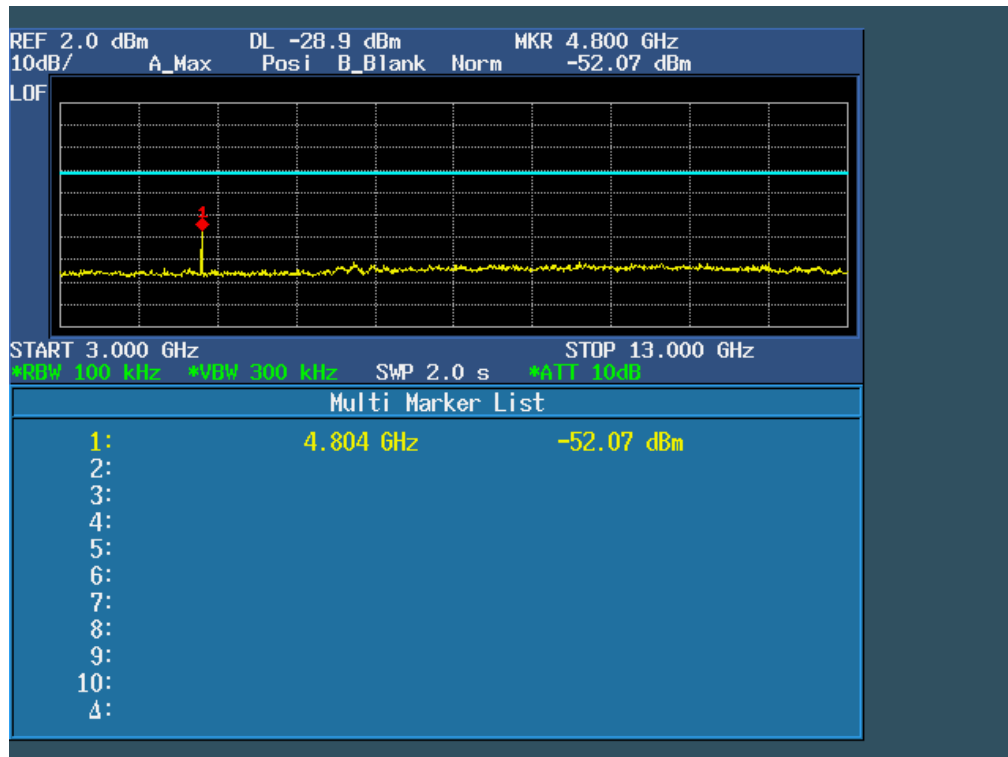
### The Lowest Channel 00 (1Mbps): 2402MHz



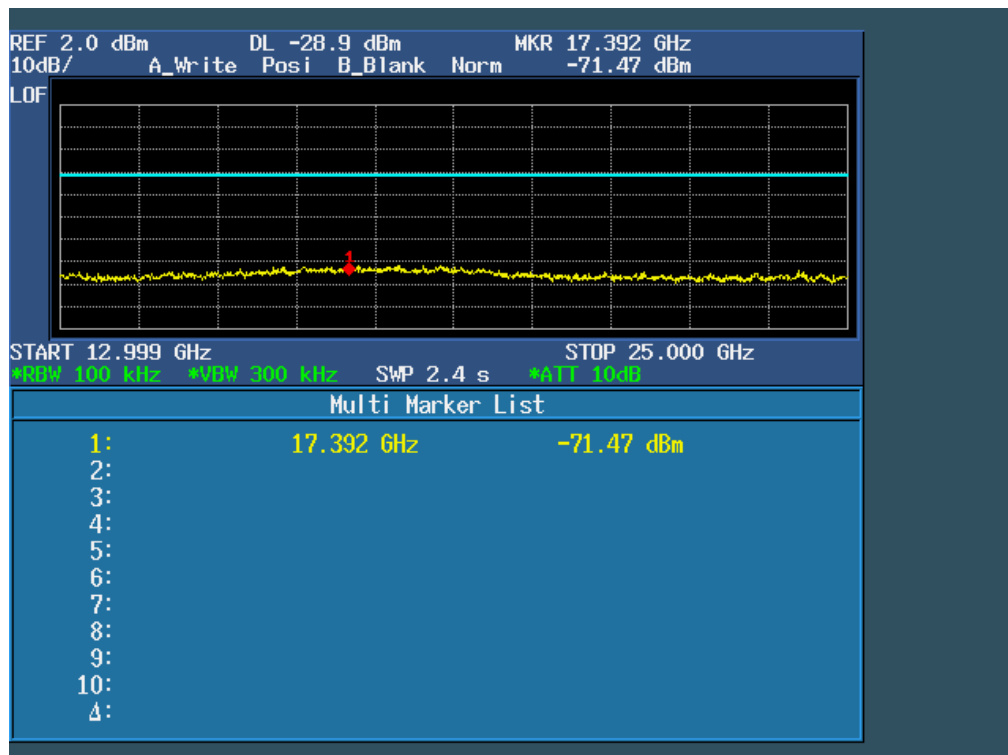
Note: Sweep Points=9700



Note: Sweep Points=20000

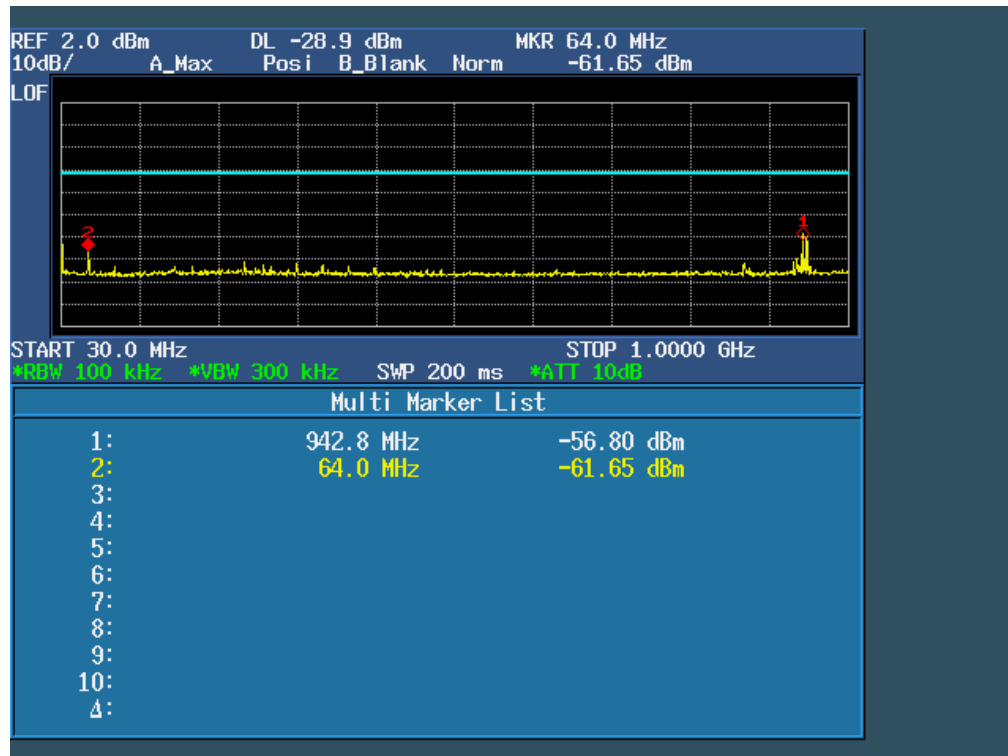


Note: Sweep Points=100000

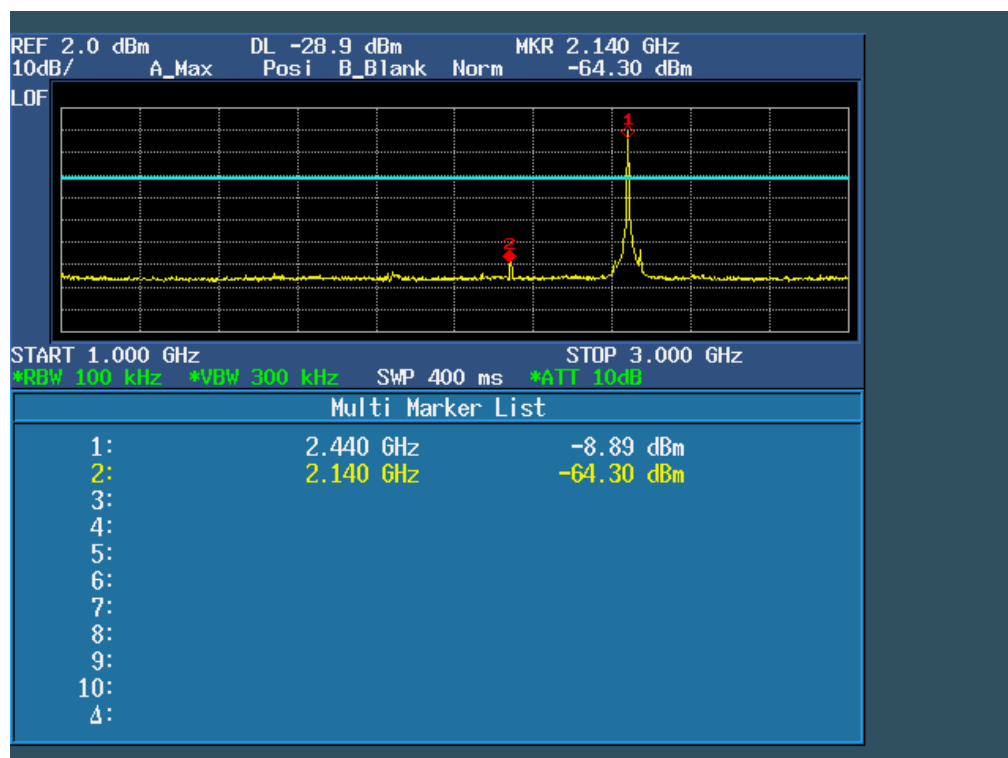


Note: Sweep Points=120000

### The Middle Channel 19(1Mbps): 2440MHz

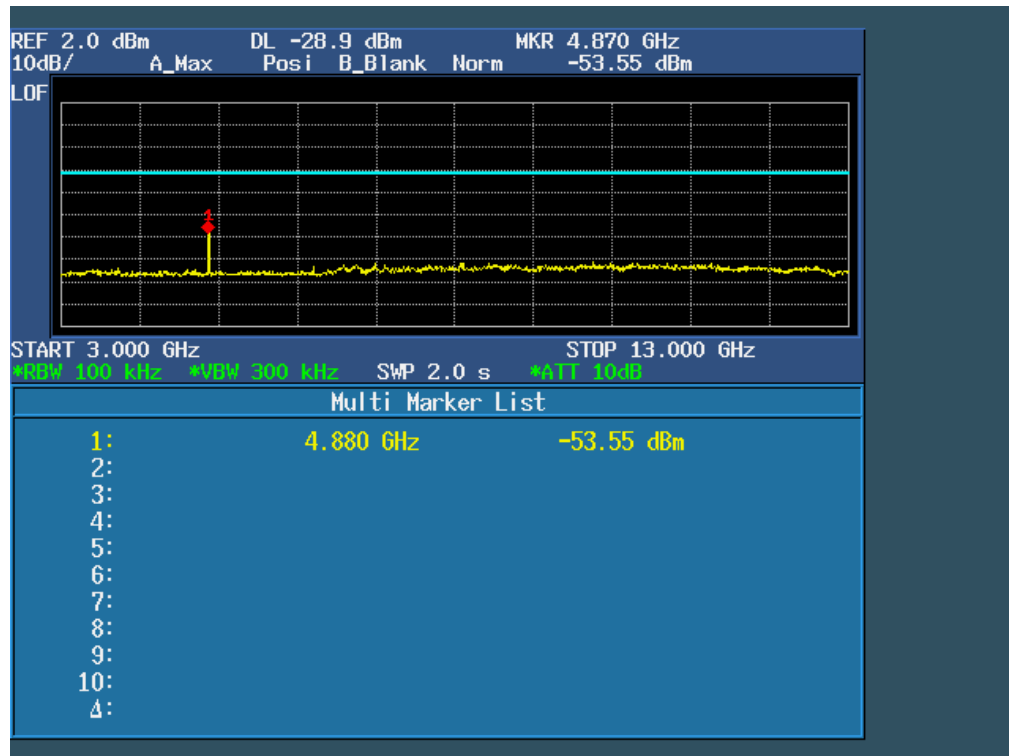


Note: Sweep Points=9700

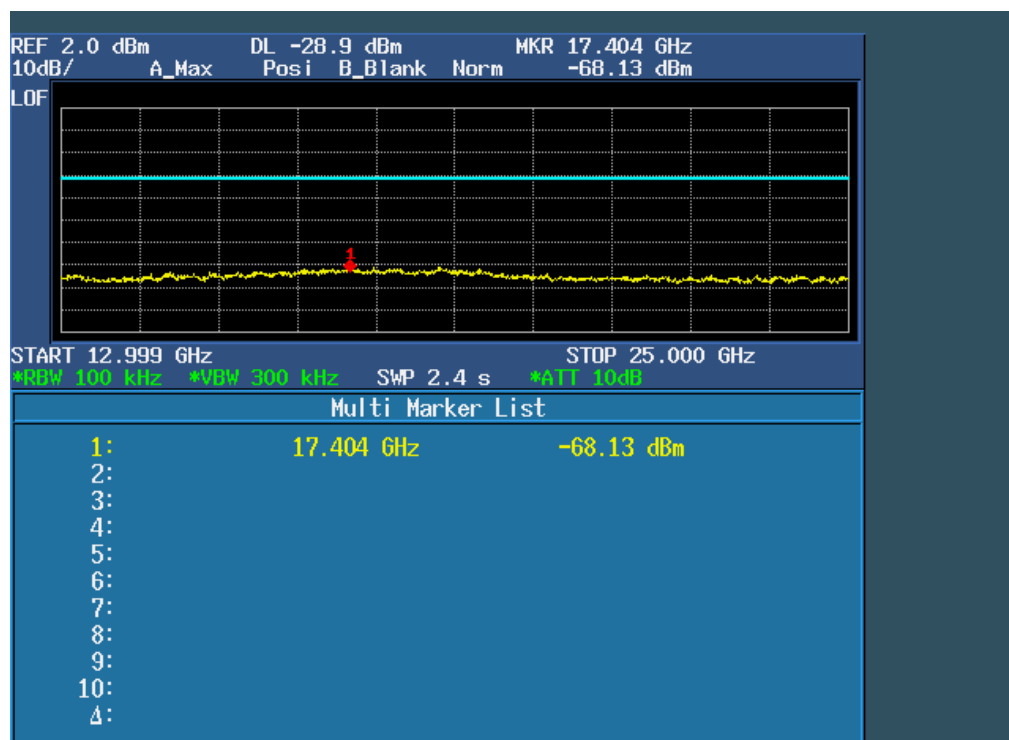


Note: Sweep Points=20000



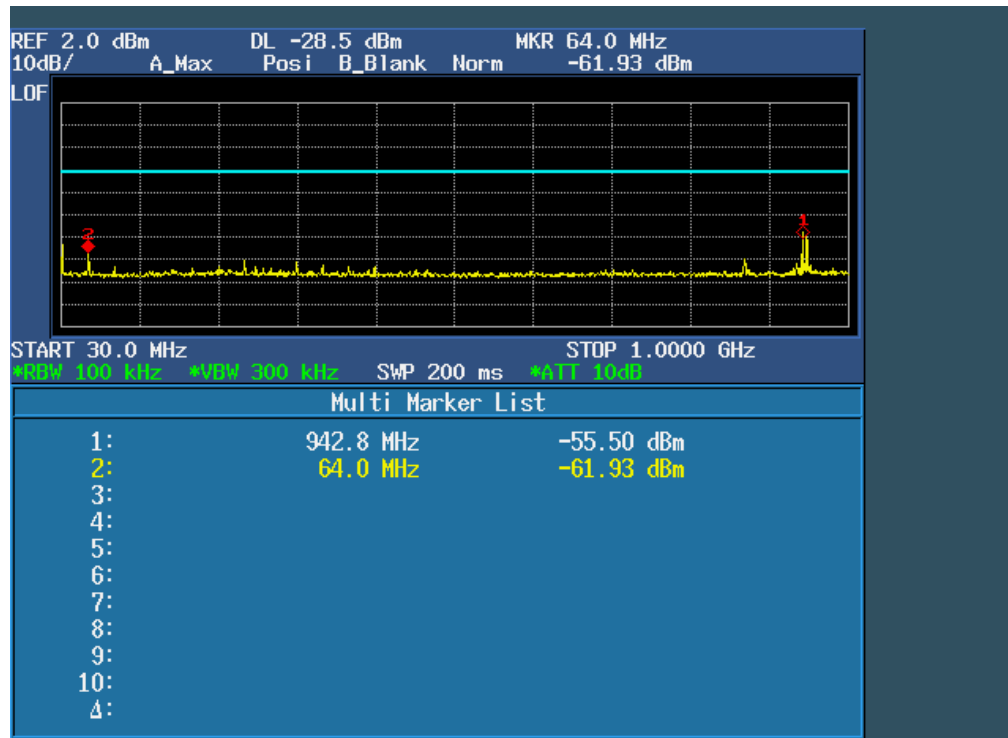


Note: Sweep Points=100000

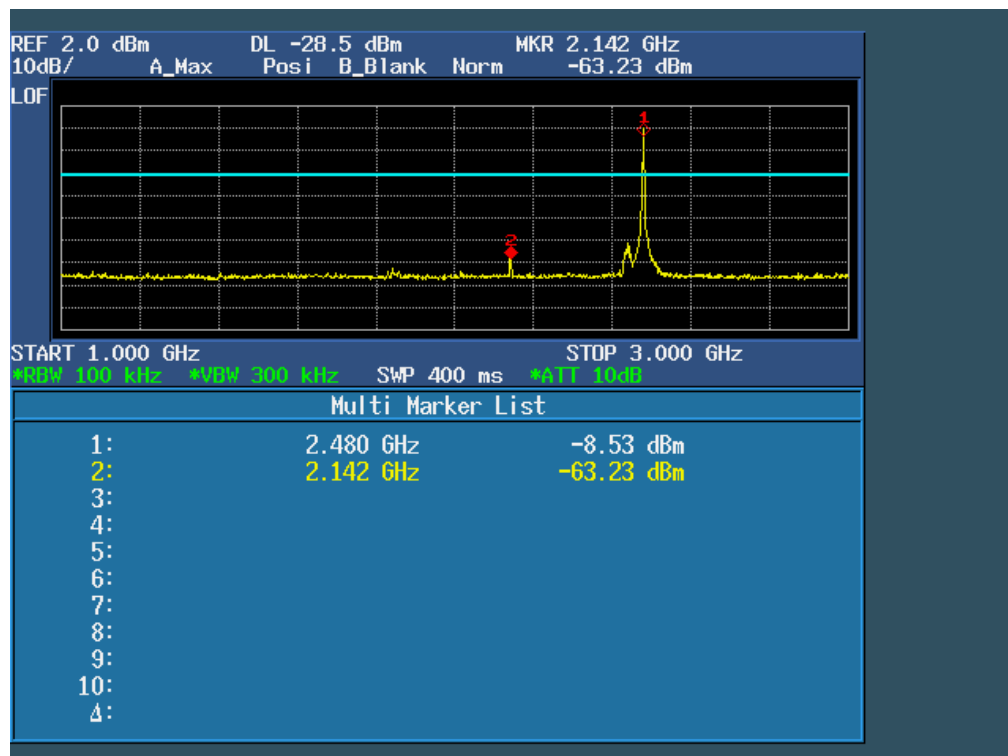


Note: Sweep Points=120000

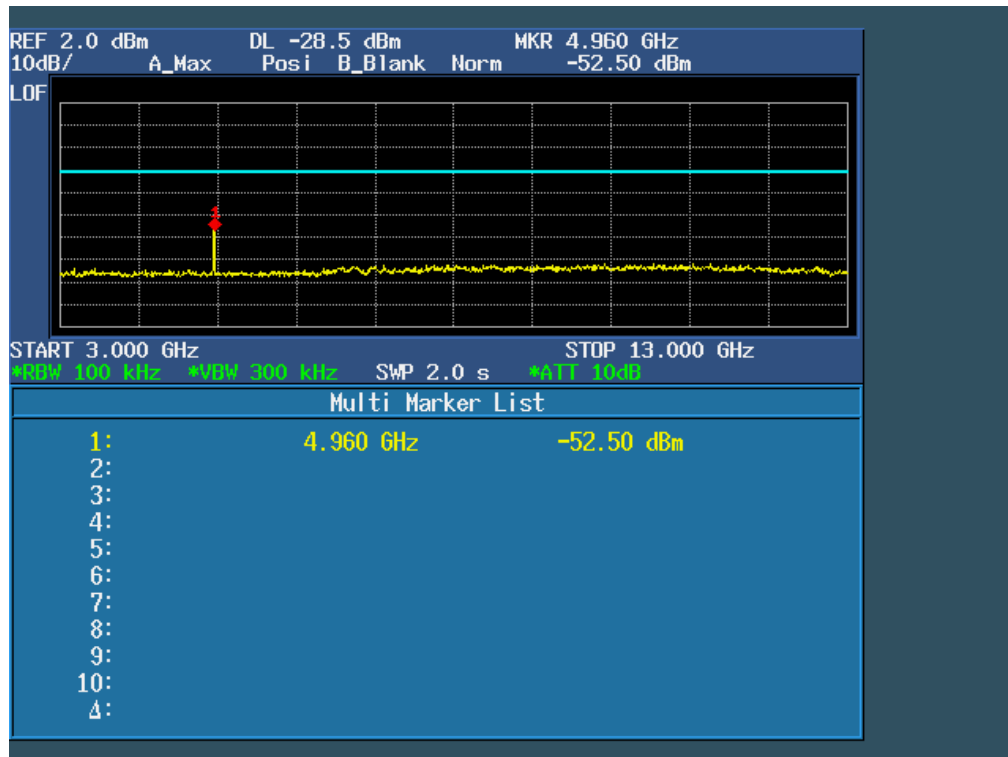
### The High Channel 39(1Mbps): 2480MHz



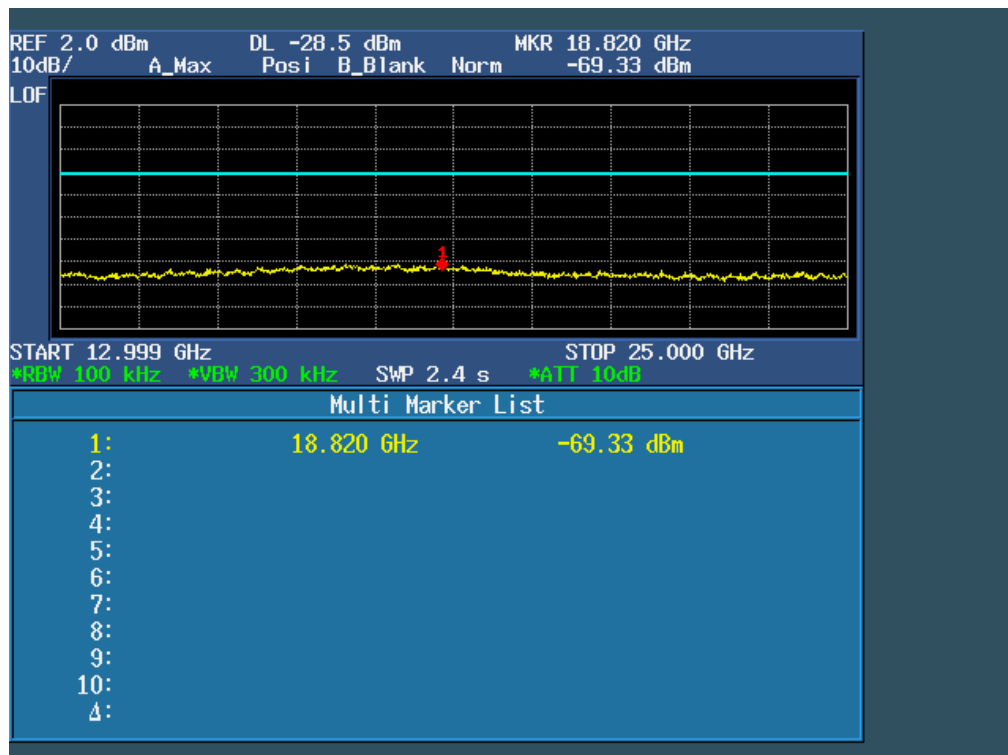
Note: Sweep Points=9700



Note: Sweep Points=20000



Note: Sweep Points=100000



Note: Sweep Points=120000