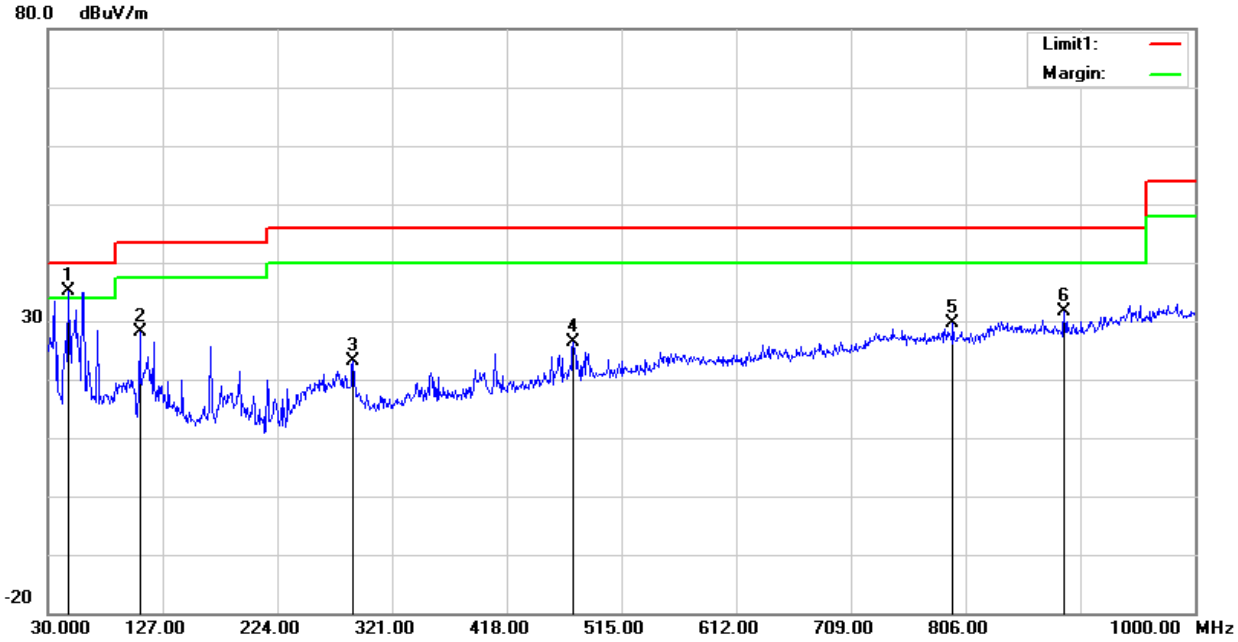
Temperature:	23.1(C)	Relative Humidity:	60%RH
Test Voltage:	DC 3.3V	Phase:	Vertical
Test Mode:	Mode 1/2/3 (Mode 3 worst mode)		

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	47.4600	56.93	-21.92	35.01	40.00	-4.99	QP
2	107.6000	47.46	-19.32	28.14	43.50	-15.36	QP
3	288.0200	38.50	-15.26	23.24	46.00	-22.76	QP
4	474.2600	35.20	-8.85	26.35	46.00	-19.65	QP
5	795.3300	31.69	-2.01	29.68	46.00	-16.32	QP
6	889.4200	32.31	-0.68	31.63	46.00	-14.37	QP

Remark:
1. Margin = Result (Result =Reading + Factor)–Limit
2. Factor= Antenna factor+Cable attenuation factor(cable loss)-Amplifier gain



(1GHz-25GHz) Spurious emission Requirements

GFSK

Frequency	Meter Reading	Amplifier	Loss	Antenna Factor	Orrected Factor	Emission Level	Limits	Margin	Detector	Comment
(MHz)	(dBμV)	（dB）	（dB）	（dB/m）	（dB）	(dBμV/m)	(dBμV/m)	(dB)	Type	
Low Channel (2402 MHz)										
3264.78	61.31	44.70	6.70	28.20	-9.80	51.51	74.00	-22.49	PK	Vertical
3264.78	50.30	44.70	6.70	28.20	-9.80	40.50	54.00	-13.50	AV	Vertical
3264.74	61.80	44.70	6.70	28.20	-9.80	52.00	74.00	-22.00	PK	Horizontal
3264.74	50.68	44.70	6.70	28.20	-9.80	40.88	54.00	-13.12	AV	Horizontal
4804.53	58.53	44.20	9.04	31.60	-3.56	54.97	74.00	-19.03	PK	Vertical
4804.53	49.48	44.20	9.04	31.60	-3.56	45.92	54.00	-8.08	AV	Vertical
4804.54	58.63	44.20	9.04	31.60	-3.56	55.07	74.00	-18.93	PK	Horizontal
4804.54	50.01	44.20	9.04	31.60	-3.56	46.45	54.00	-7.55	AV	Horizontal
5359.65	48.32	44.20	9.86	32.00	-2.34	45.98	74.00	-28.02	PK	Vertical
5359.65	40.21	44.20	9.86	32.00	-2.34	37.87	54.00	-16.13	AV	Vertical
5359.57	47.14	44.20	9.86	32.00	-2.34	44.80	74.00	-29.20	PK	Horizontal
5359.57	39.22	44.20	9.86	32.00	-2.34	36.88	54.00	-17.12	AV	Horizontal
7205.84	53.97	43.50	11.40	35.50	3.40	57.37	74.00	-16.63	PK	Vertical
7205.84	44.00	43.50	11.40	35.50	3.40	47.40	54.00	-6.60	AV	Vertical
7205.75	54.41	43.50	11.40	35.50	3.40	57.81	74.00	-16.19	PK	Horizontal
7205.75	44.11	43.50	11.40	35.50	3.40	47.51	54.00	-6.49	AV	Horizontal
Middle Channel (2440 MHz)										
3264.84	61.75	44.70	6.70	28.20	-9.80	51.95	74.00	-22.05	PK	Vertical
3264.84	51.09	44.70	6.70	28.20	-9.80	41.29	54.00	-12.71	AV	Vertical
3264.63	61.39	44.70	6.70	28.20	-9.80	51.59	74.00	-22.41	PK	Horizontal
3264.63	49.93	44.70	6.70	28.20	-9.80	40.13	54.00	-13.87	AV	Horizontal
4880.53	58.62	44.20	9.04	31.60	-3.56	55.06	74.00	-18.94	PK	Vertical
4880.53	50.04	44.20	9.04	31.60	-3.56	46.48	54.00	-7.52	AV	Vertical
4880.45	59.58	44.20	9.04	31.60	-3.56	56.02	74.00	-17.98	PK	Horizontal
4880.45	49.50	44.20	9.04	31.60	-3.56	45.94	54.00	-8.06	AV	Horizontal
5359.76	48.55	44.20	9.86	32.00	-2.34	46.21	74.00	-27.79	PK	Vertical
5359.76	39.23	44.20	9.86	32.00	-2.34	36.89	54.00	-17.11	AV	Vertical
5359.59	47.43	44.20	9.86	32.00	-2.34	45.09	74.00	-28.91	PK	Horizontal
5359.59	38.38	44.20	9.86	32.00	-2.34	36.04	54.00	-17.96	AV	Horizontal
7320.71	54.70	43.50	11.40	35.50	3.40	58.10	74.00	-15.90	PK	Vertical
7320.71	44.42	43.50	11.40	35.50	3.40	47.82	54.00	-6.18	AV	Vertical
7320.88	53.77	43.50	11.40	35.50	3.40	57.17	74.00	-16.83	PK	Horizontal
7320.88	43.88	43.50	11.40	35.50	3.40	47.28	54.00	-6.72	AV	Horizontal

High Channel (2480 MHz)										
3264.89	61.51	44.70	6.70	28.20	-9.80	51.71	74.00	-22.29	PK	Vertical
3264.89	50.19	44.70	6.70	28.20	-9.80	40.39	54.00	-13.61	AV	Vertical
3264.79	60.99	44.70	6.70	28.20	-9.80	51.19	74.00	-22.81	PK	Horizontal
3264.79	50.25	44.70	6.70	28.20	-9.80	40.45	54.00	-13.55	AV	Horizontal
4960.51	59.14	44.20	9.04	31.60	-3.56	55.58	74.00	-18.42	PK	Vertical
4960.51	49.89	44.20	9.04	31.60	-3.56	46.33	54.00	-7.67	AV	Vertical
4960.60	58.46	44.20	9.04	31.60	-3.56	54.90	74.00	-19.10	PK	Horizontal
4960.60	50.02	44.20	9.04	31.60	-3.56	46.46	54.00	-7.54	AV	Horizontal
5359.62	48.41	44.20	9.86	32.00	-2.34	46.07	74.00	-27.93	PK	Vertical
5359.62	39.10	44.20	9.86	32.00	-2.34	36.76	54.00	-17.24	AV	Vertical
5359.74	48.17	44.20	9.86	32.00	-2.34	45.83	74.00	-28.17	PK	Horizontal
5359.74	38.56	44.20	9.86	32.00	-2.34	36.22	54.00	-17.78	AV	Horizontal
7439.88	53.60	43.50	11.40	35.50	3.40	57.00	74.00	-17.00	PK	Vertical
7439.88	44.91	43.50	11.40	35.50	3.40	48.31	54.00	-5.69	AV	Vertical
7439.77	54.51	43.50	11.40	35.50	3.40	57.91	74.00	-16.09	PK	Horizontal
7439.77	44.78	43.50	11.40	35.50	3.40	48.18	54.00	-5.82	AV	Horizontal

Note:

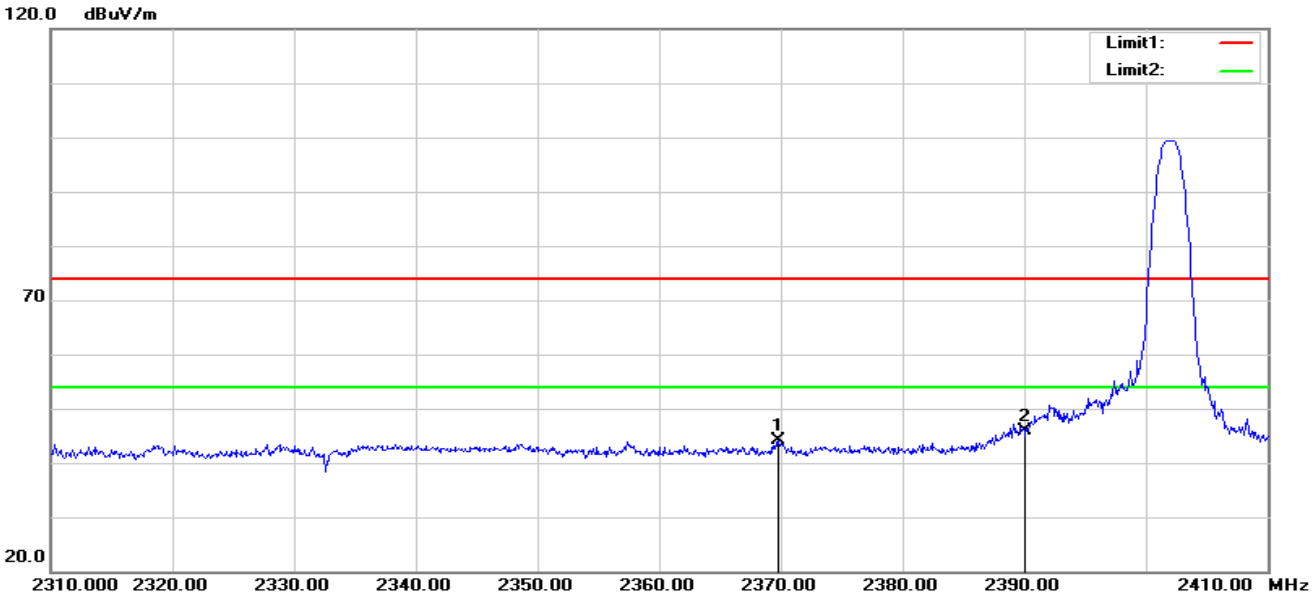
1) Factor = Antenna Factor + Cable Loss – Pre-amplifier.
   Emission Level = Reading + Factor

2) The frequency emission of peak points that did not show above the forms are at least 20dB below the limit, the frequency emission is mainly from the environment noise.

4.6 TEST RESULTS (Restricted Bands Requirements)

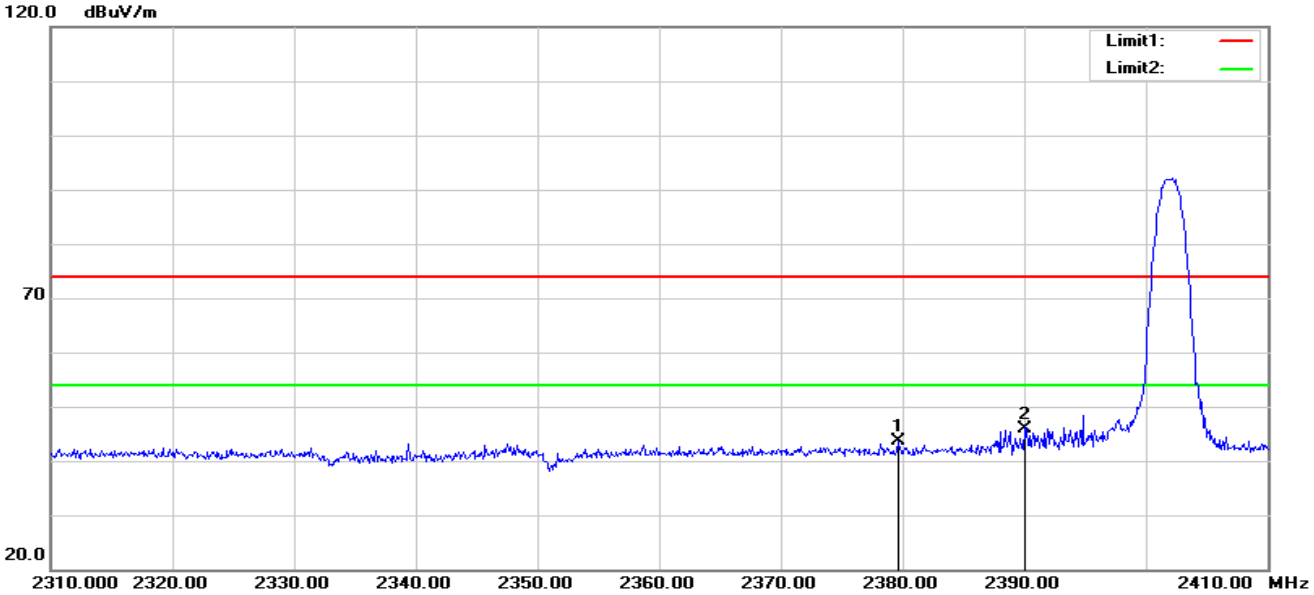
GFSK-Low

Horizontal



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2369.800	40.01	4.04	44.05	74.00	-29.95	peak
2	2390.000	41.56	4.34	45.90	74.00	-28.10	peak

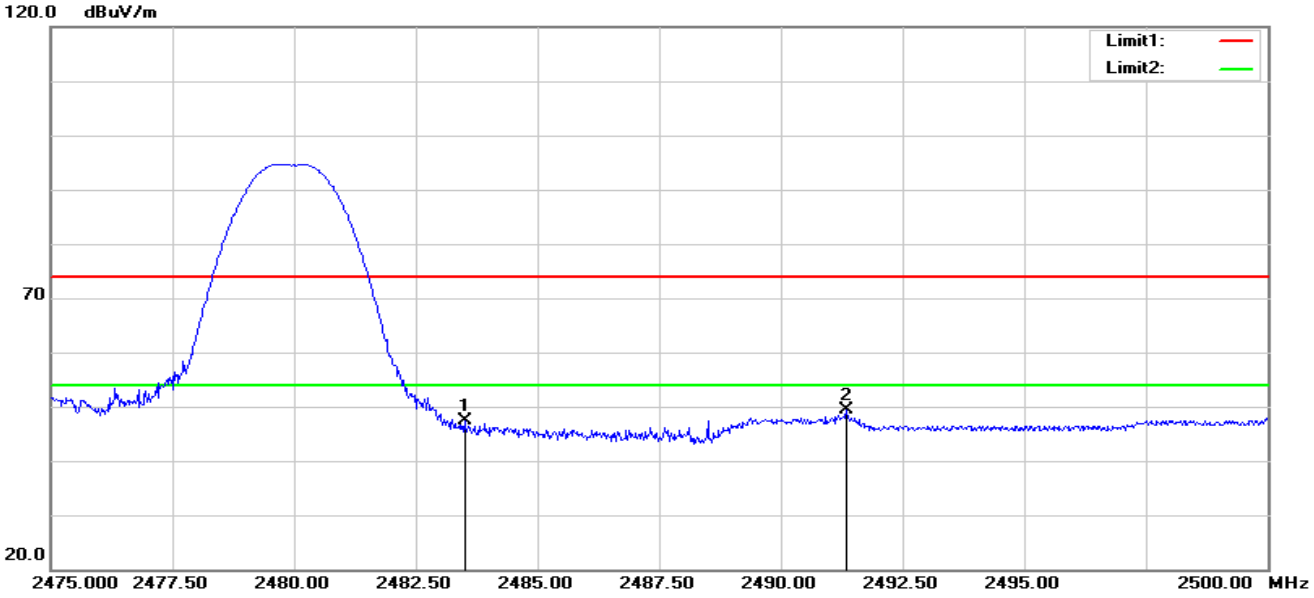
Vertical



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2379.600	39.52	4.18	43.70	74.00	-30.30	peak
2	2390.000	41.51	4.34	45.85	74.00	-28.15	peak

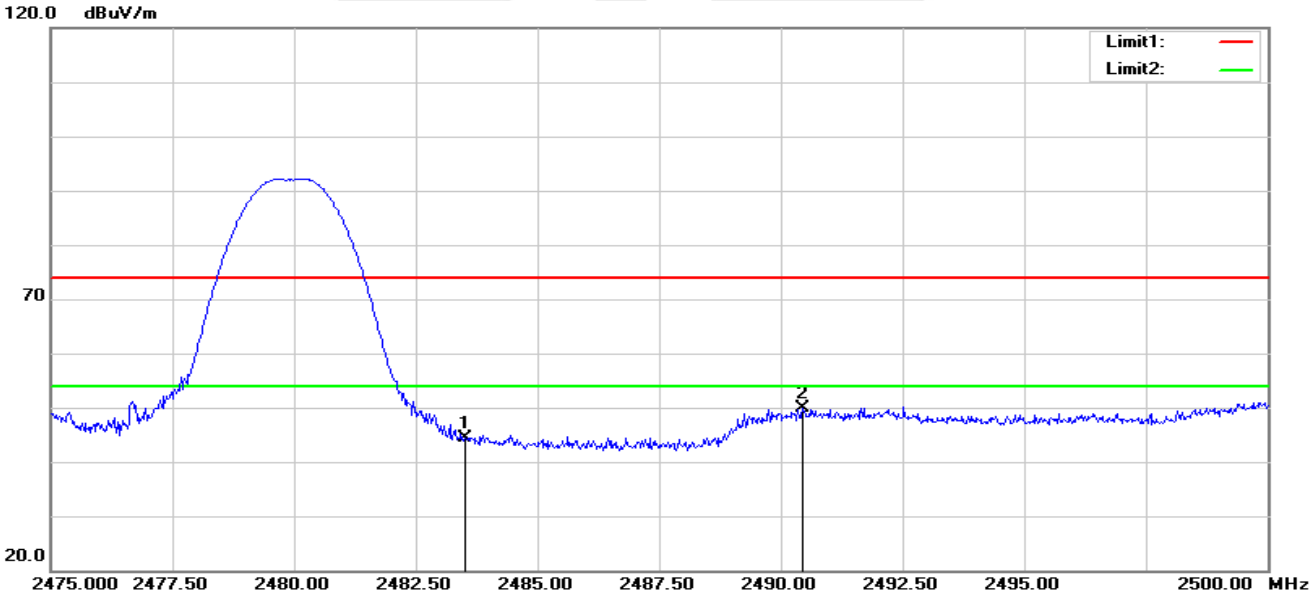
GFSK-High

Horizontal



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	42.88	4.60	47.48	74.00	-26.52	peak
2	2491.350	44.87	4.63	49.50	74.00	-24.50	peak

Vertical



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	39.89	4.60	44.49	74.00	-29.51	peak
2	2490.450	45.28	4.63	49.91	74.00	-24.09	peak

5. CONDUCTED SPURIOUS & BAND EDGE EMISSION

5.1 LIMIT

According to FCC section 15.247(d), in any 100kHz 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 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement.

5.2 TEST PROCEDURE

Spectrum Parameter	Setting
Detector	Peak
Start/Stop Frequency	30 MHz to 10th carrier harmonic
RB / VB (emission in restricted band)	100 KHz/300 KHz
Trace-Mode:	Max hold

For Band edge

Spectrum Parameter	Setting
Detector	Peak
Start/Stop Frequency	Lower Band Edge: 2300 – 2407 MHz Upper Band Edge: 2475 – 2500 MHz
RB / VB (emission in restricted band)	100 KHz/300 KHz
Trace-Mode:	Max hold

5.3 TEST SETUP

The EUT which is powered by the DC Power, is connected to the Spectrum Analyzer; the RF load attached to the EUT antenna terminal is 50 Ohm; the path loss as the factor is calibrated to correct the reading. Make the measurement with the spectrum analyzer's resolution bandwidth(RBW) = 100 kHz. In order to make an accurate measurement, set the span greater than RBW.

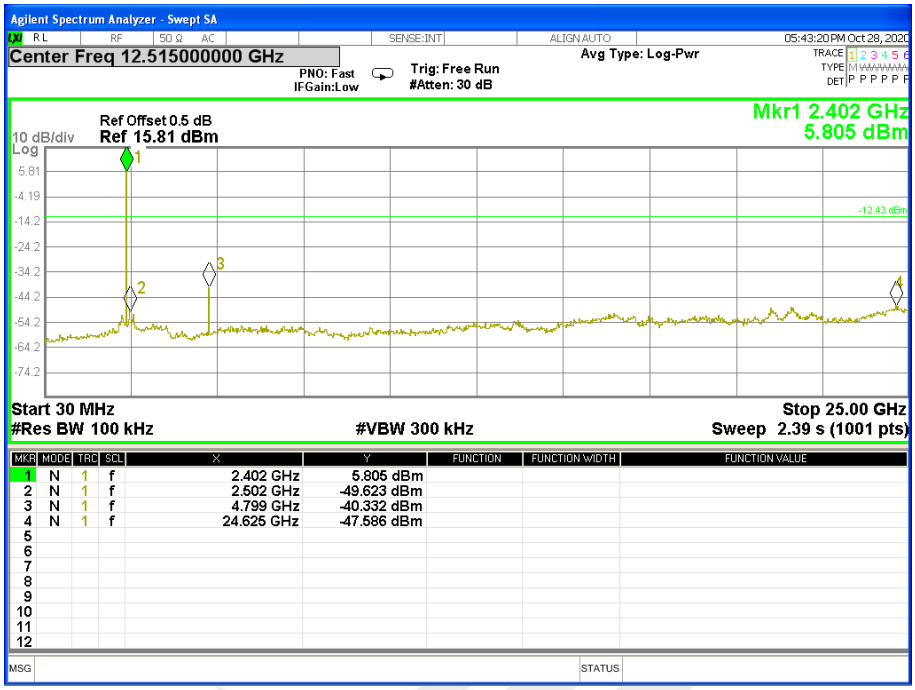
5.4 EUT OPERATION CONDITIONS

Please refer to section 3.4 of this report.

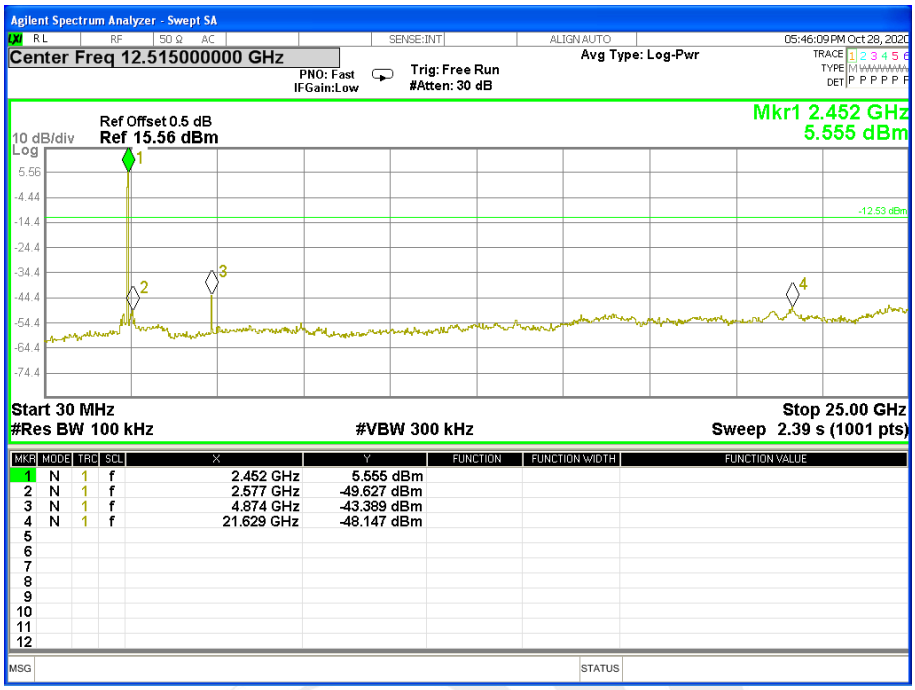
5.5 TEST RESULTS

Temperature:	25 ℃	Relative Humidity:	50%
Test Voltage:	DC 3.3V	Test Mode:	TX Mode /CH00, CH19, CH39

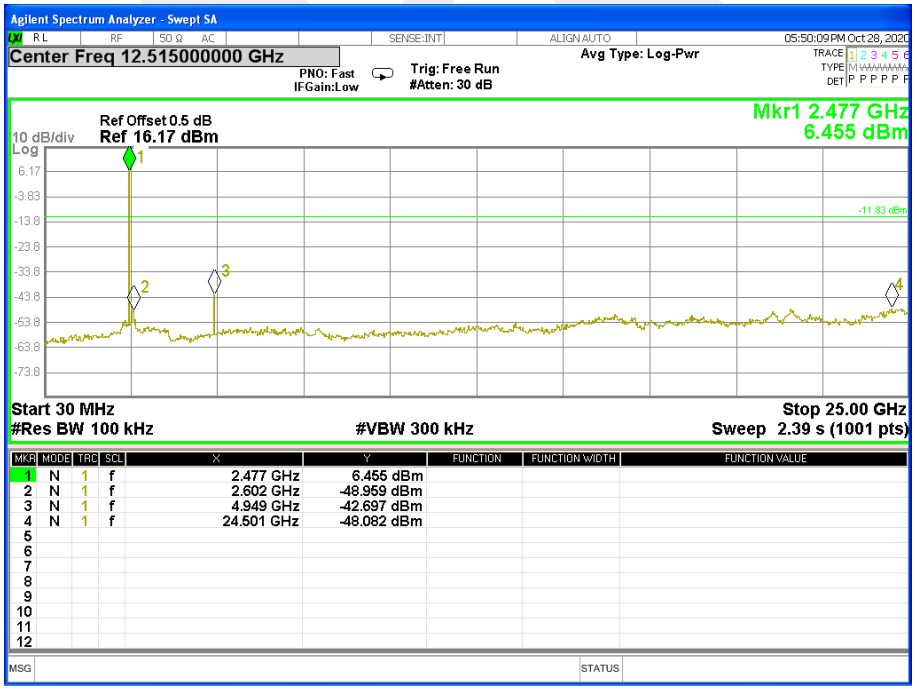
00 CH



19 CH

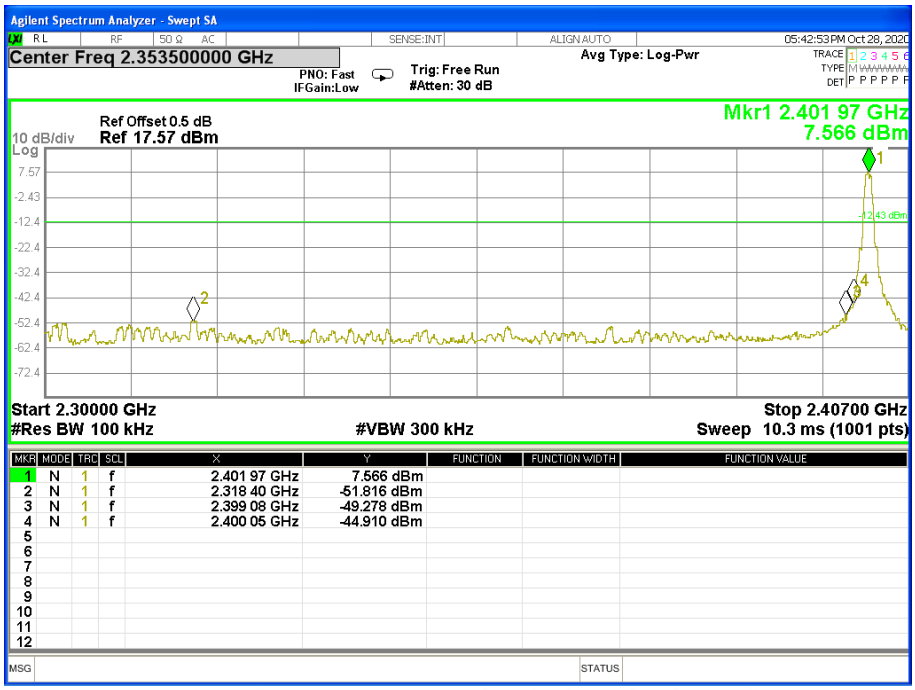

Agilent Spectrum Analyzer - Swept SA
Center Freq 12.515000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
05:46:09 PM Oct 28, 2020
Ref Offset 0.5 dB
10 dB/div
Ref 15.56 dBm
Log
Mkr1 2.452 GHz
5.555 dBm
-12.53 dBm
Start 30 MHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 25.00 GHz
Sweep 2.39 s (1001 pts)
1 N 1 f 2.452 GHz 5.555 dBm
2 N 1 f 2.577 GHz -49.627 dBm
3 N 1 f 4.874 GHz -43.389 dBm
4 N 1 f 21.629 GHz -48.147 dBm

39 CH

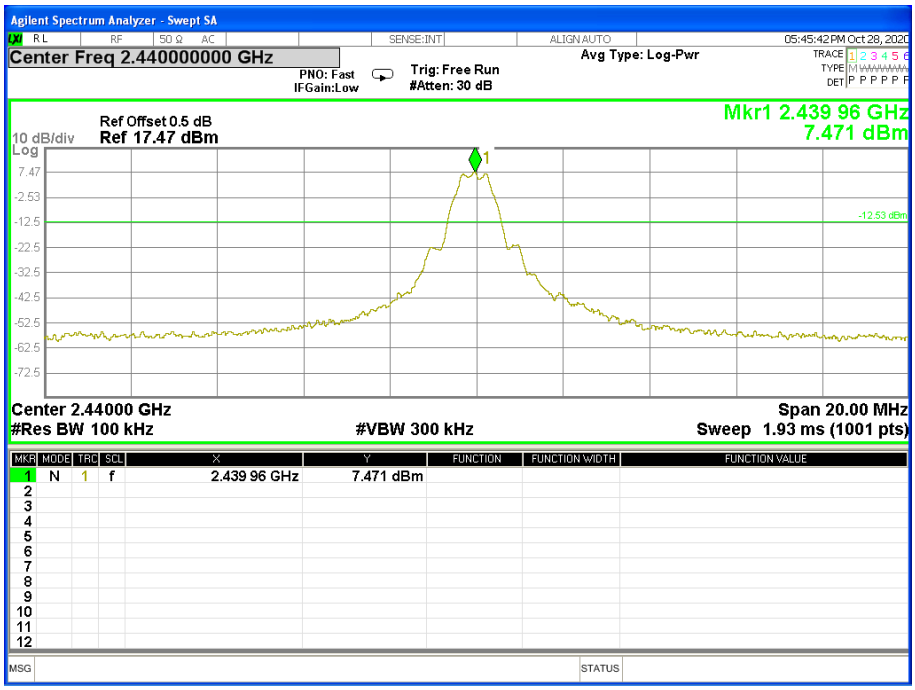

Agilent Spectrum Analyzer - Swept SA
Center Freq 12.515000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
05:50:09 PM Oct 28, 2020
Ref Offset 0.5 dB
10 dB/div
Ref 16.17 dBm
Log
Mkr1 2.477 GHz
6.455 dBm
-11.83 dBm
Start 30 MHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 25.00 GHz
Sweep 2.39 s (1001 pts)
1 N 1 f 2.477 GHz 6.455 dBm
2 N 1 f 2.602 GHz -48.959 dBm
3 N 1 f 4.949 GHz -42.697 dBm
4 N 1 f 24.501 GHz -48.082 dBm

For Band edge(it's also the reference level for conducted spurious emission)

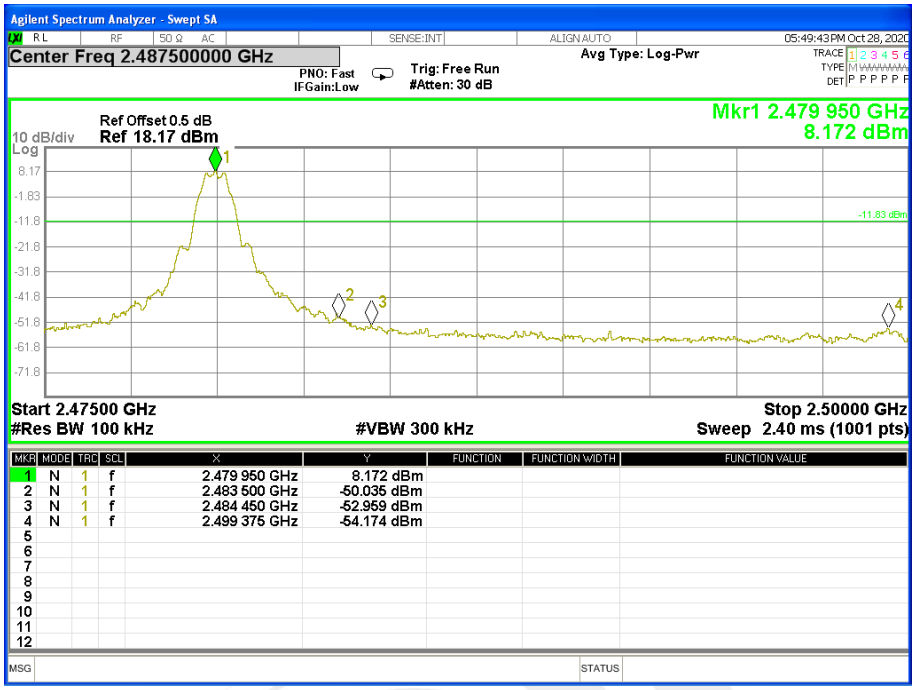
00 CH



19 CH



39 CH


Agilent Spectrum Analyzer - Swept SA
Center Freq 2.487500000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
05:49:43 PM Oct 28, 2020
Ref Offset 0.5 dB
10 dB/div
Ref 18.17 dBm
Log
Mkr1 2.479 950 GHz
8.172 dBm
-11.83 dBm
Start 2.47500 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 2.50000 GHz
Sweep 2.40 ms (1001 pts)
1 N 1 f 2.479 950 GHz 8.172 dBm
2 N 1 f 2.483 500 GHz -50.035 dBm
3 N 1 f 2.484 450 GHz -52.959 dBm
4 N 1 f 2.499 375 GHz -54.174 dBm

6. POWER SPECTRAL DENSITY TEST

6.1 LIMIT

FCC Part 15.247,Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247(e)	Power Spectral Density	≤8 dBm (RBW≥3KHz)	2400-2483.5	PASS

6.2 TEST PROCEDURE

1. Set analyzer center frequency to DTS channel center frequency.
2. Set the span to 1.5 times the DTS channel bandwidth.
3. Set the RBW to: 100 kHz ≥ RBW ≥ 3 kHz.
4. Set the VBW ≥ 3 x RBW.
5. Detector = peak.
6. Sweep time = auto couple.
7. Trace mode = max hold.
8. Allow trace to fully stabilize.
9. Use the peak marker function to determine the maximum amplitude level.
10. If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

6.3 TEST SETUP

6.4 EUT OPERATION CONDITIONS

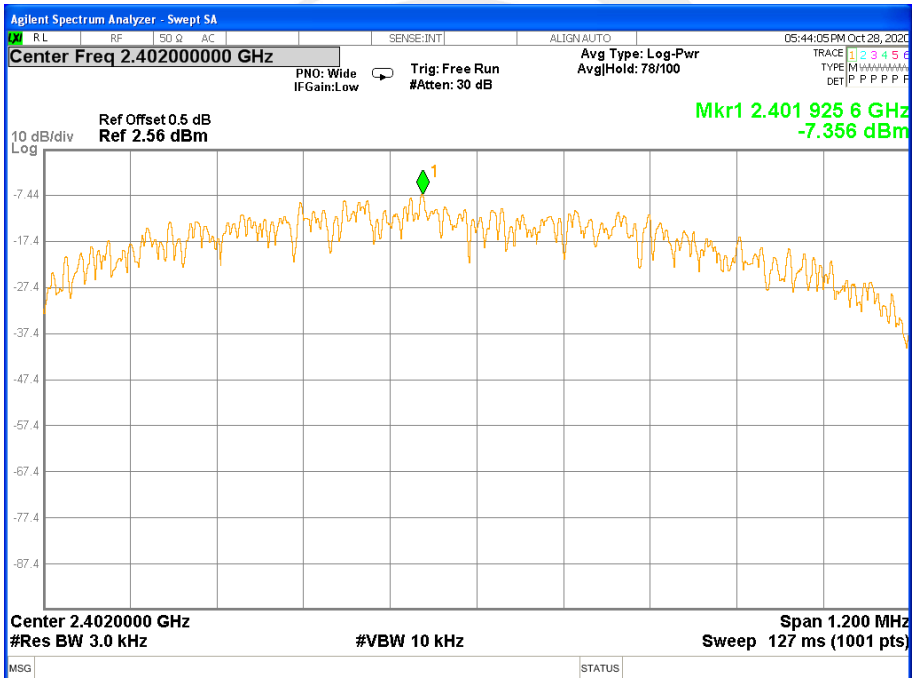
Please refer to section 3.4 of this report.

6.5 TEST RESULTS

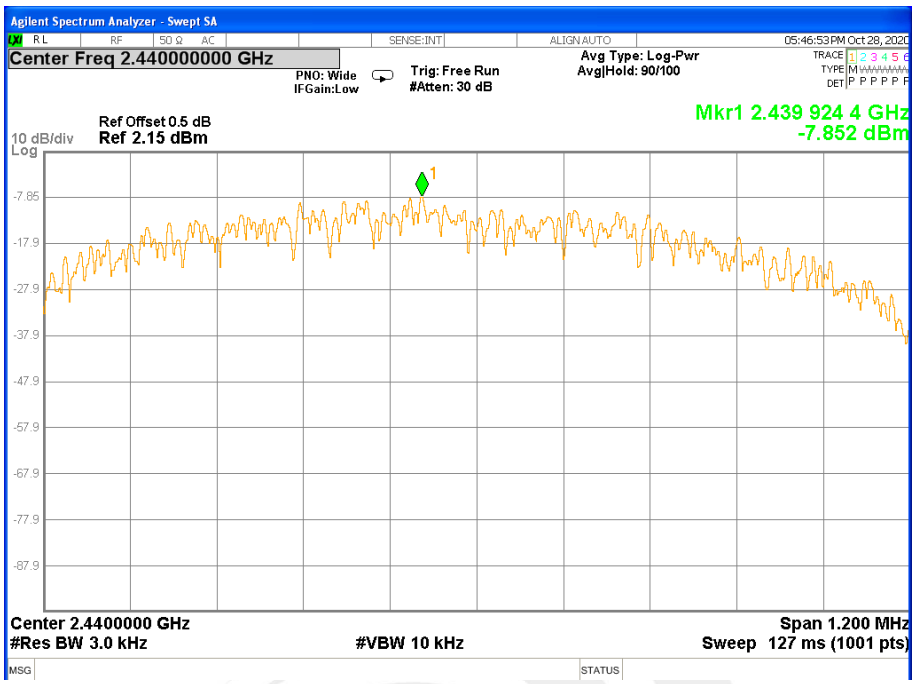
Temperature:	25 ℃	Relative Humidity:	60%
Test Voltage:	DC 3.3V	Test Mode:	TX Mode /CH00, CH19, CH39

Frequency	Power Density (dBm/3kHz)	Limit (dBm/3KHz)	Result
2402 MHz	-7.356	≤8	PASS
2440 MHz	-7.852	≤8	PASS
2480 MHz	-7.426	≤8	PASS

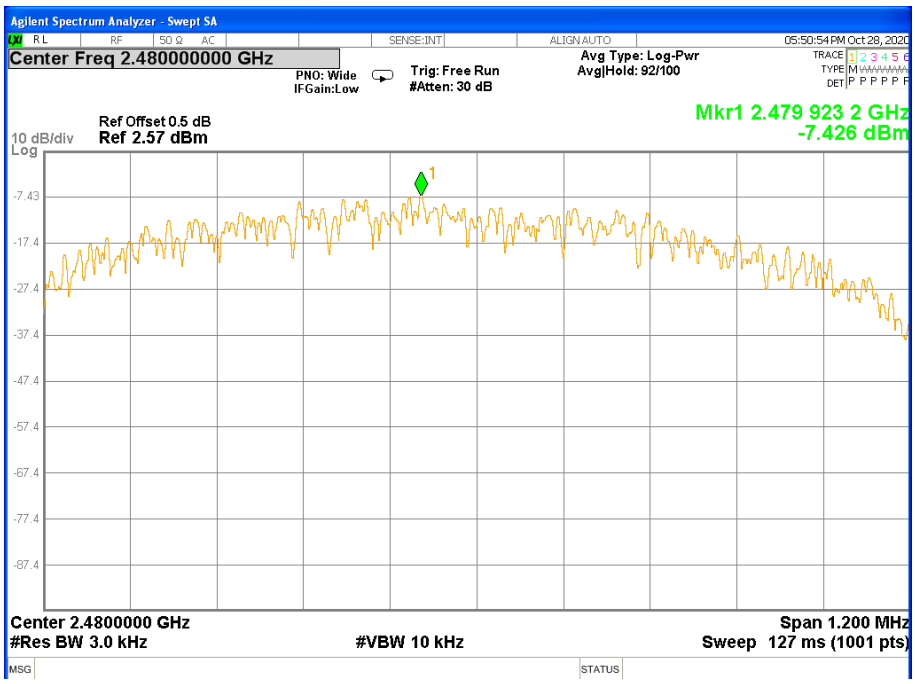
TX CH00



TX CH19



TX CH39



7. BANDWIDTH TEST

7.1 LIMIT

FCC Part 15.247,Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247(a)(2)	Bandwidth	>= 500KHz (6dB bandwidth)	2400-2483.5	PASS

7.2 TEST PROCEDURE

The automatic bandwidth measurement capability of an instrument may be employed using the X dB bandwidth mode with X set to 6 dB, if the functionality described above (i.e., RBW = 100 kHz, VBW≥3RBW, peak detector with maximum hold) is implemented by the instrumentation function. When using this capability, care shall be taken so that the bandwidth measurement is not influenced by any intermediate power nulls in the fundamental emission that might be≥6 dB.

7.3 TEST SETUP

7.4 EUT OPERATION CONDITIONS

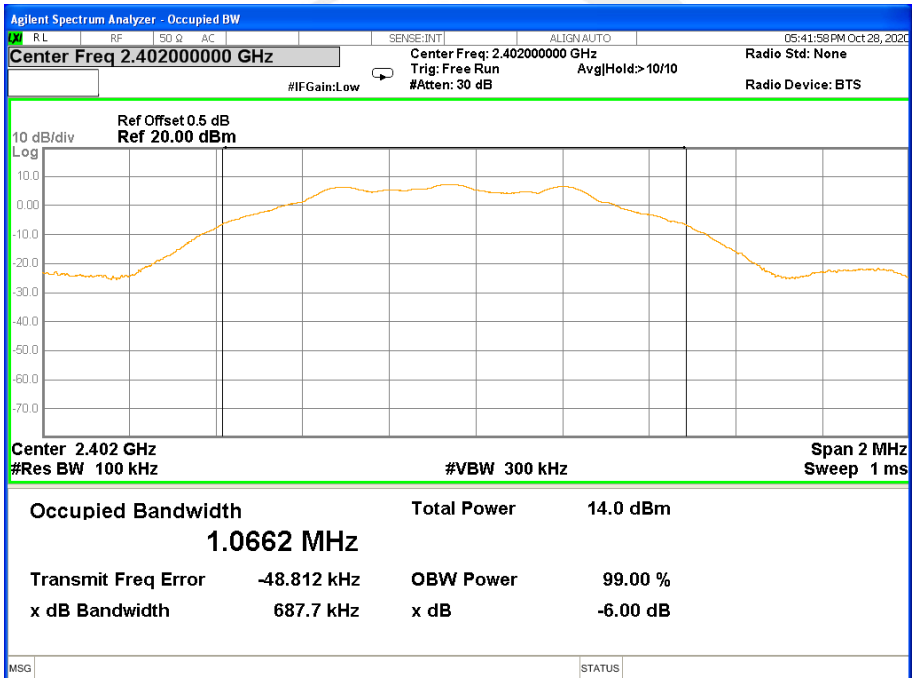
Please refer to section 3.4 of this report.

7.5 TEST RESULTS

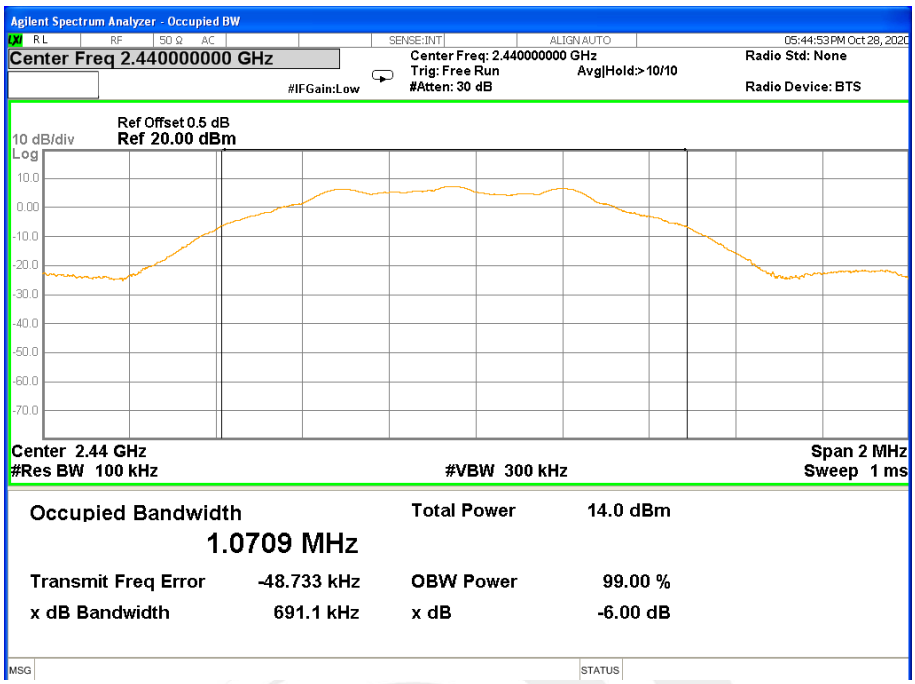
Temperature:	25 ℃	Relative Humidity:	60%
Test Voltage:	DC 3.3V	Test Mode:	TX Mode /CH00, CH19, CH39

Frequency	6dB Bandwidth (KHz)	Limit (KHz)	Result
2402 MHz	687.700	≥500KHz	PASS
2440 MHz	691.100	≥500KHz	PASS
2480 MHz	693.600	≥500KHz	PASS

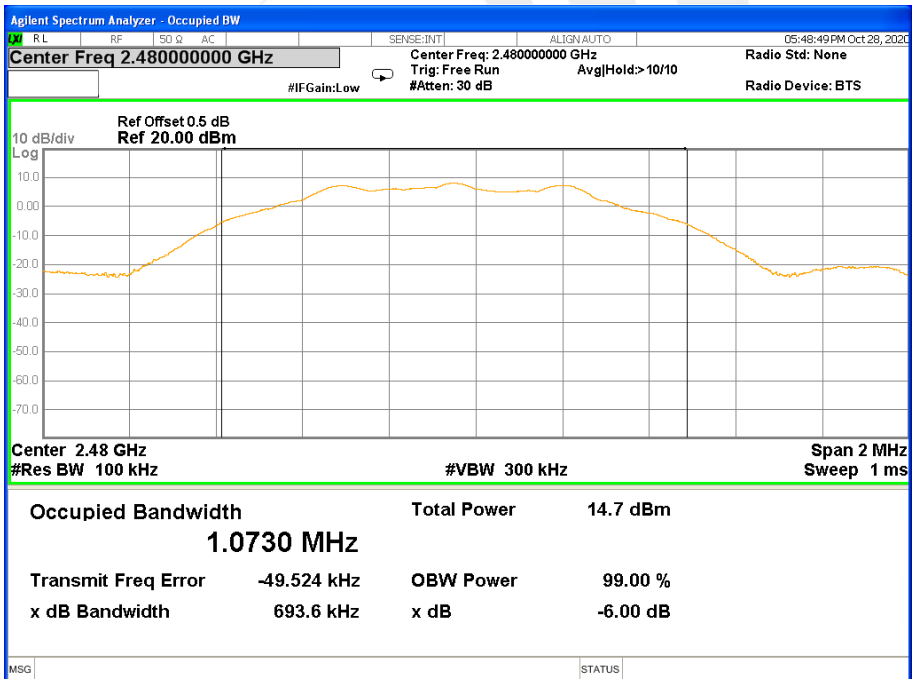
TX CH 00



TX CH 19



TX CH 39



8. PEAK OUTPUT POWER TEST

8.1 LIMIT

FCC Part 15.247,Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247(b)(3)	Output Power	1 watt or 30dBm	2400-2483.5	PASS

8.2 TEST PROCEDURE

One of the following procedures may be used to determine the maximum peak conducted output power of a DTS EUT.

RBW ≥ DTS bandwidth

The following procedure shall be used when an instrument with a resolution bandwidth that is greater than the DTS bandwidth is available to perform the measurement:

a) Set the RBW ≥ DTS bandwidth.
b) Set VBW ≥ [3 × RBW].
c) Set span ≥ [3 × RBW].
d) Sweep time = auto couple.
e) Detector = peak.
f) Trace mode = max hold.
g) Allow trace to fully stabilize.
h) Use peak marker function to determine the peak amplitude level.

Integrated band power method:

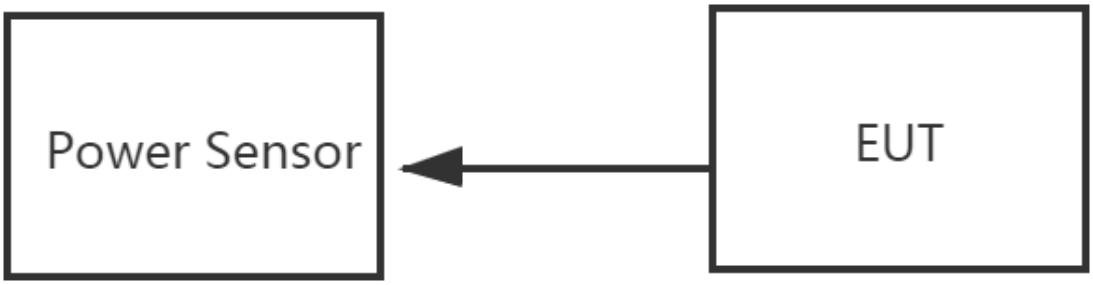
The following procedure can be used when the maximum available RBW of the instrument is less than the
DTS bandwidth:

a) Set the RBW = 1 MHz.
b) Set the VBW ≥ [3 × RBW].
c) Set the span ≥ [1.5 × DTS bandwidth].
d) Detector = peak.
e) Sweep time = auto couple.
f) Trace mode = max hold.
g) Allow trace to fully stabilize.
h) Use the instrument's band/channel power measurement function with the band limits set equal to the DTS bandwidth edges (for some instruments, this may require a manual override to select the peak detector). If the instrument does not have a band power function, then sum the spectrum levels (in linear power units) at intervals equal to the RBW extending across the DTS channel bandwidth.

PKPM1 Peak power meter method:

The maximum peak conducted output power may be measured using a broadband peak RF power meter. The power meter shall have a video bandwidth that is greater than or equal to the DTS bandwidth and shall use a fast-responding diode detector.

8.3 TEST SETUP



8.4 EUT OPERATION CONDITIONS

Please refer to section 3.4 of this report.

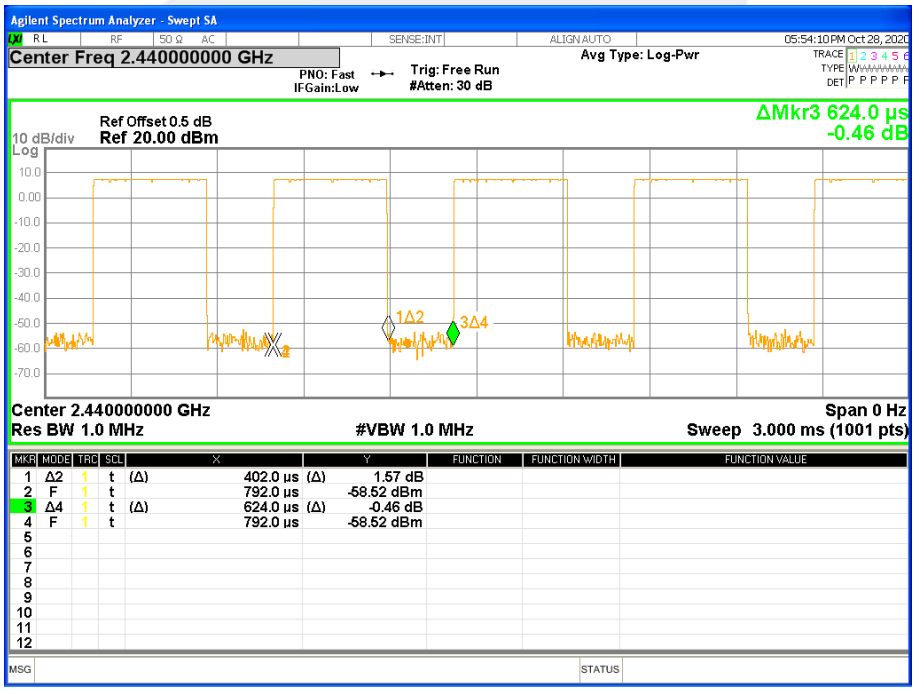
8.5 TEST RESULTS

Temperature:	25 ℃	Relative Humidity:	60%
Test Voltage:	DC 3.3V	Test Mode:	TX Mode /CH00, CH19, CH39

Test Channe	Frequency	Peak Conducted Output Power	Average Conducted Output Power	LIMIT
	(MHz)	(dBm)	(dBm)	dBm
CH0	2402	7.60	5.50	30
CH19	2440	7.87	5.80	30
CH39	2480	8.73	6.49	30

Note: Our power sensor test AVG power has no duty cycle display. The power sensor measures AVG power is Burst power. The software has considered the factor of the duty cycle factor, so it is unnecessary to add it again.

Duty cycle



Ton	Tp	Duty cycle(%)	Duty factor(dB)
0.402	0.624	64.42%	1.91

9. ANTENNA REQUIREMENT

9.1 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.

9.2 EUT ANTENNA

The EUT antenna is Chip Antenna. It comply with the standard requirement.

10. EUT TEST PHOTO

Note: See test photos in setup photo document for the actual connections between Product and support equipment.

※※※※※END OF THE REPORT※※※※※