

7. 6dB Bandwidth Test

7.1. Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Spectrum	Agilent	N9030A	MY51380221	Sep.20,17	1 Year
2.	Attenuator (20dB)	Agilent	8491B	MY39262165	Apr.27,17	1 Year
3.	RF Cable	Marvelous Microwave Inc	SFL402105FLEX	No.1	Oct.15,17	1 Year

7.2. Limit

For direct sequence systems, the minimum 6dB bandwidth shall be at least 500kHz

7.3. Test Procedure

The transmitter output was connected to a spectrum analyzer, The bandwidth of the fundamental frequency was measured by spectrum analyzer with 100kHz RBW and 300kHz VBW. The 6dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 6dB.

7.4. Test Results

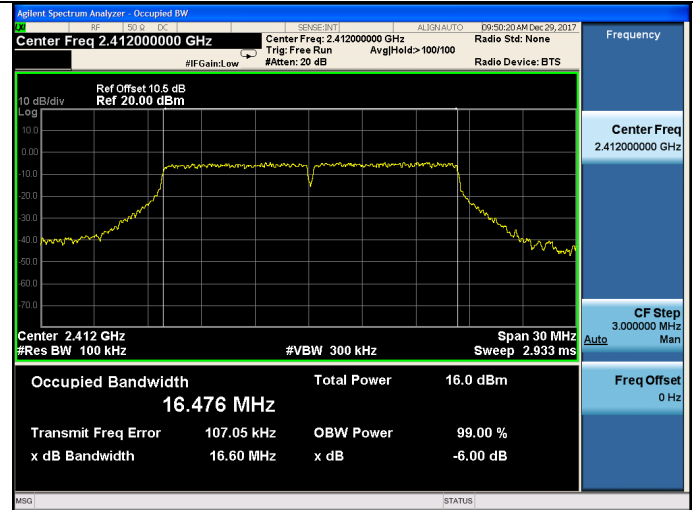
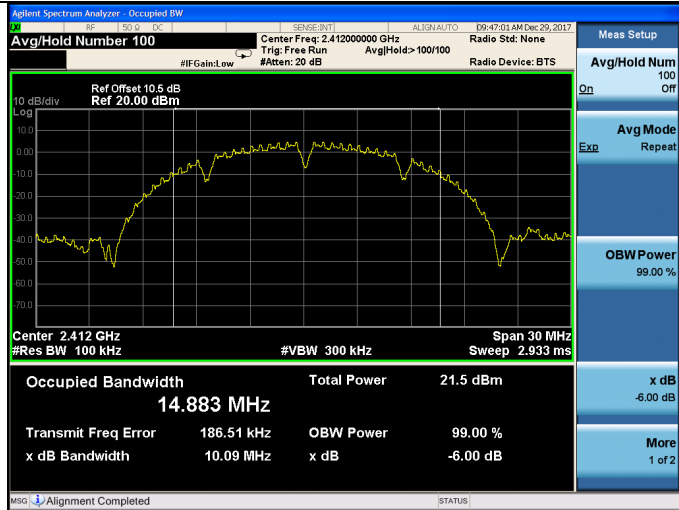
EUT: Yi Mini Dash Camera; Mini Dash Camera		
M/N: YCS.1B18		
Test date: 2017-12-29	Pressure: 102.8±1.0 kpa	Humidity: 52.3±3.0%
Tested by: Lynn	Test site: RF site	Temperature: 22.8±0.6 °C

Test Mode	CH	-6dB bandwidth (MHz)	Limit (KHz)
11b	CH1	10.09	>500
	CH6	10.07	>500
	CH11	10.05	>500
11g	CH1	16.60	>500
	CH6	16.59	>500
	CH11	16.59	>500
11n HT20	CH1	17.81	>500
	CH6	17.82	>500
	CH11	17.81	>500
11n HT40	CH3	36.36	>500
	CH6	36.40	>500
	CH9	36.21	>500

Conclusion : PASS

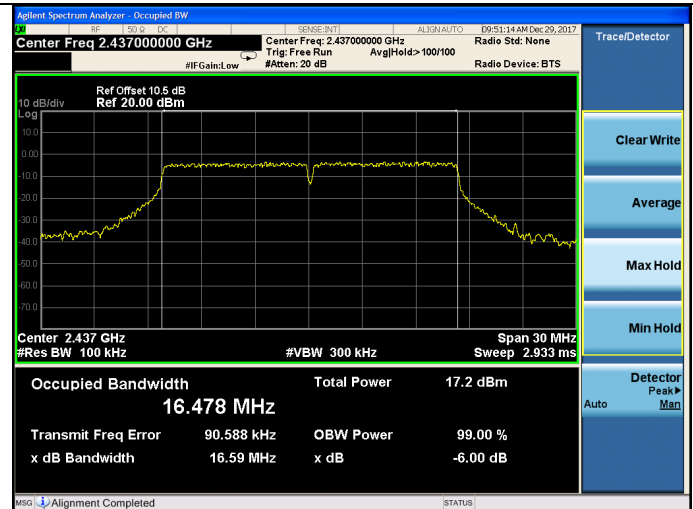
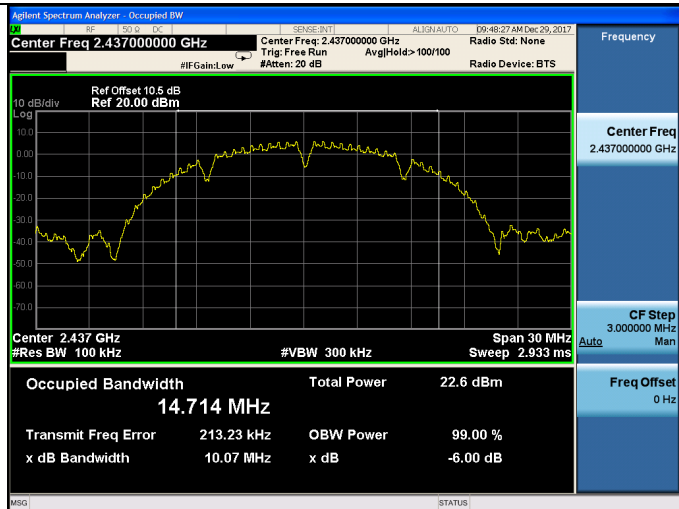
Test Mode: IEEE 802.11b
Test CH1: 2412MHz

Test Mode: IEEE 802.11g
Test CH1: 2412MHz



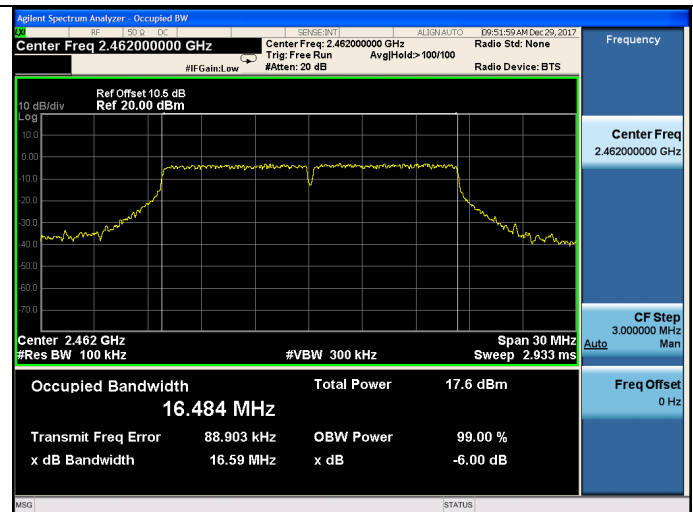
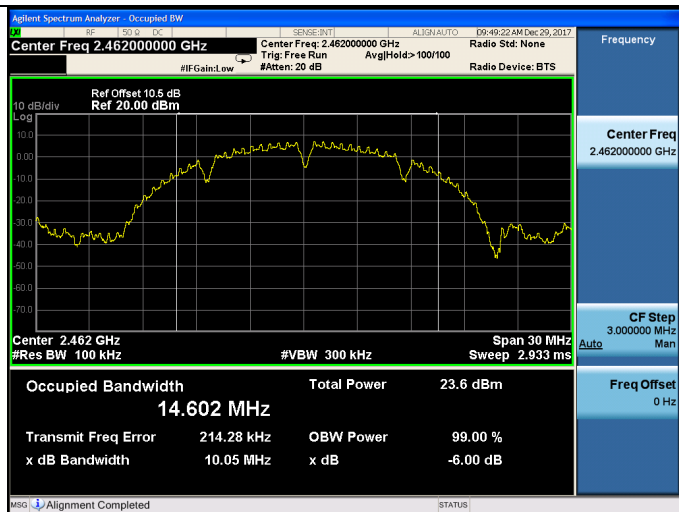
Test CH6: 2437MHz

Test CH6: 2437MHz



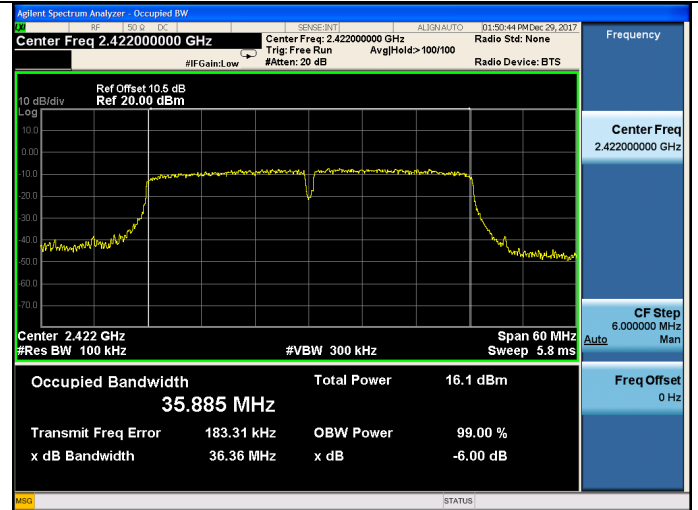
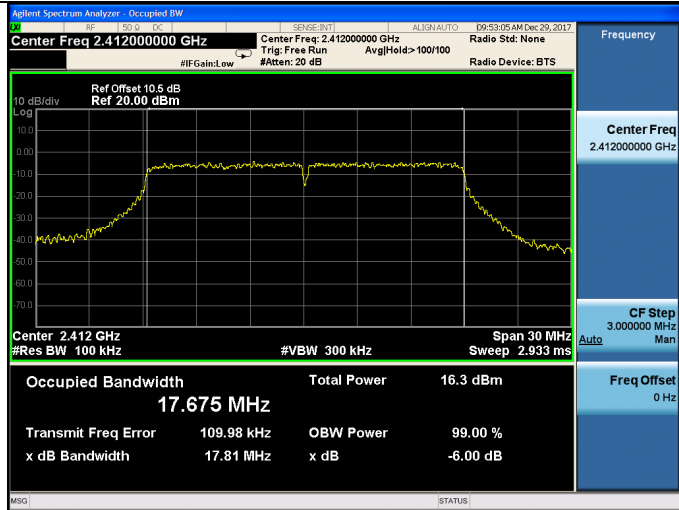
Test CH11: 2462MHz

Test CH11: 2462MHz



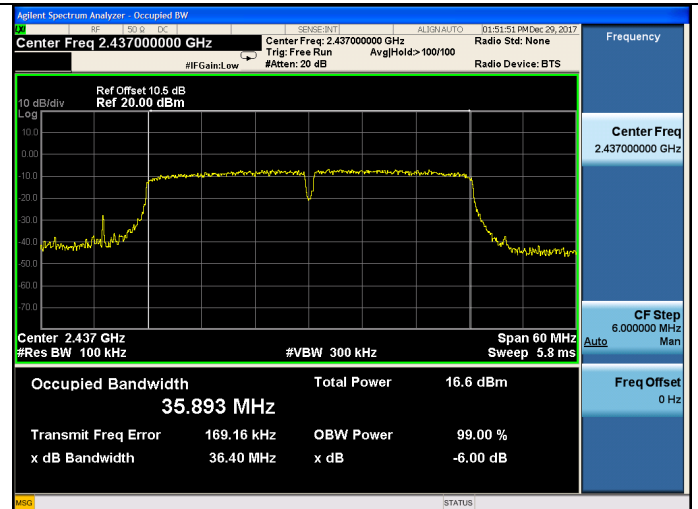
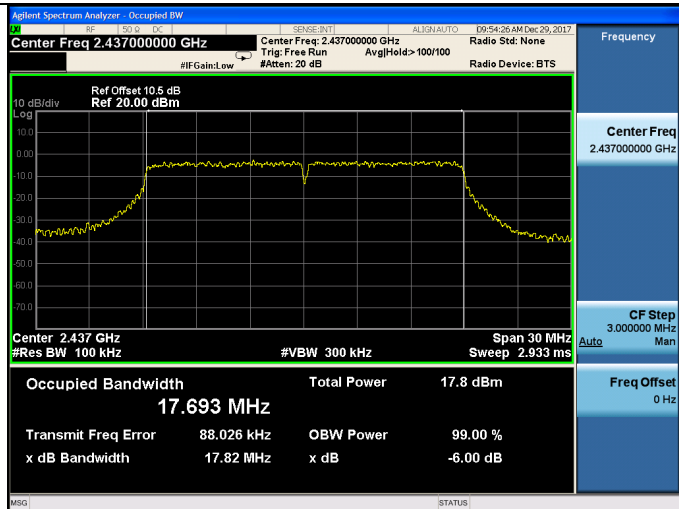
Test Mode: IEEE 802.11n HT20
Test CH1: 2412MHz

Test Mode: IEEE 802.11 HT40
Test CH3: 2422MHz



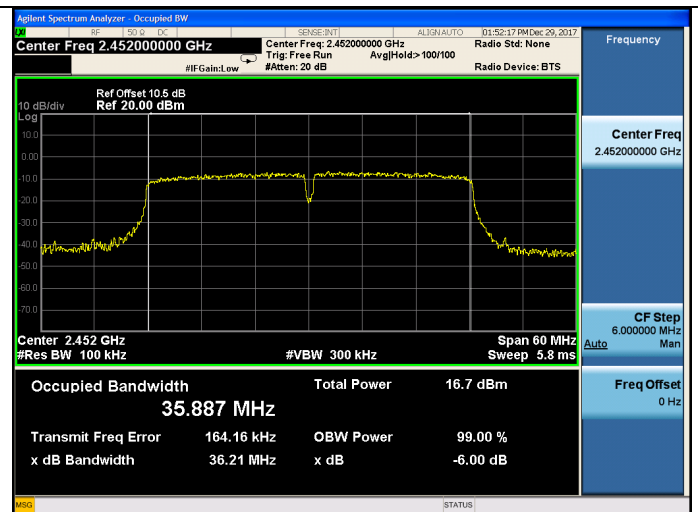
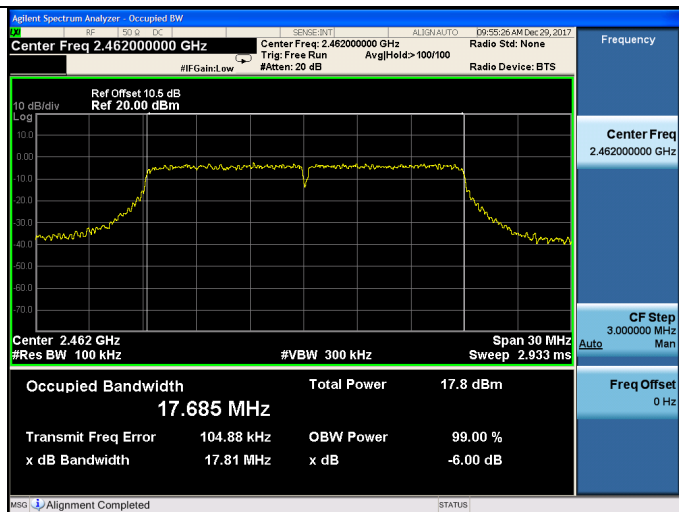
Test CH6: 2437MHz

Test CH6: 2437MHz



Test CH11: 2462MHz

Test CH9: 2452MHz



8. OUTPUT POWER TEST

8.1. Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Spectrum	Agilent	N9030A	MY51380221	Sep.20,17	1 Year
2.	Power meter	Anritsu	ML2487A	6K00002472	Apr.22,17	1 Year
3.	Power sensor	Anritsu	MA2491A	0033005	Apr.22,17	1 Year
4.	Attenuator (20dB)	Agilent	8491B	MY39262165	Apr.22,17	1 Year
5.	RF Cable	Marvelous Microwave Inc	SFL402105FLEX	No.1	Oct.15,17	1 Year

8.2. Limit (FCC Part 15C 15.247 b(3))

For systems using digital modulation in the 2400—2483.5MHz, The Peak output Power shall not exceed 1W(30dBm), 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.

8.3. Test Procedure

- 1, Connected the EUT’s antenna port to measure device by 20dB attenuator.
- 2, Use the test method described in KDB558074 clause 9.2.2.
 - 1) Set span to at least 1.5 OBW.
 - 2) Set RBW = 1 % to 5 % of the OBW, not to exceed 1 MHz.
 - 3) Set VBW \geq 3 RBW.
 - 4) Number of points in sweep \geq 2 span / RBW.
 - 5) Sweep time = auto.
 - 6) Detector = RMS (i.e., power averaging), if available. Otherwise, use sample detector mode.
 - 7) If transmit duty cycle < 98 %, use a sweep trigger with the level set to enable triggering only on full power pulses. The transmitter shall operate at maximum power control level for the entire 558074 D01 DTS Meas Guidance v04 Page 8 duration of every sweep. If the EUT transmits continuously or at duty cycle \geq 98 %, and if each transmission is entirely at the maximum power control level, then the trigger shall be set to “free run”.
 - 8) Trace average at least 100 traces in power averaging mode.
 - 9) Compute power by integrating the spectrum across the OBW of the signal using the instrument’s band power measurement function, with band limits set equal to the OBW band edges. If the instrument does not have a band power function, sum the spectrum levels (in power units) at intervals equal to the RBW extending across the entire OBW of the spectrum.

Note: The cable loss and attenuator loss were offset into measure device as an amplitude offset.

8.4. Test Results

EUT: Yi Mini Dash Camera; Mini Dash Camera			
M/N: YCS.1B18			
Test date: 2017-12-29		Pressure: 102.8±1.0 kpa	Humidity: 52.3±3.0%
Tested by: Lynn		Test site: RF site	Temperature: 22.8±0.6 °C
Test Mode	CH	output Power (dBm)	Limit (dBm)
11b	CH1	15.24	30
	CH6	15.99	30
	CH11	16.84	30
11g	CH1	11.91	30
	CH6	12.11	30
	CH11	12.70	30
11n HT20	CH1	10.92	30
	CH6	11.31	30
	CH11	11.69	30
11n HT40	CH3	10.36	30
	CH6	10.90	30
	CH9	10.93	30
Conclusion: PASS			

Test Mode: IEEE 802.11b
Test CH1: 2412MHz

Test CH1: 2462MHz

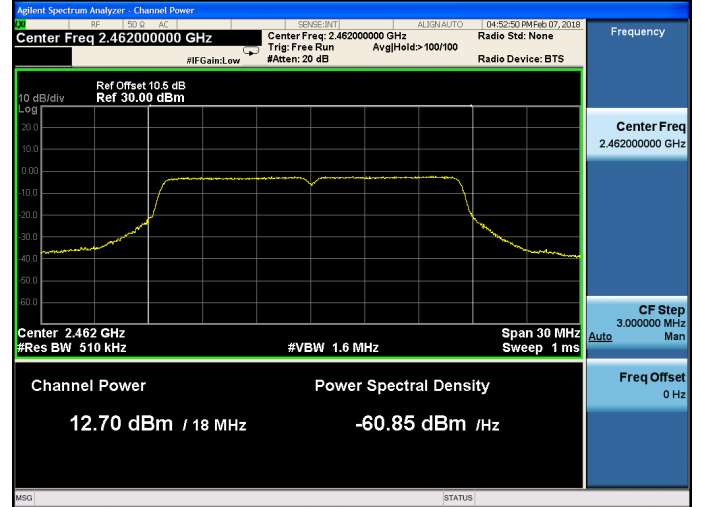
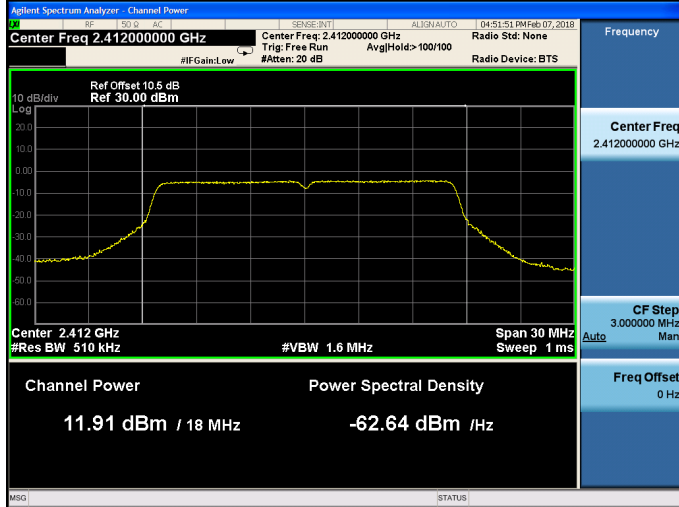


Test CH6: 2437MHz

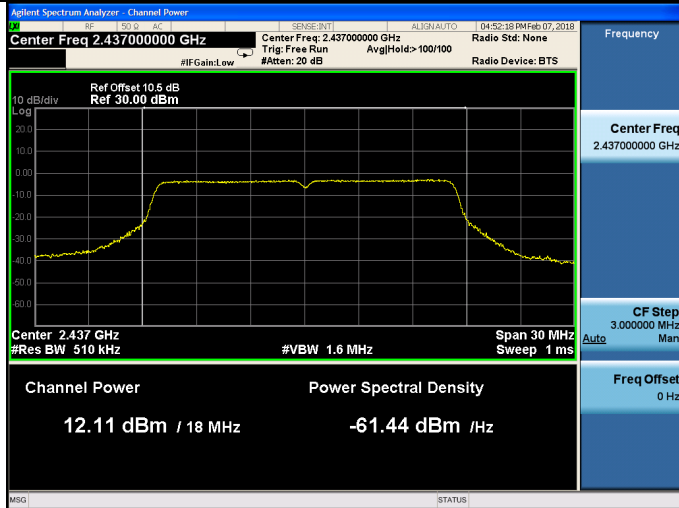


Test Mode: IEEE 802.11g
Test CH3: 2412MHz

Test CH9: 2462MHz

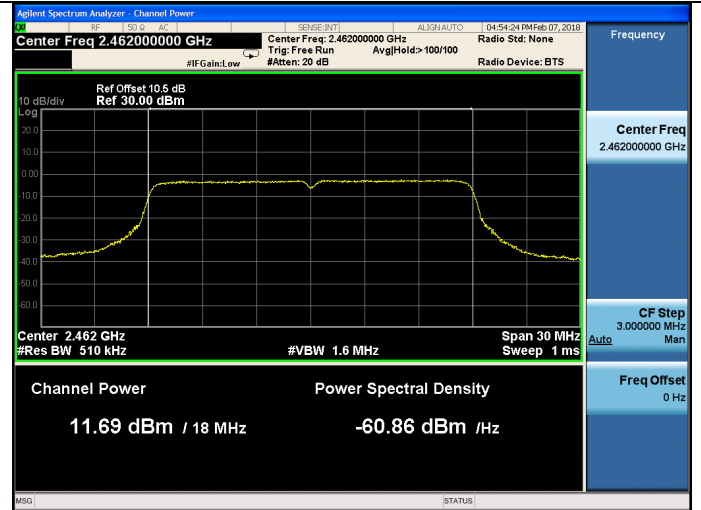
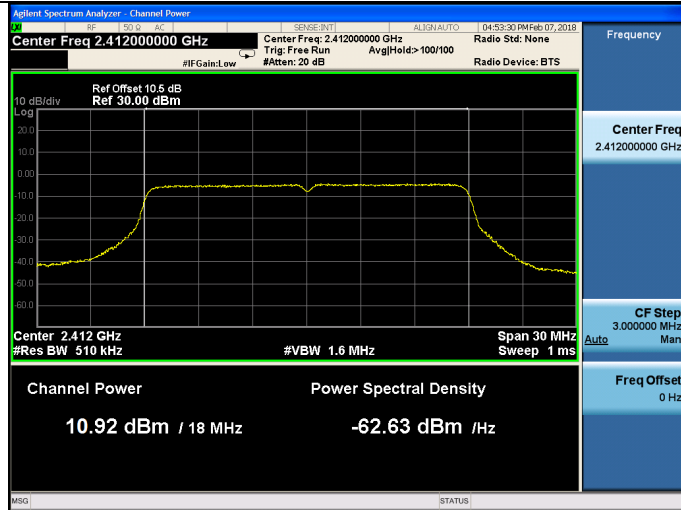


Test CH6: 2437MHz

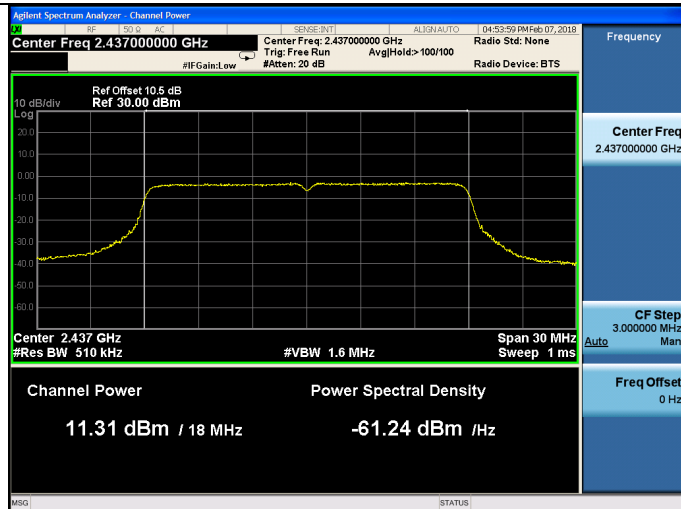


Test Mode: IEEE 802.11n HT20
 Test CH3: 2412MHz

Test CH9: 2462MHz

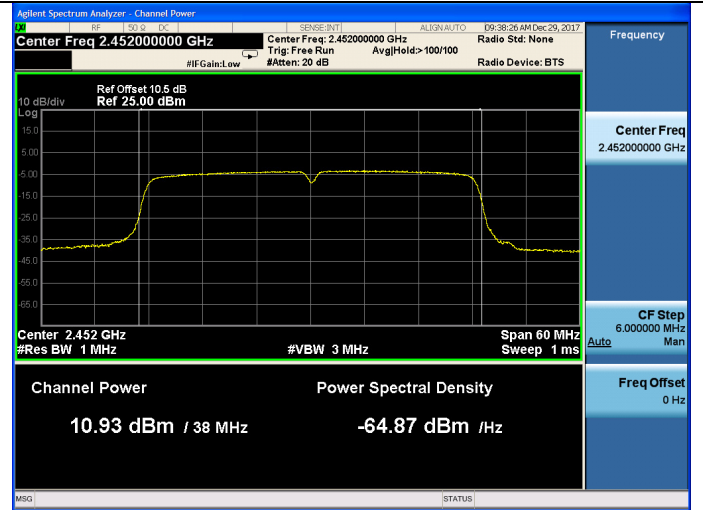
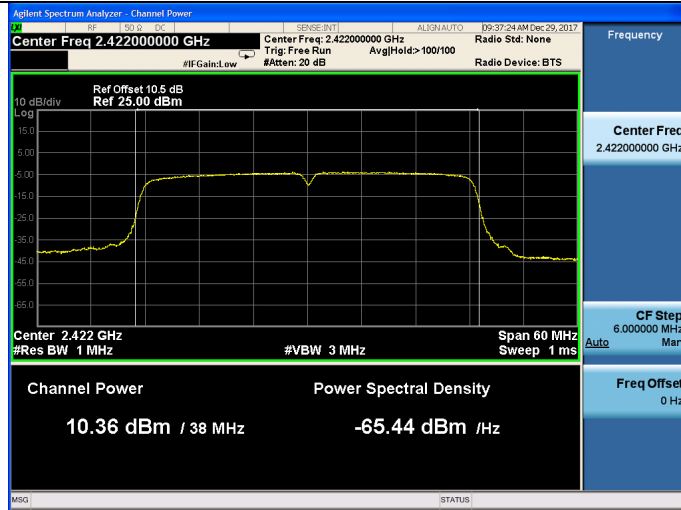


Test CH6: 2437MHz

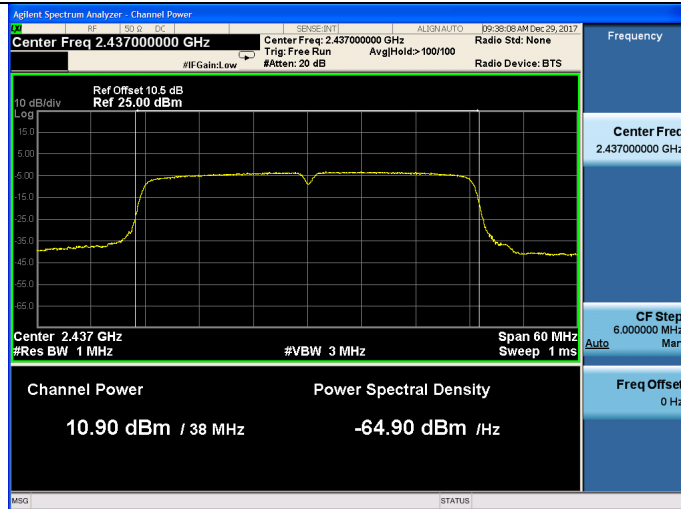


Test Mode: IEEE 802.11n HT40
 Test CH3: 2422MHz

Test CH9: 2452MHz



Test CH6: 2437MHz



9. POWER SPECTRAL DENSITY TEST

9.1. Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Spectrum	Agilent	N9030A	MY51380221	Sep.20,17	1 Year
2.	Attenuator (20dB)	Agilent	8491B	MY39262165	Apr.27,17	1 Year
3.	RF Cable	Marvelous Microwave Inc	SFL402105FLEX	No.1	Oct.15,17	1 Year

9.2. Limit

For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8dBm in any 3kHz band during any time interval of continuous transmission.

9.3. Test Procedure

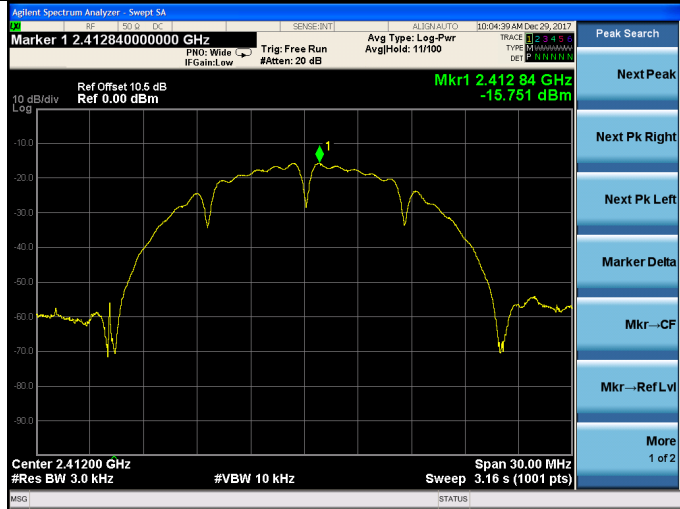
1. Connected the EUT's antenna port to spectrum analyzer device by 20dB attenuator.
2. Set span to 1.5 times the DTS Bandwidth.
3. Set the RBW=3KHz, VBW=10KHz.
4. Detector=peak, Sweep time=Auto, Trace mode=max Hold
5. All the trace to fully stabilize.
6. Use the peak marker function to determine the maximum amplitude level with in the RBW.

Note: The cable loss and attenuator loss were offset into measure device as an amplitude

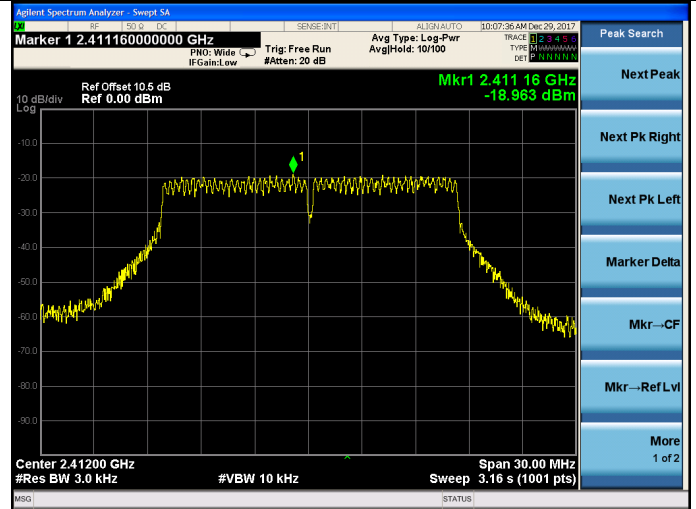
9.4. Test Results

EUT: Yi Mini Dash Camera; Mini Dash Camera			
M/N: YCS.1B18			
Test date: 2017-12-29		Pressure: 102.8±1.0 kpa	Humidity: 52.8±3.0%
Tested by: Lynn		Test site: RF site	Temperature: 22.4±0.6 °C
Test Mode	CH	Power Density (dBm/3KHz)	Limit (dBm/3KHz)
11b	CH1	-15.751	8
	CH6	-14.623	8
	CH11	-13.810	8
11g	CH1	-18.963	8
	CH6	-17.801	8
	CH11	-17.466	8
11n HT20	CH1	-18.342	8
	CH6	-17.678	8
	CH11	-17.020	8
11n HT40	CH3	-18.588	8
	CH6	-20.411	8
	CH9	-20.039	8
Conclusion: PASS			

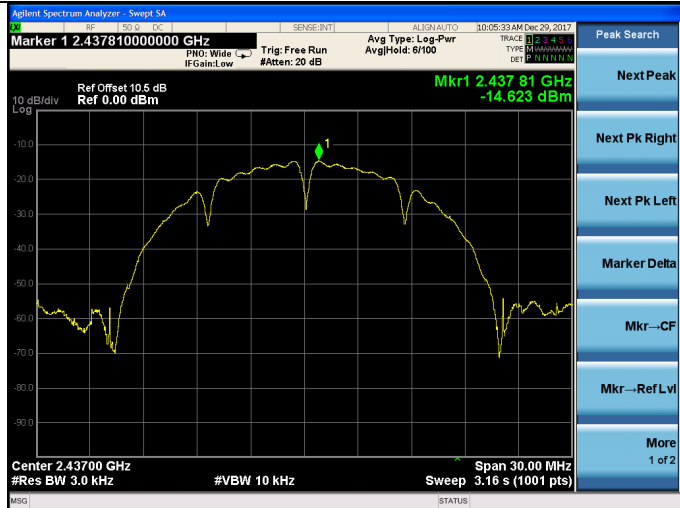
Test Mode: IEEE 802.11b
Test CH1: 2412MHz



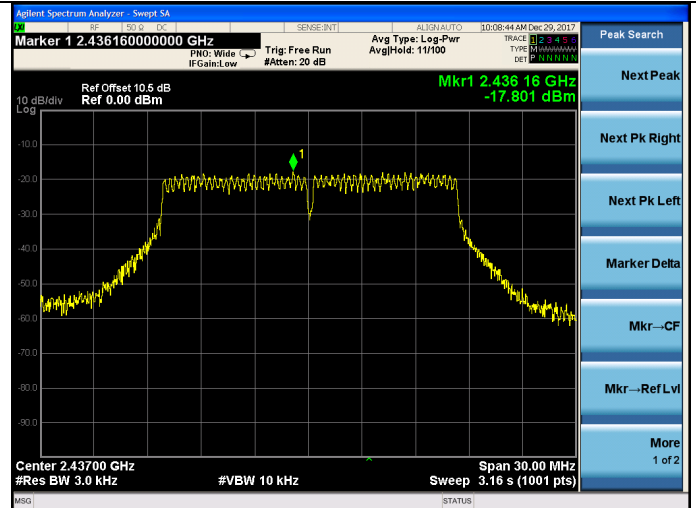
Test Mode: IEEE 802.11g
Test CH1: 2412MHz



Test CH6: 2437MHz



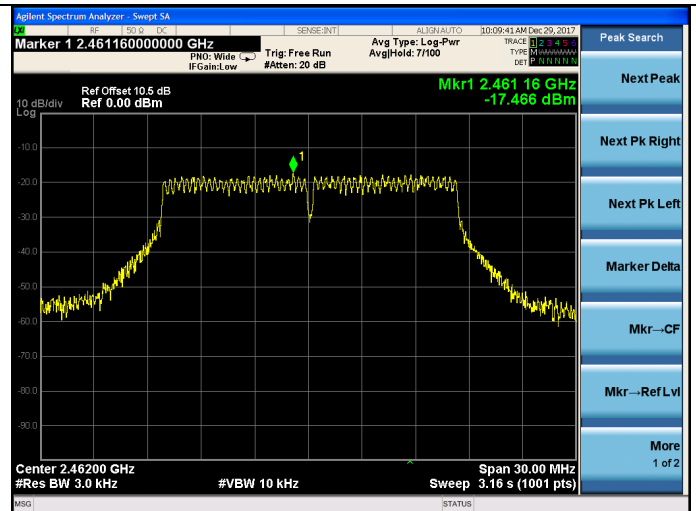
Test CH6: 2437MHz



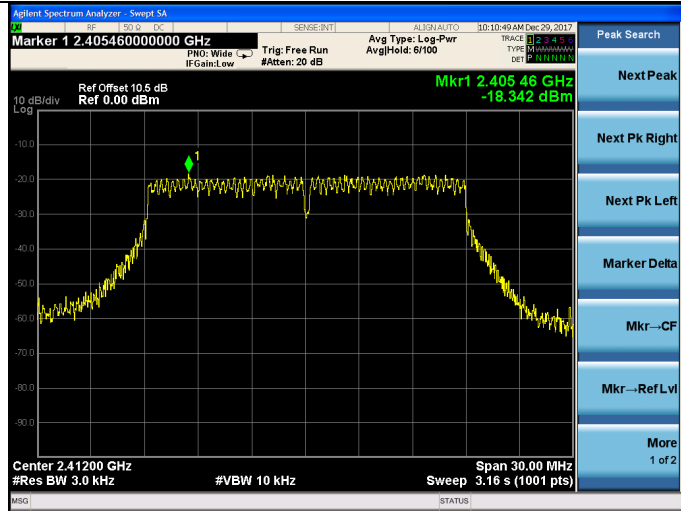
Test CH11: 2462MHz



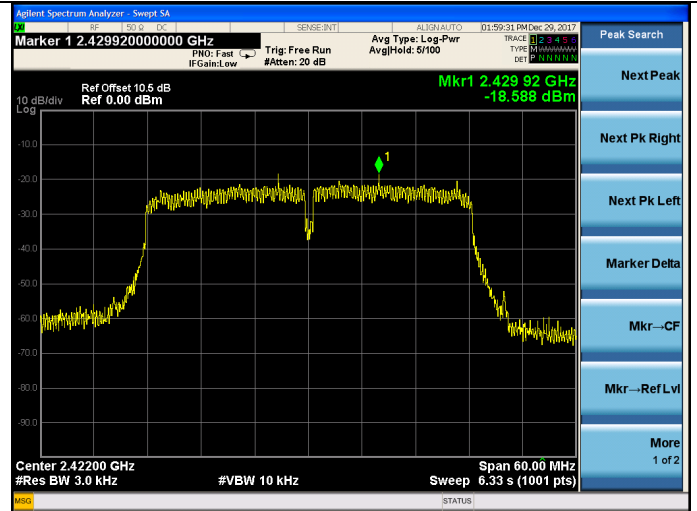
Test CH11: 2462MHz



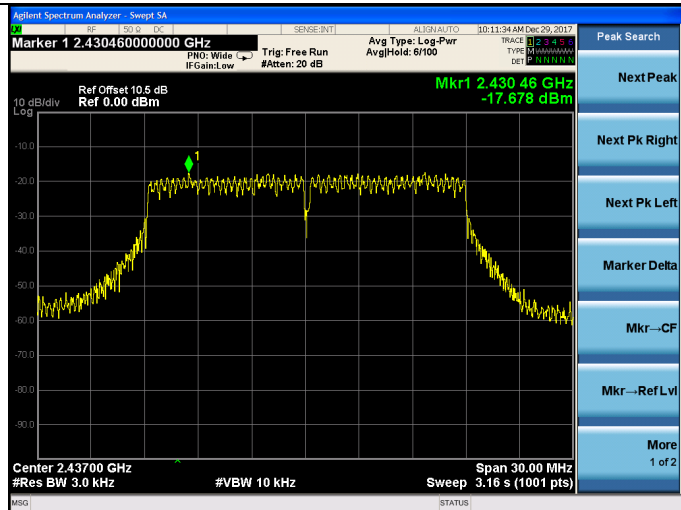
Test Mode: IEEE 802.11n HT20
Test CH1: 2412MHz



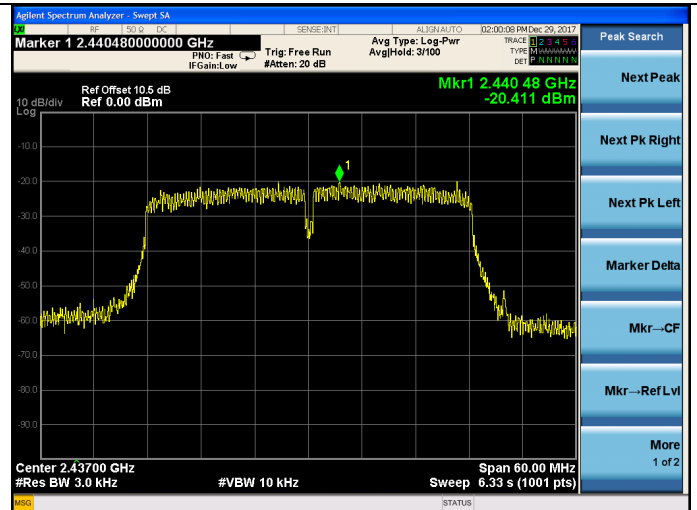
Test Mode: IEEE 802.11n HT40
Test CH3: 2422MHz



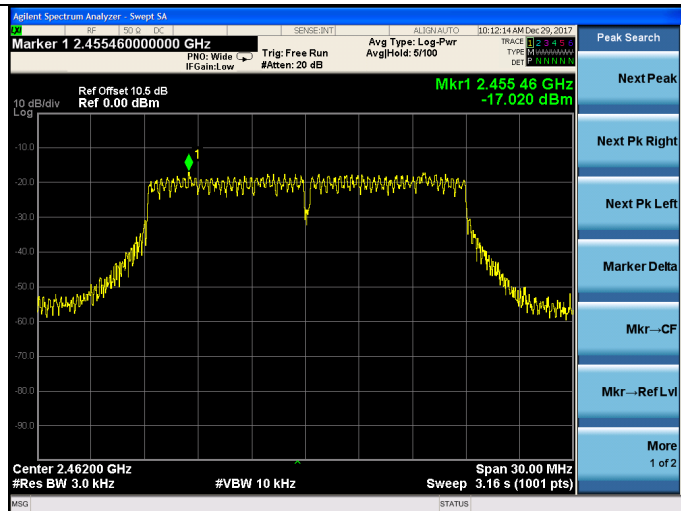
Test CH6: 2437MHz



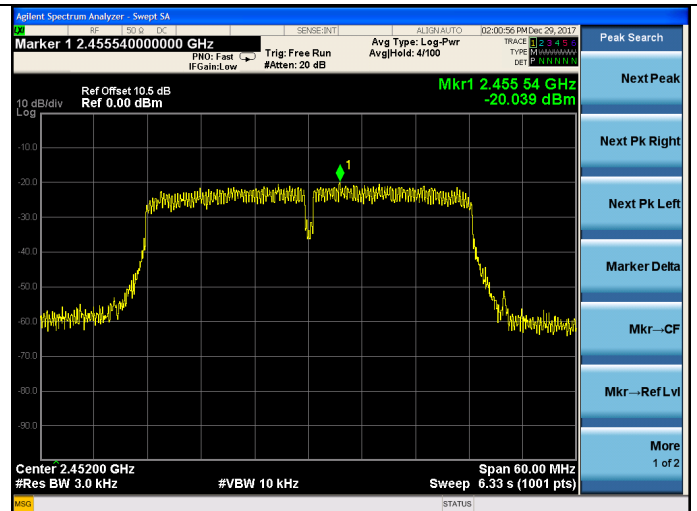
Test CH6: 2437MHz



Test CH11: 2462MHz



Test CH9: 2452MHz



10. MPE ESTIMATION

10.1.Limit for General Population/ Uncontrolled Exposures

Frequency	Power density (mW/cm2)	Averaging time(minutes)
300MHz----1.5GHz	F/1500	30
1.5GHz---100GHz	1.0	30

Frequency	Power density (mW/cm2)	Averaging time(minutes)
2412	1	30
2437	1	30
2462	1	30

Note: F= Frequency in MHz

10.2.Estimation Result

EUT: Yi Mini Dash Camera; Mini Dash Camera		
M/N: YCS.1B18		
Test date: 2017-12-29	Pressure: 102.8±1.0 kpa	Humidity: 52.3±3.0%
Tested by: Lynn	Test site: RF site	Temperature:22.8±0.6 °C

Test Mode	Frequency (MHz)	Peak Output Power (dBm)	Peak Output Power (mW)	Antenna Gain (dBi)	Antenna Gain (Linear)	MPE
11b	2412	15.24	33.42	1.72	1.49	0.0099
	2437	15.99	39.72	1.72	1.49	0.0117
	2462	16.84	48.31	1.72	1.49	0.0143
11g	2412	11.91	15.52	1.72	1.49	0.0046
	2437	12.11	16.26	1.72	1.49	0.0048
	2462	12.70	18.62	1.72	1.49	0.0055
11n HT20	2412	10.92	12.36	1.72	1.49	0.0037
	2437	11.31	13.52	1.72	1.49	0.0040
	2462	11.69	14.76	1.72	1.49	0.0044
11n HT40	2422	10.36	10.86	1.72	1.49	0.0032
	2437	10.9	12.30	1.72	1.49	0.0036
	2452	10.93	12.39	1.72	1.49	0.0037

$$MPE = \frac{PG}{4\pi R^2} \quad (R=20 \text{ cm})$$

11. ANTENNA REQUIREMENT

11.1. Standard Applicable

For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. And according to FCC 47 CFR Section 15.247 (b), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

11.2. Antenna Connected Construction

The antennas used for this product are Connector antenna that no antenna other than that furnished by the responsible party shall be used with the device, the maximum peak gain of the transmit antenna is 1.72dBi.

12.DEVIATION TO TEST SPECIFICATIONS

[NONE]