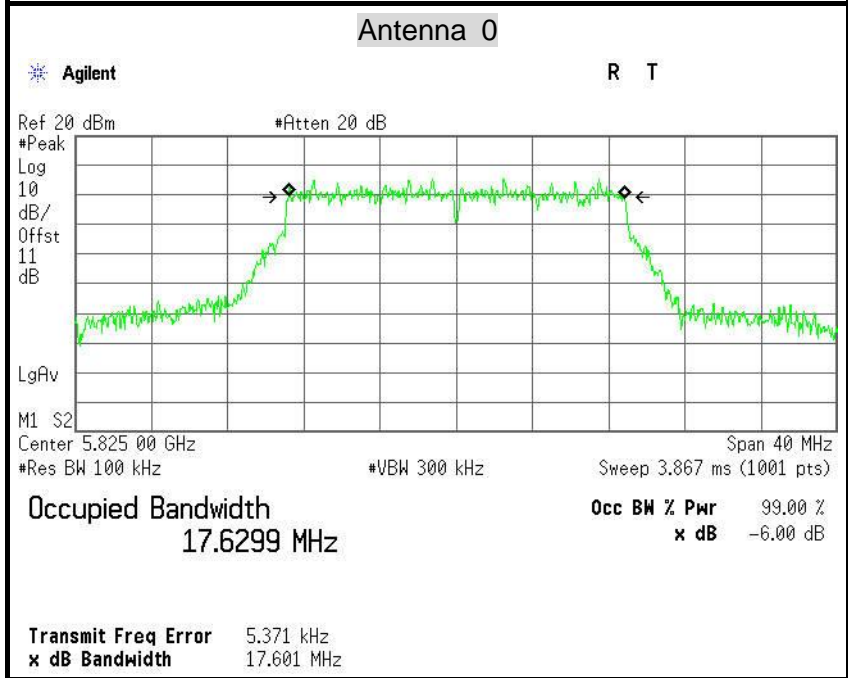


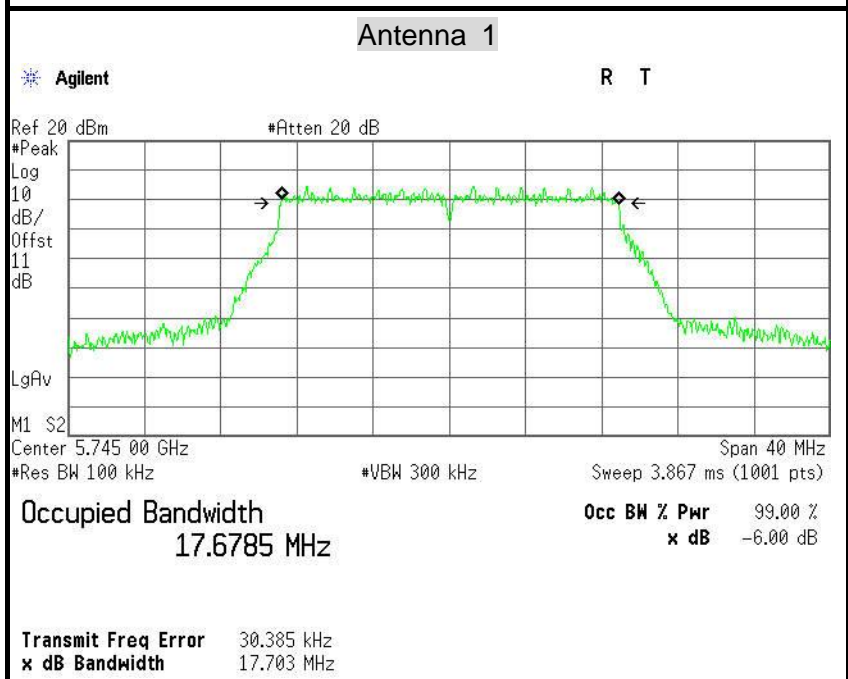


6dB Bandwidth (CH High)



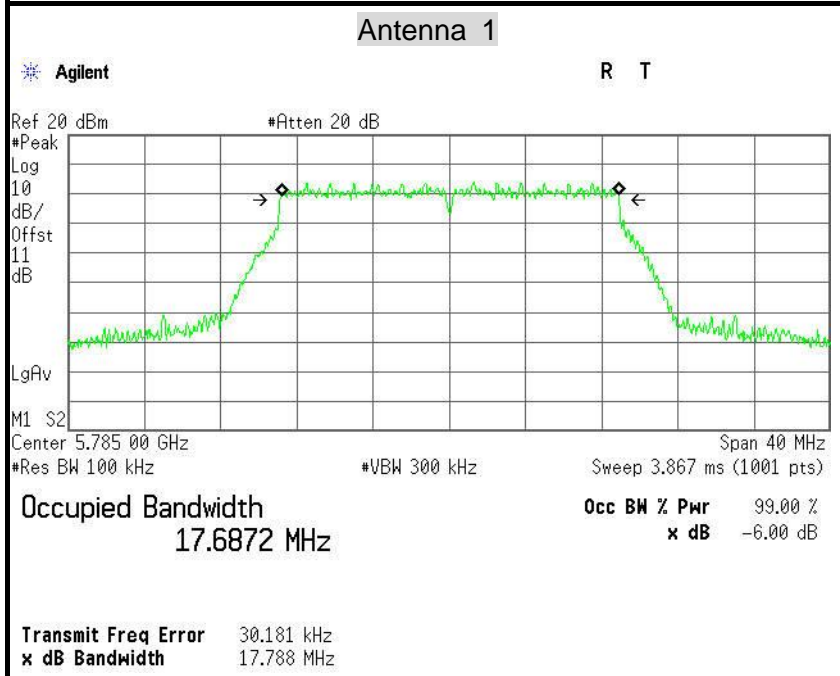
IEEE 802.11n HT 20 MHz mode / 5745 ~ 5825MHz

6dB Bandwidth (CH Low)

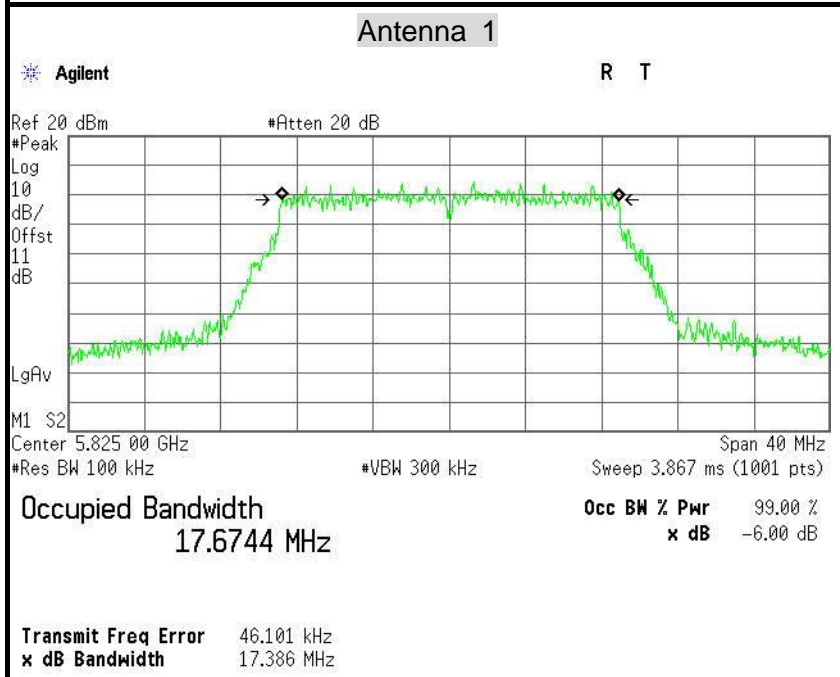


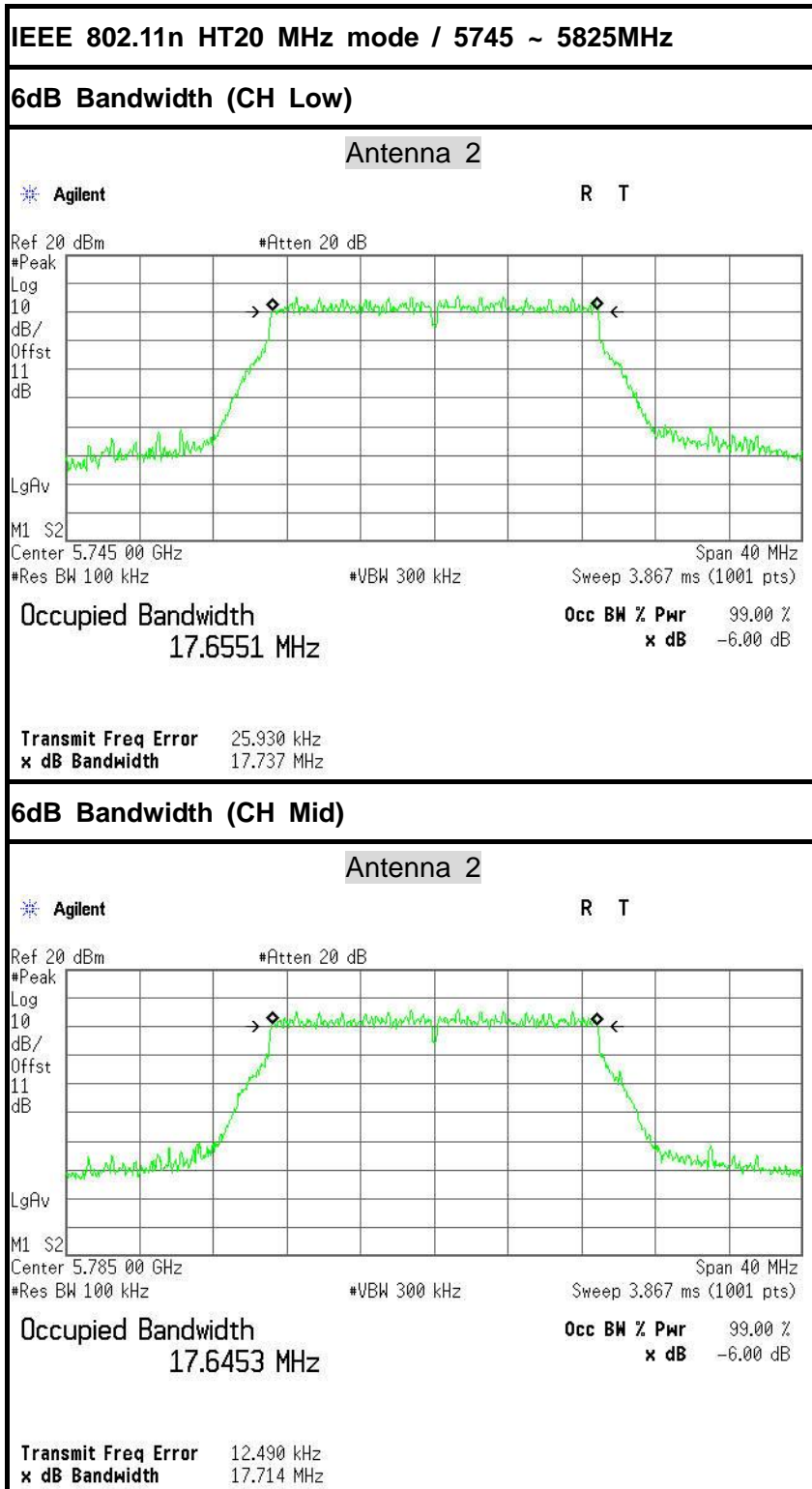


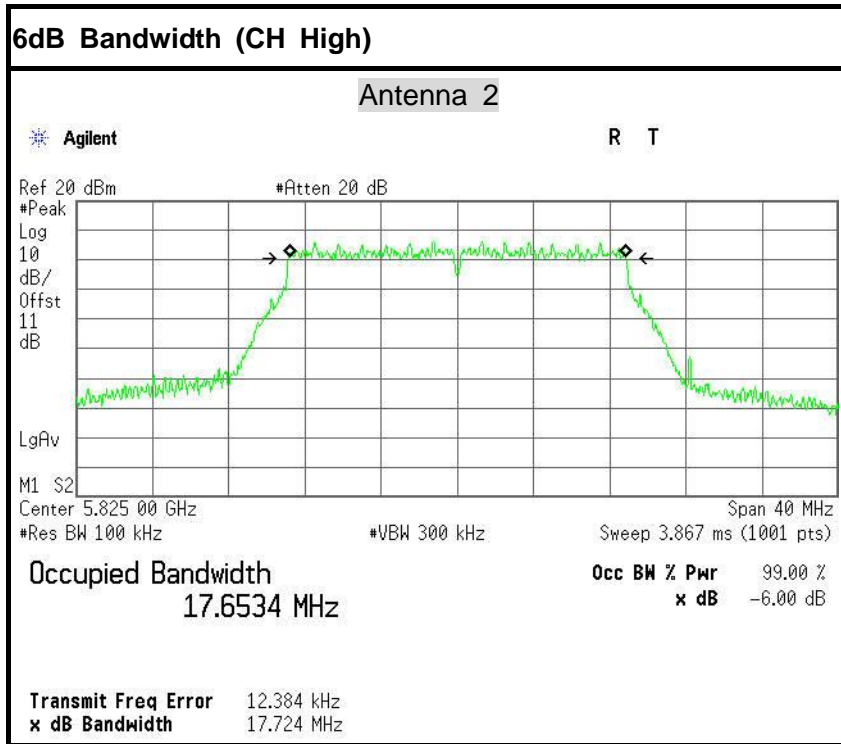
6dB Bandwidth (CH Mid)

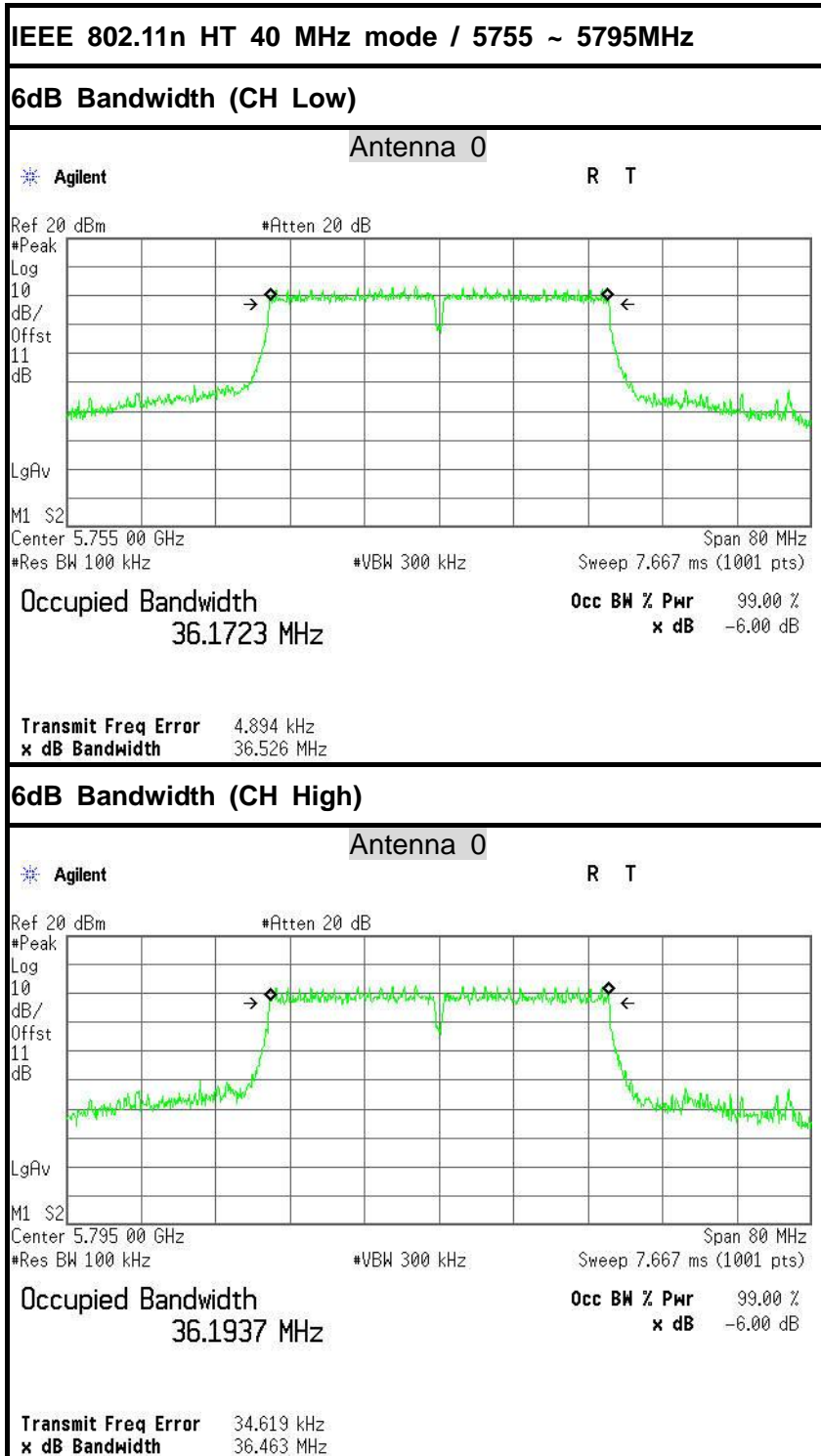


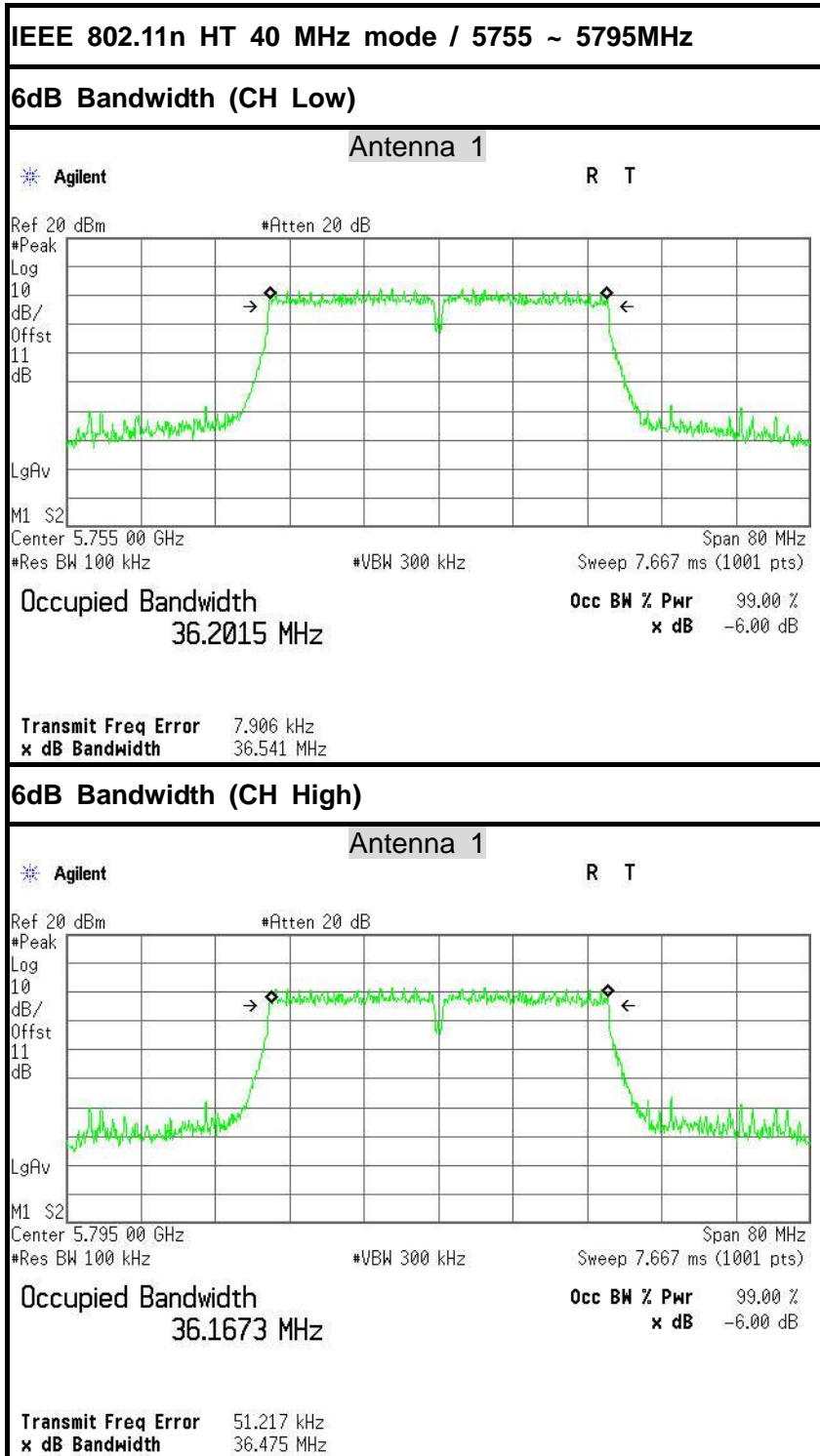
6dB Bandwidth (CH High)

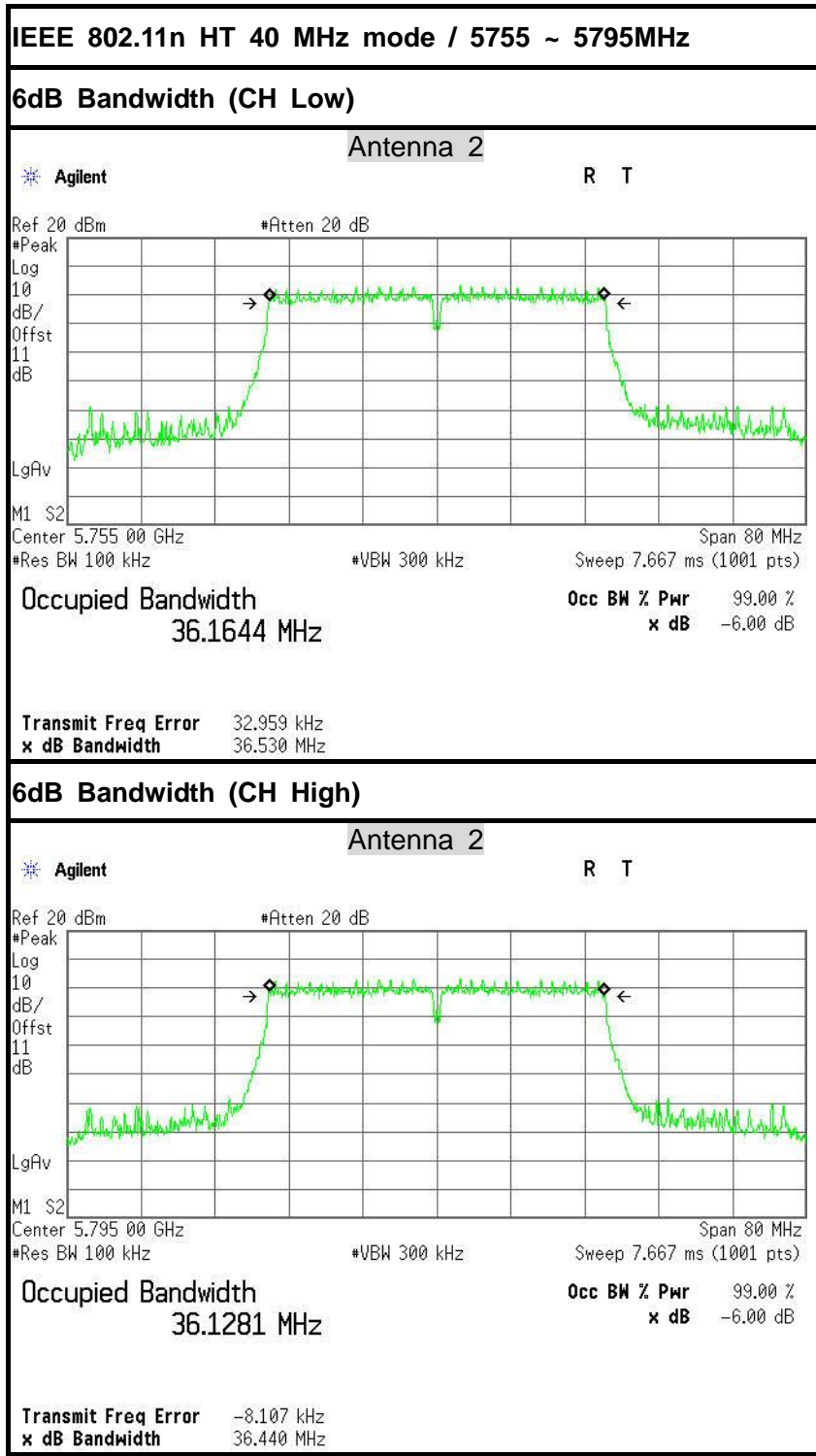


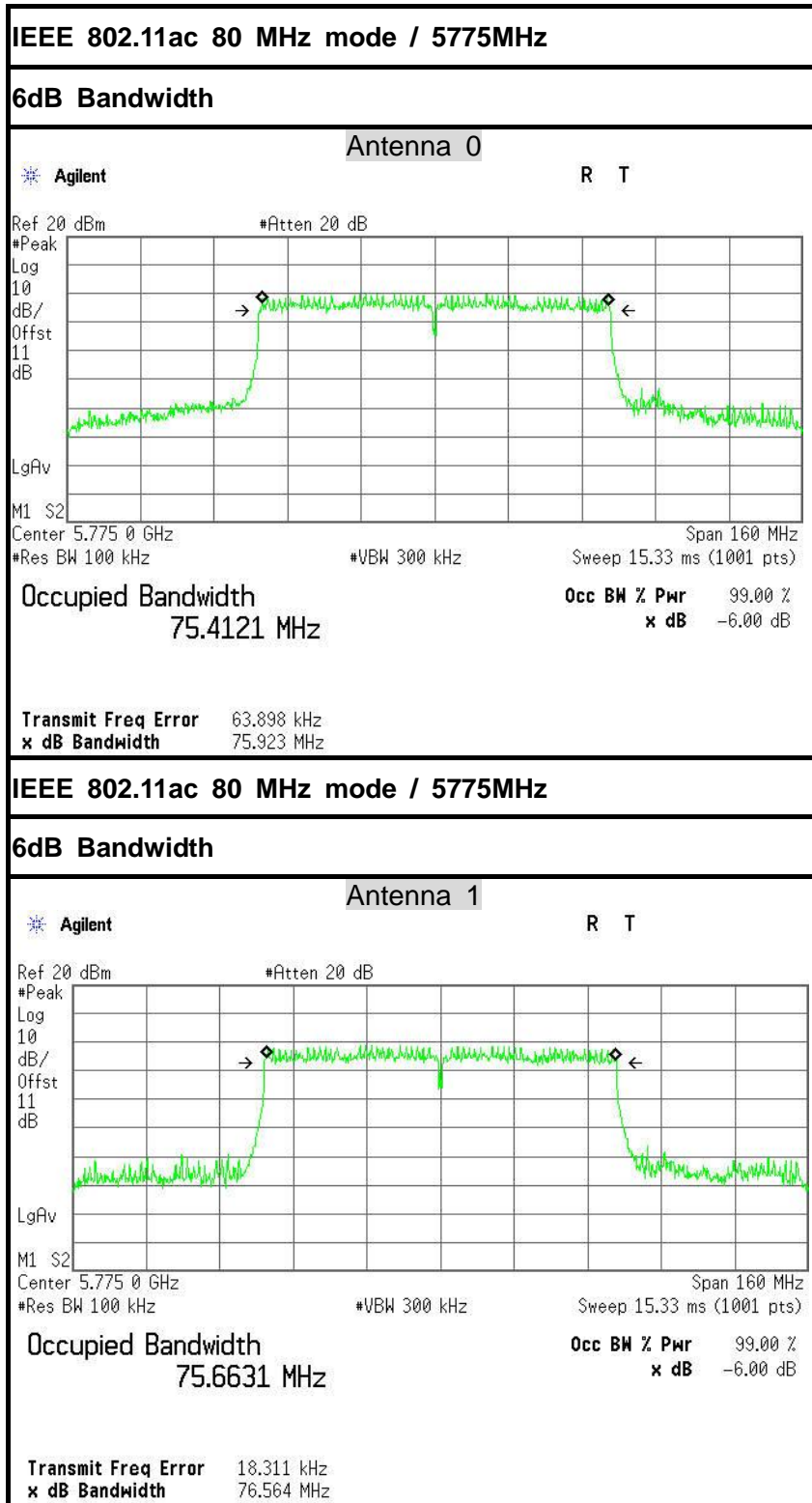


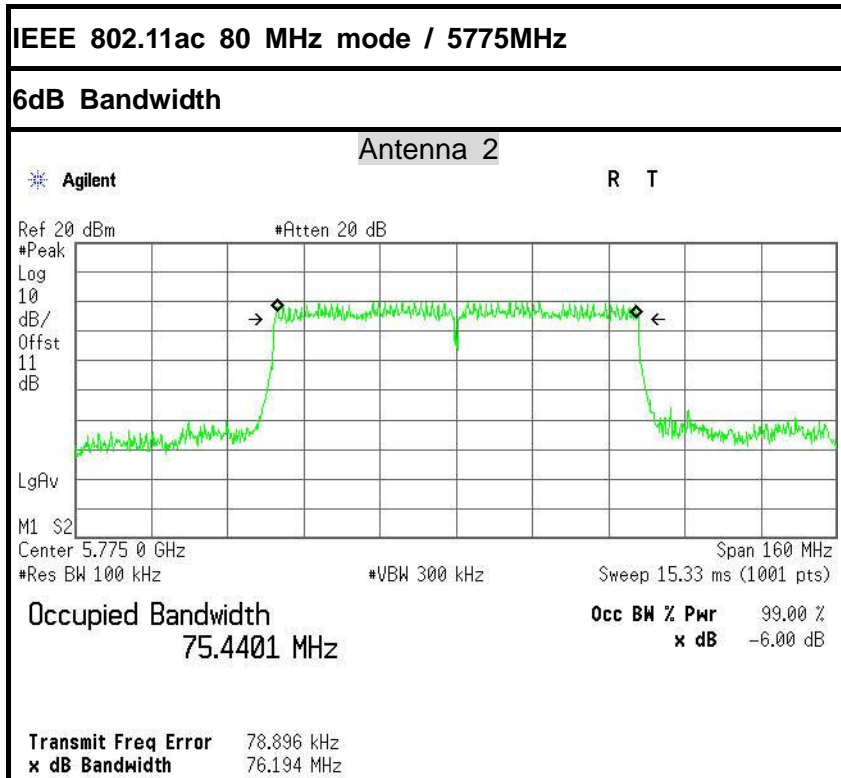














6.3 ANTENNA GAIN

MEASUREMENT

The antenna gain of the complete system is calculated by the difference of radiated power in EIRP and the conducted power of the module. For normal WLAN devices, the OFDM mode is used.

MEASUREMENT PARAMETERS

Measurement parameter	
Detector	Peak
Sweep time	Auto
Resolution bandwidth	3 MHz
Video bandwidth	3 MHz
Trace-Mode	Max hold

LIMITS

FCC	IC
Antenna Gain	
6 dBi	

TEST RESULTS

Please refer to the antenna report.



6.4 OUTPUT POWER

6.4.1 LIMIT

According to §15.407(a)& FCC R&O FCC 14 - 30,

(1) For the band 5.15-5.25 GHz.

(i) For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).

(ii) For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(iii) For fixed point-to-point access points operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power or maximum power spectral density. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power and maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

(iv) For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(2) For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or $11 \text{ dBm} + 10 \log B$, where B is the 26 dB emission bandwidth in megahertz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(3) For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall



not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

Note to paragraph (a)(3): The Commission strongly recommends that parties employing U-NII devices to provide critical communications services should determine if there are any nearby Government radar systems that could affect their operation.



Specified Limit of the Output Power

Test mode: IEEE 802.11a mode / 5260 ~ 5320MHz

Channel	Frequency (MHz)	26 dB Bandwidth (B) (MHz)		10*Log(B) (dB)		11 + 10*Log(B) (dBm)		Maximum Conducted Output Power Limit (dBm)	
		Antenna 0	Antenna 0	Antenna 0	Antenna 0	Antenna 0	Antenna 0	Antenna 0	Antenna 0
Low	5260	20.01	20.01	13.01	13.01	24.01	24.01	24.00	24.00
Mid	5300	20.46	20.46	13.11	13.11	24.11	24.11	24.00	24.00
High	5320	19.98	19.98	13.01	13.01	24.01	24.01	24.00	24.00

Channel	Frequency (MHz)	26 dB Bandwidth (B) (MHz)		10*Log(B) (dB)		11 + 10*Log(B) (dBm)		Maximum Conducted Output Power Limit (dBm)	
		Antenna 1	Antenna 2	Antenna 1	Antenna 2	Antenna 1	Antenna 2	Antenna 1	Antenna 2
Low	5260	20.17	20.42	13.05	13.10	24.05	24.10	24.00	24.00
Mid	5300	19.86	19.95	12.98	13.00	23.98	24.00	23.98	24.00
High	5320	20.14	19.87	13.04	12.98	24.04	23.98	24.00	23.98

Test mode: IEEE 802.11a mode / 5500 ~ 5700MHz

Channel	Frequency (MHz)	26 dB Bandwidth (B) (MHz)		10*Log(B) (dB)		11 + 10*Log(B) (dBm)		Maximum Conducted Output Power Limit (dBm)	
		Antenna 0	Antenna 0	Antenna 0	Antenna 0	Antenna 0	Antenna 0	Antenna 0	Antenna 0
Low	5500	20.42	20.42	13.10	13.10	24.10	24.10	24.00	24.00
Mid	5580	19.90	19.90	12.99	12.99	23.99	23.99	23.99	23.99
High	5700	20.51	20.51	13.12	13.12	24.12	24.12	24.00	24.00

Channel	Frequency (MHz)	26 dB Bandwidth (B) (MHz)		10*Log(B) (dB)		11 + 10*Log(B) (dBm)		Maximum Conducted Output Power Limit (dBm)	
		Antenna 1	Antenna 2	Antenna 1	Antenna 2	Antenna 1	Antenna 2	Antenna 1	Antenna 2
Low	5500	20.09	20.47	13.03	13.11	24.03	24.11	24.00	24.00
Mid	5580	20.26	20.47	13.07	13.11	24.07	24.11	24.00	24.00
High	5700	20.04	20.19	13.02	13.05	24.02	24.05	24.00	24.00



Test mode: IEEE 802.11n HT 20 MHz mode / 5260 ~ 5320MHz

Channel	Frequency (MHz)	26 dB Bandwidth (B) (MHz)	10*Log(B) (dB)	11 + 10*Log(B) (dBm)	Maximum Conducted Output Power Limit (dBm)
		Antenna 0	Antenna 0	Antenna 0	Antenna 0
Low	5260	20.36	13.09	24.09	24.00
Mid	5300	20.44	13.10	24.10	24.00
High	5320	20.48	13.11	24.11	24.00

Channel	Frequency (MHz)	26 dB Bandwidth (B) (MHz)		10*Log(B) (dB)		11 + 10*Log(B) (dBm)		Maximum Conducted Output Power Limit (dBm)	
		Antenna 1	Antenna 2	Antenna 1	Antenna 2	Antenna 1	Antenna 2	Antenna 1	Antenna 2
Low	5260	20.46	20.45	13.11	13.11	24.11	24.11	24.00	24.00
Mid	5300	20.30	20.35	13.08	13.08	24.08	24.08	24.00	24.00
High	5320	20.28	20.10	13.07	13.03	24.07	24.03	24.00	24.00

Test mode: IEEE 802.11n HT 20 MHz mode / 5500 ~ 5700MHz

Channel	Frequency (MHz)	26 dB Bandwidth (B) (MHz)	10*Log(B) (dB)	11 + 10*Log(B) (dBm)	Maximum Conducted Output Power Limit (dBm)
		Antenna 0	Antenna 0	Antenna 0	Antenna 0
Low	5500	20.55	13.13	24.13	24.00
Mid	5580	20.56	13.13	24.13	24.00
High	5700	20.40	13.10	24.10	24.00

Channel	Frequency (MHz)	26 dB Bandwidth (B) (MHz)		10*Log(B) (dB)		11 + 10*Log(B) (dBm)		Maximum Conducted Output Power Limit (dBm)	
		Antenna 1	Antenna 2	Antenna 1	Antenna 2	Antenna 1	Antenna 2	Antenna 1	Antenna 2
Low	5500	20.34	19.89	13.08	12.99	24.08	23.99	24.00	23.99
Mid	5580	20.63	20.52	13.14	13.12	24.14	24.12	24.00	24.00
High	5700	20.54	20.26	13.13	13.07	24.13	24.07	24.00	24.00



IEEE 802.11n HT 40 MHz mode / 5270 ~ 5310MHz

Channel	Frequency (MHz)	26 dB Bandwidth (B) (MHz)	10*Log(B) (dB)	11 + 10*Log(B) (dBm)	Maximum Conducted Output Power Limit (dBm)
		Antenna 0	Antenna 0	Antenna 0	Antenna 0
Low	5270	38.57	15.86	26.86	24.00
High	5310	38.37	15.84	26.84	24.00

Channel	Frequency (MHz)	26 dB Bandwidth (B) (MHz)		10*Log(B) (dB)		11 + 10*Log(B) (dBm)		Maximum Conducted Output Power Limit (dBm)	
		Antenna 1	Antenna 2	Antenna 1	Antenna 2	Antenna 1	Antenna 2	Antenna 1	Antenna 2
Low	5270	38.62	38.62	16.00	15.87	26.87	26.87	24.00	24.00
High	5310	38.59	38.69	15.86	15.00	26.86	26.88	24.00	24.00

IEEE 802.11n HT 40 MHz mode / 5510 ~ 5670MHz

Channel	Frequency (MHz)	26 dB Bandwidth (B) (MHz)	10*Log(B) (dB)	11 + 10*Log(B) (dBm)	Maximum Conducted Output Power Limit (dBm)
		Antenna 0	Antenna 0	Antenna 0	Antenna 0
Low	5510	38.69	15.88	26.88	24.00
Mid	5550	38.82	15.89	26.89	24.00
High	5670	38.87	15.90	26.90	24.00

Channel	Frequency (MHz)	26 dB Bandwidth (B) (MHz)		10*Log(B) (dB)		11 + 10*Log(B) (dBm)		Maximum Conducted Output Power Limit (dBm)	
		Antenna 1	Antenna 2	Antenna 1	Antenna 2	Antenna 1	Antenna 2	Antenna 1	Antenna 2
Low	5510	38.93	38.67	15.90	15.87	26.90	26.87	24.00	24.00
Mid	5550	38.78	38.72	15.89	15.88	26.89	26.88	24.00	24.00
High	5670	38.76	38.30	15.88	15.83	26.88	26.83	24.00	24.00



IEEE 802.11ac 80 mode / 5290MHz

Channel	Frequency (MHz)	26 dB Bandwidth (B) (MHz)		10*Log(B) (dB)		11 + 10*Log(B) (dBm)		Maximum Conducted Output Power Limit (dBm)	
		Antenna 0		Antenna 0		Antenna 0		Antenna 0	
	5290	78.59		18.95		29.95		24.00	

Channel	Frequency (MHz)	26 dB Bandwidth (B) (MHz)		10*Log(B) (dB)		11 + 10*Log(B) (dBm)		Maximum Conducted Output Power Limit (dBm)	
		Antenna 1	Antenna 2	Antenna 1	Antenna 2	Antenna 1	Antenna 2	Antenna 1	Antenna 2
	5290	78.45	78.32	16.00	18.94	29.95	29.94	24.00	24.00

IEEE 802.11ac 80 mode / 5530MHz

Channel	Frequency (MHz)	26 dB Bandwidth (B) (MHz)		10*Log(B) (dB)		11 + 10*Log(B) (dBm)		Maximum Conducted Output Power Limit (dBm)	
		Antenna 0		Antenna 0		Antenna 0		Antenna 0	
	5530	78.73		18.96		29.96		24.00	

Channel	Frequency (MHz)	26 dB Bandwidth (B) (MHz)		10*Log(B) (dB)		11 + 10*Log(B) (dBm)		Maximum Conducted Output Power Limit (dBm)	
		Antenna 1	Antenna 2	Antenna 1	Antenna 2	Antenna 1	Antenna 2	Antenna 1	Antenna 2
	5530	78.74	78.43	16.00	18.94	29.96	29.94	24.00	24.00



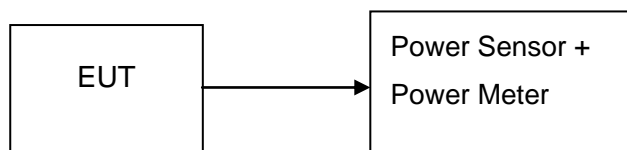
6.4.2 MEASUREMENT EQUIPMENT USED

Name of Equipment	Manufacturer	Model	Serial Number	Last Calibration	Calibration Due
Power Meter	Anritsu	ML2495A	1204003	02/21/2016	02/20/2017
Power Sensor	Anritsu	MA2411B	1126150	02/21/2016	02/20/2017

Remark: Each piece of equipment is scheduled for calibration once a year.

6.4.3 TEST CONFIGURATIONS

The EUT was connected to a spectrum analyzer through a 50Ω RF cable.



6.4.4 TEST PROCEDURE

Set span to encompass the entire emission bandwidth (EBW) of the signal.

Set RBW = 1 MHz / Set VBW = 3 MHz.

Use sample detector mode if bin width (i.e., span/number of points in spectrum display) < 0.5 RBW. Otherwise use peak detector mode. Use a video trigger with the trigger level set to enable triggering only on full power pulses. Transmitter must operate at full control power for entire sweep of every sweep. If the device transmits continuously, with no off intervals or reduced power intervals, the trigger may be set to “free run”. Trace average 100 traces in power averaging mode. Compute power by integrating the spectrum across the 26 dB EBW of the signal. The integration can be performed using the spectrum analyzer’s band power measurement function with band limits set equal to the EBW band edges or by summing power levels in each 1 MHz band in linear power terms. The 1 MHz band power levels to be summed can be obtained by averaging, in linear power terms, power levels in each frequency bin across the 1 MHz.

6.4.5 TEST RESULTS

No non-compliance noted



6.4.6 TEST DATA

IEEE 802.11a mode / 5180 ~ 5240MHz

Channel	Frequency (MHz)	Output Power (dBm)			Output Power (W)			Limit (dBm)	Result
		Antenna 0	Antenna 1	Antenna 2	Antenna 0	Antenna 1	Antenna 2		
Low	5180	18.57	18.98	18.96	0.07194	0.07907	0.07870	30.00	PASS
Mid	5200	18.78	18.46	18.79	0.07551	0.07015	0.07568		PASS
High	5240	18.99	18.61	18.92	0.07925	0.07261	0.07798		PASS

IEEE 802.11a mode / 5260~ 5320MHz

Channel	Frequency (MHz)	Output Power (dBm)			Output Power (W)			Limit (dBm)	Result
		Antenna 0	Antenna 1	Antenna 2	Antenna 0	Antenna 1	Antenna 2		
Low	5260	19.17	20.06	20.90	0.08260	0.10139	0.12303	24.00	PASS
Mid	5300	18.83	20.18	21.11	0.07638	0.10423	0.12912		PASS
High	5320	18.91	19.96	21.32	0.07780	0.09908	0.13552		PASS

IEEE 802.11a mode / 5500 ~ 5700MHz

Channel	Frequency (MHz)	Output Power (dBm)			Output Power (W)			Limit (dBm)	Result
		Antenna 0	Antenna 1	Antenna 2	Antenna 0	Antenna 1	Antenna 2		
Low	5500	20.99	20.00	20.77	0.12560	0.10000	0.11940	24.00	PASS
Mid	5580	20.26	20.41	20.44	0.10617	0.10990	0.11066		PASS
High	5700	19.84	19.81	19.71	0.09638	0.09572	0.09354		PASS

IEEE 802.11a mode / 5745 ~ 5825MHz

Channel	Frequency (MHz)	Output Power (dBm)			Output Power (W)			Limit (dBm)	Result
		Antenna 0	Antenna 1	Antenna 2	Antenna 0	Antenna 1	Antenna 2		
Low	5745	20.34	19.86	20.25	0.10814	0.09683	0.10593	30.00	PASS
Mid	5785	20.67	19.80	19.97	0.11668	0.09550	0.09931		PASS
High	5825	20.79	19.53	20.39	0.11995	0.08974	0.10940		PASS



IEEE 802.11n HT 20 MHz mode / 5180 ~ 5240MHz

Channel	Frequency (MHz)	Output Power (dBm)				Output Power (W)	Limit (dBm)	Result
		Antenna 0	Antenna 1	Antenna 2	Total			
Low	5180	8.61	8.42	9.17	13.52	0.02247	27.40	PASS
Mid	5200	9.29	8.28	9.07	13.67	0.02329		PASS
High	5240	9.64	7.95	8.84	13.64	0.02310		PASS

IEEE 802.11n HT 20 MHz mode / 5260~ 5320MHz

Channel	Frequency (MHz)	Output Power (dBm)				Output Power (W)	Limit (dBm)	Result
		Antenna 0	Antenna 1	Antenna 2	Total			
Low	5260	14.50	15.68	16.78	20.52	0.11281	21.20	PASS
Mid	5300	15.51	15.27	16.71	20.65	0.11610		PASS
High	5320	14.51	15.80	16.78	20.57	0.11391		PASS

IEEE 802.11n HT 20 MHz mode / 5500 ~ 5700MHz

Channel	Frequency (MHz)	Output Power (dBm)				Output Power (W)	Limit (dBm)	Result
		Antenna 0	Antenna 1	Antenna 2	Total			
Low	5500	15.98	14.85	16.13	20.46	0.11120	21.20	PASS
Mid	5580	15.29	15.02	16.01	20.23	0.10548		PASS
High	5700	15.99	15.69	15.43	20.48	0.11170		PASS

IEEE 802.11n HT 20 MHz mode / 5745 ~ 5825MHz

Channel	Frequency (MHz)	Output Power (dBm)				Output Power (W)	Limit (dBm)	Result
		Antenna 0	Antenna 1	Antenna 2	Total			
Low	5745	19.15	18.80	19.44	23.91	0.24598	27.40	PASS
Mid	5785	18.92	18.27	19.11	23.55	0.22660		PASS
High	5825	18.81	18.03	18.97	23.39	0.21845		PASS

Remark: The product has the function of the smart antenna, the beamforming gain=10log(3)=4.77, Antenna Gain=3.8+4.77



IEEE 802.11n HT 40 MHz mode / 5190 ~ 5230MHz

Channel	Frequency (MHz)	Output Power (dBm)				Output Power (W)	Limit (dBm)	Result
		Antenna 0	Antenna 1	Antenna 2	Total			
Low	5190	9.03	8.49	8.56	13.47	0.02224	27.40	PASS
High	5230	9.23	8.54	7.97	13.38	0.02179		PASS

IEEE 802.11n HT 40 MHz mode / 5270 ~ 5310MHz

Channel	Frequency (MHz)	Output Power (dBm)				Output Power (W)	Limit (dBm)	Result
		Antenna 0	Antenna 1	Antenna 2	Total			
Low	5270	14.45	15.96	16.98	20.69	0.11720	21.20	PASS
High	5310	14.83	15.83	16.86	20.69	0.11722		PASS

IEEE 802.11n HT 40 MHz mode / 5510 ~ 5670MHz

Channel	Frequency (MHz)	Output Power (dBm)				Output Power (W)	Limit (dBm)	Result
		Antenna 0	Antenna 1	Antenna 2	Total			
Low	5510	16.38	15.00	16.39	20.74	0.11862	21.20	PASS
Mid	5550	15.55	15.55	16.59	20.70	0.11739		PASS
High	5670	15.69	15.75	16.25	20.68	0.11682		PASS

IEEE 802.11n HT 40 MHz mode / 5755 ~ 5795MHz

Channel	Frequency (MHz)	Output Power (dBm)				Output Power (W)	Limit (dBm)	Result
		Antenna 0	Antenna 1	Antenna 2	Total			
Low	5755	18.90	18.55	19.25	23.68	0.23338	27.40	PASS
High	5795	18.74	18.24	19.30	23.55	0.22661		PASS

Remark: The product has the function of the smart antenna, the beamforming gain= $10\log(3)=4.77$, Antenna Gain= $3.8+4.77$



IEEE 802.11ac 80 mode / 5210MHz

Channel	Frequency (MHz)	Output Power (dBm)				Output Power (W)	Limit (dBm)	Result
		Antenna 0	Antenna 1	Antenna 2	Total			
	5210	9.53	8.51	8.42	13.62	0.02302	27.40	PASS

IEEE 802.11ac 80 mode / 5290MHz

Channel	Frequency (MHz)	Output Power (dBm)				Output Power (W)	Limit (dBm)	Result
		Antenna 0	Antenna 1	Antenna 2	Total			
	5290	10.99	12.35	13.33	17.10	0.05127	21.20	PASS

IEEE 802.11ac 80 mode / 5530MHz

Channel	Frequency (MHz)	Output Power (dBm)				Output Power (W)	Limit (dBm)	Result
		Antenna 0	Antenna 1	Antenna 2	Total			
	5530	15.64	14.97	16.12	20.37	0.10897	21.20	PASS

IEEE 802.11ac 80 mode / 5775MHz

Channel	Frequency (MHz)	Output Power (dBm)				Output Power (W)	Limit (dBm)	Result
		Antenna 0	Antenna 1	Antenna 2	Total			
	5775	16.70	16.12	17.09	21.43	0.13887	27.40	PASS

Remark: The product has the function of the smart antenna, the beamforming gain= $10\log(3)=4.77$, Antenna Gain= $3.8+4.77$



Transmit power control (TPC)

IEEE 802.11a mode / 5260~ 5320MHz

Channel	Frequency (MHz)	Output Power (dBm)			Output Power (W)			Limit (dBm)	Result
		Antenna 0	Antenna 1	Antenna 2	Antenna 0	Antenna 1	Antenna 2		
Low	5260	13.17	14.06	14.90	0.02075	0.02547	0.03090	23.98	PASS
Mid	5300	12.83	14.18	15.11	0.01919	0.02618	0.03243		PASS
High	5320	12.91	13.96	15.32	0.01954	0.02489	0.03404		PASS

IEEE 802.11a mode / 5500 ~ 5700MHz

Channel	Frequency (MHz)	Output Power (dBm)			Output Power (W)			Limit (dBm)	Result
		Antenna 0	Antenna 1	Antenna 2	Antenna 0	Antenna 1	Antenna 2		
Low	5500	16.99	14.00	14.77	0.05000	0.02512	0.02999	23.99	PASS
Mid	5580	14.26	14.41	14.44	0.02667	0.02761	0.02780		PASS
High	5700	13.84	13.81	13.71	0.02421	0.02404	0.02350		PASS

IEEE 802.11n HT 20 MHz mode / 5260~ 5320MHz

Channel	Frequency (MHz)	Output Power (dBm)				Output Power (W)	Limit (dBm)	Result
		Antenna 0	Antenna 1	Antenna 2	Total			
Low	5260	8.50	9.68	10.78	14.52	0.02834	24.00	PASS
Mid	5300	9.51	9.27	10.71	14.65	0.02916		PASS
High	5320	8.51	9.80	10.78	14.57	0.02861		PASS

IEEE 802.11n HT 20 MHz mode / 5500 ~ 5700MHz

Channel	Frequency (MHz)	Output Power (dBm)				Output Power (W)	Limit (dBm)	Result
		Antenna 0	Antenna 1	Antenna 2	Total			
Low	5500	9.98	8.85	10.13	14.46	0.02793	23.99	PASS
Mid	5580	9.29	9.02	10.01	14.23	0.02649		PASS
High	5700	9.99	9.69	9.43	14.48	0.02806		PASS

Remark: The product has the function of the smart antenna, the beamforming gain= $10\log(3)=4.77$, Antenna Gain= $3.8+4.77$



IEEE 802.11n HT 40 MHz mode / 5270 ~ 5310MHz

Channel	Frequency (MHz)	Output Power (dBm)				Output Power (W)	Limit (dBm)	Result
		Antenna 0	Antenna 1	Antenna 2	Total			
Low	5270	8.45	9.96	10.98	14.69	0.02944	24.00	PASS
High	5310	8.83	9.83	10.86	14.69	0.02944		PASS

IEEE 802.11n HT 40 MHz mode / 5510 ~ 5670MHz

Channel	Frequency (MHz)	Output Power (dBm)				Output Power (W)	Limit (dBm)	Result
		Antenna 0	Antenna 1	Antenna 2	Total			
Low	5510	10.38	9.00	10.39	14.74	0.02980	24.00	PASS
Mid	5550	9.55	9.55	10.59	14.70	0.02949		PASS
High	5670	9.69	9.75	10.25	14.68	0.02934		PASS

IEEE 802.11ac 80 mode / 5290MHz

Channel	Frequency (MHz)	Output Power (dBm)				Output Power (W)	Limit (dBm)	Result
		Antenna 0	Antenna 1	Antenna 2	Total			
	5290	4.99	6.35	7.33	11.10	0.01288	24.00	PASS

IEEE 802.11ac 80 mode / 5530MHz

Channel	Frequency (MHz)	Output Power (dBm)				Output Power (W)	Limit (dBm)	Result
		Antenna 0	Antenna 1	Antenna 2	Total			
	5530	9.64	8.97	10.12	14.37	0.02737	24.00	PASS

Remark: The product has the function of the smart antenna, the beamforming gain= $10\log(3)=4.77$, Antenna Gain= $3.8+4.77$



6.5 BAND EDGES MEASUREMENT

6.5.1 LIMIT

According to §15.407(b)

- (1) The provisions of Section 15.205 of this part apply to intentional radiators operating under this section.
- (2) When measuring the emission limits, the nominal carrier frequency shall be adjusted as close to the upper and lower frequency block edges as the design of the equipment permits.

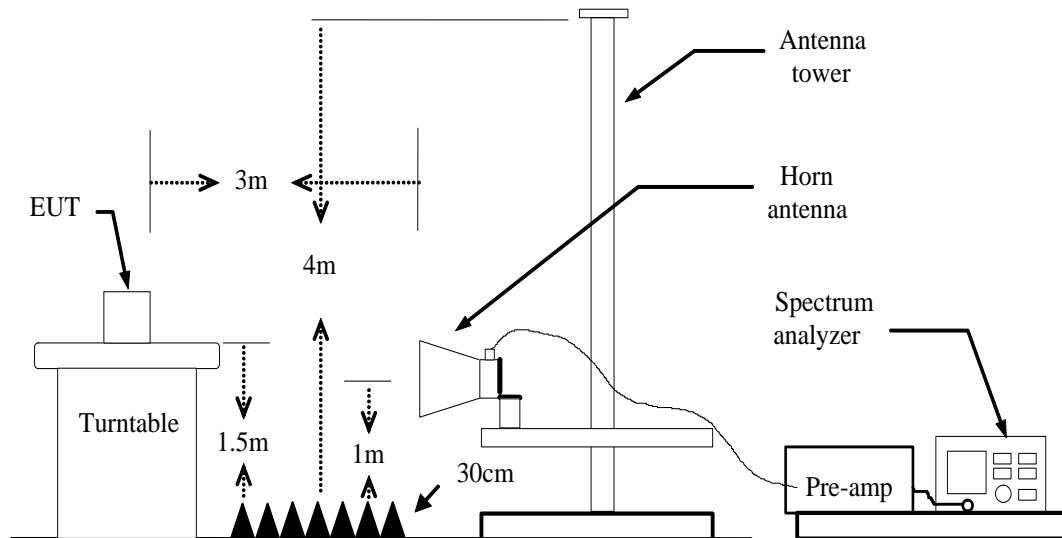
6.5.2 MEASUREMENT EQUIPMENT USED

Radiated Emission Test Site 966(2)					
Name of Equipment	Manufacturer	Model Number	Serial Number	Last Calibration	Due Calibration
PSA Series Spectrum Analyzer	Agilent	E4446A	US44300399	02/21/2016	02/20/2017
EMI TEST RECEIVER	ROHDE&SCHWARZ	ESCI	100783	02/21/2016	02/20/2017
Amplifier	EMEC	EM330	060661	03/18/2016	03/17/2017
High Noise Amplifier	Agilent	8449B	3008A01838	02/21/2016	02/20/2017
Loop Antenna	COM-POWER	AL-130	121044	09/25/2015	09/24/2016
Bilog Antenna	SCHAFFNER	CBL6143	5082	02/21/2016	02/20/2017
Horn Antenna	SCHWARZBECK	BBHA9120	D286	02/28/2016	02/27/2017
Board-Band Horn Antenna	Schwarzbeck	BBHA 9170	9170-497	02/28/2016	02/27/2017
Turn Table	N/A	N/A	N/A	N.C.R	N.C.R
Antenna Tower	SUNOL	TLT2	N/A	N.C.R	N.C.R
Controller	Sunol Sciences	SC104V	022310-1	N.C.R	N.C.R
Controller	CT	N/A	N/A	N.C.R	N.C.R
Temp. / Humidity Meter	Anymetre	JR913	N/A	02/21/2016	02/20/2017
Test S/W	FARAD	LZ-RF / CCS-SZ-3A2			

- NOTE:**
1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
 2. The FCC Site Registration number is 101879.
 3. N.C.R = No Calibration Required.



6.5.3 TEST CONFIGURATION



6.5.4 TEST PROCEDURE

1. The EUT is placed on a turntable, which is 1.5m above the ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emission.
4. Set the spectrum analyzer in the following setting in order to capture the lower and upper band-edges of the emission:
 - (a) PEAK: RBW=1 / VBW=3MHz / Sweep=AUTO
 - (b) AVERAGE: RBW=1MHz / VBW=10Hz / Sweep=AUTO / Detector=Peak
5. Repeat the procedures until all the PEAK and AVERAGE versus POLARIZATION are measured.



6.5.5 TEST RESULT

IEEE 802.11a mode / 5500 ~ 5700MHz

Antenna 0:

1. Operating Frequency: 5500-5700MHz
2. CH Low: 5500MHz, CH High: 5700MHz
3. 26dB bandwidth: CH Low: 20.422MHz, CH High: 20.512MHz
4. Frequency Range: 5489.7890MHz, 5710.2560MHz

Antenna 1:

1. Operating Frequency: 5500-5700MHz
2. CH Low: 5500MHz, CH High: 5700MHz
3. 26dB bandwidth: CH Low: 20.091MHz, CH High: 20.038MHz
4. Frequency Range: 5489.9545MHz, 5710.0190MHz

Antenna 2:

1. Operating Frequency: 5500-5700MHz
2. CH Low: 5500MHz, CH High: 5700MHz
3. 26dB bandwidth: CH Low: 20.466MHz, CH High: 20.191MHzssss
4. Frequency Range: 5489.7670MHz, 5710.0955MHz

IEEE 802.11a mode / 5745 ~ 5825MHz

Antenna 0:

1. Operating Frequency: 5745-5825MHz
2. CH Low: 5745MHz, CH High: 5825MHz
3. 26dB bandwidth: CH Low: 20.304MHz, CH High: 20.209MHz
4. Frequency Range: 5734.8480MHz, 5835.1045MHz

Antenna 1:

1. Operating Frequency: 5745-5825MHz
2. CH Low: 5745MHz, CH High: 5825MHz
3. 26dB bandwidth: CH Low: 20.169MHz, CH High: 20.252MHz
4. Frequency Range: 5734.9155MHz, 5835.1260MHz

Antenna 2:

1. Operating Frequency: 5745-5825MHz
2. CH Low: 5745MHz, CH High: 5825MHz
3. 26dB bandwidth: CH Low: 20.198MHz, CH High: 20.210MHz
4. Frequency Range: 5734.9010MHz, 5835.1050MHz



IEEE 802.11n HT 20 MHz mode / 5500 ~ 5700MHz

Antenna 0:

1. Operating Frequency: 5500-5700MHz
2. CH Low: 5500MHz, CH High: 5700MHz
3. 26dB bandwidth: CH Low: 20.548MHz, CH High: 20.403MHz
4. Frequency Range: 5489.7260MHz, 5710.2015MHz

Antenna 1:

1. Operating Frequency: 5500-5700MHz
2. CH Low: 5500MHz, CH High: 5700MHz
3. 26dB bandwidth: CH Low: 20.343MHz, CH High: 20.539MHz
4. Frequency Range: 5489.8285MHz, 5710.2695MHz

Antenna 2:

1. Operating Frequency: 5500-5700MHz
2. CH Low: 5500MHz, CH High: 5700MHz
3. 26dB bandwidth: CH Low: 19.893MHz, CH High: 20.257MHz
4. Frequency Range: 5490.0535MHz, 5710.1285MHz

IEEE 802.11n HT 20 MHz mode / 5745 ~ 5825MHz

Antenna 0:

1. Operating Frequency: 5745-5825MHz
2. CH Low: 5745MHz, CH High: 5825MHz
3. 26dB bandwidth: CH Low: 20.672MHz, CH High: 20.621MHz
4. Frequency Range: 5734.664MHz, 5835.3105MHz

Antenna 1:

1. Operating Frequency: 5745-5825MHz
2. CH Low: 5745MHz, CH High: 5825MHz
3. 26dB bandwidth: CH Low: 20.641MHz, CH High: 20.595MHz
4. Frequency Range: 5734.6795MHz, 5835.2975MHz

Antenna 2:

1. Operating Frequency: 5745-5825MHz
2. CH Low: 5745MHz, CH High: 5825MHz
3. 26dB bandwidth: CH Low: 20.334MHz, CH High: 20.288MHz
4. Frequency Range: 5734.8330MHz, 5835.1440MHz



IEEE 802.11n HT 40 MHz mode / 5510 ~ 5670MHz

Antenna 0:

1. Operating Frequency: 5510-5670MHz
2. CH Low: 5510MHz, CH High: 5670MHz
3. 26dB bandwidth: CH Low: 38.689MHz, CH High: 38.867MHz
4. Frequency Range: 5490.6555MHz, 5689.4335MHz

Antenna 1:

1. Operating Frequency: 5510-5670MHz
2. CH Low: 5510MHz, CH High: 5670MHz
3. 26dB bandwidth: CH Low: 38.928MHz, CH High: 38.762MHz
4. Frequency Range: 5490.5360MHz, 5689.3810MHz

Antenna 2:

1. Operating Frequency: 5510-5670MHz
2. CH Low: 5510MHz, CH High: 5670MHz
3. 26dB bandwidth: CH Low: 38.674MHz, CH High: 38.298MHz
4. Frequency Range: 5490.6630MHz, 5689.1490MHz

IEEE 802.11n HT 40 MHz mode / 5755 ~ 5795MHz

Antenna 0:

1. Operating Frequency: 5755-5795MHz
2. CH Low: 5755MHz, CH High: 5795MHz
3. 26dB bandwidth: CH Low: 38.699MHz, CH High: 38.629MHz
4. Frequency Range: 5735.6505MHz, 5814.3145MHz

Antenna 1:

1. Operating Frequency: 5755-5795MHz
2. CH Low: 5755MHz, CH High: 5795MHz
3. 26dB bandwidth: CH Low: 38.647MHz, CH High: 38.803MHz
4. Frequency Range: 5735.6765MHz, 5814.4015MHz

Antenna 2:

1. Operating Frequency: 5755-5795MHz
2. CH Low: 5755MHz, CH High: 5795MHz
3. 26dB bandwidth: CH Low: 38.671MHz, CH High: 38.575MHz
4. Frequency Range: 5735.6645MHz, 5814.2875MHz



IEEE 802.11ac 80 mode / 5530MHz

Antenna 0:

1. Operating Frequency: 5530MHz
2. CH: 5530MHz
3. 26dB bandwidth: CH: 78.726MHz
4. Frequency Range: 5490.637MHz, 5569.3630MHz

Antenna 1:

1. Operating Frequency: 5530MHz
2. CH: 5530MHz
3. 26dB bandwidth: CH: 78.737MHz
4. Frequency Range: 5490.6315MHz, 5569.3685MHz

Antenna 2:

1. Operating Frequency: 5530MHz
2. CH: 5530MHz
3. 26dB bandwidth: CH: 78.430MHz
4. Frequency Range: 5490.7850MHz, 5569.2150MHz

IEEE 802.11ac 80 mode / 5775MHz

Antenna 0:

1. Operating Frequency: 5530MHz
2. CH: 5530MHz
3. 26dB bandwidth: CH: 78.726MHz
4. Frequency Range: 5490.637MHz, 5569.3630MHz

Antenna 1:

1. Operating Frequency: 5530MHz
2. CH: 5530MHz
3. 26dB bandwidth: CH: 78.737MHz
4. Frequency Range: 5490.6315MHz, 5569.3685MHz

Antenna 2:

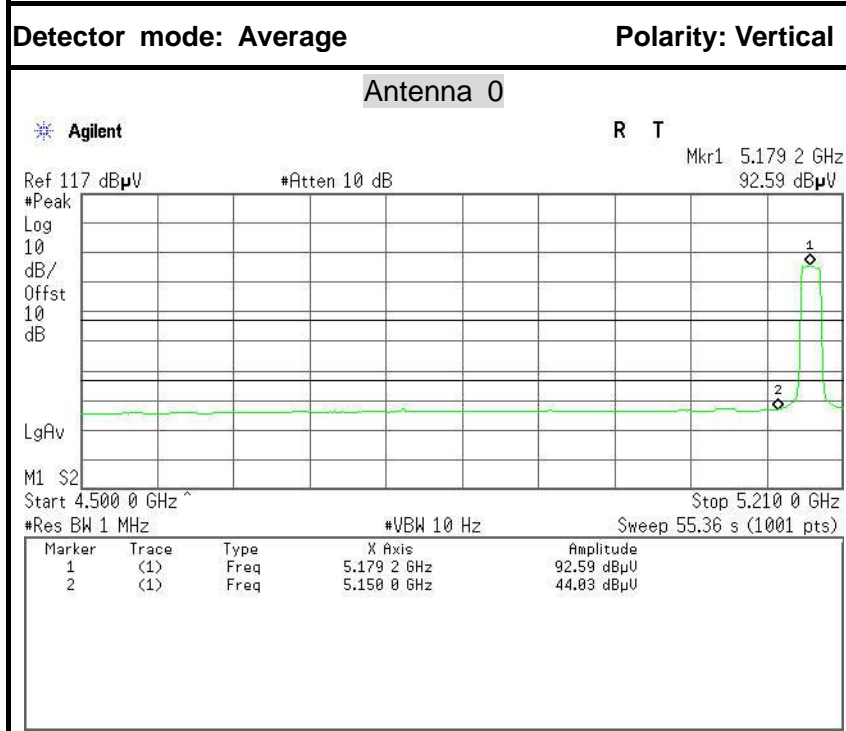
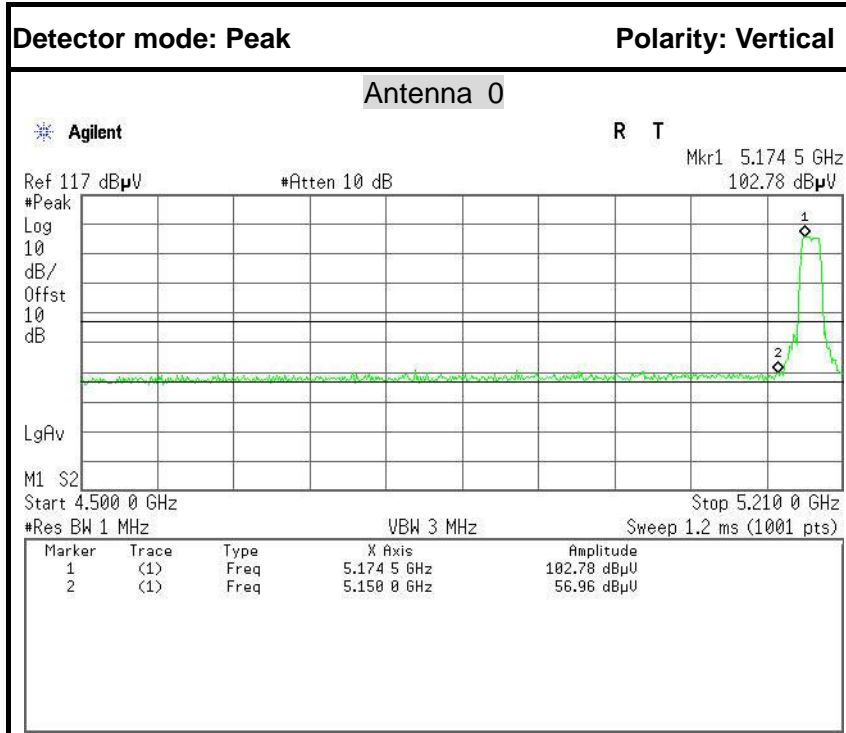
1. Operating Frequency: 5530MHz
2. CH: 5530MHz
3. 26dB bandwidth: CH: 78.430MHz
4. Frequency Range: 5490.7850MHz, 5569.2150MHz

Because the mentioned conditions, the test is not applicable.

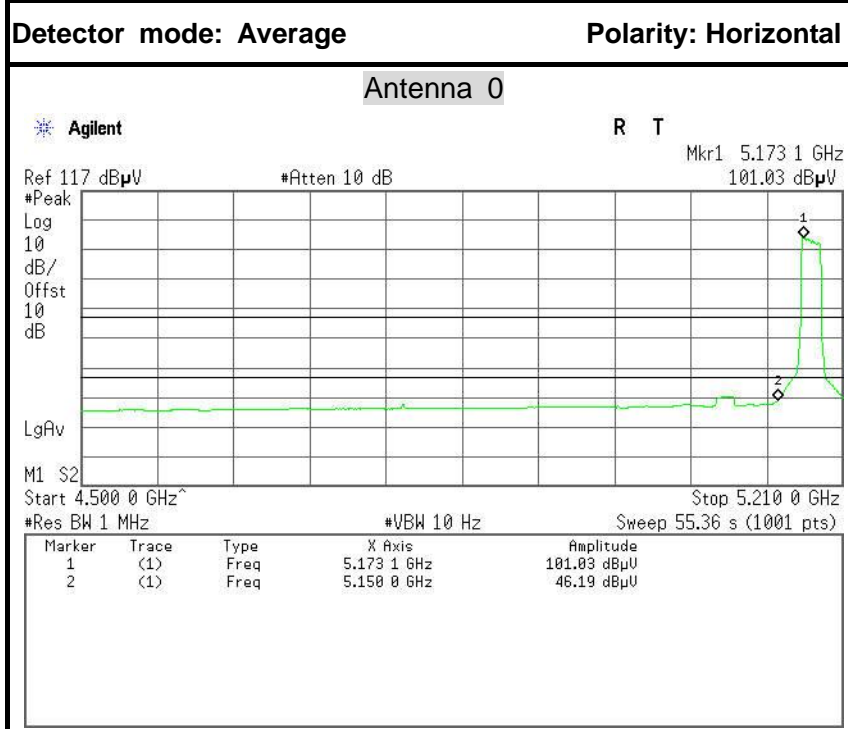
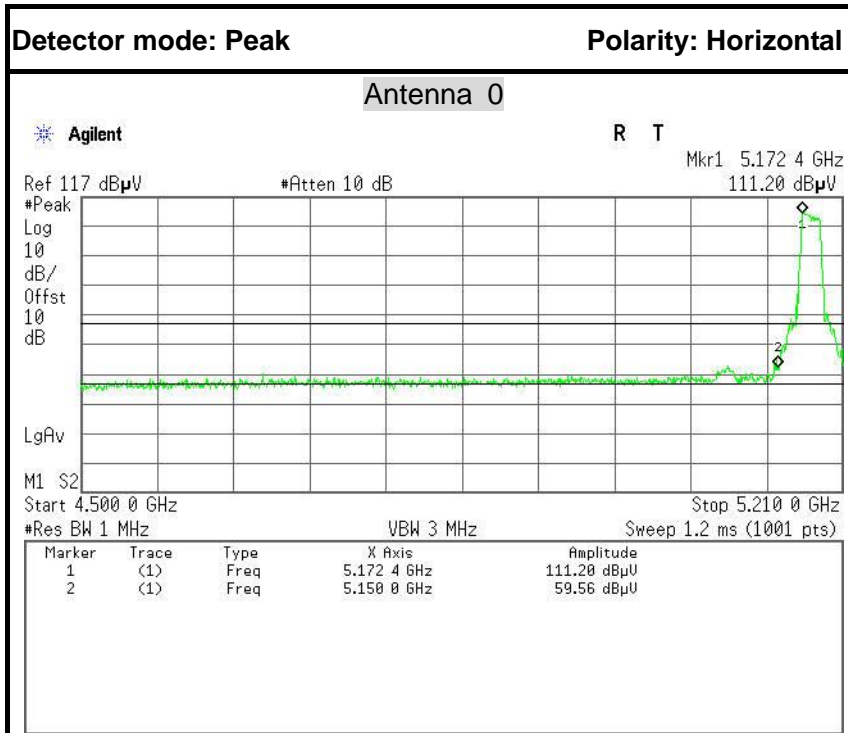


Test Plot

IEEE 802.11a mode / 5180MHz



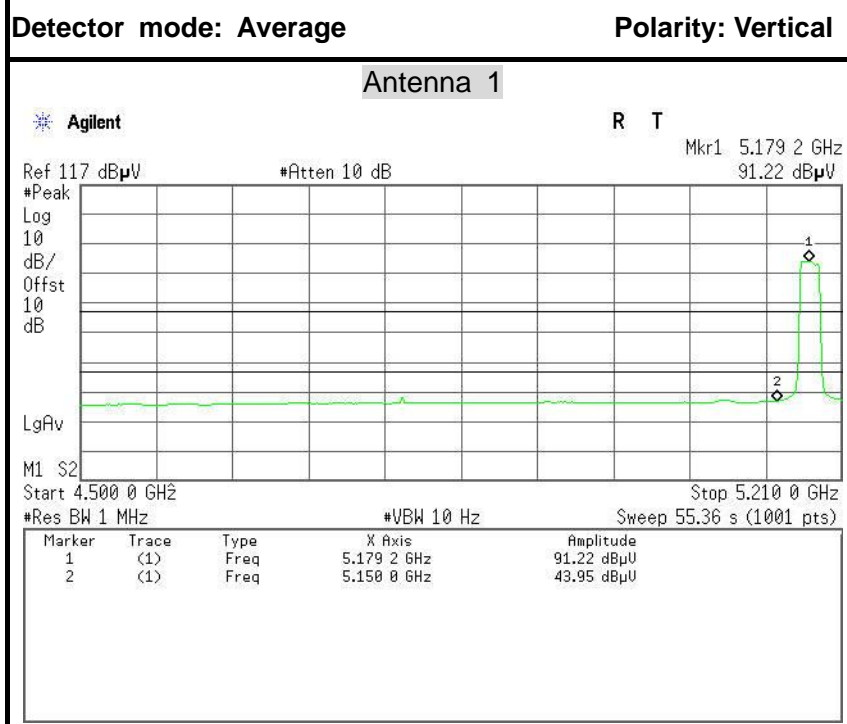
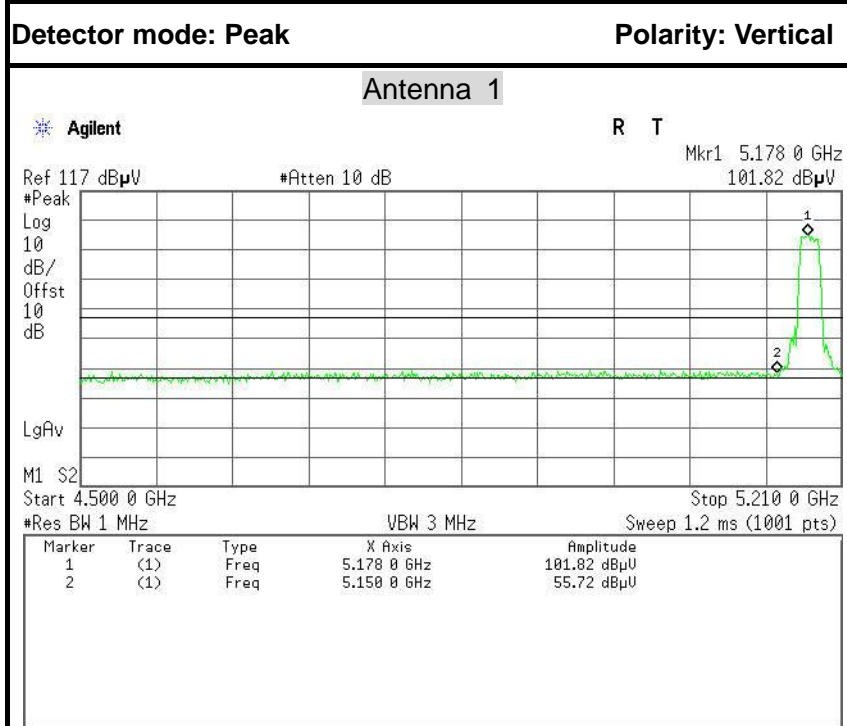
No.	Frequency (MHz)	Reading (dBuV)	Corrected (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Antenna Pole
1	5150.0000	62.56	5.60	56.96	74.00	-17.04	Peak	Vertical
2	5150.0000	49.63	5.60	44.03	54.00	-9.97	Average	Vertical



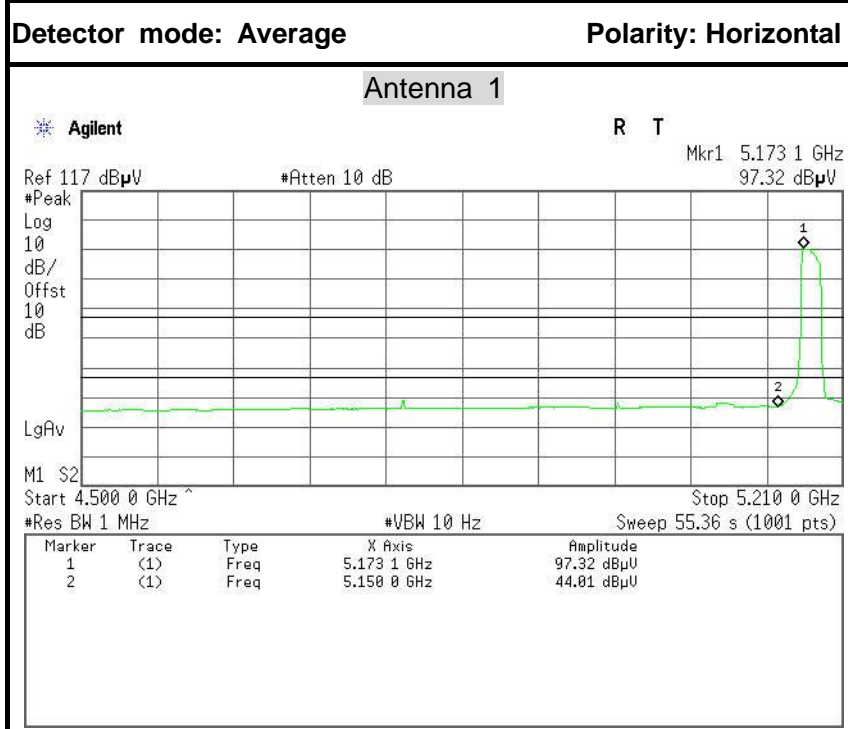
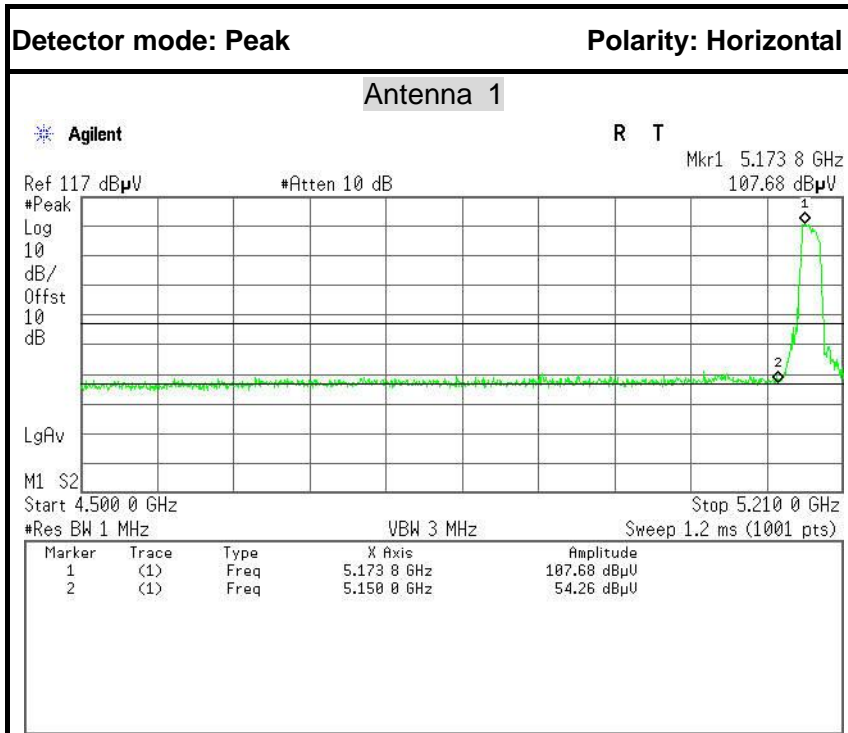
No.	Frequency (MHz)	Reading (dB μ V)	Corrected (dB)	Result (dB μ V)	Limit (dB μ V)	Margin (dB)	Detector	Antenna Pole
1	5150.0000	65.16	5.60	59.56	74.00	-14.44	Peak	Horizontal
2	5150.0000	51.79	5.60	46.19	54.00	-7.81	Average	Horizontal



IEEE 802.11a mode / 5180MHz



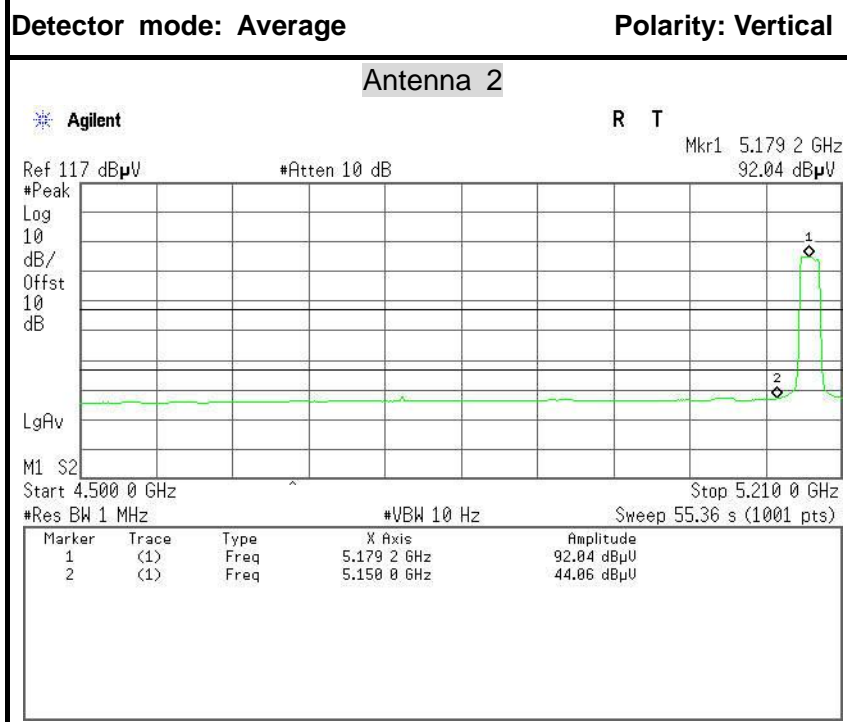
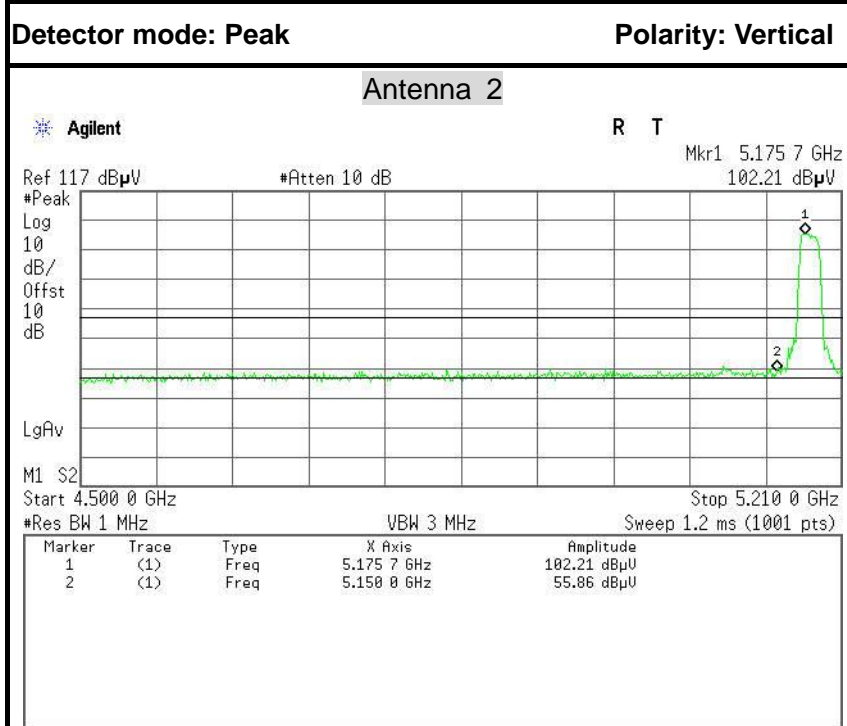
No.	Frequency (MHz)	Reading (dBuV)	Corrected (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Antenna Pole
1	5150.0000	61.32	5.60	55.72	74.00	-18.28	Peak	Vertical
2	5150.0000	49.55	5.60	43.95	54.00	-10.05	Average	Vertical



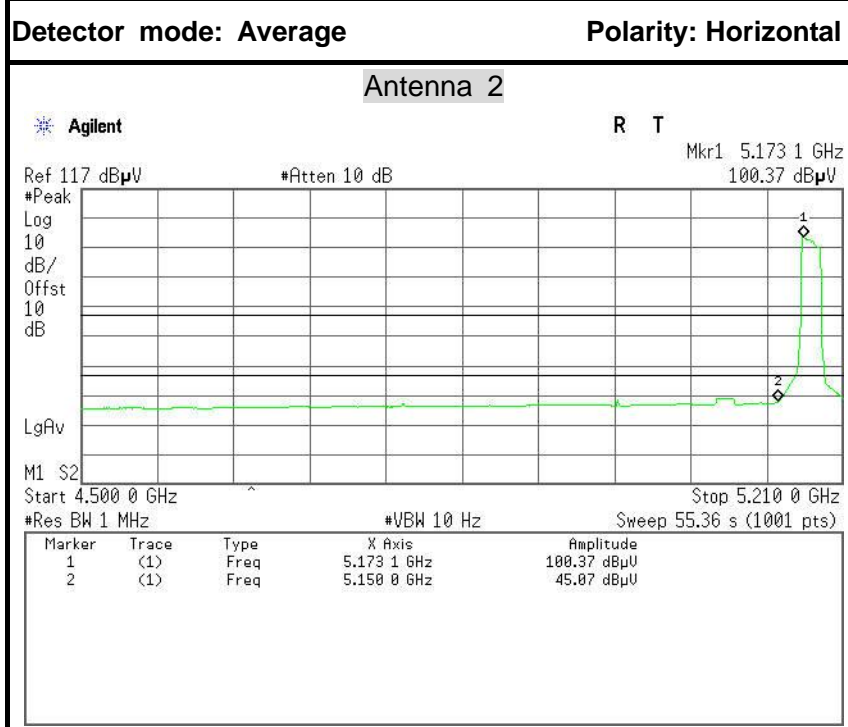
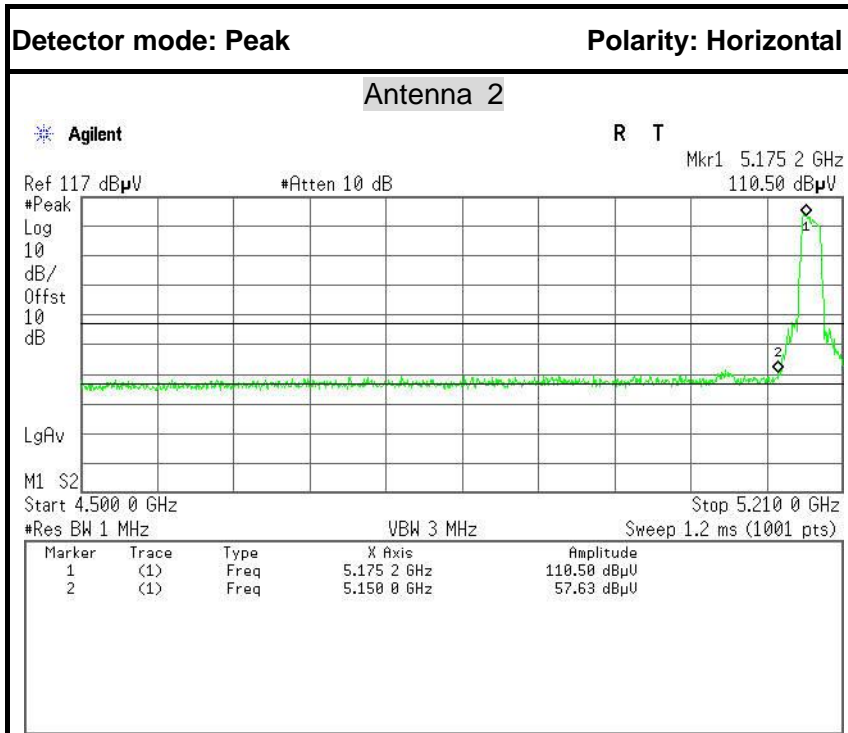
No.	Frequency (MHz)	Reading (dBµV)	Corrected (dB)	Result (dBµV)	Limit (dBµV)	Margin (dB)	Detector	Antenna Pole
1	5150.0000	59.86	5.60	54.26	74.00	-19.74	Peak	Horizontal
2	5150.0000	49.61	5.60	44.01	54.00	-9.99	Average	Horizontal



IEEE 802.11a mode / 5180MHz



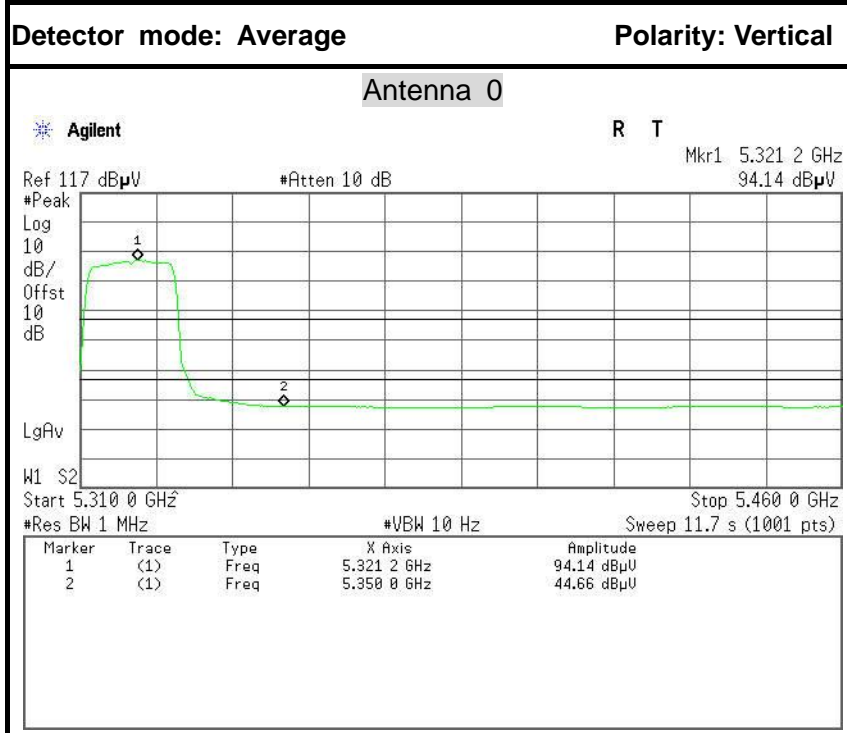
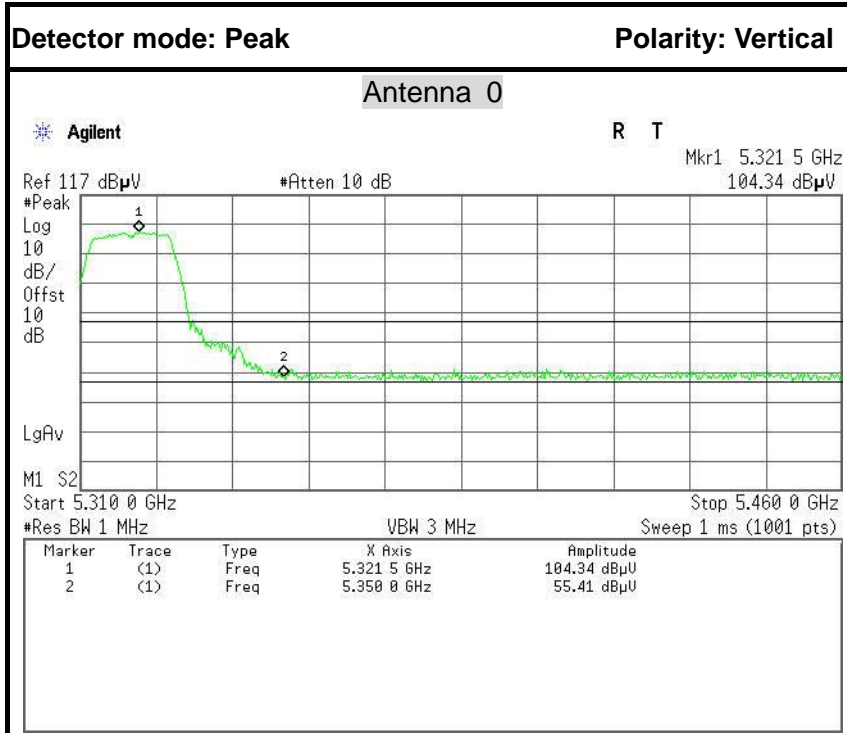
No.	Frequency (MHz)	Reading (dBµV)	Corrected (dB)	Result (dBµV)	Limit (dBµV)	Margin (dB)	Detector	Antenna Pole
1	5150.0000	61.46	5.60	55.86	74.00	-18.14	Peak	Vertical
2	5150.0000	49.66	5.60	44.06	54.00	-9.94	Average	Vertical



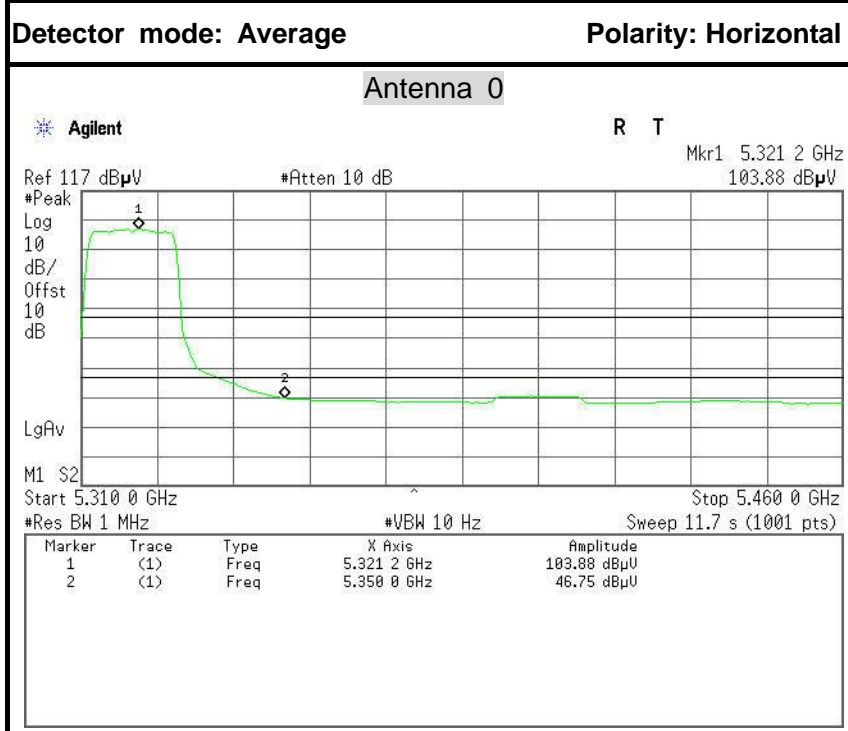
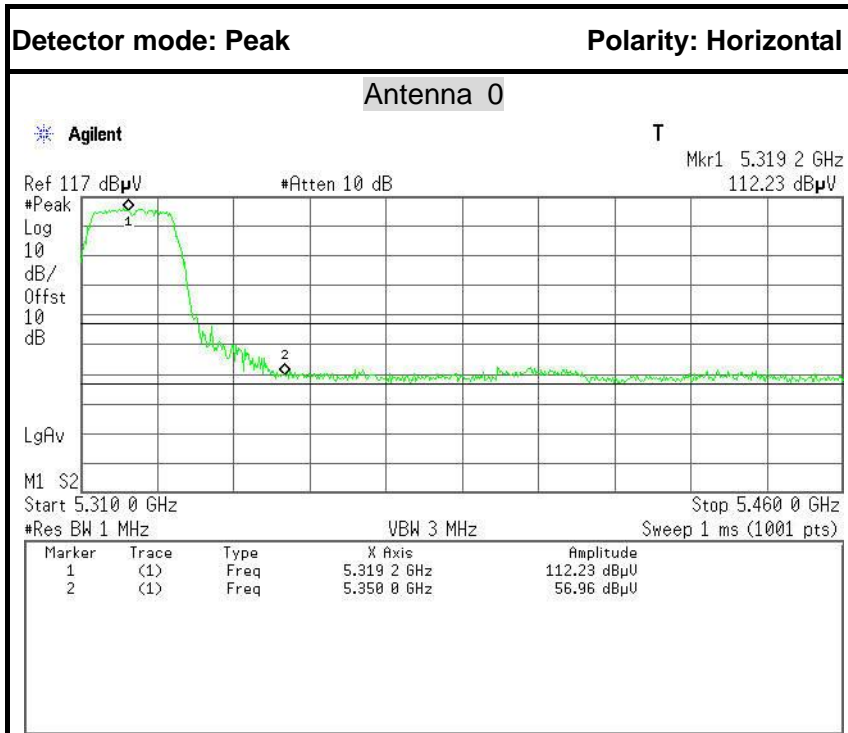
No.	Frequency (MHz)	Reading (dBµV)	Corrected (dB)	Result (dBµV)	Limit (dBµV)	Margin (dB)	Detector	Antenna Pole
1	5150.0000	63.23	5.60	57.63	74.00	-16.37	Peak	Horizontal
2	5150.0000	50.67	5.60	45.07	54.00	-8.93	Average	Horizontal



IEEE 802.11a mode / 5320MHz



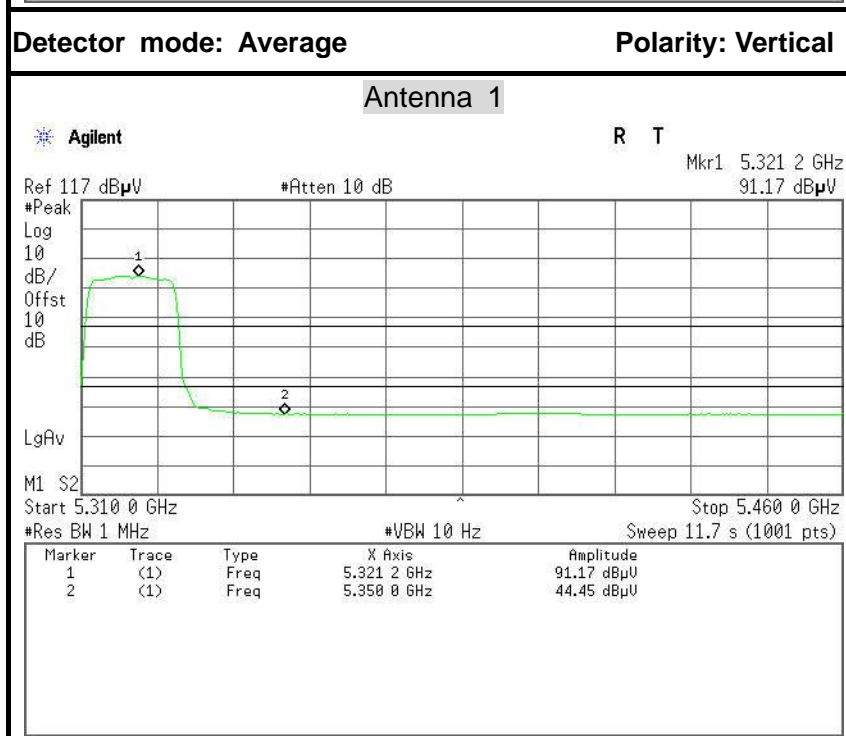
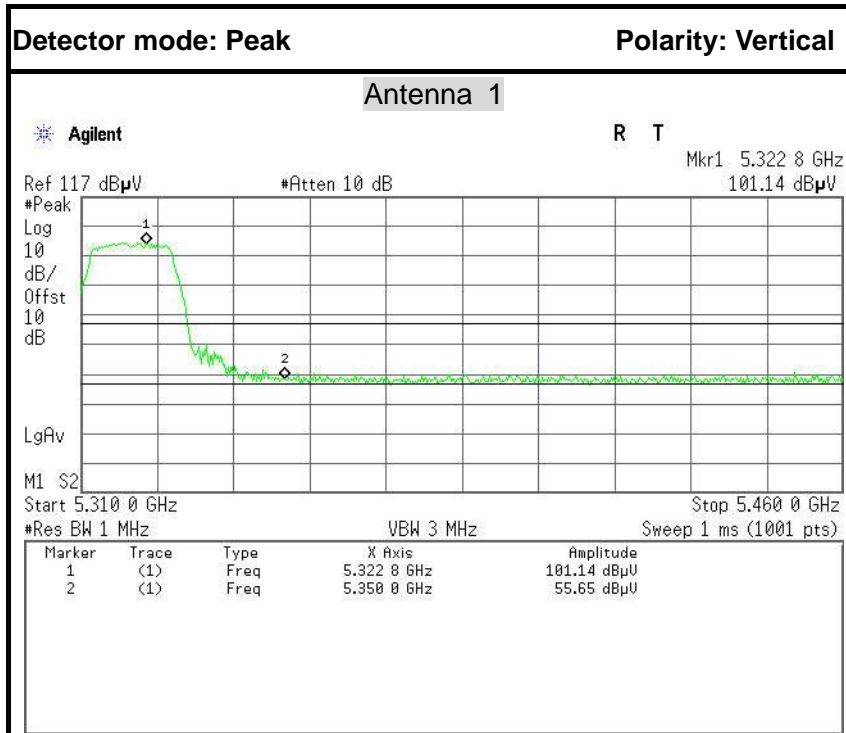
No.	Frequency (MHz)	Reading (dBuV)	Corrected (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Antenna Pole
1	5350.0000	61.01	5.60	55.41	74.00	-18.59	Peak	Vertical
2	5350.0000	50.26	5.60	44.66	54.00	-9.34	Average	Vertical



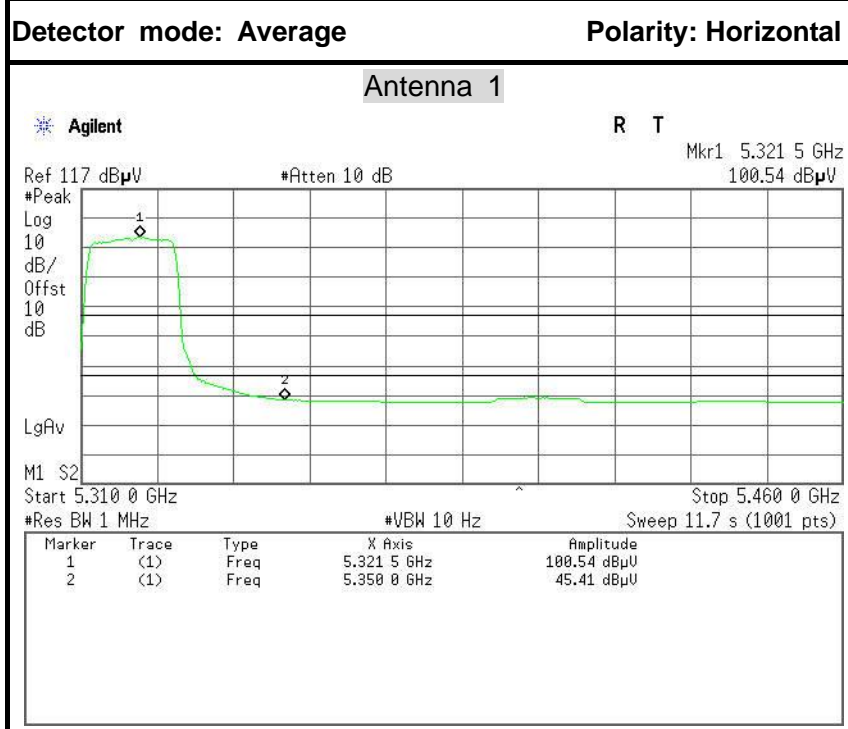
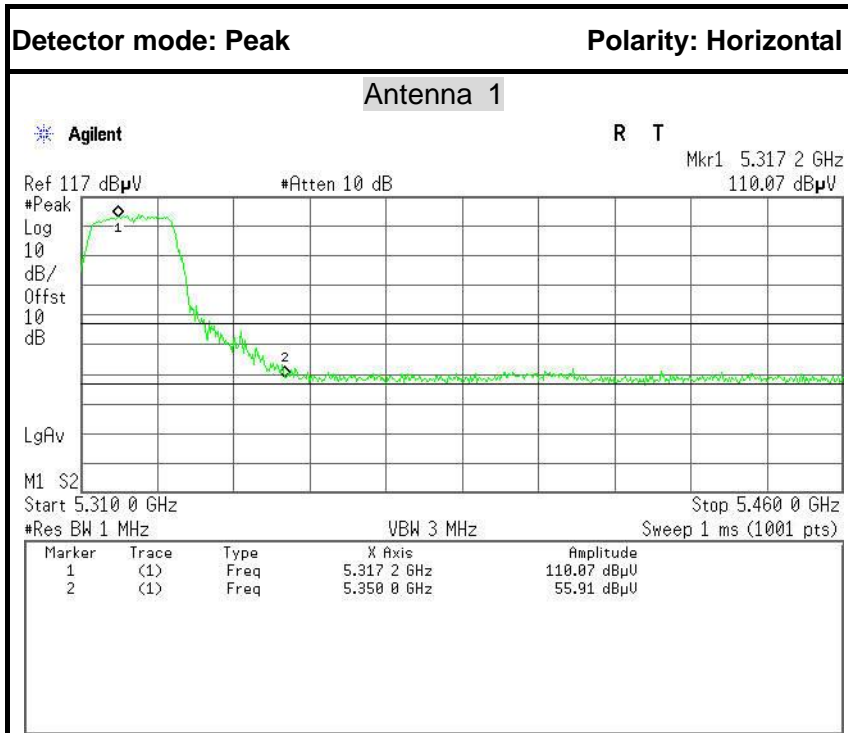
No.	Frequency (MHz)	Reading (dBuV)	Corrected (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Antenna Pole
1	5350.0000	62.56	5.60	56.96	74.00	-17.04	Peak	Horizontal
2	5350.0000	52.35	5.60	46.75	54.00	-7.25	Average	Horizontal



IEEE 802.11a mode / 5320MHz



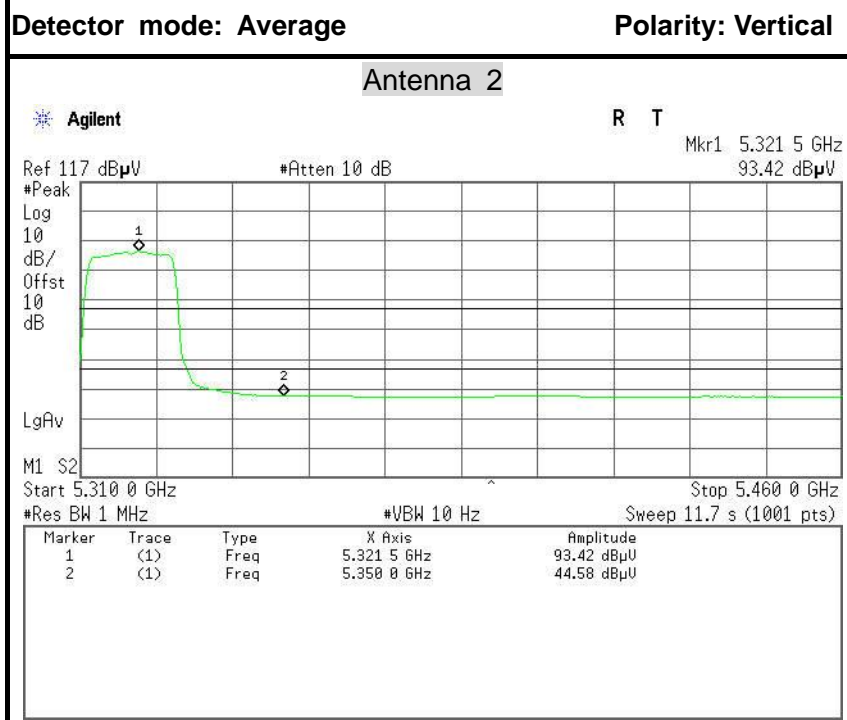
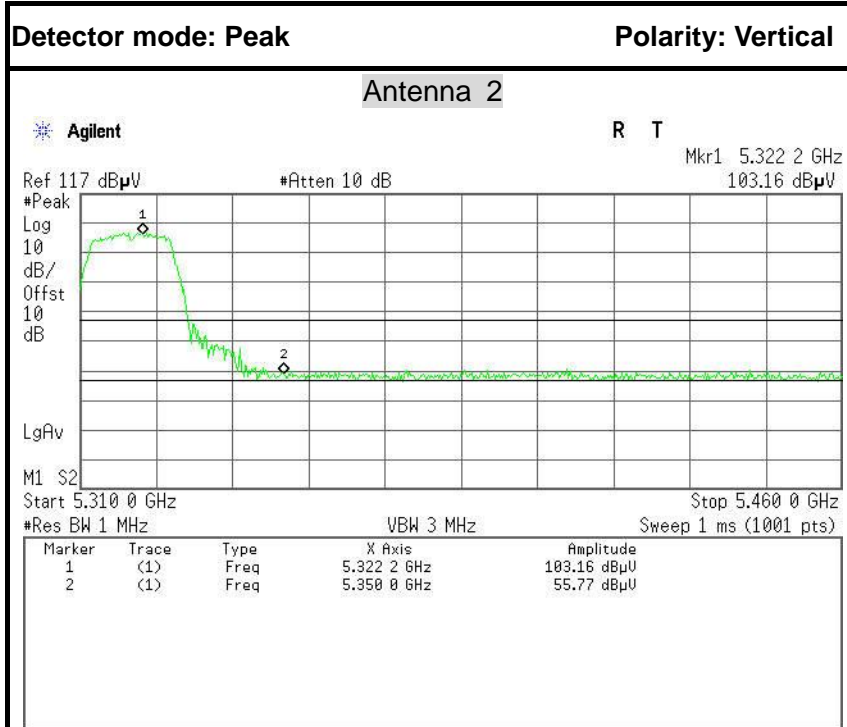
No.	Frequency (MHz)	Reading (dBuV)	Corrected (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Antenna Pole
1	5350.0000	61.25	5.60	55.65	74.00	-18.35	Peak	Vertical
2	5350.0000	50.05	5.60	44.45	54.00	-9.55	Average	Vertical



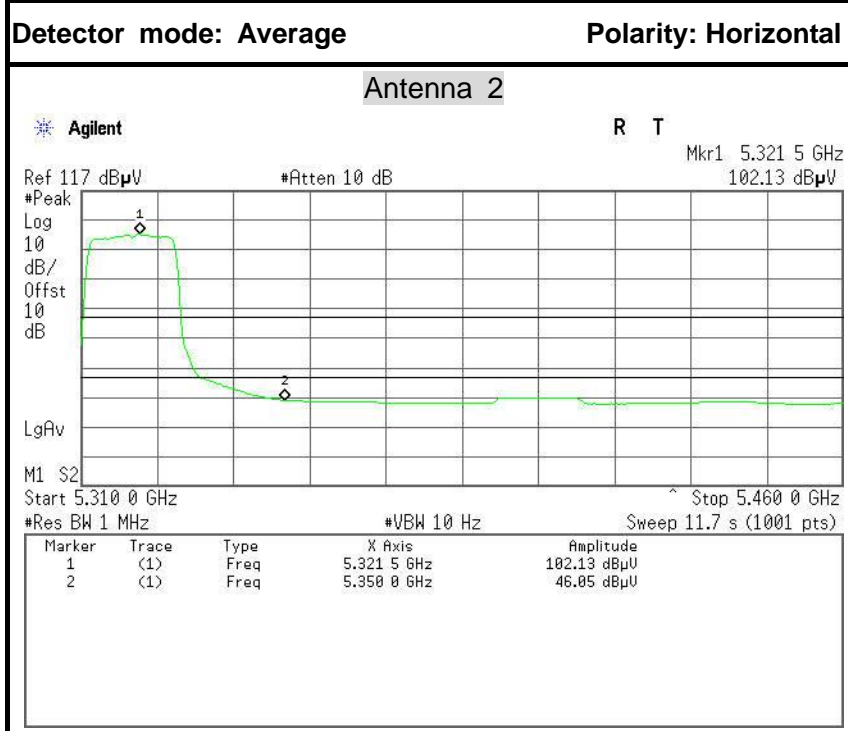
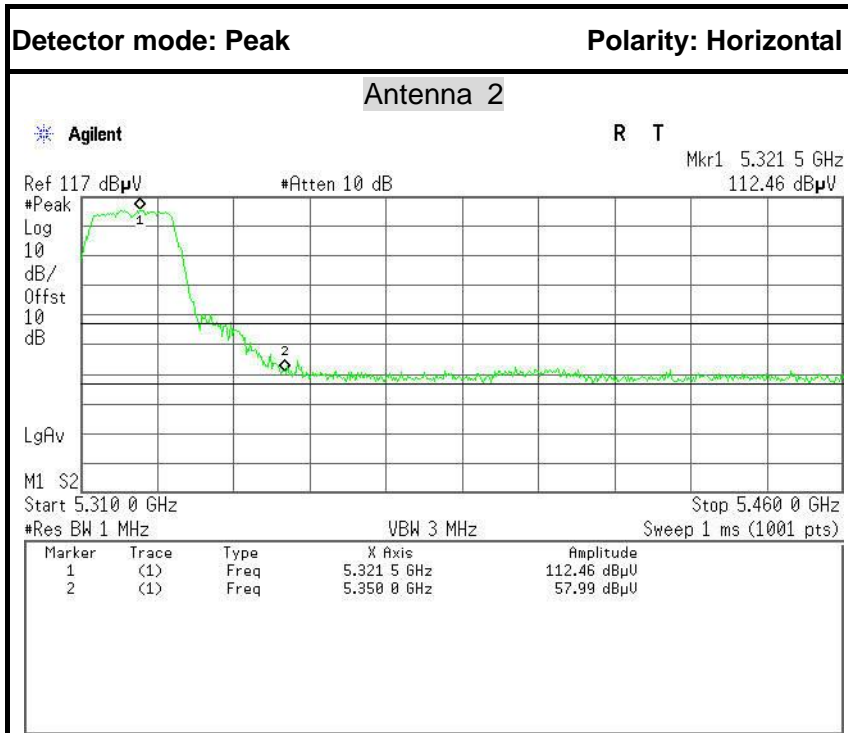
No.	Frequency (MHz)	Reading (dBuV)	Corrected (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Antenna Pole
1	5350.0000	61.51	5.60	55.91	74.00	-18.09	Peak	Horizontal
2	5350.0000	51.01	5.60	45.41	54.00	-8.59	Average	Horizontal



IEEE 802.11a mode / 5320MHz



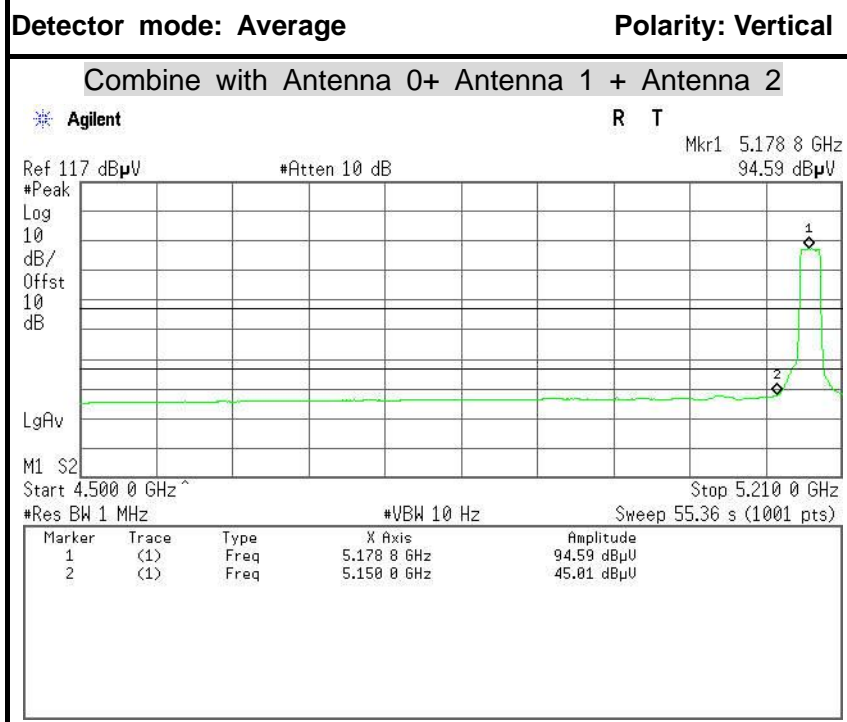
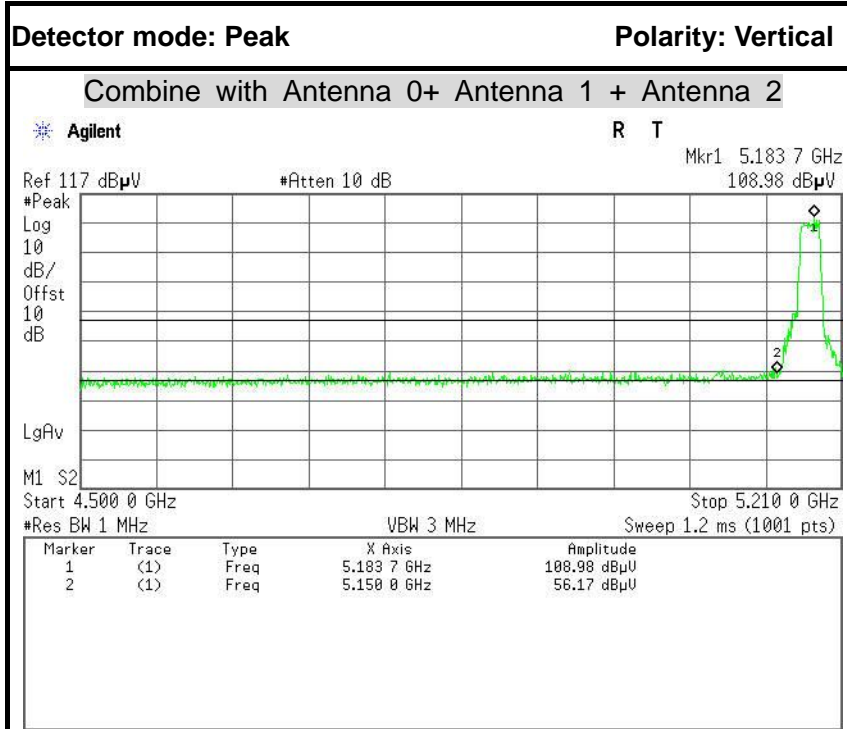
No.	Frequency (MHz)	Reading (dBuV)	Corrected (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Antenna Pole
1	5350.0000	61.37	5.60	55.77	74.00	-18.23	Peak	Vertical
2	5350.0000	50.18	5.60	44.58	54.00	-9.42	Average	Vertical



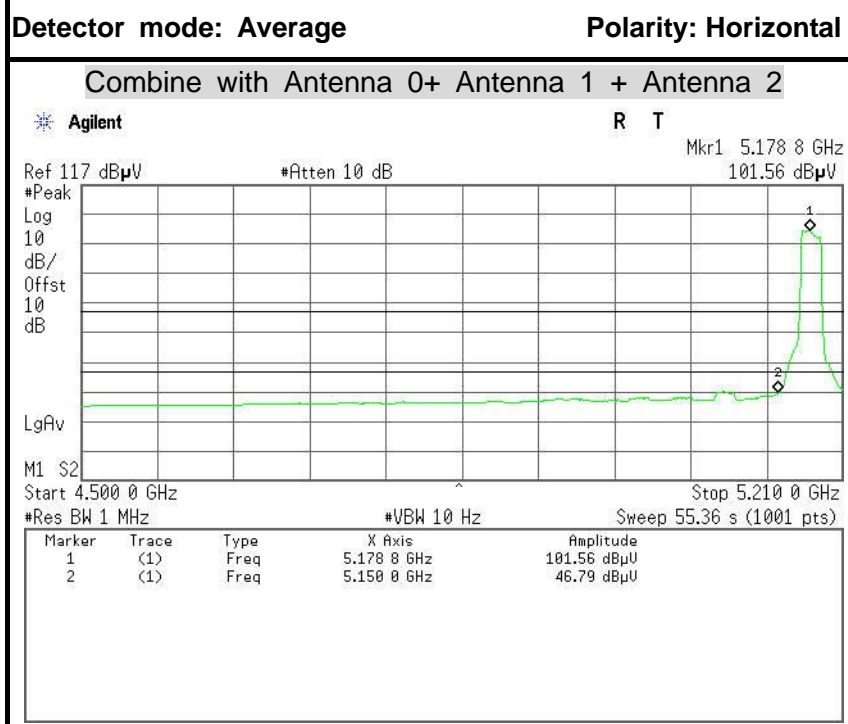
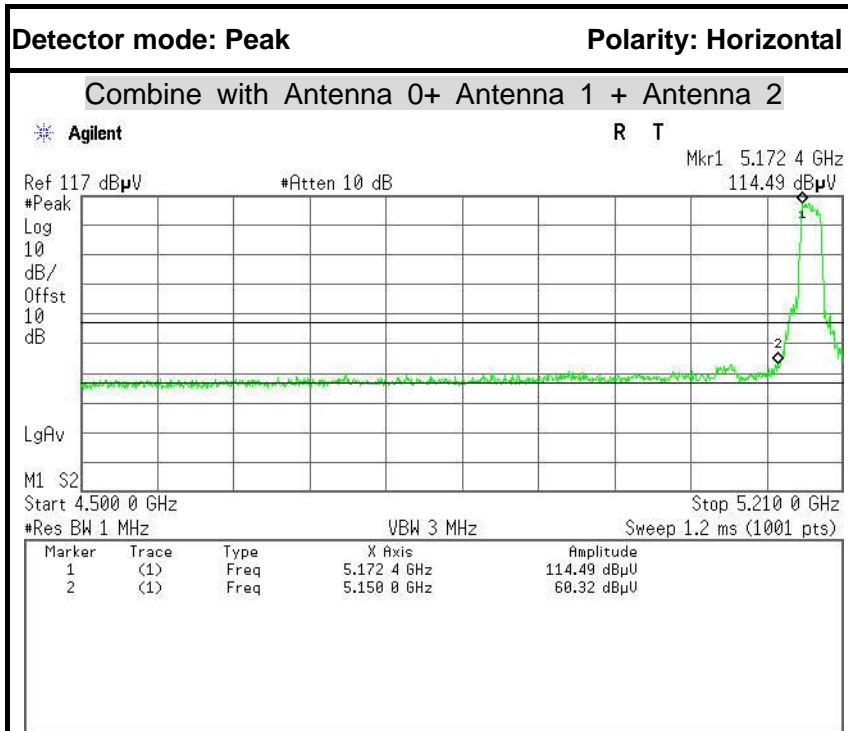
No.	Frequency (MHz)	Reading (dBµV)	Corrected (dB)	Result (dBµV)	Limit (dBµV)	Margin (dB)	Detector	Antenna Pole
1	5350.0000	63.59	5.60	57.99	74.00	-16.01	Peak	Horizontal
2	5350.0000	51.65	5.60	46.05	54.00	-7.95	Average	Horizontal



IEEE 802.11n HT 20 MHz mode / 5180 MHz



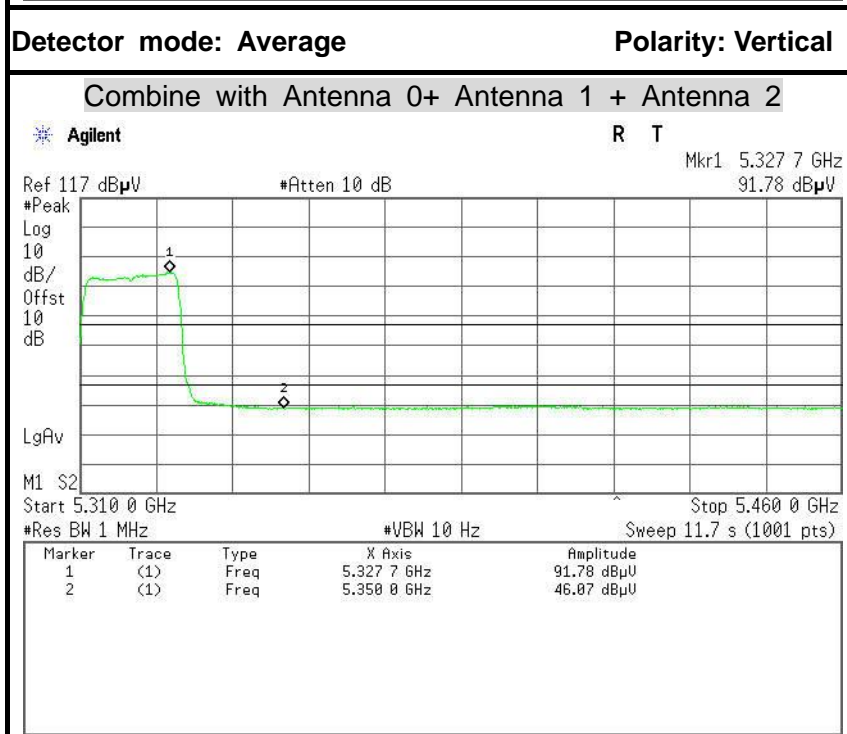
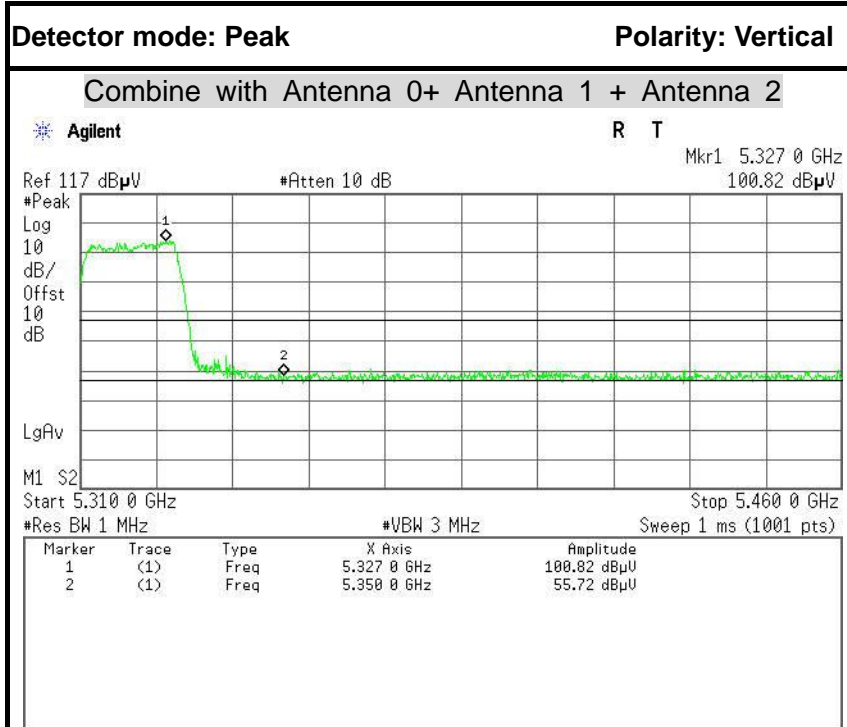
No.	Frequency (MHz)	Reading (dBµV)	Corrected (dB)	Result (dBµV)	Limit (dBµV)	Margin (dB)	Detector	Antenna Pole
1	5150.0000	61.77	5.60	56.17	74.00	-17.83	Peak	Vertical
2	5150.0000	50.61	5.60	45.01	54.00	-8.99	Average	Vertical



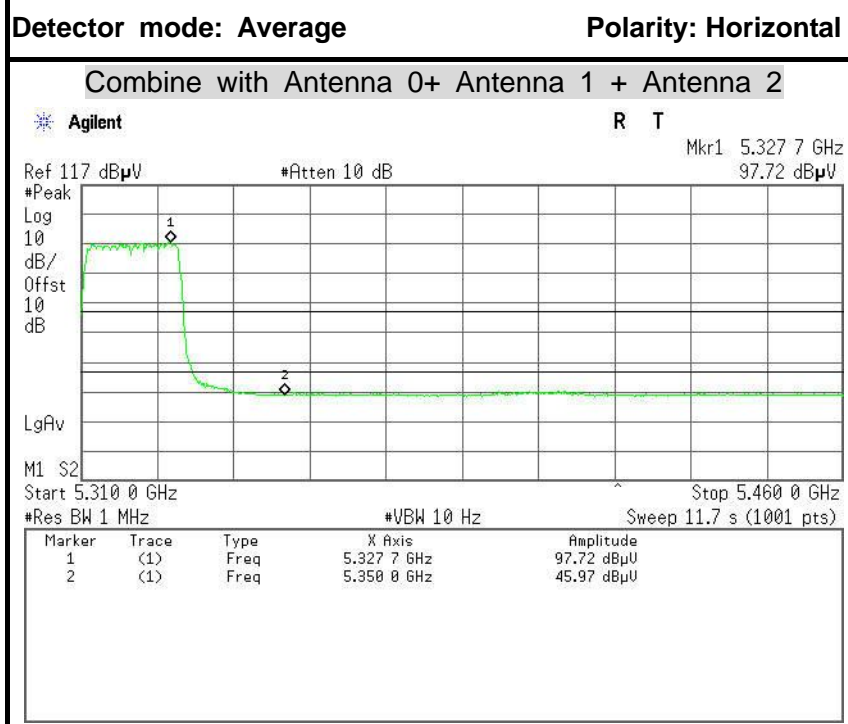
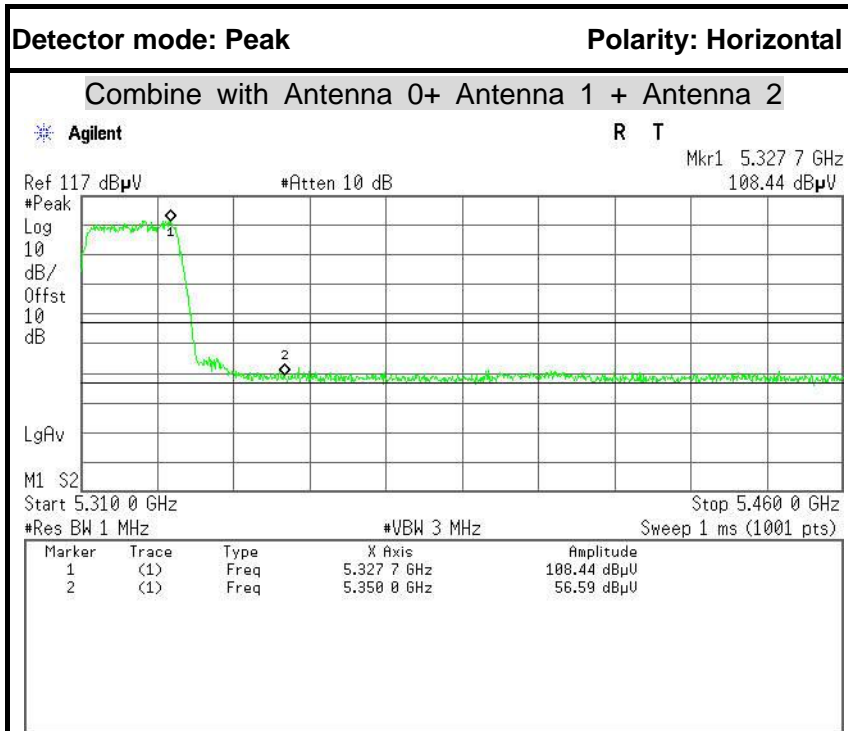
No.	Frequency (MHz)	Reading (dBuV)	Corrected (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Antenna Pole
1	5150.0000	65.92	5.60	60.32	74.00	-13.68	Peak	Horizontal
2	5150.0000	52.39	5.60	46.79	54.00	-7.21	Average	Horizontal



IEEE 802.11n HT 20 MHz mode / 5320 MHz



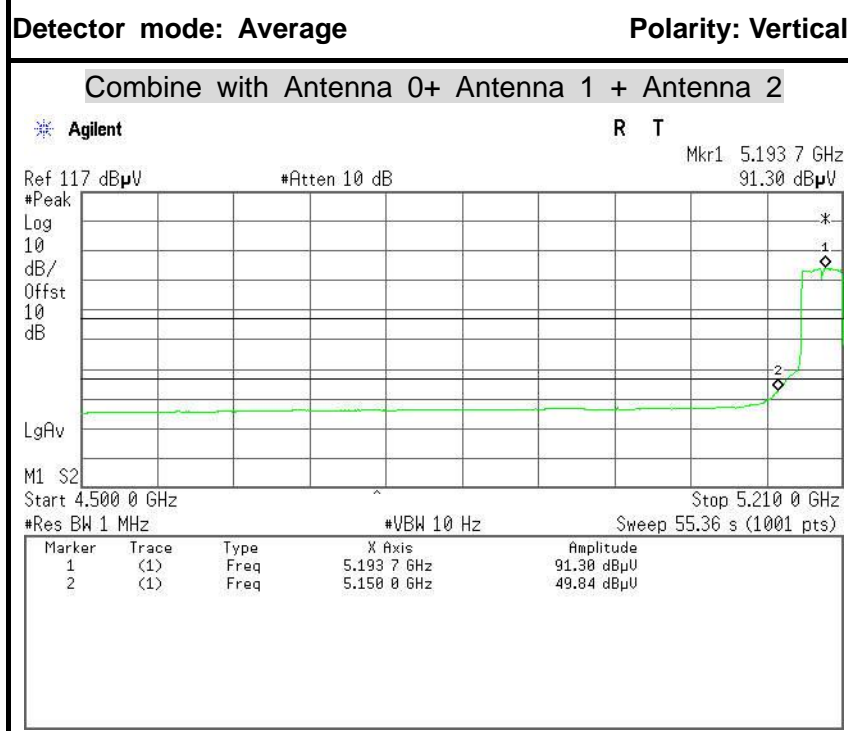
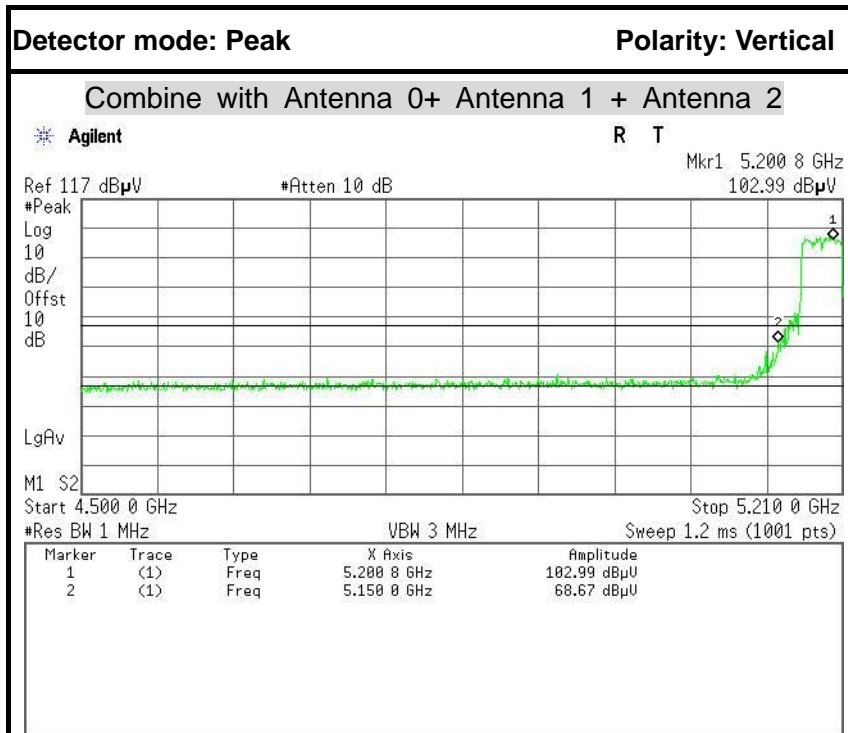
No.	Frequency (MHz)	Reading (dBuV)	Corrected (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Antenna Pole
1	5350.0000	61.32	5.60	55.72	74.00	-18.28	Peak	Vertical
2	5350.0000	51.67	5.60	46.07	54.00	-7.93	Average	Vertical



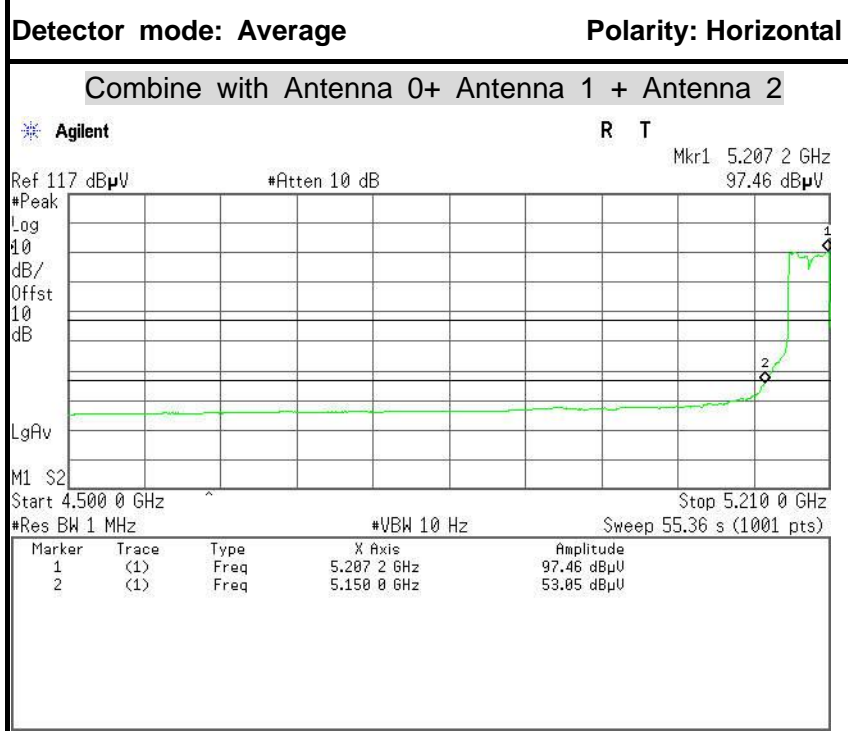
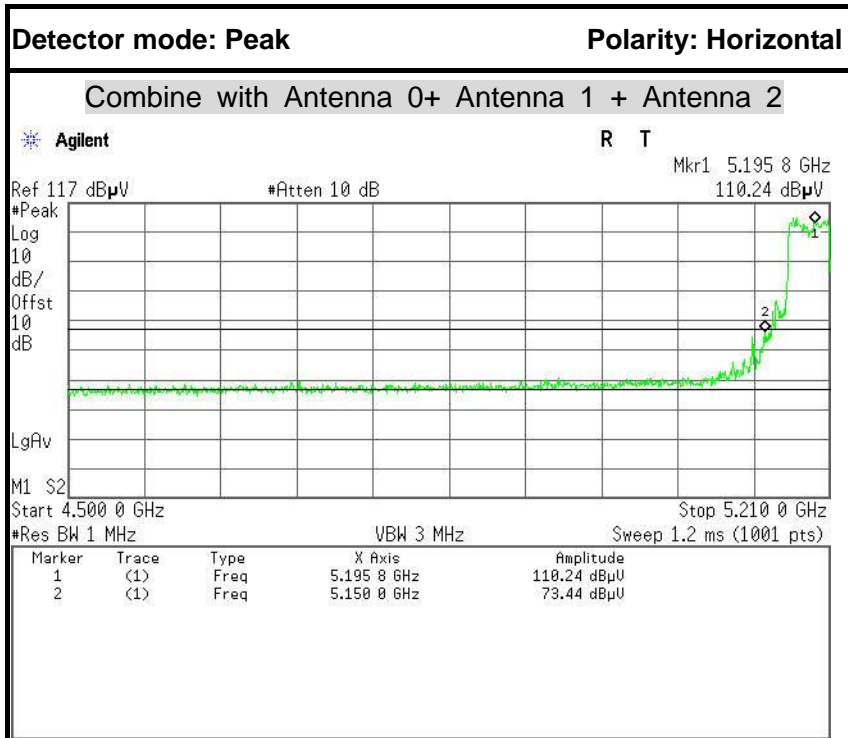
No.	Frequency (MHz)	Reading (dBuV)	Corrected (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Antenna Pole
1	5350.0000	62.19	5.60	56.59	74.00	-17.41	Peak	Horizontal
2	5350.0000	51.57	5.60	45.97	54.00	-8.03	Average	Horizontal



IEEE 802.11n HT 40 MHz mode / 5190 MHz



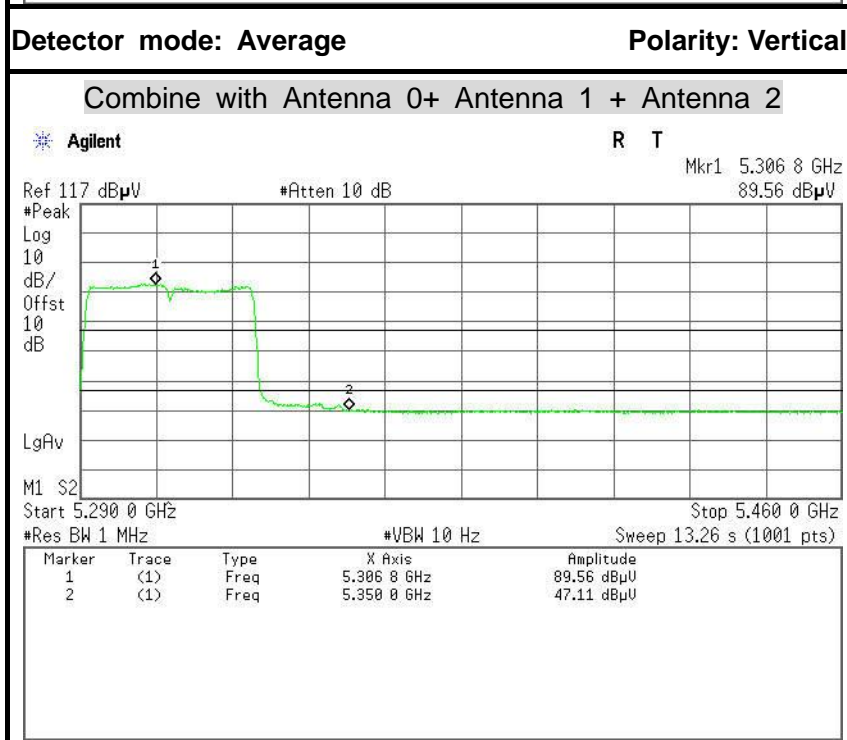
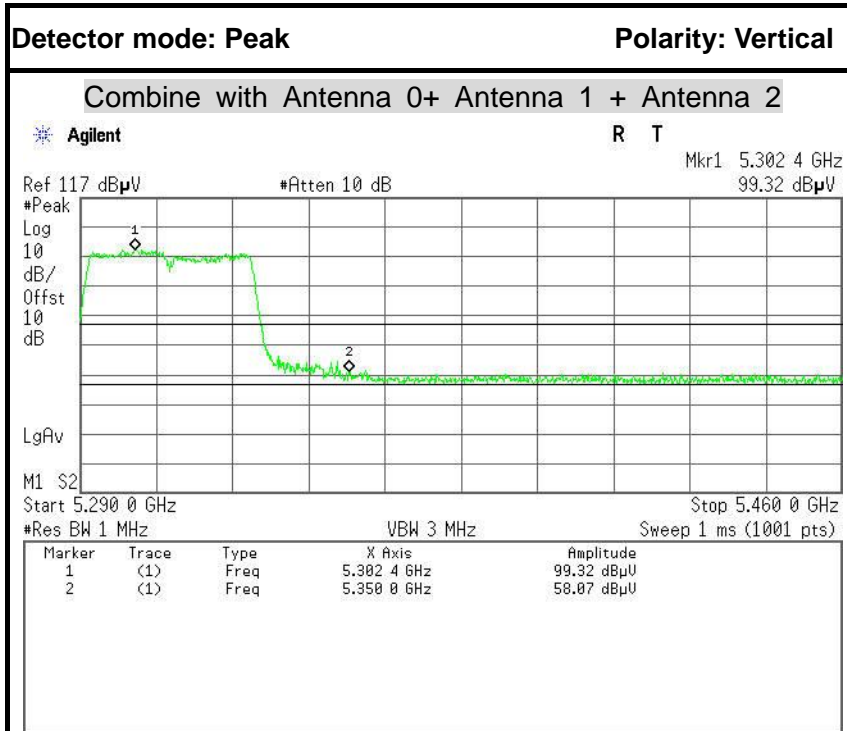
No.	Frequency (MHz)	Reading (dBuV)	Corrected (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Antenna Pole
1	5150.0000	74.27	5.60	68.67	74.00	-5.33	Peak	Vertical
2	5150.0000	55.44	5.60	49.84	54.00	-4.16	Average	Vertical



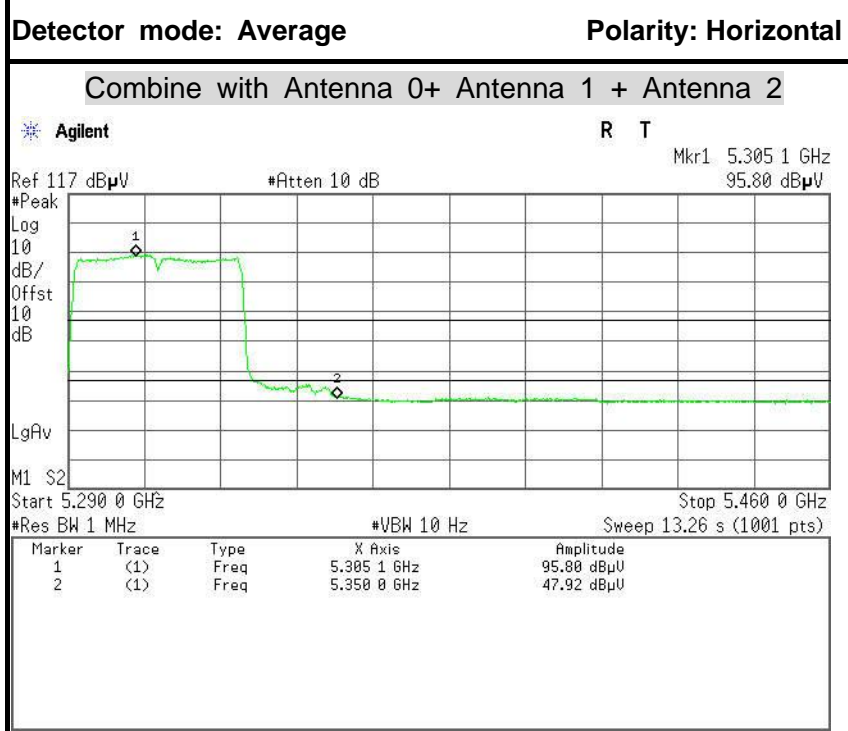
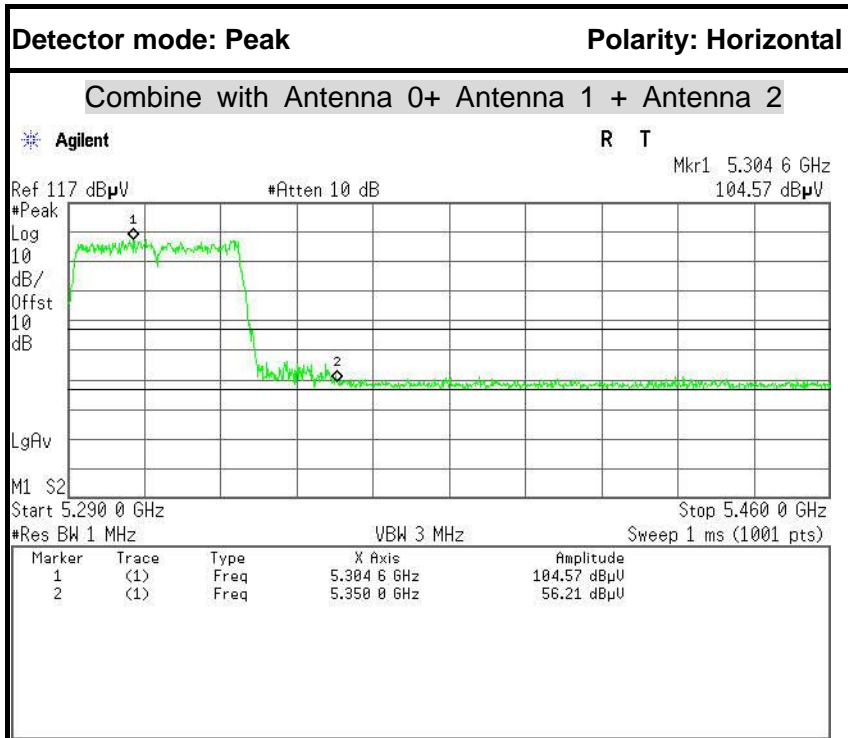
No.	Frequency (MHz)	Reading (dBuV)	Corrected (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Antenna Pole
1	5150.0000	79.04	5.60	73.44	74.00	-0.56	Peak	Horizontal
2	5150.0000	58.65	5.60	53.05	54.00	-0.95	Average	Horizontal



IEEE 802.11n HT 40 MHz mode / 5310 MHz



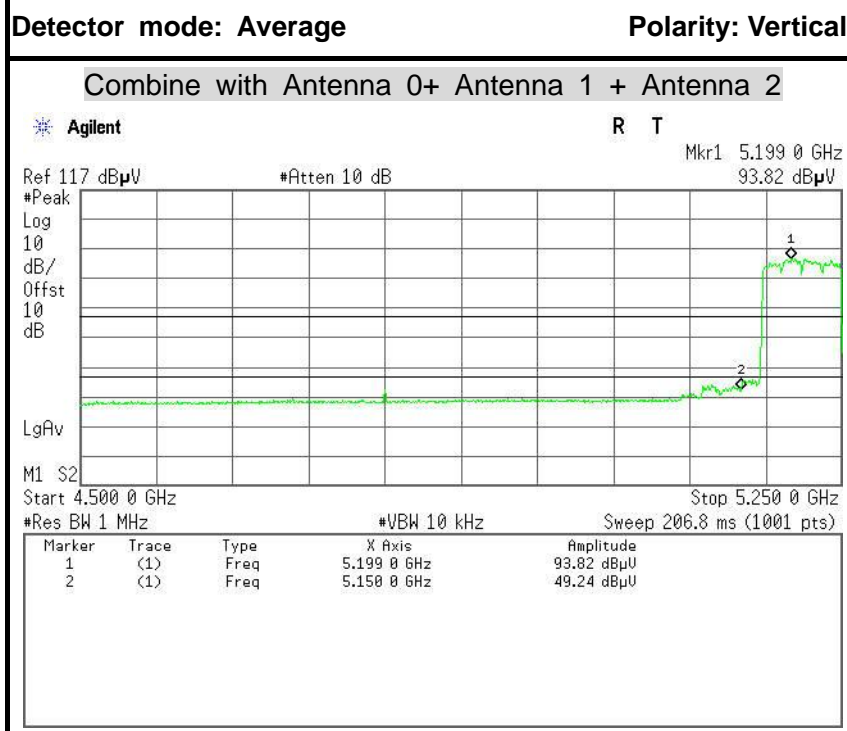
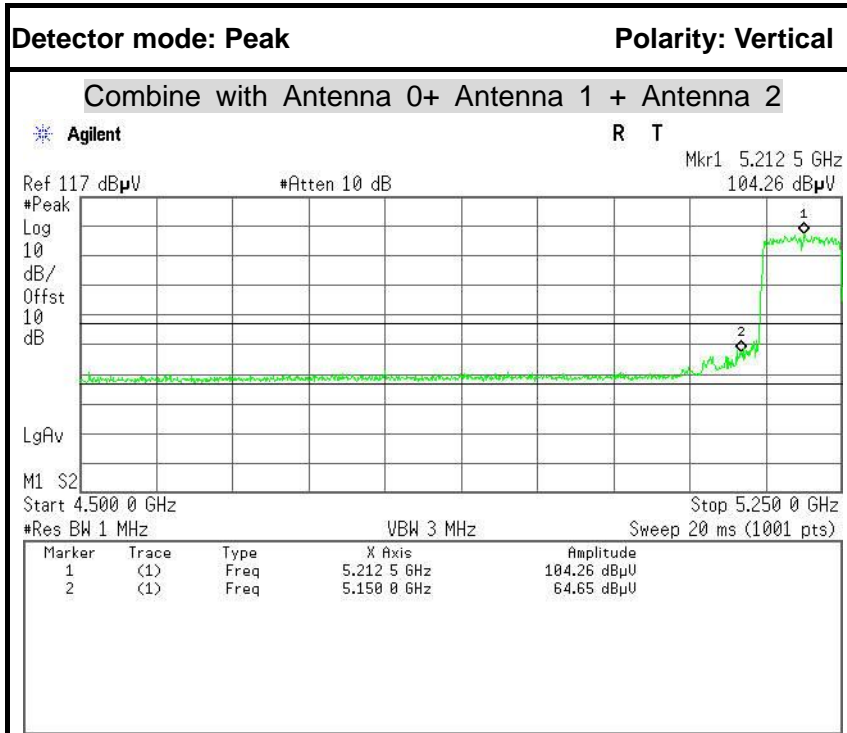
No.	Frequency (MHz)	Reading (dBuV)	Corrected (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Antenna Pole
1	5350.0000	63.67	5.60	58.07	74.00	-15.93	Peak	Vertical
2	5350.0000	52.71	5.60	47.11	54.00	-6.89	Average	Vertical



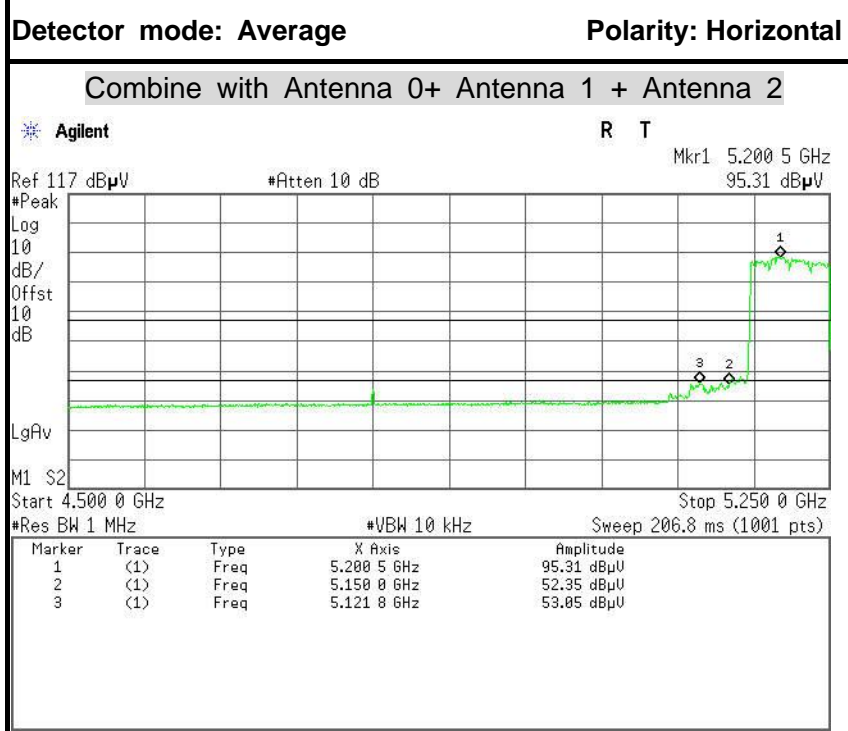
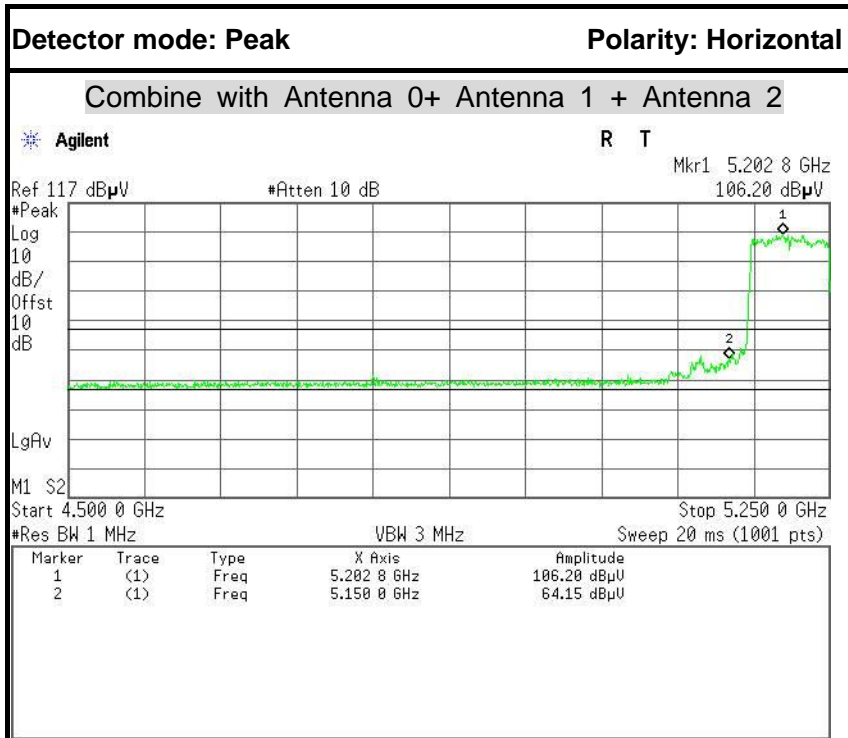
No.	Frequency (MHz)	Reading (dBuV)	Corrected (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Antenna Pole
1	5350.0000	61.81	5.60	56.21	74.00	-17.79	Peak	Horizontal
2	5350.0000	53.52	5.60	47.92	54.00	-6.08	Average	Horizontal



IEEE 802.11ac 80 mode / 5210 MHz



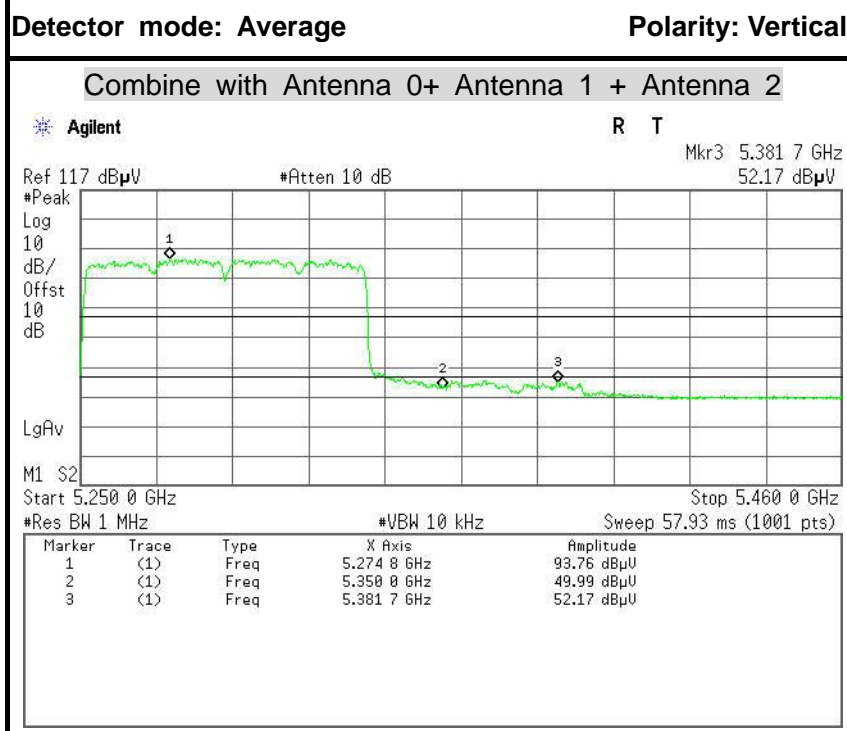
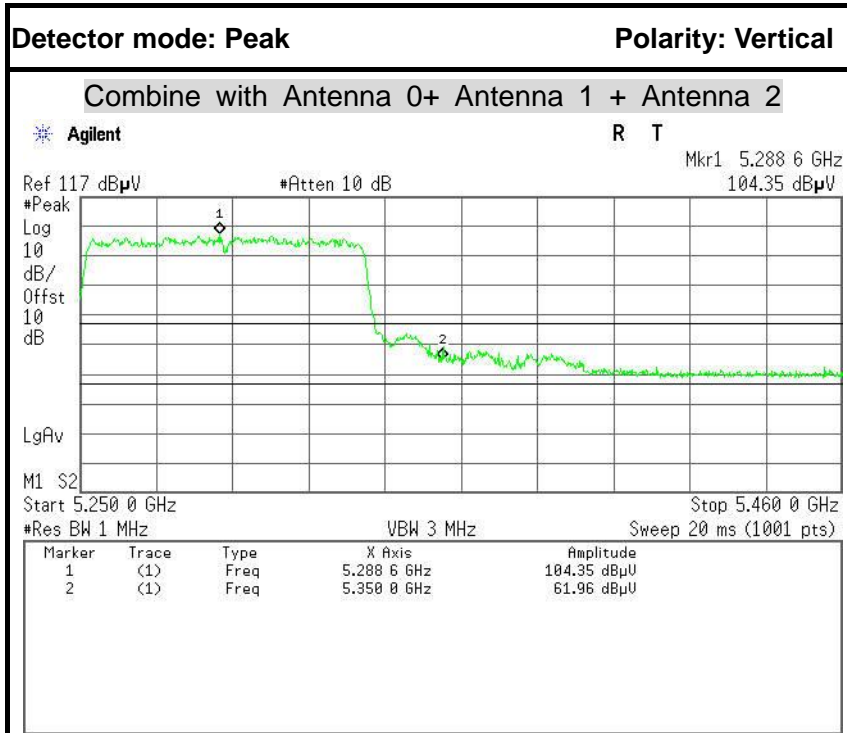
No.	Frequency (MHz)	Reading (dBuV)	Corrected (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Antenna Pole
1	5150.0000	70.25	5.60	64.65	74.00	-9.35	Peak	Vertical
2	5150.0000	54.84	5.60	49.24	54.00	-4.76	Average	Vertical



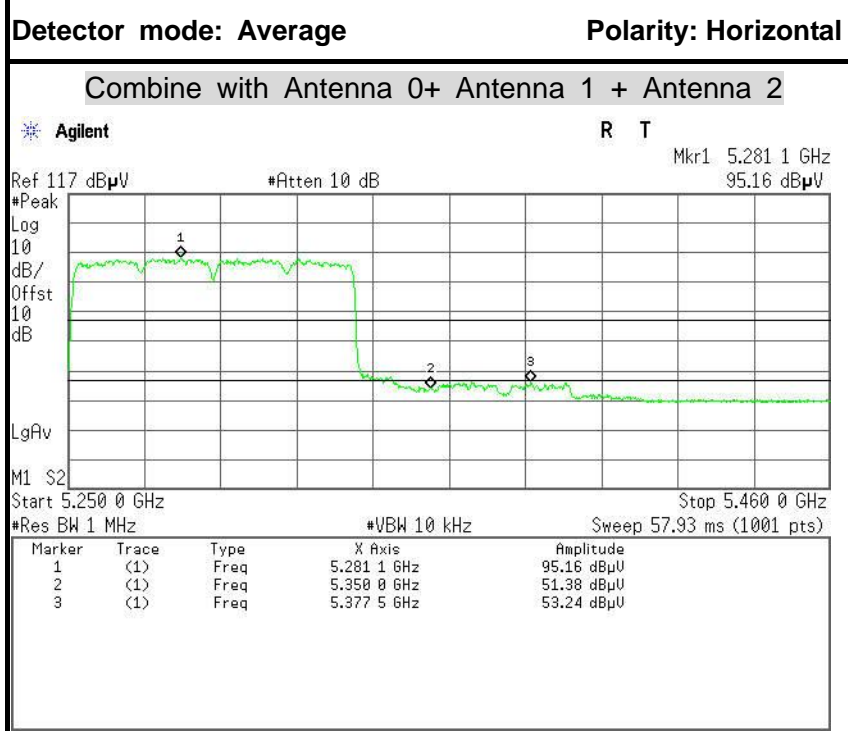
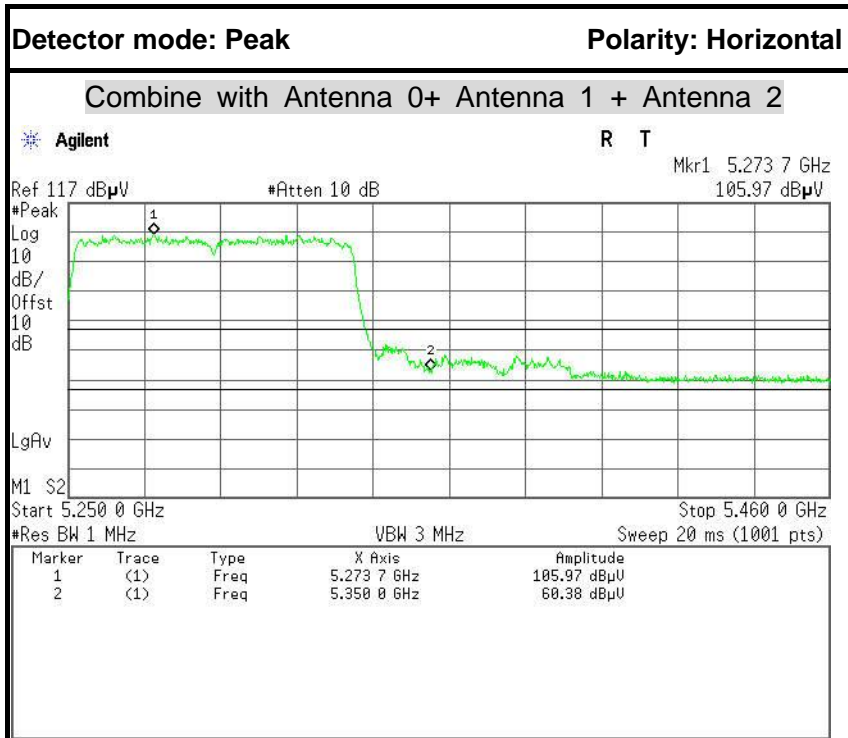
No.	Frequency (MHz)	Reading (dBuV)	Corrected (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Antenna Pole
1	5150.0000	69.75	5.60	64.15	74.00	-9.85	Peak	Horizontal
2	5150.0000	58.65	5.60	53.05	54.00	-0.95	Average	Horizontal



IEEE 802.11ac 80 mode / 5290 MHz



No.	Frequency (MHz)	Reading (dBuV)	Corrected (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Antenna Pole
1	5350.0000	67.56	5.60	61.96	74.00	-12.04	Peak	Vertical
2	5350.0000	57.77	5.60	52.17	54.00	-1.83	Average	Vertical



No.	Frequency (MHz)	Reading (dBuV)	Corrected (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Antenna Pole
1	5350.0000	65.98	5.60	60.38	74.00	-13.62	Peak	Horizontal
2	5350.0000	58.84	5.60	53.24	54.00	-0.76	Average	Horizontal



6.6 PEAK POWER SPECTRAL DENSITY

6.6.1 LIMIT

According to §15.407(a) & FCC R&O FCC 14-30

(1) For the band 5.15-5.25 GHz.

(i) For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).

(ii) For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(iii) For fixed point-to-point access points operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power or maximum power spectral density. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power and maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

(iv) For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(2) For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or $11 \text{ dBm} + 10 \log B$, where B is the 26 dB emission bandwidth in megahertz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(3) For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall



not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

Note to paragraph (a)(3): The Commission strongly recommends that parties employing U-NII devices to provide critical communications services should determine if there are any nearby Government radar systems that could affect their operation.

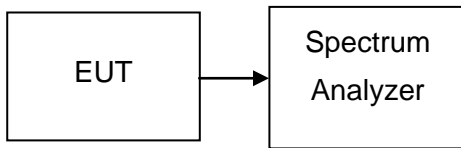
6.6.2 MEASUREMENT EQUIPMENT USED

Name of Equipment	Manufacturer	Model	Serial Number	Last Calibration	Due Calibration
Spectrum Analyzer	Agilent	E4446A	US44300399	02/21/2016	02/20/2017

Remark: Each piece of equipment is scheduled for calibration once a year.



6.6.3 TEST CONFIGURATION



6.6.4 TEST PROCEDURE

1. Place the EUT on the table and set it in transmitting mode.
Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
2. For devices operating in the bands 5.15-5.25 GHz, Set the spectrum analyzer as RBW = 1MHz, VBW = 3MHz, Span = 30MHz, Sweep=1ms
3. For devices operating in the bands 5.725-5.85 GHz, Set the spectrum analyzer as RBW = 500kHz, VBW = 1.5MHz, Span = 30MHz, Sweep=1ms
4. Record the max. reading.
5. Repeat the above procedure until the measurements for all frequencies are completed



6.6.5 TEST RESULTS

Test Data

Test mode: IEEE 802.11a mode / 5180 ~ 5240MHz

Channel	Frequency (MHz)	PPSD (dBm)			Limit (dBm)	Margain			Result
		Antenna 0	Antenna 1	Antenna 2		Antenna 0	Antenna 1	Antenna 2	
Low	5180	5.329	4.718	5.498	30	-24.671	-25.282	-24.502	PASS
Mid	5200	5.725	5.918	5.294		-24.275	-24.082	-24.706	PASS
High	5240	5.148	4.888	4.351		-24.852	-25.112	-25.649	PASS

Test mode: IEEE 802.11a mode / 5260~ 5320MHz

Channel	Frequency (MHz)	PPSD (dBm)			Limit (dBm)	Margain			Result
		Antenna 0	Antenna 1	Antenna 2		Antenna 0	Antenna 1	Antenna 2	
Low	5260	5.312	4.599	4.977	24	-18.688	-19.401	-19.023	PASS
Mid	5300	4.561	4.316	5.130		-19.439	-19.684	-18.870	PASS
High	5320	4.417	4.002	3.555		-19.583	-19.998	-20.445	PASS

Test mode: IEEE 802.11a mode / 5500 ~ 5700MHz

Channel	Frequency (MHz)	PPSD (dBm)			Limit (dBm)	Margain			Result
		Antenna 0	Antenna 1	Antenna 2		Antenna 0	Antenna 1	Antenna 2	
Low	5500	3.184	4.064	4.681	24	-20.816	-19.936	-19.319	PASS
Mid	5580	3.515	3.270	2.727		-20.485	-20.730	-21.273	PASS
High	5700	3.986	2.396	2.539		-20.014	-21.604	-21.461	PASS

Test mode: IEEE 802.11a mode / 5745 ~ 5825MHz

Channel	Frequency (MHz)	PPSD (dBm)			factor	Limit (dBm)	Margain			Result
		Antenna 0	Antenna 1	Antenna 2			Antenna 0	Antenna 1	Antenna 2	
Low	5745	2.955	3.431	3.412	-3.01	30	-23.633	-29.579	-29.598	PASS
Mid	5785	2.666	2.663	3.540	-3.01		-23.794	-30.347	-29.470	PASS
High	5825	2.899	2.931	3.229	-3.01		-23.872	-30.079	-26.771	PASS

Remark: factor =10*log10(500/RBW)



Test mode: IEEE 802.11n HT 20 MHz mode / 5180 ~ 5240MHz

Channel	Frequency (MHz)	PPSD (dBm)			Total (dBm)	Limit (dBm)	Margain	Result
		Antenna 0	Antenna 1	Antenna 2				
Low	5180	-16.707	-21.741	-15.703	-12.601	27.40	-40.001	PASS
Mid	5200	-19.064	-21.825	-15.360	-13.180		-40.580	PASS
High	5240	-19.124	-19.954	-16.333	-13.410		-40.810	PASS

Test mode: IEEE 802.11n HT 20 MHz mode / 5260~ 5320MHz

Channel	Frequency (MHz)	PPSD (dBm)			Total (dBm)	Limit (dBm)	Margain	Result
		Antenna 0	Antenna 1	Antenna 2				
Low	5260	-1.377	-0.460	-1.165	3.789	21.20	-17.411	PASS
Mid	5300	-0.766	-1.802	-1.948	3.299		-17.901	PASS
High	5320	-3.037	-0.857	-0.581	3.410		-17.790	PASS

Test mode: IEEE 802.11n HT 20 MHz mode / 5500 ~ 5700MHz

Channel	Frequency (MHz)	PPSD (dBm)			Total (dBm)	Limit (dBm)	Margain	Result
		Antenna 0	Antenna 1	Antenna 2				
Low	5500	3.396	2.790	2.295	7.622	21.20	-13.578	PASS
Mid	5580	3.420	1.766	2.687	7.448		-13.752	PASS
High	5700	1.070	1.565	2.146	6.387		-14.813	PASS

Test mode: IEEE 802.11n HT 20 MHz mode / 5745 ~ 5825MHz

Channel	Frequency (MHz)	PPSD (dBm)			factor	Total (dBm)	Limit (dBm)	Margain	Result
		Antenna 0	Antenna 1	Antenna 2					
Low	5745	3.328	4.985	4.292	-3.01	6.015	27.40	-21.385	PASS
Mid	5785	2.447	2.601	0.942	-3.01	3.820		-23.580	PASS
High	5825	1.539	2.567	2.922	-3.01	4.142		-23.258	PASS

Remark: factor = $10*\log_{10}(500/RBW)$

Note: The product has the funtion of the smart antenna, the beamforming gain= $10\log(3)=4.77$,
Antenna Gain= $3.8+4.77$



Test mode: IEEE 802.11n HT 40 MHz mode / 5190 ~ 5230MHz

Channel	Frequency (MHz)	PPSD (dBm)			Total (dBm)	Limit (dBm)	Margain	Result
		Antenna 0	Antenna 1	Antenna 2				
Low	5190	-22.091	-21.956	-17.663	-15.275	27.40	-42.675	PASS
High	5230	-20.943	-19.500	-20.406	-16.919		-44.319	PASS

Test mode: IEEE 802.11n HT 40 MHz mode / 5270 ~ 5310MHz

Channel	Frequency (MHz)	PPSD (dBm)			Total (dBm)	Limit (dBm)	Margain	Result
		Antenna 0	Antenna 1	Antenna 2				
Low	5270	-6.756	-8.047	-8.746	-2.999	27.20	-30.199	PASS
High	5310	-7.425	-6.587	-7.541	-2.392		-29.592	PASS

Test mode: IEEE 802.11n HT 40 MHz mode / 5510 ~ 5670MHz

Channel	Frequency (MHz)	PPSD (dBm)			Total (dBm)	Limit (dBm)	Margain	Result
		Antenna 0	Antenna 1	Antenna 2				
Low	5510	-1.570	-0.142	-2.182	3.559	27.20	-23.641	PASS
Mid	5550	-0.764	-2.882	-1.540	3.128		-24.072	PASS
High	5670	-0.394	-0.790	-2.167	3.718		-23.482	PASS

Test mode: IEEE 802.11n HT 40 MHz mode / 5755 ~ 5795MHz

Channel	Frequency (MHz)	PPSD (dBm)			factor	Total (dBm)	Limit (dBm)	Margain	Result
		Antenna 0	Antenna 1	Antenna 2					
Low	5755	-2.543	-3.278	-3.179	-3.01	-1.226	27.40	-28.626	PASS
High	5795	-4.293	-0.624	-1.424	-3.01	-0.090		-27.490	PASS

Remark: factor = $10 \cdot \log_{10}(500/RBW)$

Note: The product has the funtion of the smart antenna, the beamforming gain= $10\log(3)=4.77$,
Antenna Gain= $3.8+4.77$



Test mode: IEEE 802.11ac 80 mode / 5210MHz

Channel	Frequency (MHz)	PPSD (dBm)			Total (dBm)	Limit (dBm)	Margain	Result
		Antenna 0	Antenna 1	Antenna 2				
	5210	-19.514	-22.058	-20.109	-15.660	27.40	-43.060	PASS

Test mode: IEEE 802.11ac 80 mode / 5290MHz

Channel	Frequency (MHz)	PPSD (dBm)			Total (dBm)	Limit (dBm)	Margain	Result
		Antenna 0	Antenna 1	Antenna 2				
	5290	-22.024	-12.595	-19.216	-11.351	27.20	-38.551	PASS

Test mode: IEEE 802.11ac 80 mode / 5530MHz

Channel	Frequency (MHz)	PPSD (dBm)			Total (dBm)	Limit (dBm)	Margain	Result
		Antenna 0	Antenna 1	Antenna 2				
	5530	-15.072	-16.967	-15.595	-11.036	27.20	-38.236	PASS

Test mode: IEEE 802.11ac 80 mode / 5775MHz

Channel	Frequency (MHz)	PPSD (dBm)			factor	Total (dBm)	Limit (dBm)	Margain	Result
		Antenna 0	Antenna 1	Antenna 2					
	5775	-15.613	-18.991	-19.216	-3.01	-15.845	27.40	-43.245	PASS

Remark: factor =10*log10(500/RBW)

Note: The product has the function of the smart antenna, the beamforming gain=10log(3)=4.77, Antenna Gain=3.8+4.77



Test Plot

