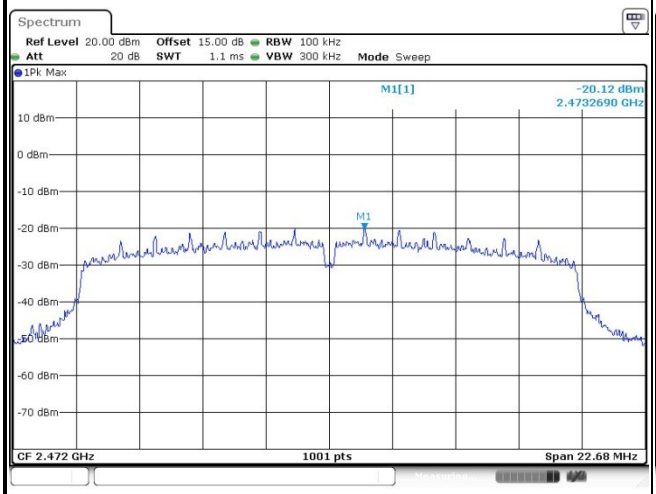
Test Mode :	802.11n HT20	**Temperature :**	24~26℃
Test Band :	2.4GHz High	**Relative Humidity :**	50~53%
Test Channel :	13	**Test Engineer :**	Sam Zheng

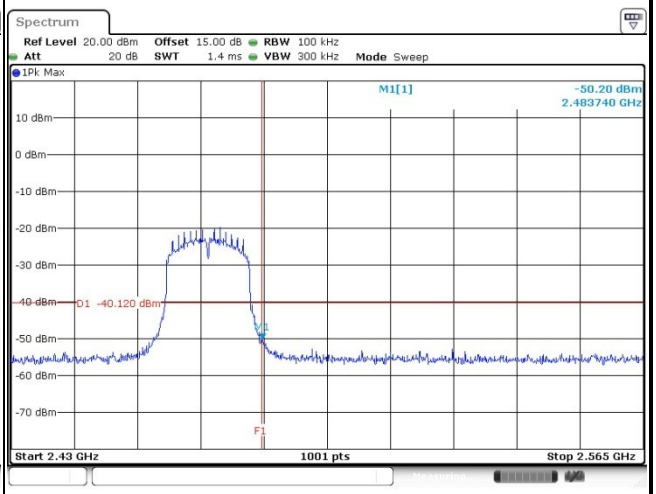
WLAN 802.11n HT20 Channel 13

100kHz PSD reference Level



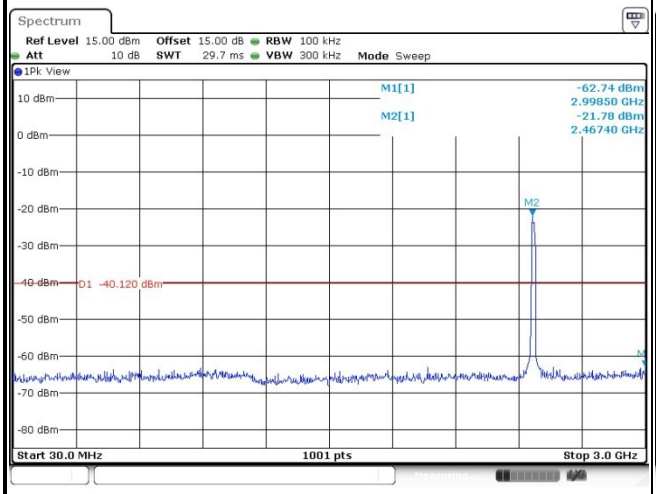
Date: 13.OCT.2018 00:08:53

High Channel Plot



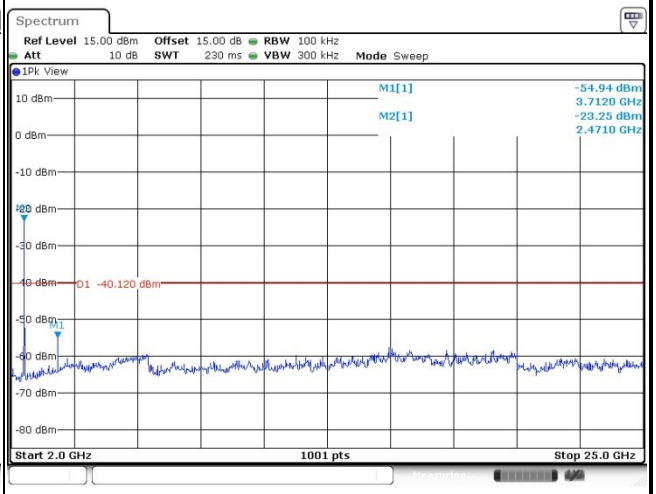
Date: 13.OCT.2018 00:09:03

Spurious Emission 30MHz~3GHz



Date: 13.OCT.2018 00:09:16

Spurious Emission 2GHz~25GHz



Date: 13.OCT.2018 00:09:24

3.5 Radiated Band Edges and Spurious Emission Measurement

3.5.1 Limit of Radiated band edge and Spurious Emission Measurement

In any 100 kHz bandwidth outside the intentional radiator frequency band, all harmonics/spurious must be at least 20 dB below the highest emission level within the authorized band. If the output power of this device was measured by spectrum analyzer, the attenuation under this paragraph shall be 30 dB instead of 20 dB. In addition, radiated emissions which fall in the restricted bands must also comply with the limits as below.

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009 – 0.490	2400/F(kHz)	300
0.490 – 1.705	24000/F(kHz)	30
1.705 – 30.0	30	30
30 – 88	100	3
88 – 216	150	3
216 - 960	200	3
Above 960	500	3

3.5.2 Measuring Instruments

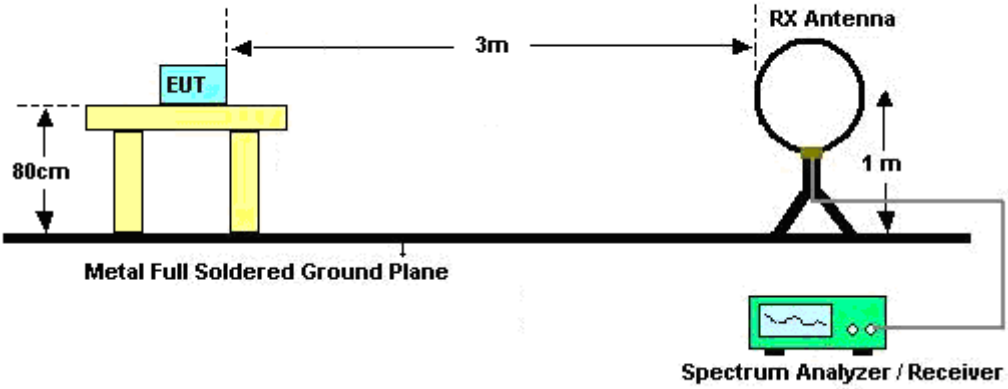
The measuring equipment is listed in the section 4 of this test report.

3.5.3 Test Procedures

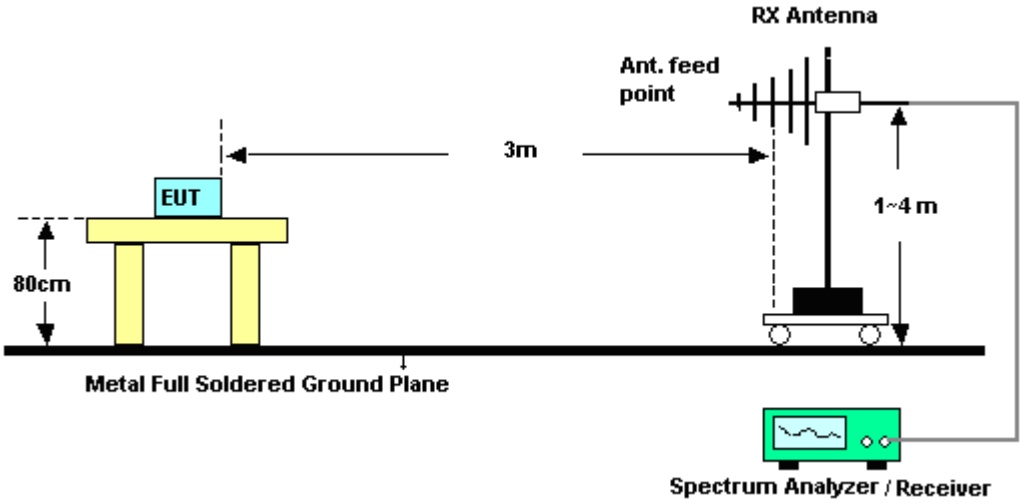
1. The testing follows ANSI C63.10-2013 clause 11.11 & 11.12
2. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level.
3. The EUT was placed on a turntable with 0.8 meter for frequency below 1GHz and 1.5 meter for frequency above 1GHz respectively above ground.
4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
5. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level
6. For testing below 1GHz, if the emission level of the EUT in peak mode was 3 dB lower than the limit specified, then peak values of EUT will be reported, otherwise, the emissions will be repeated one by one using the CISPR quasi-peak method and reported.
7. For testing above 1GHz, the emission level of the EUT in peak mode was 20dB lower than average limit (that means the emission level in average mode also complies with the limit in average mode), then peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.
8. Use the following spectrum analyzer settings:
   (1) Span shall wide enough to fully capture the emission being measured;
   (2) Set RBW=100 kHz for f < 1 GHz; VBW ≥ RBW; Sweep = auto; Detector function = peak; Trace = max hold;
   (3) Set RBW = 1 MHz, VBW= 3MHz for f ≥ 1 GHz for peak measurement.
   For average measurement:
   - VBW = 10 Hz, when duty cycle is no less than 98 percent.
   - VBW ≥ 1/T, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.

3.5.4 Test Setup

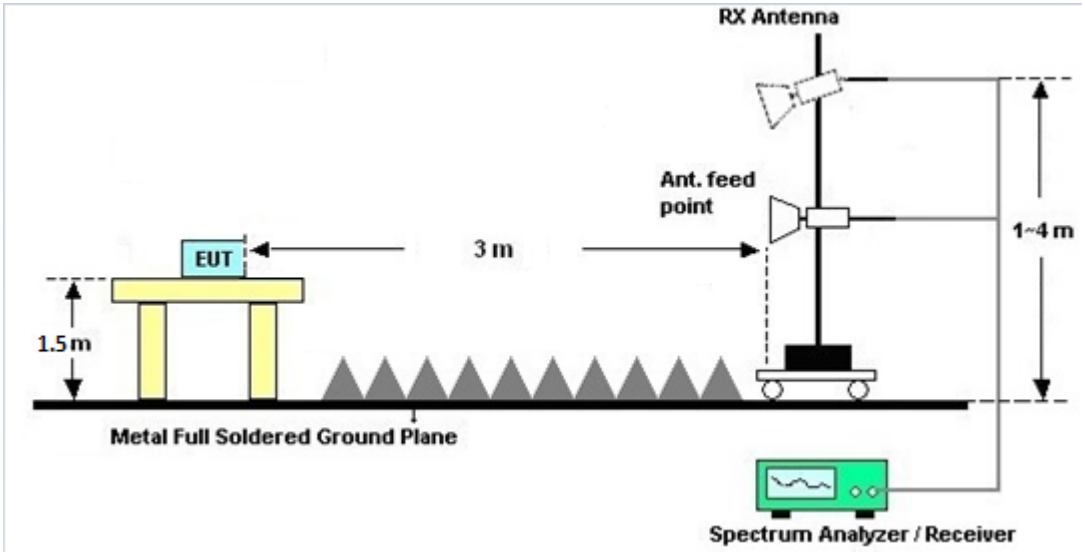
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



3.5.5 Test Results of Radiated Spurious Emissions (9kHz ~ 30MHz)

The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line was not reported.

3.5.6 Test Result of Radiated Spurious at Band Edges

Please refer to Appendix B and C.

3.5.7 Duty Cycle

Please refer to Appendix D.

3.5.8 Test Result of Radiated Spurious Emission (30MHz ~ 10th Harmonic)

Please refer to Appendix B and C.

3.6 AC Conducted Emission Measurement

3.6.1 Limit of AC Conducted Emission

For equipment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table.

Frequency of Emission (MHz)	Conducted Limit (dBμV)	
	Quasi-Peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

*Decreases with the logarithm of the frequency.

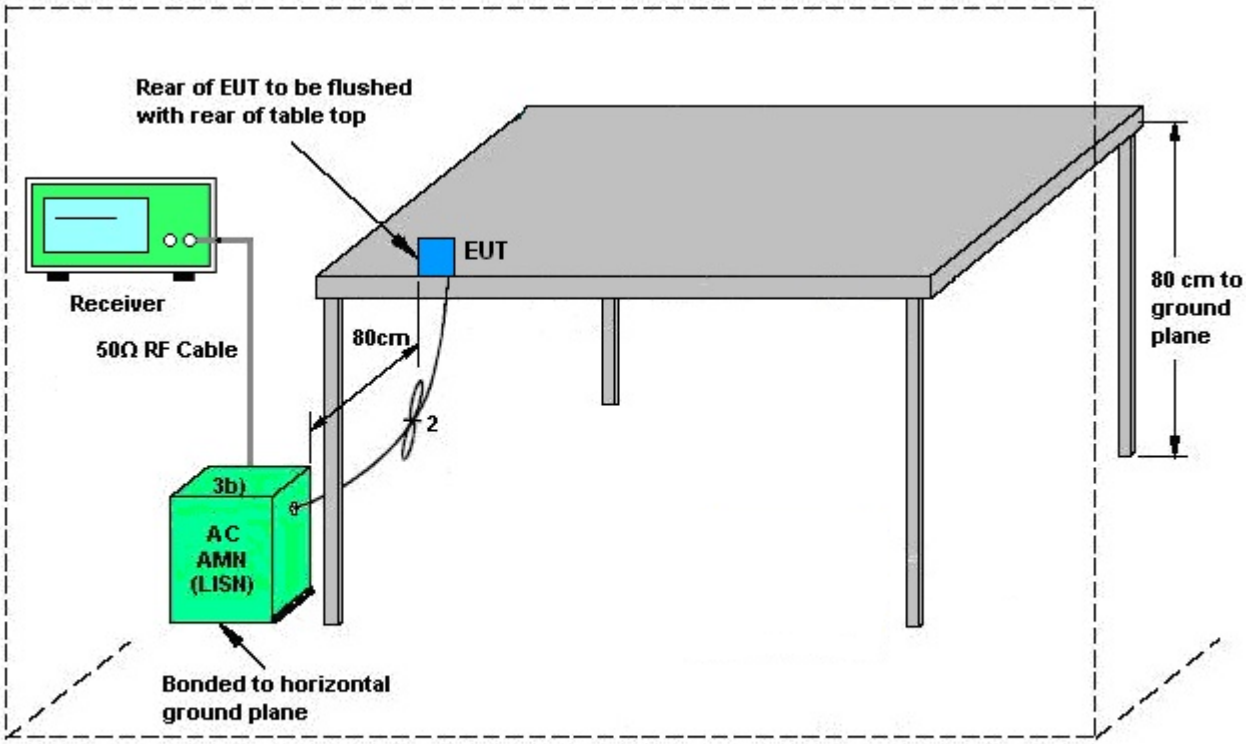
3.6.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.6.3 Test Procedures

1. The EUT was placed 0.4 meter from the conducting wall of the shielding room, and it was kept at least 80 centimeters from any other grounded conducting surface.
2. Connect EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connecting to the other LISN.
4. The LISN provides 50 ohm coupling impedance for the measuring instrument.
5. The FCC states that a 50 ohm, 50 microhenry LISN should be used.
6. Both sides of AC line were checked for maximum conducted interference.
7. The frequency range from 150 kHz to 30 MHz was searched.
8. Set the test-receiver system to Peak Detect Function and specified bandwidth (IF bandwidth = 9kHz) with Maximum Hold Mode.

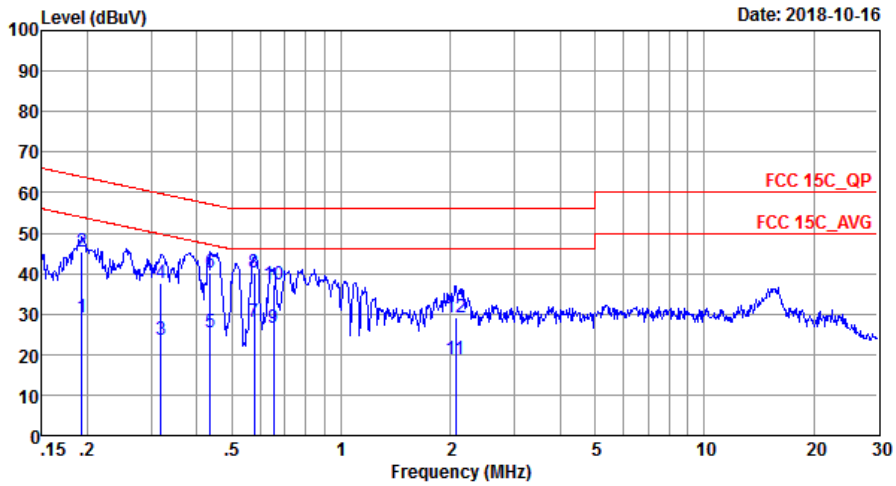
3.6.4 Test Setup



AMN = Artificial mains network (LISN)
AE = Associated equipment
EUT = Equipment under test
ISN = Impedance stabilization network

3.6.5 Test Result of AC Conducted Emission

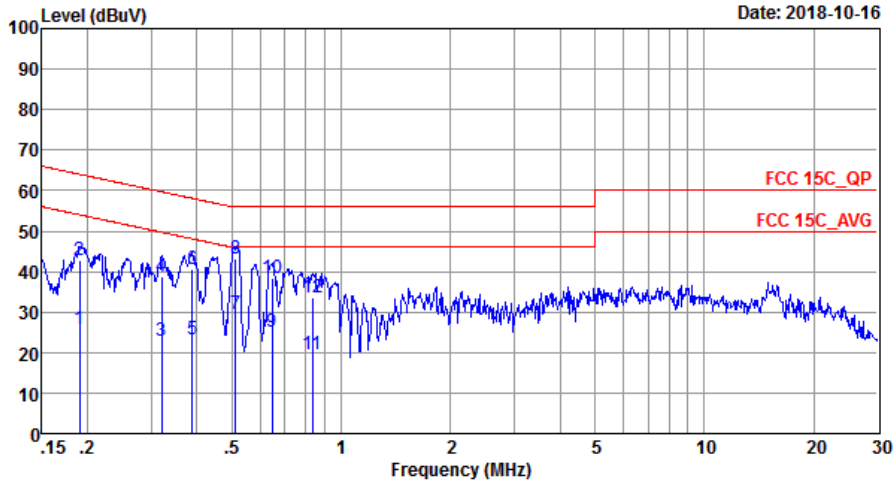
Test Mode :	Mode 1	**Temperature :**	22~25℃
Test Engineer :	Zhang Xu	**Relative Humidity :**	50~55%
Test Voltage :	120Vac / 60Hz	**Phase :**	Line
Function Type :	Bluetooth Link + WLAN (2.4G) Link + USB Cable (Charging from Adapter)		



Site : CO01-SZ
Condition: FCC 15C_QP LISN_20180719_L LINE

		Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
		MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1		0.19	29.30	-24.59	53.89	19.20	0.03	10.07	Average
2		0.19	45.29	-18.60	63.89	35.19	0.03	10.07	QP
3		0.32	23.71	-26.04	49.75	13.60	0.03	10.08	Average
4		0.32	37.71	-22.04	59.75	27.60	0.03	10.08	QP
5		0.44	25.61	-21.54	47.15	15.50	0.03	10.08	Average
6		0.44	40.31	-16.84	57.15	30.20	0.03	10.08	QP
7		0.58	28.10	-17.90	46.00	18.00	0.02	10.08	Average
8	*	0.58	40.30	-15.70	56.00	30.20	0.02	10.08	QP
9		0.65	26.70	-19.30	46.00	16.60	0.02	10.08	Average
10		0.65	37.40	-18.60	56.00	27.30	0.02	10.08	QP
11		2.07	18.83	-27.17	46.00	8.61	0.11	10.11	Average
12		2.07	29.03	-26.97	56.00	18.81	0.11	10.11	QP

Test Mode :	Mode 1	Temperature :	22~25℃
Test Engineer :	Zhang Xu	Relative Humidity :	50~55%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	Bluetooth Link + WLAN (2.4G) Link + USB Cable (Charging from Adapter)		



Site : CO01-SZ
Condition: FCC 15C_QP LISN_20180719_N NEUTRAL

		Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
				dB	dBuV	dBuV	dB	dB	
1		0.19	25.90	-28.12	54.02	15.80	0.03	10.07	Average
2		0.19	42.80	-21.22	64.02	32.70	0.03	10.07	QP
3		0.32	22.71	-27.00	49.71	12.60	0.03	10.08	Average
4		0.32	38.61	-21.10	59.71	28.50	0.03	10.08	QP
5		0.39	23.40	-24.68	48.08	13.30	0.02	10.08	Average
6		0.39	40.60	-17.48	58.08	30.50	0.02	10.08	QP
7		0.51	29.70	-16.30	46.00	19.60	0.02	10.08	Average
8	*	0.51	43.00	-13.00	56.00	32.90	0.02	10.08	QP
9		0.64	25.00	-21.00	46.00	14.90	0.02	10.08	Average
10		0.64	38.20	-17.80	56.00	28.10	0.02	10.08	QP
11		0.83	19.72	-26.28	46.00	9.60	0.03	10.09	Average
12		0.83	33.62	-22.38	56.00	23.50	0.03	10.09	QP

3.7 Antenna Requirements

3.7.1 Standard Applicable

If directional gain of transmitting antennas is greater than 6dBi, the power shall be reduced by the same level in dB comparing to gain minus 6dBi. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the rule.

3.7.2 Antenna Anti-Replacement Construction

An embedded-in antenna design is used.

3.7.3 Antenna Gain

The antenna peak gain of EUT is less than 6 dBi. Therefore, it is not necessary to reduce maximum peak output power limit.

4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Spectrum Analyzer	R&S	FSV40	101078	9kHz~40GHz	Apr. 19, 2018	Oct. 12, 2018~ Oct. 13, 2018	Apr. 18, 2019	Conducted (TH01-SZ)
Pulse Power Senor	Anritsu	MA2411B	1207253	30MHz~40GHz	Dec. 26, 2017	Oct. 12, 2018~ Oct. 13, 2018	Dec. 25, 2018	Conducted (TH01-SZ)
Power Meter	Anritsu	ML2495A	1218010	50MHz Bandwidth	Dec. 26, 2017	Oct. 12, 2018~ Oct. 13, 2018	Dec. 25, 2018	Conducted (TH01-SZ)
Spectrum Analyzer	R&S	FSV40	101041	10kHz~40GHz; Max 30dBm	Oct. 19, 2017	Oct. 10, 2018~ Oct. 12, 2018	Oct. 18, 2018	Radiation (03CH02-SZ)
Loop Antenna	R&S	HFH2-Z2	100354	9kHz~30MHz	May 14, 2018	Oct. 10, 2018~ Oct. 12, 2018	May 13, 2019	Radiation (03CH02-SZ)
Bilog Antenna	TeseQ	CBL6112D	35407	30MHz-2GHz	May 10, 2018	Oct. 10, 2018~ Oct. 12, 2018	May 09, 2019	Radiation (03CH02-SZ)
Double Ridge Horn Antenna	SCHWARZBECK	BBHA 9120D	9120D-1285	1GHz~18GHz	Dec. 13, 2017	Oct. 10, 2018~ Oct. 12, 2018	Dec. 12, 2018	Radiation (03CH02-SZ)
SHF-EHF Horn	com-power	AH-840	101071	18Ghz-40GHz	Mar. 30, 2018	Oct. 10, 2018~ Oct. 12, 2018	Mar. 29, 2019	Radiation (03CH02-SZ)
LF Amplifier	Burgeon	BPA-530	102211	0.01~3000Mhz	Oct. 19, 2017	Oct. 10, 2018~ Oct. 12, 2018	Oct. 18, 2018	Radiation (03CH02-SZ)
HF Amplifier	MITEQ	AMF-7D-0010 1800-30-10P-R	1707137	1GHz~18GHz	Oct. 19, 2017	Oct. 10, 2018~ Oct. 12, 2018	Oct. 18, 2018	Radiation (03CH02-SZ)
Amplifier	Agilent	8449B	3008A01023	1GHz~26.5GHz	Oct. 19, 2017	Oct. 10, 2018~ Oct. 12, 2018	Oct. 18, 2018	Radiation (03CH02-SZ)
HF Amplifier	MITEQ	TTA1840-35-HG	1871923	18GHz~40GHz	Jul. 30, 2018	Oct. 10, 2018~ Oct. 12, 2018	Jul. 29, 2019	Radiation (03CH02-SZ)
AC Power Source	Chroma	61601	616010002470	N/A	NCR	Oct. 10, 2018~ Oct. 12, 2018	NCR	Radiation (03CH02-SZ)
Turn Table	Chaintek	T-200	N/A	0~360 degree	NCR	Oct. 10, 2018~ Oct. 12, 2018	NCR	Radiation (03CH02-SZ)
Antenna Mast	Chaintek	MBS-400	N/A	1 m~4 m	NCR	Oct. 10, 2018~ Oct. 12, 2018	NCR	Radiation (03CH02-SZ)
EMI Receiver	R&S	ESR7	101630	9kHz~7GHz;	Dec. 26, 2017	Oct. 16, 2018	Dec. 25, 2018	Conduction (CO01-SZ)
AC LISN	EMCO	3816/2SH	00103912	9kHz~30MHz	Dec. 26, 2017	Oct. 16, 2018	Dec. 25, 2018	Conduction (CO01-SZ)
AC LISN (for auxiliary equipment)	MessTec	3816/2SH	00103892	9kHz~30MHz	Nov. 01, 2017	Oct. 16, 2018	Oct. 31, 2018	Conduction (CO01-SZ)
AC Power Source	Chroma	61602	616020000891	100Vac~250Vac	Jul. 18, 2018	Oct. 16, 2018	Jul. 17, 2019	Conduction (CO01-SZ)

NCR: No Calibration Required

5 Uncertainty of Evaluation

Uncertainty of Conducted Emission Measurement (150kHz ~ 30MHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	2.6dB

Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	5.0dB

Uncertainty of Radiated Emission Measurement (1GHz ~ 18GHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	5.0dB

Uncertainty of Radiated Emission Measurement (18GHz ~ 40GHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	4.4dB

Appendix A. Conducted Test Results

Test Engineer:	Sam Zheng	Temperature:	24~26	°C
Test Date:	2018/10/12~2018/10/13	Relative Humidity:	50~53	%

TEST RESULTS DATA
6dB and 99% Occupied Bandwidth

2.4GHz Band								
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	99% Occupied BW (MHz)	6dB BW (MHz)	6dB BW Limit (MHz)	Pass/Fail
					Ant 1	Ant 1		
11b		1	1	2412	14.19	9.03	0.50	Pass
11b		1	6	2437	14.34	9.51	0.50	Pass
11b		1	11	2462	14.24	9.53	0.50	Pass
11b		1	12	2467	14.14	8.55	0.50	Pass
11b		1	13	2472	14.14	8.99	0.50	Pass
11g		1	1	2412	17.63	15.13	0.50	Pass
11g		1	6	2437	17.88	15.13	0.50	Pass
11g		1	11	2462	17.93	15.33	0.50	Pass
11g		1	12	2467	17.78	15.11	0.50	Pass
11g		1	13	2472	17.73	15.33	0.50	Pass
HT20		1	1	2412	18.28	15.13	0.50	Pass
HT20		1	6	2437	19.68	15.13	0.50	Pass
HT20		1	11	2462	18.53	15.13	0.50	Pass
HT20		1	12	2467	18.33	15.13	0.50	Pass
HT20		1	13	2472	18.68	15.13	0.50	Pass

TEST RESULTS DATA
Peak Output Power

2.4GHz Band								
Mod.	NTX	CH.	Freq. (MHz)	Peak Conducted Power (dBm)	Conducted Power Limit (dBm)	EIRP Power (dBm)	EIRP Power Limit (dBm)	Pass /Fail
				Ant 1	Ant 1	Ant 1	Ant 1	
11b	1	1	2412	21.36	30.00	24.23	36.00	Pass
11b	1	6	2437	21.30	30.00	24.17	36.00	Pass
11b	1	11	2462	21.15	30.00	24.02	36.00	Pass
11b	1	12	2467	19.80	30.00	22.67	36.00	Pass
11b	1	13	2472	12.44	30.00	15.31	36.00	Pass
11g	1	1	2412	25.52	30.00	28.39	36.00	Pass
11g	1	6	2437	26.30	30.00	29.17	36.00	Pass
11g	1	11	2462	25.84	30.00	28.71	36.00	Pass
11g	1	12	2467	24.71	30.00	27.58	36.00	Pass
11g	1	13	2472	13.09	30.00	15.96	36.00	Pass
HT20	1	1	2412	25.30	30.00	28.17	36.00	Pass
HT20	1	6	2437	26.21	30.00	29.08	36.00	Pass
HT20	1	11	2462	25.12	30.00	27.99	36.00	Pass
HT20	1	12	2467	24.48	30.00	27.35	36.00	Pass
HT20	1	13	2472	2.00	30.00	4.87	36.00	Pass

TEST RESULTS DATA
Average Output Power

2.4GHz Band					
Mod.	NTX	CH.	Freq. (MHz)	Duty Factor (dB)	Average Conducted Power (dBm)
				Ant 1	Ant 1
11b	1	1	2412	0.04	18.90
11b	1	6	2437	0.04	18.87
11b	1	11	2462	0.04	18.64
11b	1	12	2467	0.04	17.16
11b	1	13	2472	0.04	10.19
11g	1	1	2412	0.29	16.14
11g	1	6	2437	0.29	18.62
11g	1	11	2462	0.29	16.42
11g	1	12	2467	0.29	14.73
11g	1	13	2472	0.29	2.29
HT20	1	1	2412	0.31	15.01
HT20	1	6	2437	0.31	18.51
HT20	1	11	2462	0.31	15.65
HT20	1	12	2467	0.31	14.09
HT20	1	13	2472	0.31	-10.59

TEST RESULTS DATA
Peak Power Spectral Density

2.4GHz Band								
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Peak PSD (dBm/3kHz)	DG (dBi)	Peak PSD Limit (dBm/3kHz)	Pass/Fail
					Ant 1	Ant 1	Ant 1	
11b		1	1	2412	-2.63	2.87	8.00	Pass
11b		1	6	2437	0.72	2.87	8.00	Pass
11b		1	11	2462	-1.48	2.87	8.00	Pass
11b		1	12	2467	-3.52	2.87	8.00	Pass
11b		1	13	2472	-10.73	2.87	8.00	Pass
11g		1	1	2412	-8.90	2.87	8.00	Pass
11g		1	6	2437	-3.63	2.87	8.00	Pass
11g		1	11	2462	-8.42	2.87	8.00	Pass
11g		1	12	2467	-9.63	2.87	8.00	Pass
11g		1	13	2472	-26.27	2.87	8.00	Pass
HT20		1	1	2412	-8.15	2.87	8.00	Pass
HT20		1	6	2437	-4.77	2.87	8.00	Pass
HT20		1	11	2462	-8.22	2.87	8.00	Pass
HT20		1	12	2467	-10.35	2.87	8.00	Pass
HT20		1	13	2472	-33.77	2.87	8.00	Pass

Appendix B. Radiated Spurious Emission

2.4GHz 2400~2483.5MHz

WIFI 802.11b (Band Edge @ 3m)

WIFI Ant.	Note	Frequency	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Peak Avg.	Pol.
1		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11b CH 01 2412MHz		2386.23	58.73	-15.27	74	56.35	27.09	6.57	31.28	150	47	P	H
		2383.71	53.1	-0.9	54	50.8	27.04	6.57	31.31	150	47	A	H
	*	2412	113.28	-	-	110.8	27.14	6.6	31.26	150	47	P	H
	*	2412	110.06	-	-	107.58	27.14	6.6	31.26	150	47	A	H
		2386.75	53.89	-20.11	74	51.51	27.09	6.57	31.28	378	104	P	V
		2386.86	46.89	-7.11	54	44.51	27.09	6.57	31.28	378	104	A	V
	*	2412	107.19	-	-	104.71	27.14	6.6	31.26	378	104	P	V
	*	2412	104	-	-	101.52	27.14	6.6	31.26	378	104	A	V
802.11b CH 06 2437MHz		2388.4	55.17	-18.83	74	52.76	27.09	6.6	31.28	143	44	P	H
		2384.62	47.74	-6.26	54	45.44	27.04	6.57	31.31	143	44	A	H
	*	2437	114.84	-	-	112.23	27.24	6.63	31.26	143	44	P	H
	*	2437	110.48	-	-	107.87	27.24	6.63	31.26	143	44	A	H
		2488.38	52.48	-21.52	74	49.57	27.4	6.73	31.22	143	44	P	H
		2484.88	44.36	-9.64	54	41.53	27.35	6.7	31.22	143	44	A	H
		2384.48	52.26	-21.74	74	49.96	27.04	6.57	31.31	378	104	P	V
		2384.48	43.53	-10.47	54	41.23	27.04	6.57	31.31	378	104	A	V
	*	2437	108.44	-	-	105.83	27.24	6.63	31.26	378	104	P	V
	*	2437	105.18	-	-	102.57	27.24	6.63	31.26	378	104	A	V
		2484.39	50.82	-23.18	74	47.99	27.35	6.7	31.22	378	104	P	V
		2484.67	41.74	-12.26	54	38.91	27.35	6.7	31.22	378	104	A	V

802.11b CH 11 2462MHz	*	2462	111.88	-	-	109.15	27.3	6.67	31.24	166	44	P	H
	*	2462	108.68	-	-	105.95	27.3	6.67	31.24	166	44	A	H
		2487.08	59	-15	74	56.17	27.35	6.7	31.22	166	44	P	H
		2488.32	53.11	-0.89	54	50.2	27.4	6.73	31.22	166	44	A	H
	*	2462	108.66	-	-	105.93	27.3	6.67	31.24	378	104	P	V
		2462	105.47	-	-	102.74	27.3	6.67	31.24	378	104	A	V
		2487.36	56.2	-17.8	74	53.37	27.35	6.7	31.22	378	104	P	V
		2488.2	50.28	-3.72	54	47.37	27.4	6.73	31.22	378	104	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11b CH 12 2467MHz	*	2467	108.58	-	-	105.8	27.3	6.7	31.22	182	57	P	H
	*	2467	106.86	-	-	104.08	27.3	6.7	31.22	182	57	A	H
		2483.52	57.91	-16.09	74	55.08	27.35	6.7	31.22	182	57	P	H
		2484.36	52.34	-1.66	54	49.51	27.35	6.7	31.22	182	57	A	H
	*	2467	103.83	-	-	101.05	27.3	6.7	31.22	382	96	P	V
	*	2467	101.77	-	-	98.99	27.3	6.7	31.22	382	96	A	V
		2483.88	57.58	-16.42	74	54.75	27.35	6.7	31.22	382	96	P	V
		2484.32	51.86	-2.14	54	49.03	27.35	6.7	31.22	382	96	A	V
802.11b CH 13 2472MHz	*	2472	103.12	-	-	100.29	27.35	6.7	31.22	185	49	P	H
	*	2472	101.12	-	-	98.29	27.35	6.7	31.22	185	49	A	H
		2483.52	57.03	-16.97	74	54.2	27.35	6.7	31.22	185	49	P	H
		2483.52	52.99	-1.01	54	50.16	27.35	6.7	31.22	185	49	A	H
	*	2472	97.17	-	-	94.34	27.35	6.7	31.22	339	90	P	V
	*	2472	94.82	-	-	91.99	27.35	6.7	31.22	339	90	A	V
		2483.6	55.43	-18.57	74	52.6	27.35	6.7	31.22	339	90	P	V
		2483.52	50.84	-3.16	54	48.01	27.35	6.7	31.22	339	90	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

2.4GHz 2400~2483.5MHz

WIFI 802.11b (Harmonic @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11b CH 01 2412MHz		4824	39.48	-34.52	74	56.6	31.42	9.65	58.19	185	255	P	H
		4824	39.38	-34.62	74	56.5	31.42	9.65	58.19	185	255	P	V
802.11b CH 06 2437MHz		4874	41.58	-32.42	74	58.46	31.51	9.71	58.1	165	106	P	H
		7311	47.69	-26.31	74	57.24	36.36	12.01	57.92	174	100	P	H
		4874	41.72	-32.28	74	58.6	31.51	9.71	58.1	165	106	P	V
		7311	56.6	-17.4	74	66.15	36.36	12.01	57.92	113	342	P	V
		7311	51.04	-2.96	54	60.59	36.36	12.01	57.92	113	342	A	V
802.11b CH 11 2462MHz		4924	41.15	-32.85	74	57.81	31.59	9.77	58.02	150	285	P	H
		7386	47.24	-26.76	74	56.16	36.65	12.08	57.65	155	274	P	H
		4924	43.56	-30.44	74	60.22	31.59	9.77	58.02	150	285	P	V
		7386	55.83	-18.17	74	64.75	36.65	12.08	57.65	113	339	P	V
		7386	50.26	-3.74	54	59.18	36.65	12.08	57.65	113	339	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11b CH 12 2467MHz		4934	39.6	-34.4	74	56.26	31.59	9.77	58.02	150	285	P	H
		7401	46.42	-27.58	74	55.21	36.71	12.1	57.6	155	274	P	H
		4934	39.85	-34.15	74	56.51	31.59	9.77	58.02	150	285	P	V
		7401	46.78	-27.22	74	55.57	36.71	12.1	57.6	155	274	P	V
802.11b CH 13 2472MHz		4944	38.64	-35.36	74	55.2	31.62	9.81	57.99	150	285	P	H
		7416	47.11	-26.89	74	55.87	36.71	12.13	57.6	155	274	P	H
		4944	38.76	-35.24	74	55.32	31.62	9.81	57.99	150	285	P	V
		7416	46.46	-27.54	74	55.22	36.71	12.13	57.6	155	274	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

2.4GHz 2400~2483.5MHz

WIFI 802.11g (Band Edge @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11g CH 01 2412MHz		2389.59	64.52	-9.48	74	62.11	27.09	6.6	31.28	194	48	P	H
		2389.91	52.4	-1.6	54	49.99	27.09	6.6	31.28	194	48	A	H
	*	2412	108.01	-	-	105.53	27.14	6.6	31.26	194	48	P	H
	*	2412	101.25	-	-	98.77	27.14	6.6	31.26	194	48	A	H
		2389.49	58.3	-15.7	74	55.89	27.09	6.6	31.28	400	99	P	V
		2389.8	48.29	-5.71	54	45.88	27.09	6.6	31.28	400	99	A	V
	*	2412	104.66	-	-	102.18	27.14	6.6	31.26	400	99	P	V
	*	2412	97.69	-	-	95.21	27.14	6.6	31.26	400	99	A	V
802.11g CH 06 2437MHz		2378.74	69.93	-4.07	74	67.63	27.04	6.57	31.31	215	49	P	H
		2389.1	51.35	-2.65	54	48.94	27.09	6.6	31.28	215	49	A	H
	*	2437	113.48	-	-	110.87	27.24	6.63	31.26	215	49	P	H
	*	2437	105.72	-	-	103.11	27.24	6.63	31.26	215	49	A	H
		2485.02	64.79	-9.21	74	61.96	27.35	6.7	31.22	215	49	P	H
		2483.76	45.92	-8.08	54	43.09	27.35	6.7	31.22	215	49	A	H
		2389.8	66.02	-7.98	74	63.61	27.09	6.6	31.28	342	99	P	V
		2384.34	45.37	-8.63	54	43.07	27.04	6.57	31.31	342	99	A	V
	*	2437	111.02	-	-	108.41	27.24	6.63	31.26	342	99	P	V
	*	2437	103.18	-	-	100.57	27.24	6.63	31.26	342	99	A	V
		2486.49	60.35	-13.65	74	57.52	27.35	6.7	31.22	342	99	P	V
		2484.53	41.71	-12.29	54	38.88	27.35	6.7	31.22	342	99	A	V

802.11g CH 11 2462MHz	*	2462	107.87	-	-	105.14	27.3	6.67	31.24	157	68	P	H
	*	2462	100.78	-	-	98.05	27.3	6.67	31.24	157	68	A	H
		2483.64	68.11	-5.89	74	65.28	27.35	6.7	31.22	157	68	P	H
		2483.56	52.92	-1.08	54	50.09	27.35	6.7	31.22	157	68	A	H
	*	2462	97.59	-	-	94.86	27.3	6.67	31.24	374	292	P	V
	*	2462	90.7	-	-	87.97	27.3	6.67	31.24	374	292	A	V
		2483.72	58.54	-15.46	74	55.71	27.35	6.7	31.22	374	292	P	V
		2483.64	43.47	-10.53	54	40.64	27.35	6.7	31.22	374	292	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11g CH 12 2467MHz	*	2467	104.96	-	-	102.18	27.3	6.7	31.22	185	46	P	H
	*	2467	98.72	-	-	95.94	27.3	6.7	31.22	185	46	A	H
		2484	72.31	-1.69	74	69.48	27.35	6.7	31.22	185	46	P	H
		2483.52	53.2	-0.8	54	50.37	27.35	6.7	31.22	185	46	A	H
	*	2467	99.92	-	-	97.14	27.3	6.7	31.22	261	246	P	V
	*	2467	93.01	-	-	90.23	27.3	6.7	31.22	261	246	A	V
		2483.84	65.2	-8.8	74	62.37	27.35	6.7	31.22	261	246	P	V
		2483.56	49.59	-4.41	54	46.76	27.35	6.7	31.22	261	246	A	V
802.11g CH 13 2472MHz	*	2472	91.95	-	-	89.12	27.35	6.7	31.22	185	48	P	H
	*	2472	85.06	-	-	82.23	27.35	6.7	31.22	185	48	A	H
		2483.56	69.13	-4.87	74	66.3	27.35	6.7	31.22	185	48	P	H
		2483.56	52.73	-1.27	54	49.9	27.35	6.7	31.22	185	48	A	H
	*	2472	93.21	-	-	90.38	27.35	6.7	31.22	337	54	P	V
	*	2472	85.98	-	-	83.15	27.35	6.7	31.22	337	54	A	V
		2483.56	65.95	-8.05	74	63.12	27.35	6.7	31.22	337	54	P	V
		2483.52	52.46	-1.54	54	49.63	27.35	6.7	31.22	337	54	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

2.4GHz 2400~2483.5MHz

WIFI 802.11g (Harmonic @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11g CH 01 2412MHz		4824	39.64	-34.36	74	56.76	31.42	9.65	58.19	185	255	P	H
		4824	39.27	-34.73	74	56.39	31.42	9.65	58.19	185	255	P	V
802.11g CH 06 2437MHz		4874	39.96	-34.04	74	56.84	31.51	9.71	58.1	165	106	P	H
		7311	47.72	-26.28	74	57.27	36.36	12.01	57.92	174	100	P	H
		4874	41.63	-32.37	74	58.51	31.51	9.71	58.1	165	106	P	V
		7311	57.54	-16.46	74	67.09	36.36	12.01	57.92	174	100	P	V
		7311	46.5	-7.5	54	56.05	36.36	12.01	57.92	174	100	A	V
802.11g CH 11 2462MHz		4924	41.93	-32.07	74	58.59	31.59	9.77	58.02	150	285	P	H
		7386	47.86	-26.14	74	56.78	36.65	12.08	57.65	155	274	P	H
		4924	42.14	-31.86	74	58.8	31.59	9.77	58.02	150	285	P	V
		7386	54.49	-19.51	74	63.41	36.65	12.08	57.65	155	274	P	V
		7386	43.66	-10.34	54	52.58	36.65	12.08	57.65	155	274	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11g CH 12 2467MHz		4934	41	-33	74	57.66	31.59	9.77	58.02	150	285	P	H
		7401	46.71	-27.29	74	55.5	36.71	12.1	57.6	155	274	P	H
		4934	41	-33	74	57.66	31.59	9.77	58.02	150	285	P	V
		7401	46.91	-27.09	74	55.7	36.71	12.1	57.6	155	274	P	V
802.11g CH 13 2472MHz		4944	40.44	-33.56	74	57	31.62	9.81	57.99	150	285	P	H
		7416	46.03	-27.97	74	54.79	36.71	12.13	57.6	155	274	P	H
		4944	41.14	-32.86	74	57.7	31.62	9.81	57.99	150	285	P	V
		7416	45.48	-28.52	74	54.24	36.71	12.13	57.6	155	274	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

2.4GHz 2400~2483.5MHz

WIFI 802.11n HT20 (Band Edge @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11n HT20 CH 01 2412MHz		2390	62.61	-11.39	74	60.2	27.09	6.6	31.28	197	46	P	H
		2389.91	52.05	-1.95	54	49.64	27.09	6.6	31.28	197	46	A	H
	*	2412	107.44	-	-	104.96	27.14	6.6	31.26	197	46	P	H
	*	2412	100.23	-	-	97.75	27.14	6.6	31.26	197	46	A	H
		2389.8	54.47	-19.53	74	52.06	27.09	6.6	31.28	241	246	P	V
		2389.91	46.5	-7.5	54	44.09	27.09	6.6	31.28	241	246	A	V
		2412	103.82	29.82	74	101.34	27.14	6.6	31.26	241	246	P	V
	*	2412	96.81	-	-	94.33	27.14	6.6	31.26	241	246	A	V
802.11n HT20 CH 06 2437MHz		2381.26	70.93	-3.07	74	68.63	27.04	6.57	31.31	215	48	P	H
		2383.92	53.4	-0.6	54	51.1	27.04	6.57	31.31	215	48	A	H
	*	2437	112.27	-	-	109.66	27.24	6.63	31.26	215	48	P	H
	*	2437	105.2	-	-	102.59	27.24	6.63	31.26	215	48	A	H
		2488.94	64.55	-9.45	74	61.64	27.4	6.73	31.22	215	48	P	H
		2491.81	45.44	-8.56	54	42.51	27.4	6.73	31.2	215	48	A	H
		2389.24	58.85	-15.15	74	56.44	27.09	6.6	31.28	160	262	P	V
		2381.12	42.39	-11.61	54	40.09	27.04	6.57	31.31	160	262	A	V
	*	2437	102.33	-	-	99.72	27.24	6.63	31.26	160	262	P	V
	*	2437	95.54	-	-	92.93	27.24	6.63	31.26	160	262	A	V
		2483.83	55.47	-18.53	74	52.64	27.35	6.7	31.22	160	262	P	V
		2486.49	38.89	-15.11	54	36.06	27.35	6.7	31.22	160	262	A	V

802.11n HT20 CH 11 2462MHz	*	2462	107.5	-	-	104.77	27.3	6.67	31.24	180	69	P	H
	*	2462	99.94	-	-	97.21	27.3	6.67	31.24	180	69	A	H
		2488.84	65.07	-8.93	74	62.16	27.4	6.73	31.22	180	69	P	H
		2483.52	53.01	-0.99	54	50.18	27.35	6.7	31.22	180	69	A	H
	*	2462	95.98	-	-	93.25	27.3	6.67	31.24	178	264	P	V
	*	2462	89.62	-	-	86.89	27.3	6.67	31.24	178	264	A	V
		2483.88	56.86	-17.14	74	54.03	27.35	6.7	31.22	178	264	P	V
		2483.68	43.43	-10.57	54	40.6	27.35	6.7	31.22	178	264	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11n HT20 CH 12 2467MHz	*	2467	105.91	-	-	103.13	27.3	6.7	31.22	183	51	P	H
	*	2467	98.4	-	-	95.62	27.3	6.7	31.22	183	51	A	H
		2483.52	67.58	-6.42	74	64.75	27.35	6.7	31.22	183	51	P	H
		2483.76	52.65	-1.35	54	49.82	27.35	6.7	31.22	183	51	A	H
	*	2467	94.72	-	-	91.94	27.3	6.7	31.22	172	262	P	V
	*	2467	88.07	-	-	85.29	27.3	6.7	31.22	172	262	A	V
		2484.24	55.29	-18.71	74	52.46	27.35	6.7	31.22	172	262	P	V
		2483.56	43.36	-10.64	54	40.53	27.35	6.7	31.22	172	262	A	V
802.11n HT20 CH 13 2472MHz	*	2472	81.71	-	-	78.88	27.35	6.7	31.22	188	48	P	H
	*	2472	74.74	-	-	71.91	27.35	6.7	31.22	188	48	A	H
		2483.6	57.55	-16.45	74	54.72	27.35	6.7	31.22	188	48	P	H
		2483.52	44.68	-9.32	54	41.85	27.35	6.7	31.22	188	48	A	H
		2472	69.9	-	-	67.07	27.35	6.7	31.22	177	256	P	V
	*	2472	63.18	-	-	60.35	27.35	6.7	31.22	177	256	A	V
		2484.16	50.72	-23.28	74	47.89	27.35	6.7	31.22	177	256	P	V
		2483.52	38.69	-15.31	54	35.86	27.35	6.7	31.22	177	256	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

2.4GHz 2400~2483.5MHz

WIFI 802.11n HT20 (Harmonic @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11n HT20 CH 01 2412MHz		4824	39.94	-34.06	74	57.06	31.42	9.65	58.19	185	255	P	H
		4824	40.26	-33.74	74	57.38	31.42	9.65	58.19	185	255	P	V
802.11n HT20 CH 06 2437MHz		4874	39.43	-34.57	74	56.31	31.51	9.71	58.1	165	106	P	H
		7311	47.06	-26.94	74	56.61	36.36	12.01	57.92	174	100	P	H
		4874	41.2	-32.8	74	58.08	31.51	9.71	58.1	165	106	P	V
		7311	56.23	-17.77	74	65.78	36.36	12.01	57.92	174	100	P	V
		7311	45.49	-8.51	54	55.04	36.36	12.01	57.92	174	100	A	V
802.11n HT20 CH 11 2462MHz		4924	39.96	-34.04	74	56.62	31.59	9.77	58.02	150	285	P	H
		7386	45.56	-28.44	74	54.48	36.65	12.08	57.65	155	274	P	H
		4924	40.75	-33.25	74	57.41	31.59	9.77	58.02	150	285	P	V
		7386	47.21	-26.79	74	56.13	36.65	12.08	57.65	155	274	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11n		4934	40.37	-33.63	74	57.03	31.59	9.77	58.02	150	285	P	H
HT20		7401	47.2	-26.8	74	55.99	36.71	12.1	57.6	155	274	P	H
CH 12		4934	41.09	-32.91	74	57.75	31.59	9.77	58.02	150	285	P	V
2467MHz		7401	47.03	-26.97	74	55.82	36.71	12.1	57.6	155	274	P	V
802.11n		4944	40.76	-33.24	74	57.32	31.62	9.81	57.99	150	285	P	H
HT20		7416	46.85	-27.15	74	55.61	36.71	12.13	57.6	155	274	P	H
CH 13		4944	41.24	-32.76	74	57.8	31.62	9.81	57.99	150	285	P	V
2472MHz		7416	46.62	-27.38	74	55.38	36.71	12.13	57.6	155	274	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

2.4GHz 2400~2483.5MHz

Emission below 1GHz

2.4GHz WIFI 802.11n HT20 (LF)

WIFI Ant.	Note	Frequency	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Peak Avg.	Pol.
1		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
2.4GHz 802.11n HT20 LF		30	21.5	-18.5	40	29.24	24.3	0.56	32.6	124	140	P	H
		140.58	15.78	-27.72	43.5	29.4	17.33	1.23	32.18	-	-	P	H
		259.89	18.58	-27.42	46	28.97	20	1.69	32.08	-	-	P	H
		490.75	22.66	-23.34	46	28.38	23.33	2.37	31.42	-	-	P	H
		725.49	25.67	-20.33	46	29.07	25.38	2.92	31.7	-	-	P	H
		988.36	27.55	-26.45	54	28.19	27.23	3.46	31.33	-	-	P	H
		30.97	21.71	-18.29	40	30.03	23.71	0.57	32.6	-	-	P	V
		55.22	27.32	-12.68	40	45.96	13.1	0.76	32.5	100	222	P	V
		117.3	15.77	-27.73	43.5	28.95	17.83	1.12	32.13	-	-	P	V
		579.02	23.79	-22.21	46	28.29	24.44	2.62	31.56	-	-	P	V
		806	26.17	-19.83	46	28.49	26.23	3.11	31.66	-	-	P	V
		995.15	27.41	-26.59	54	28.03	27.27	3.47	31.36	-	-	P	V
Remark	1. No other spurious found. 2. All results are PASS against limit line.												

Note symbol

*	**Fundamental Frequency** which can be ignored. However, the level of any unwanted emissions shall not exceed the level of the fundamental frequency.
!	Test result is **over limit** line.
P/A	**P**eak or **A**verage
H/V	**H**orizontal or **V**ertical

A calculation example for radiated spurious emission is shown as below:

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11b CH 01 2412MHz		2390	55.45	-18.55	74	54.51	32.22	4.58	35.86	103	308	P	H
		2390	43.54	-10.46	54	42.6	32.22	4.58	35.86	103	308	A	H

1. Level(dBμV/m) =

Antenna Factor(dB/m) + Cable Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)

2. Over Limit(dB) = Level(dBμV/m) – Limit Line(dBμV/m)

For Peak Limit @ 2390MHz:

1. Level(dBμV/m)

= Antenna Factor(dB/m) + Cable Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)

= 32.22(dB/m) + 4.58(dB) + 54.51(dBμV) – 35.86 (dB)

= 55.45 (dBμV/m)

2. Over Limit(dB)

= Level(dBμV/m) – Limit Line(dBμV/m)

= 55.45(dBμV/m) – 74(dBμV/m)

= -18.55(dB)

For Average Limit @ 2390MHz:

1. Level(dBμV/m)

= Antenna Factor(dB/m) + Cable Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)

= 32.22(dB/m) + 4.58(dB) + 42.6(dBμV) – 35.86 (dB)

= 43.54 (dBμV/m)

2. Over Limit(dB)

= Level(dBμV/m) – Limit Line(dBμV/m)

= 43.54(dBμV/m) – 54(dBμV/m)

= -10.46(dB)

Both peak and average measured complies with the limit line, so test result is “PASS”.

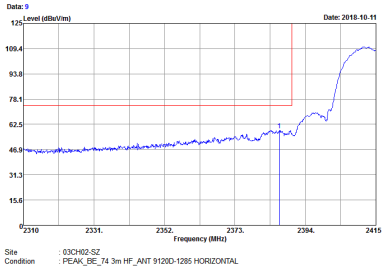
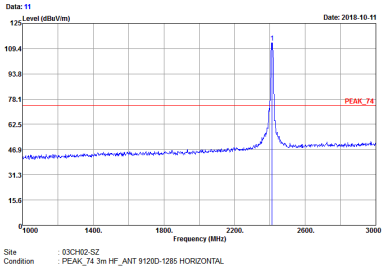
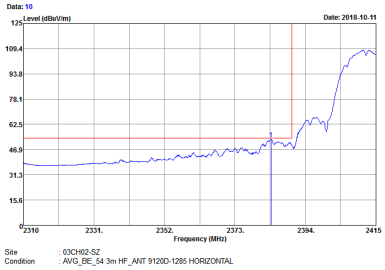
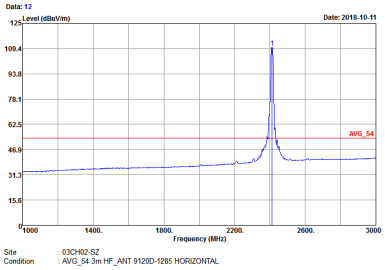
Appendix C. Radiated Spurious Emission Plots

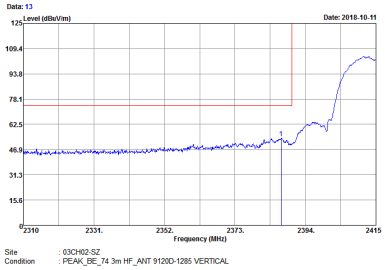
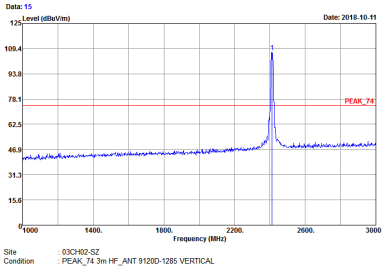
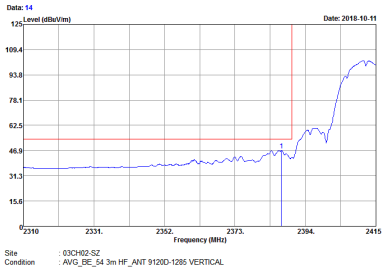
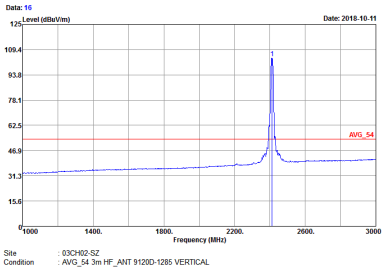
Note symbol

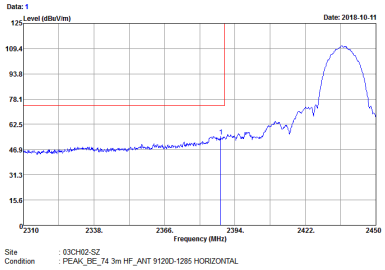
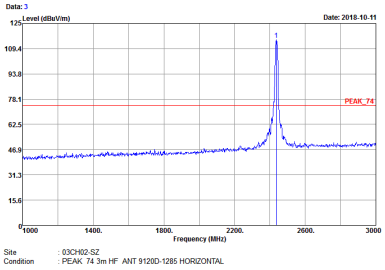
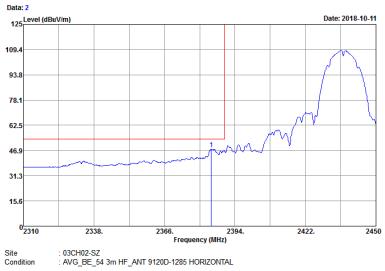
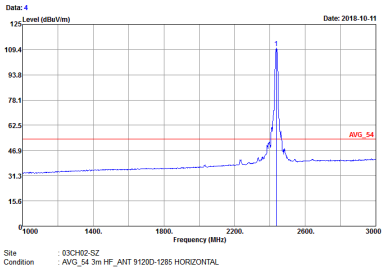
-L	**Low channel location**
-R	**High channel location**

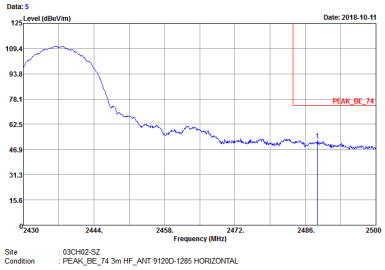
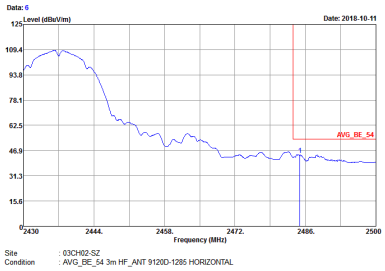
2.4GHz 2400~2483.5MHz

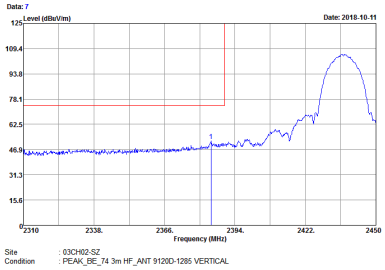
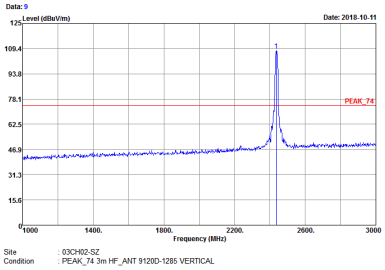
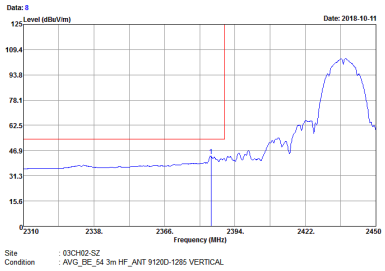
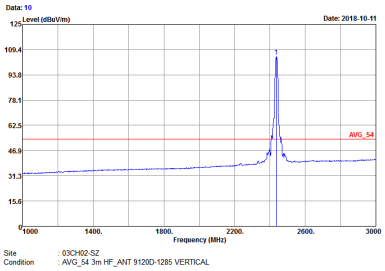
WIFI 802.11b (Band Edge @ 3m)

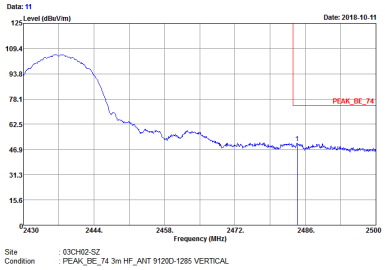
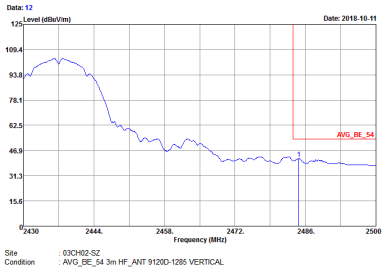
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH01 2412MHz	
1	Horizontal	Fundamental
Peak		
Avg.		

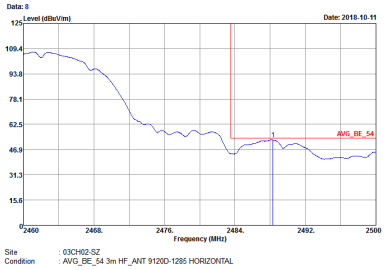
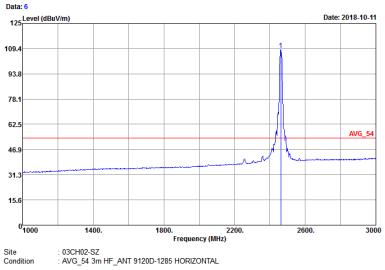
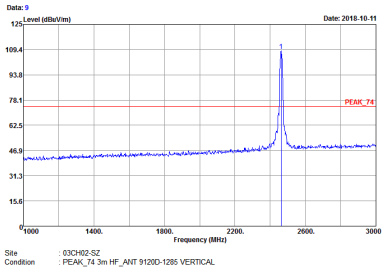
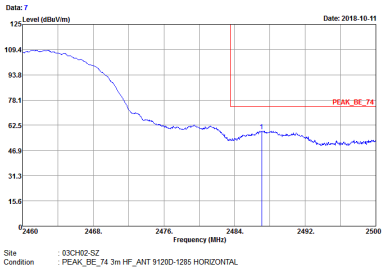
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH01 2412MHz	
1	Vertical	Fundamental
Peak		
Avg.		

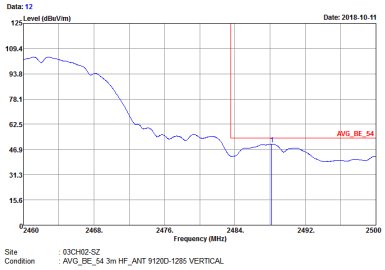
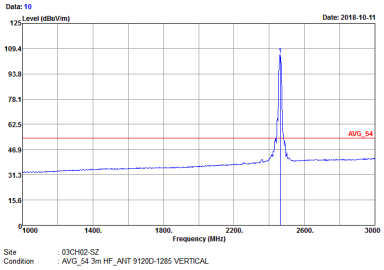
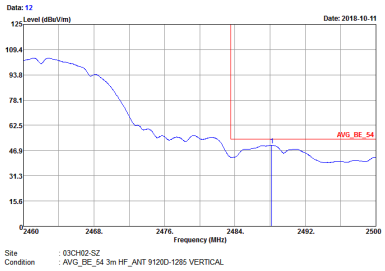
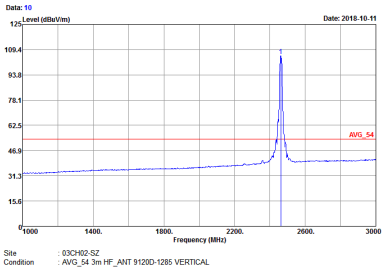
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH06 2437MHz - L	
1	Horizontal	Fundamental
Peak		
Avg.		

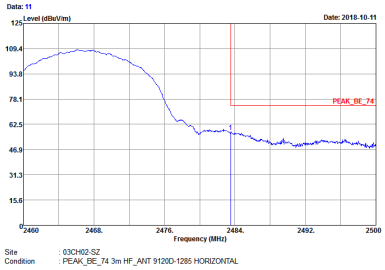
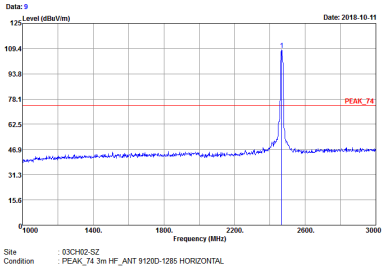
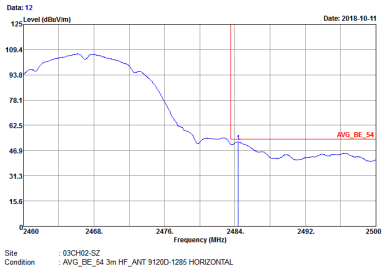
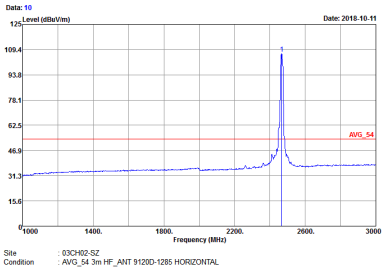
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH06 2437MHz - R	
1	Horizontal	Fundamental
Peak		
Avg.		

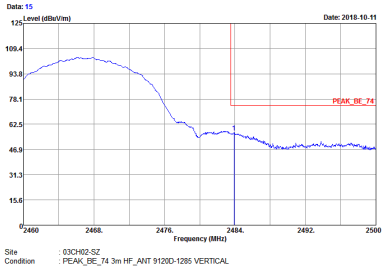
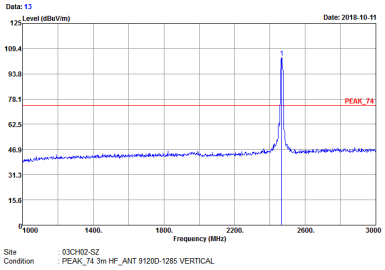
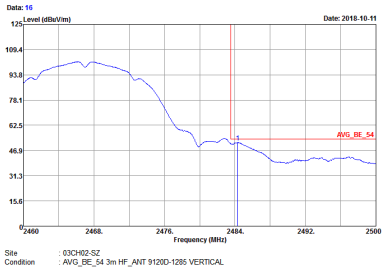
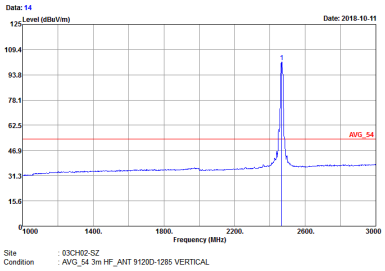
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH06 2437MHz - L	
1	Vertical	Fundamental
Peak		
Avg.		

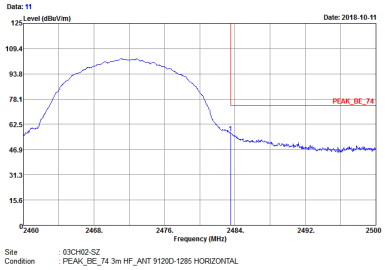
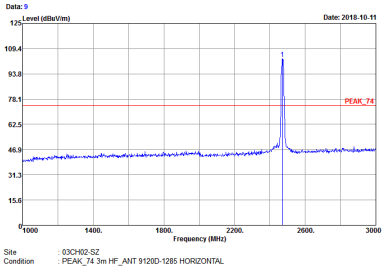
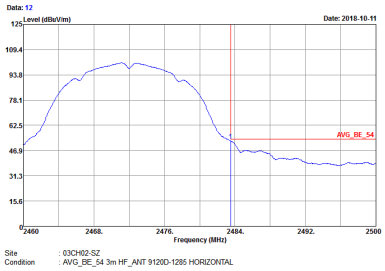
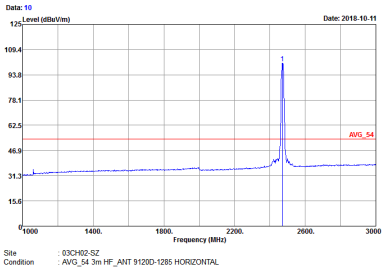
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH06 2437MHz - R	
1	Vertical	Fundamental
Peak		
Avg.		

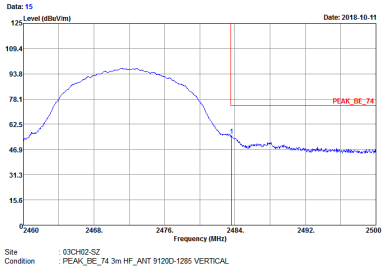
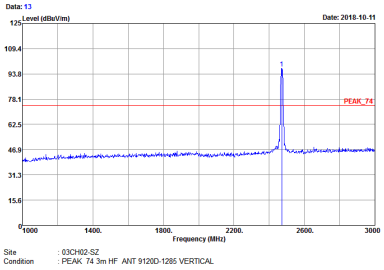
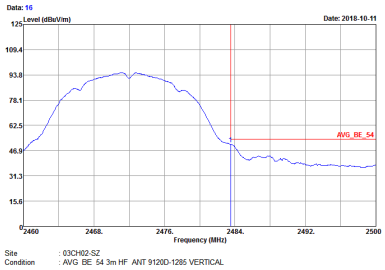
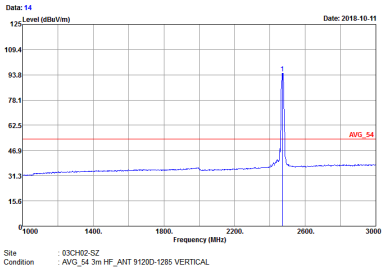
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH11 2462MHz	
1	Horizontal	Fundamental
Peak		
Avg.		

WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH11 2462MHz	
1	Vertical	Fundamental
Peak		
Avg.		

WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH12 2467MHz	
1	Horizontal	Fundamental
Peak		
Avg.		

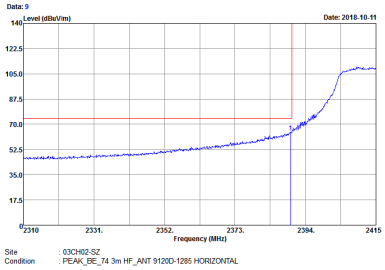
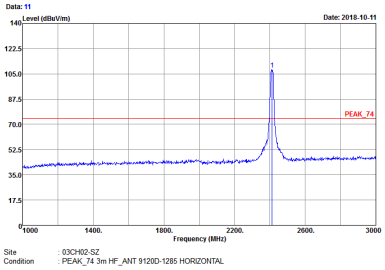
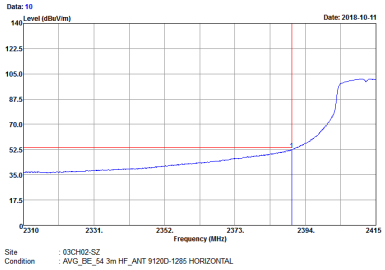
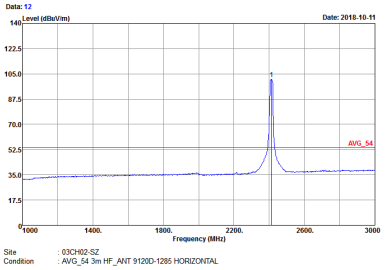
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH12 2467MHz	
1	Vertical	Fundamental
Peak		
Avg.		

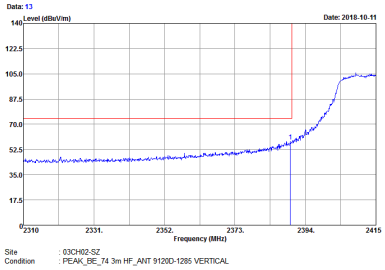
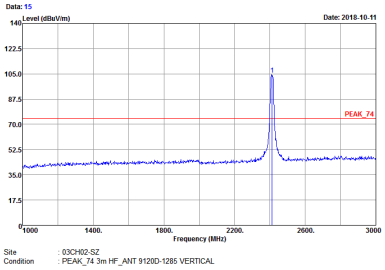
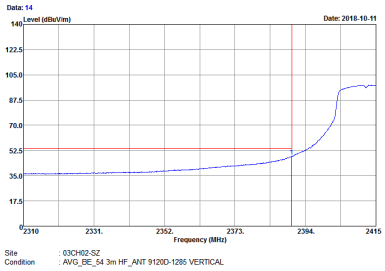
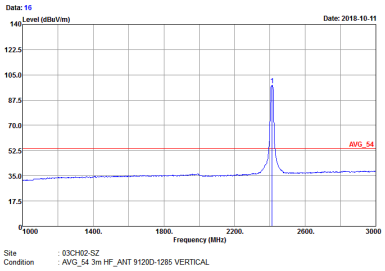
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH13 2472MHz	
1	Horizontal	Fundamental
Peak		
Avg.		

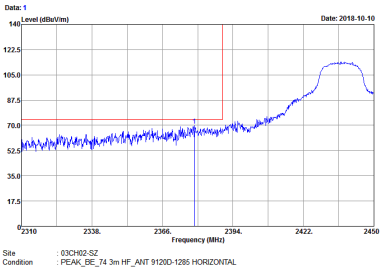
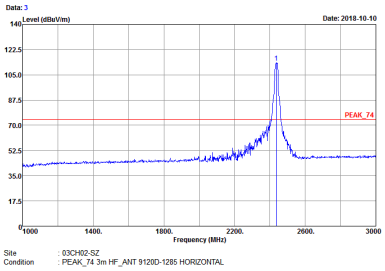
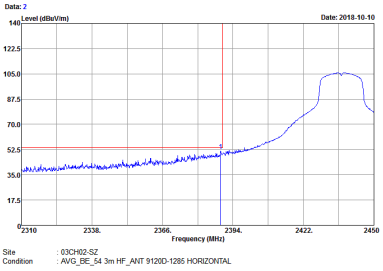
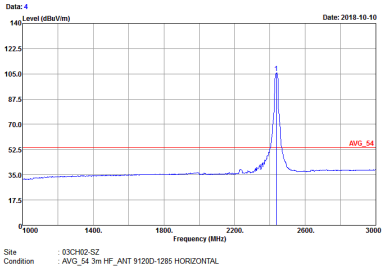
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH13 2472MHz	
1	Vertical	Fundamental
Peak		
Avg.		

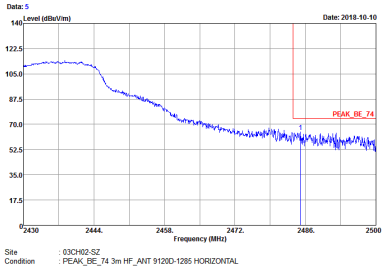
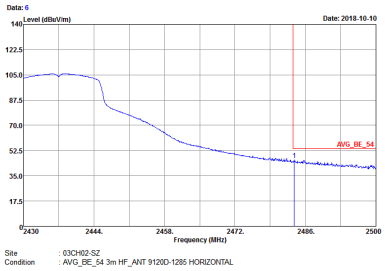
2.4GHz 2400~2483.5MHz

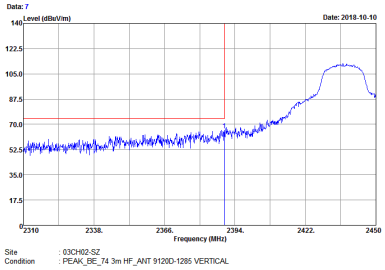
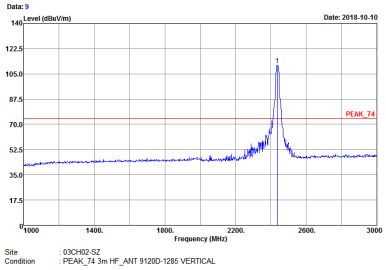
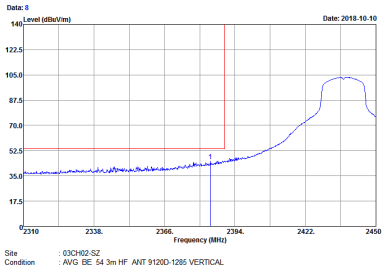
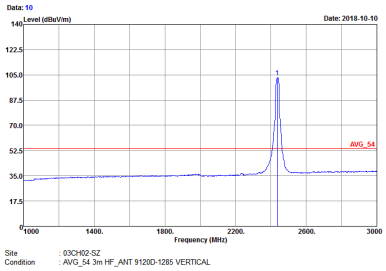
WIFI 802.11g (Band Edge @ 3m)

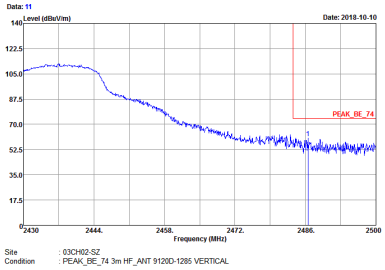
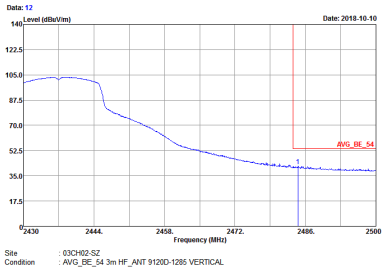
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11g CH01 2412MHz	
1	Horizontal	Fundamental
Peak		
Avg.		

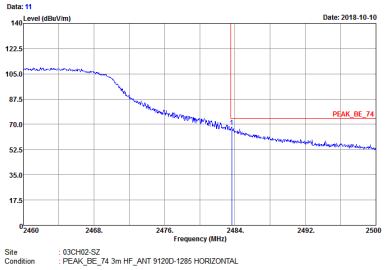
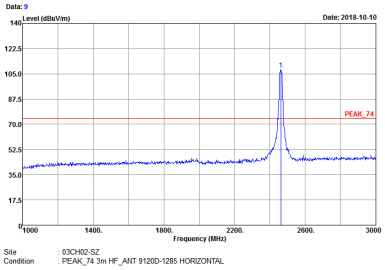
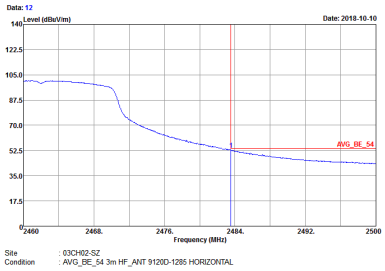
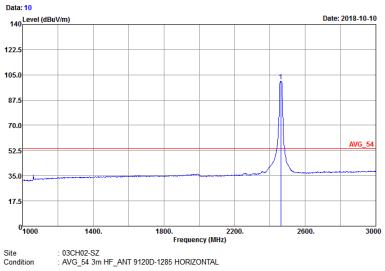
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11g CH01 2412MHz	
1	Vertical	Fundamental
Peak		
Avg.		

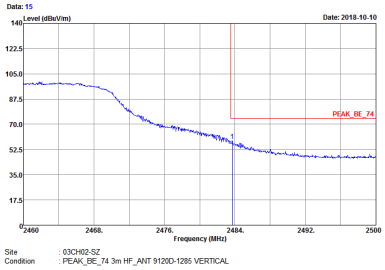
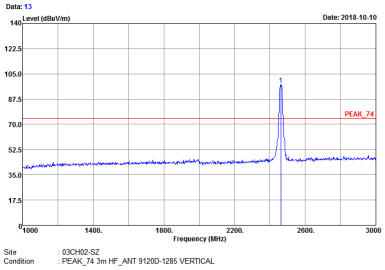
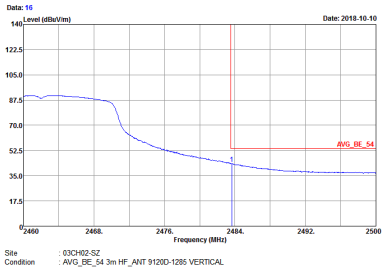
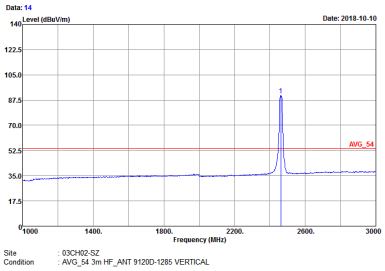
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11g CH06 2437MHz - L	
1	Horizontal	Fundamental
Peak		
Avg.		

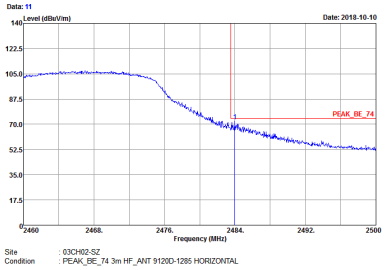
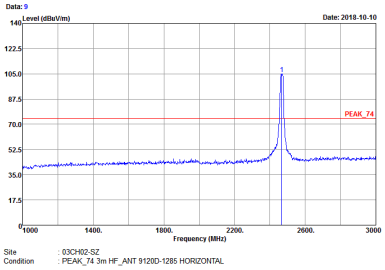
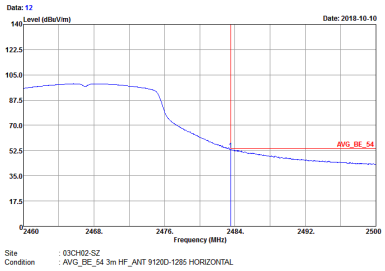
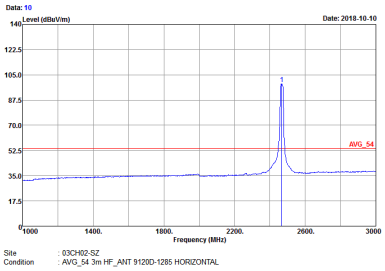
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11g CH06 2437MHz - R	
1	Horizontal	Fundamental
Peak		
Avg.		

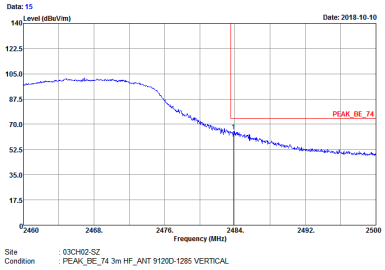
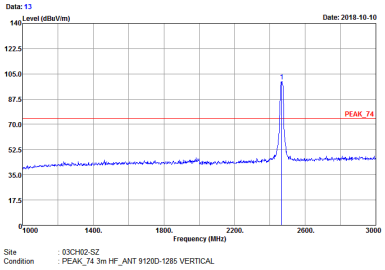
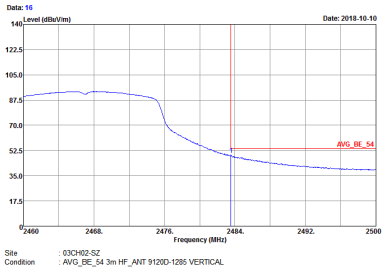
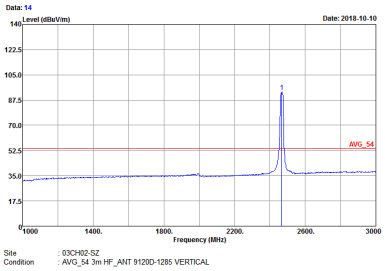
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11g CH06 2437MHz - L	
1	Vertical	Fundamental
Peak		
Avg.		

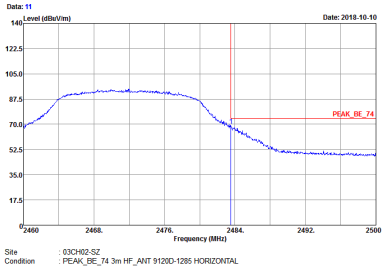
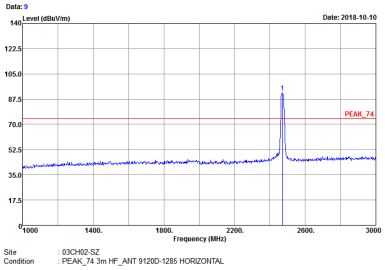
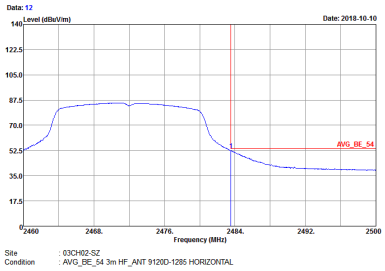
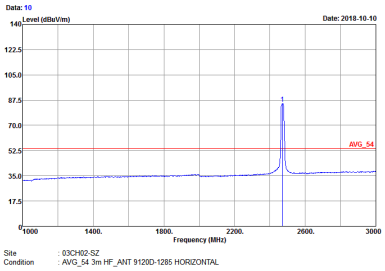
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11g CH06 2437MHz - R	
1	Vertical	Fundamental
Peak		
Avg.		

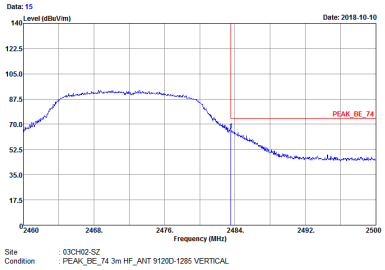
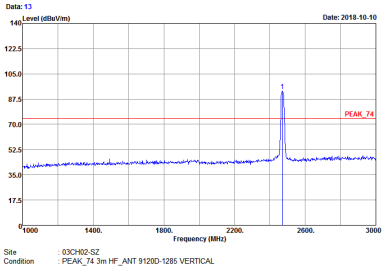
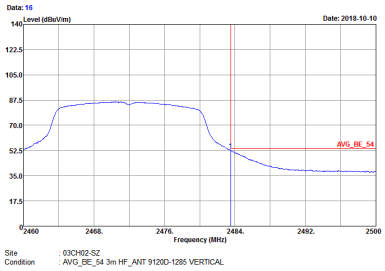
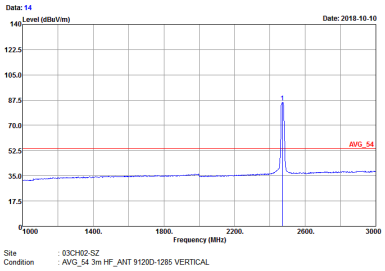
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11g CH11 2462MHz	
1	Horizontal	Fundamental
Peak		
Avg.		

WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11g CH11 2462MHz	
1	Vertical	Fundamental
Peak		
Avg.		

WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11g CH12 2467MHz	
1	Horizontal	Fundamental
Peak		
Avg.		

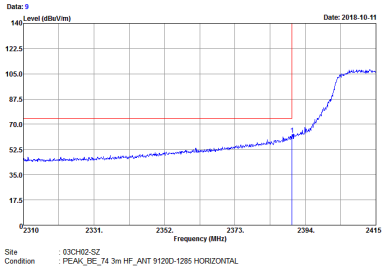
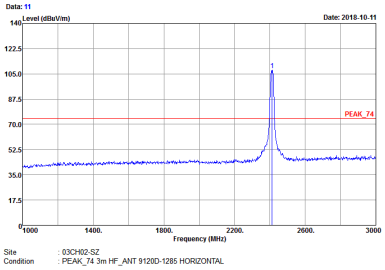
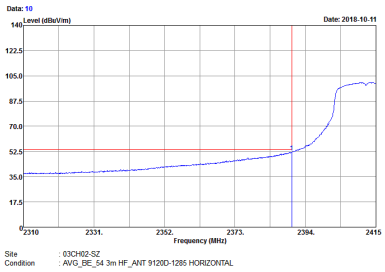
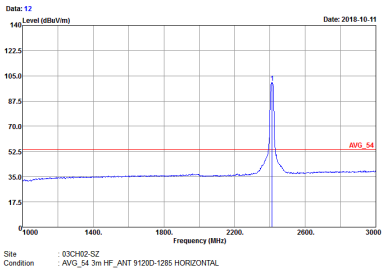
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11g CH12 2467MHz	
1	Vertical	Fundamental
Peak		
Avg.		

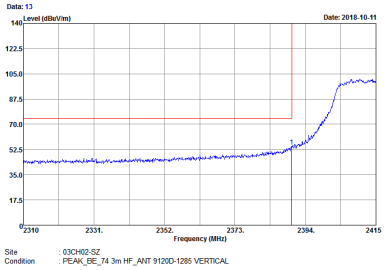
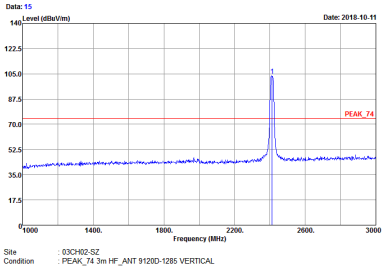
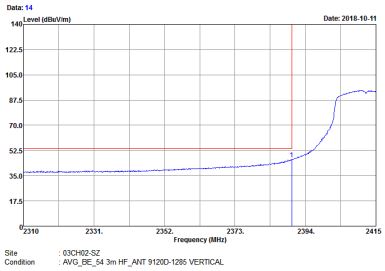
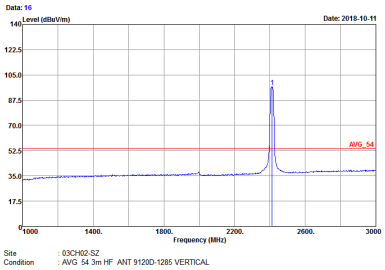
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11g CH13 2472MHz	
1	Horizontal	Fundamental
Peak		
Avg.		

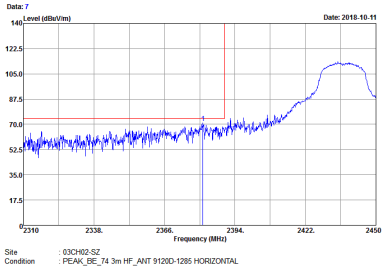
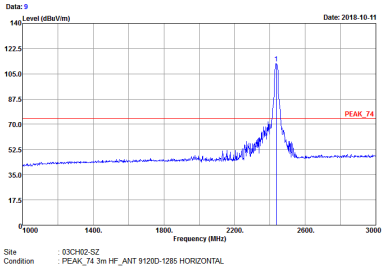
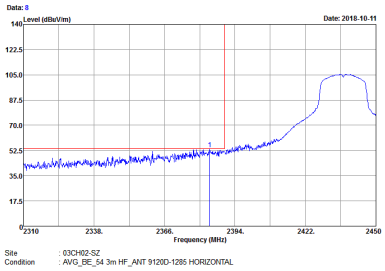
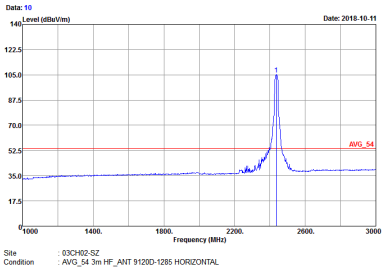
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11g CH13 2472MHz	
1	Vertical	Fundamental
Peak		
Avg.		

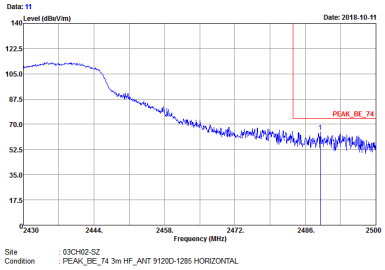
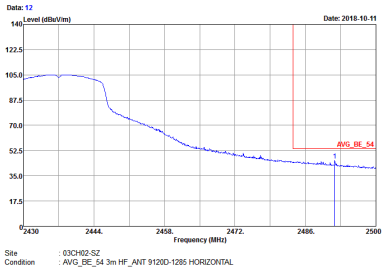
2.4GHz 2400~2483.5MHz

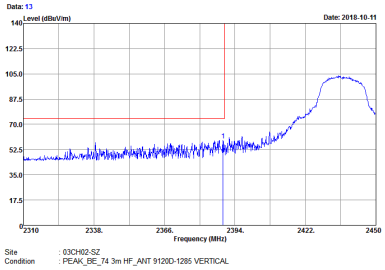
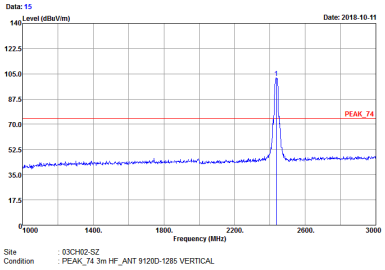
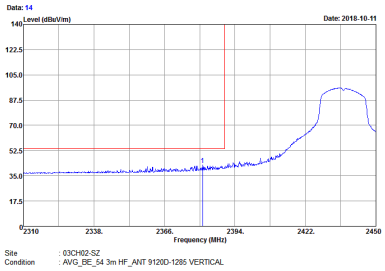
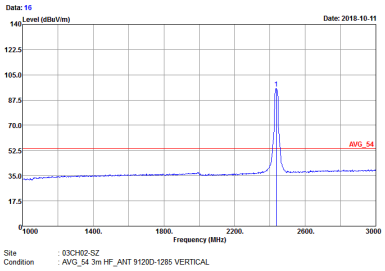
WIFI 802.11n HT20 (Band Edge @ 3m)

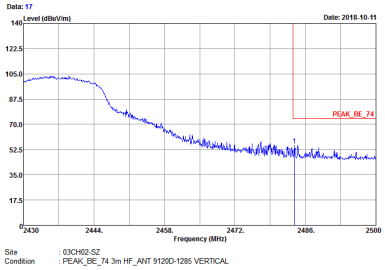
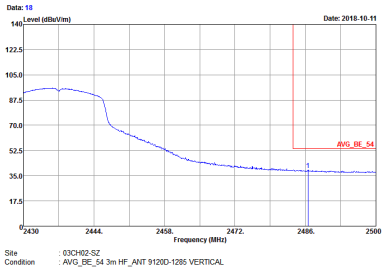
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT20 CH01 2412MHz	
1	Horizontal	Fundamental
Peak		
Avg.		

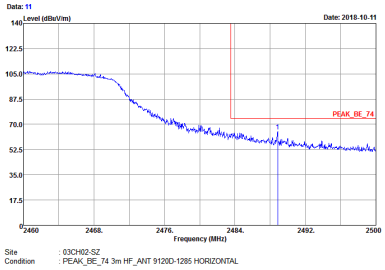
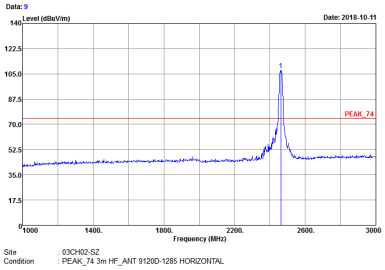
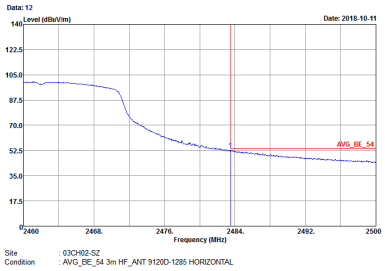
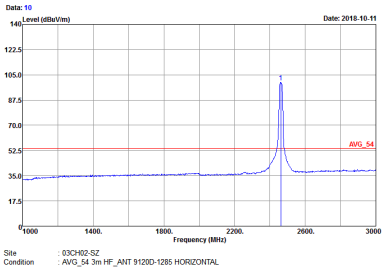
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT20 CH01 2412MHz	
1	Vertical	Fundamental
Peak		
Avg.		

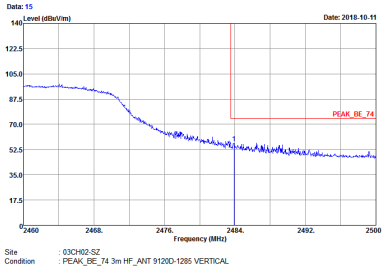
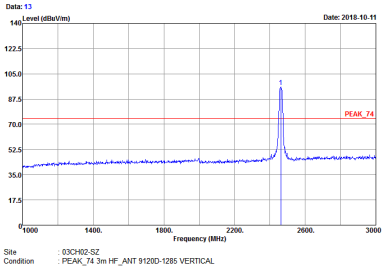
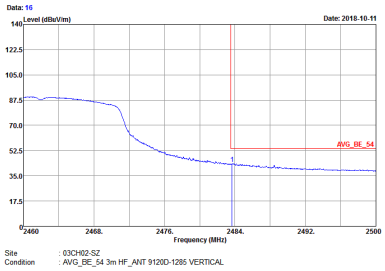
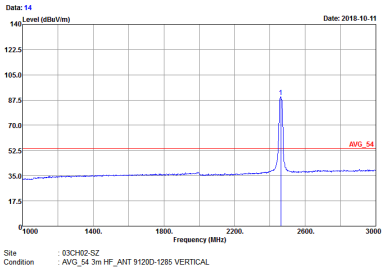
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT20 CH06 2437MHz - L	
1	Horizontal	Fundamental
Peak		
Avg.		

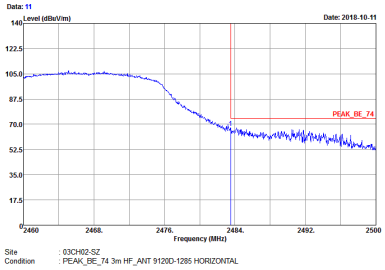
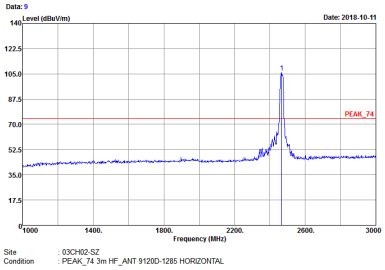
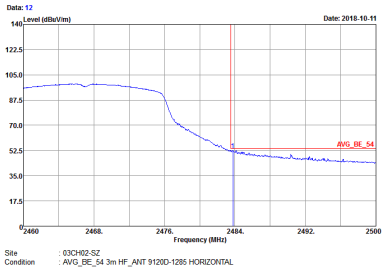
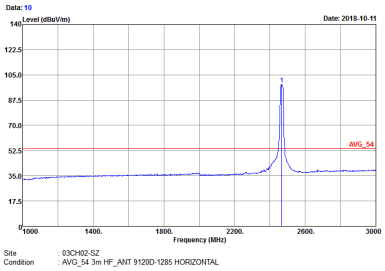
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT20 CH06 2437MHz - R	
1	Horizontal	Fundamental
Peak		
Avg.		

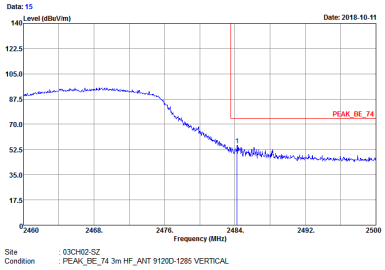
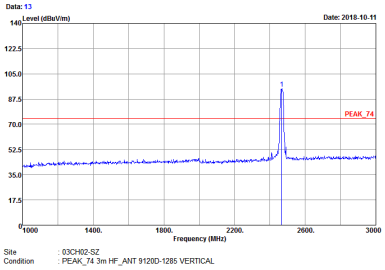
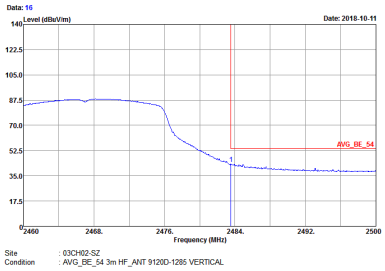
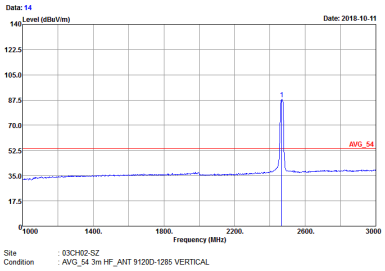
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT20 CH06 2437MHz - L	
1	Vertical	Fundamental
Peak		
Avg.		

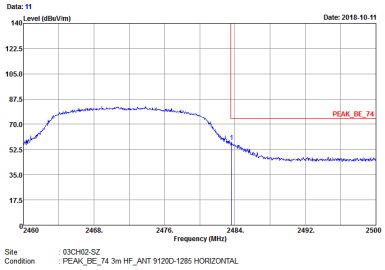
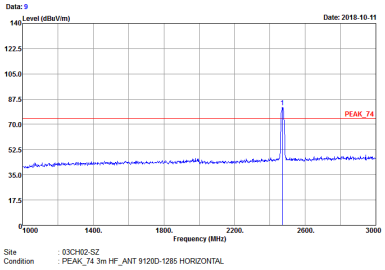
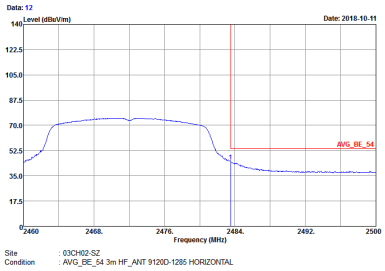
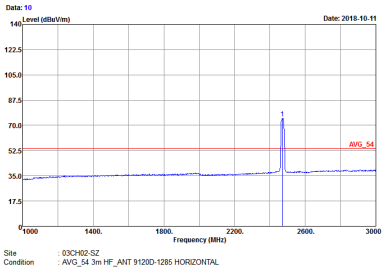
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT20 CH06 2437MHz - R	
1	Vertical	Fundamental
Peak		
Avg.		

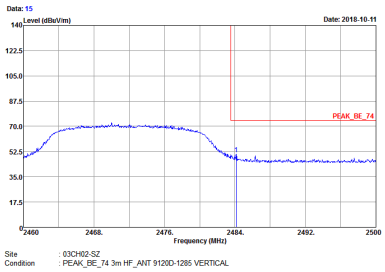
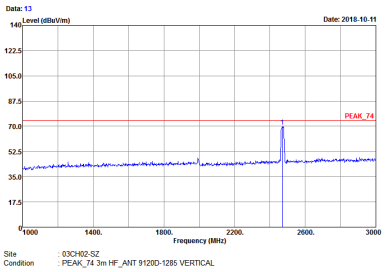
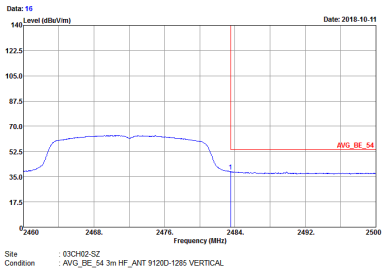
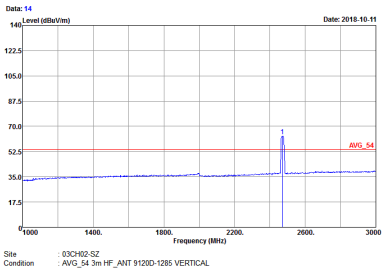
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT20 CH11 2462MHz	
1	Horizontal	Fundamental
Peak		
Avg.		

WIFI	2.4GHz 2400~2483.5MHz Fundamental @ 3m	
ANT	802.11n HT20 CH11 2462MHz	
1	Vertical	Fundamental
Peak		
Avg.		

WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT20 CH12 2467MHz	
1	Horizontal	Fundamental
Peak		
Avg.		

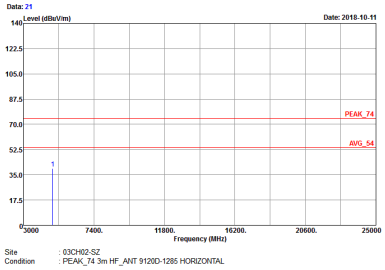
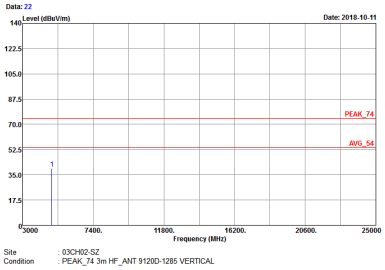
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT20 CH12 2467MHz	
1	Vertical	Fundamental
Peak		
Avg.		

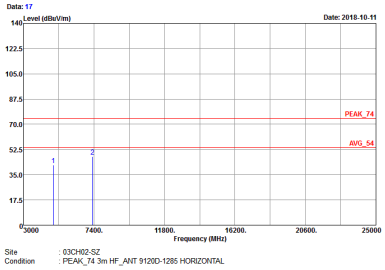
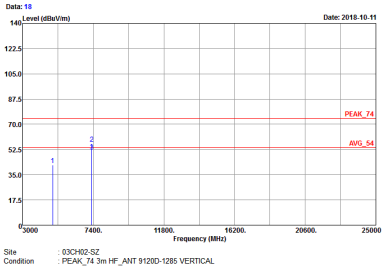
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT20 CH13 2472MHz	
1	Horizontal	Fundamental
Peak		
Avg.		

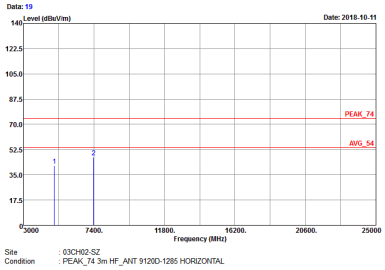
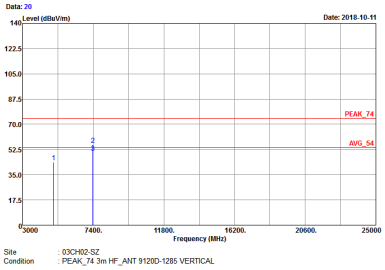
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT20 CH13 2472MHz	
1	Vertical	Fundamental
Peak		
Avg.		

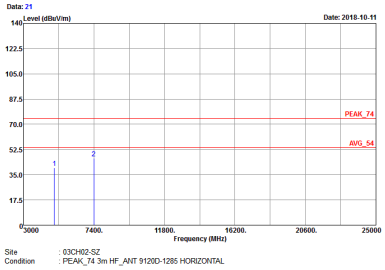
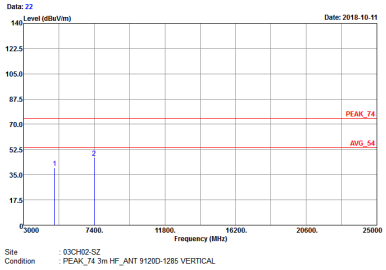
2.4GHz 2400~2483.5MHz

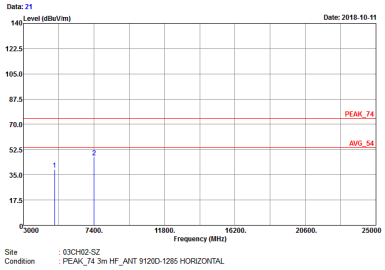
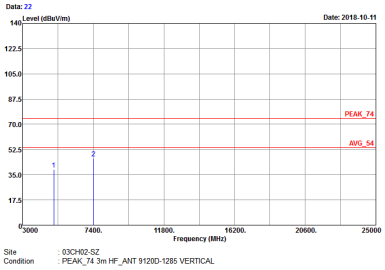
WIFI 802.11b (Harmonic @ 3m)

WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11b CH01 2412MHz	
1	Horizontal	Vertical
Peak Avg.		

WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11b CH06 2437MHz	
1	Horizontal	Vertical
Peak Avg.		

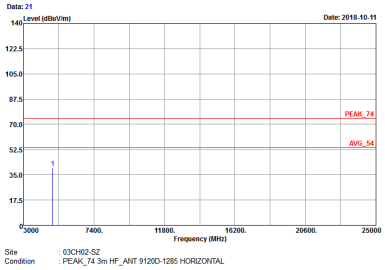
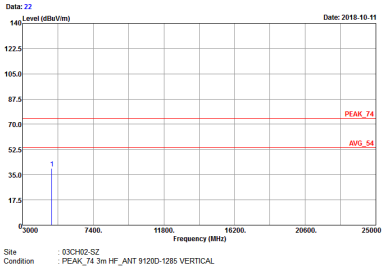
WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11b CH11 2462MHz	
1	Horizontal	Vertical
Peak Avg.		

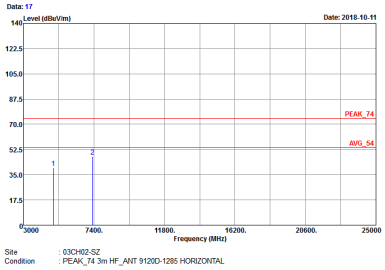
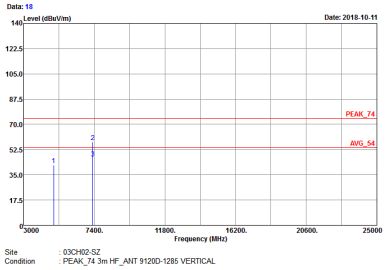
WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11b CH12 2467MHz	
1	Horizontal	Vertical
Peak Avg.		

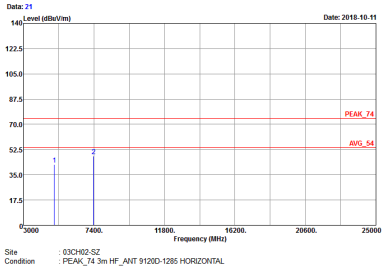
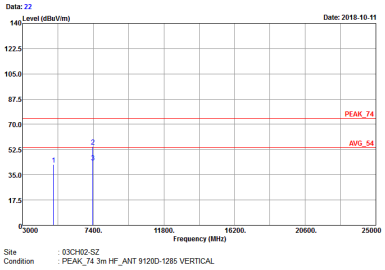
WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11b CH13 2472MHz	
1	Horizontal	Vertical
Peak Avg.		

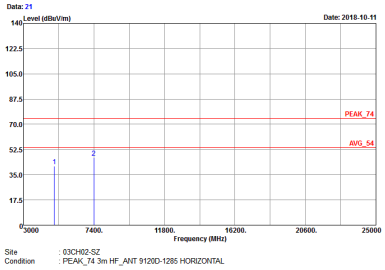
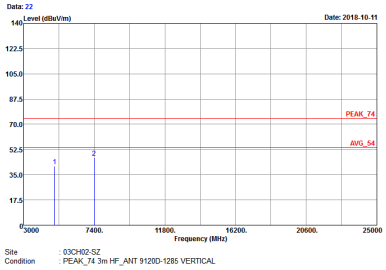
2.4GHz 2400~2483.5MHz

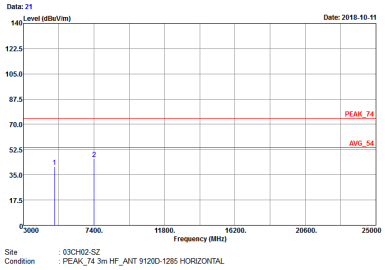
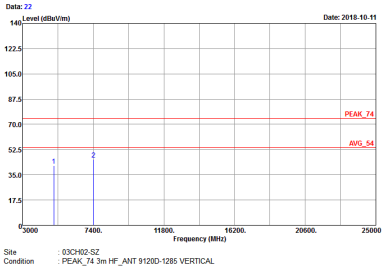
WIFI 802.11g (Harmonic @ 3m)

WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11g CH01 2412MHz	
1	Horizontal	Vertical
Peak Avg.		

WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11g CH06 2437MHz	
1	Horizontal	Vertical
Peak Avg.		

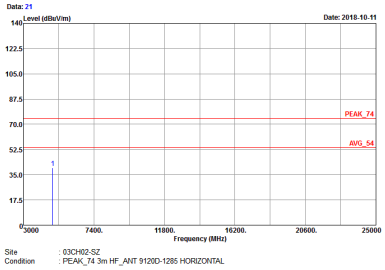
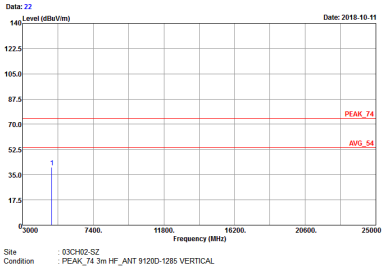
WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11g CH11 2462MHz	
1	Horizontal	Vertical
Peak Avg.		

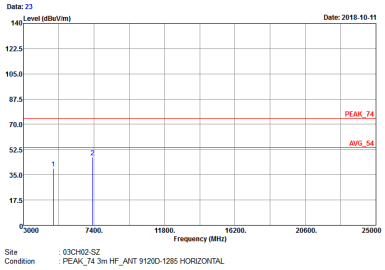
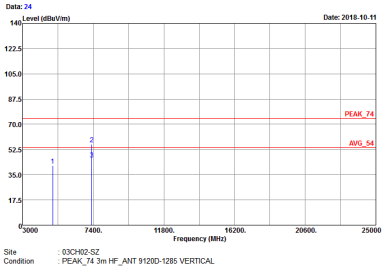
WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11g CH12 2467MHz	
1	Horizontal	Vertical
Peak Avg.		

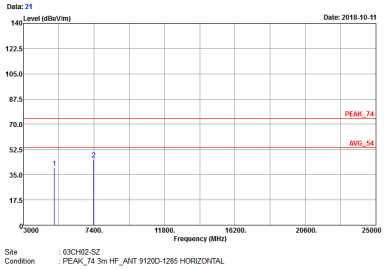
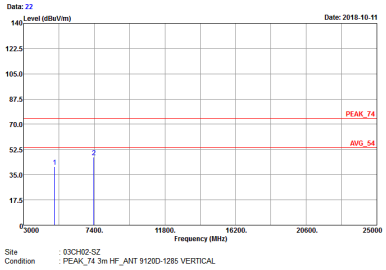
WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11g CH13 2472MHz	
1	Horizontal	Vertical
Peak Avg.		

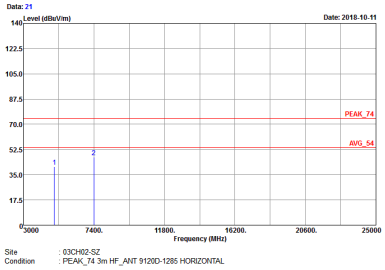
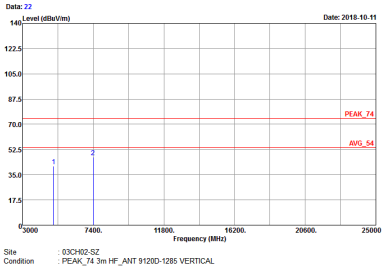
2.4GHz 2400~2483.5MHz

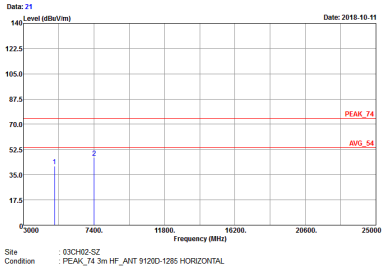
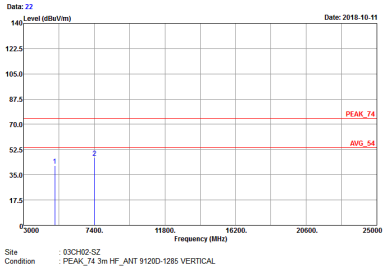
WIFI 802.11n HT20 (Harmonic @ 3m)

WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11n HT20 CH01 2412MHz	
1	Horizontal	Vertical
Peak Avg.		

WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11n HT20 CH06 2437MHz	
1	Horizontal	Vertical
Peak Avg.		

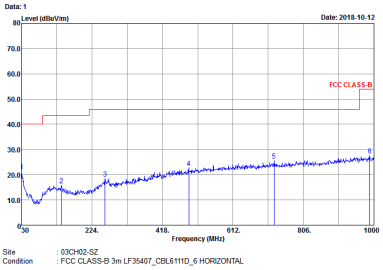
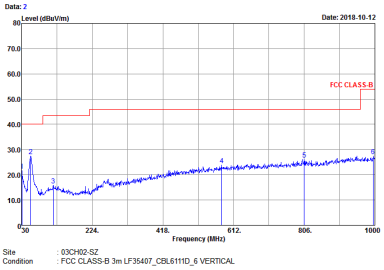
WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11n HT20 CH11 2462MHz	
1	Horizontal	Vertical
Peak Avg.		

WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11n HT20 CH12 2462MHz	
1	Horizontal	Vertical
Peak Avg.		

WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11n HT20 CH13 2472MHz	
1	Horizontal	Vertical
Peak Avg.		

Emission below 1GHz

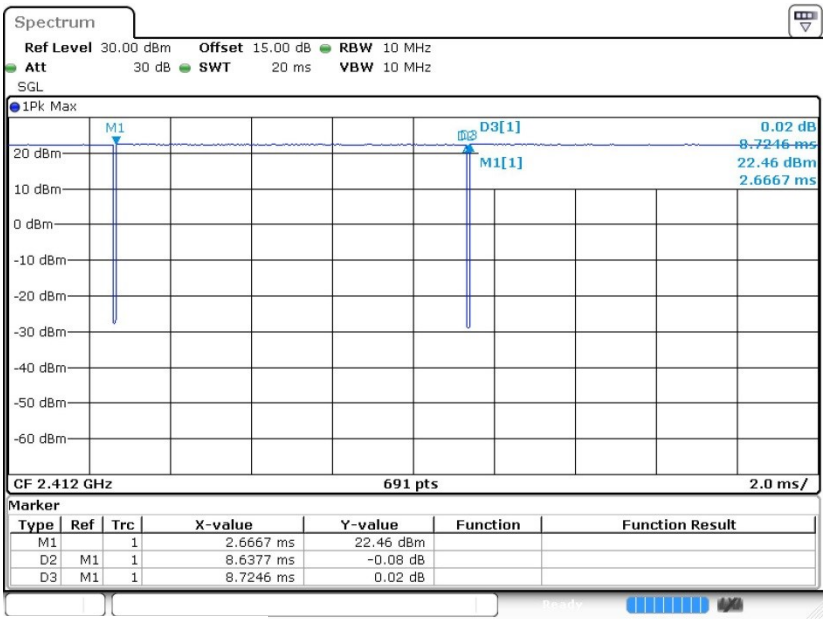
2.4GHz WIFI 802.11n HT20 (LF)

WIFI	2.4GHz 2400~2483.5MHz	
ANT	802.11n HT20 LF	
1	Horizontal	Vertical
QP / Peak		

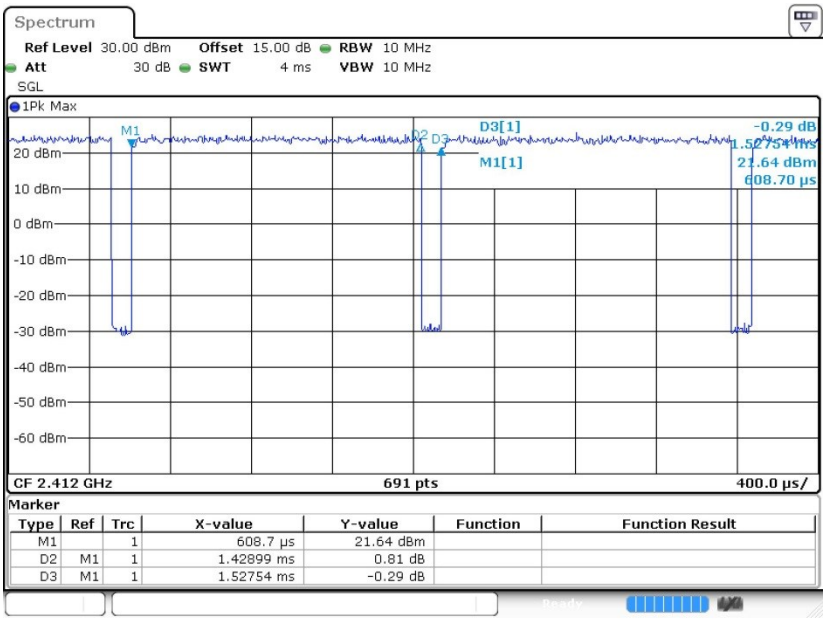
Appendix D. Duty Cycle Plots

Band	Duty Cycle(%)	T(ms)	1/T(kHz)	VBW Setting
802.11b	99.00	-	-	10Hz
802.11g	93.55	1.429	0.700	1KHz
802.11n HT20	93.13	1.336	0.748	1KHz

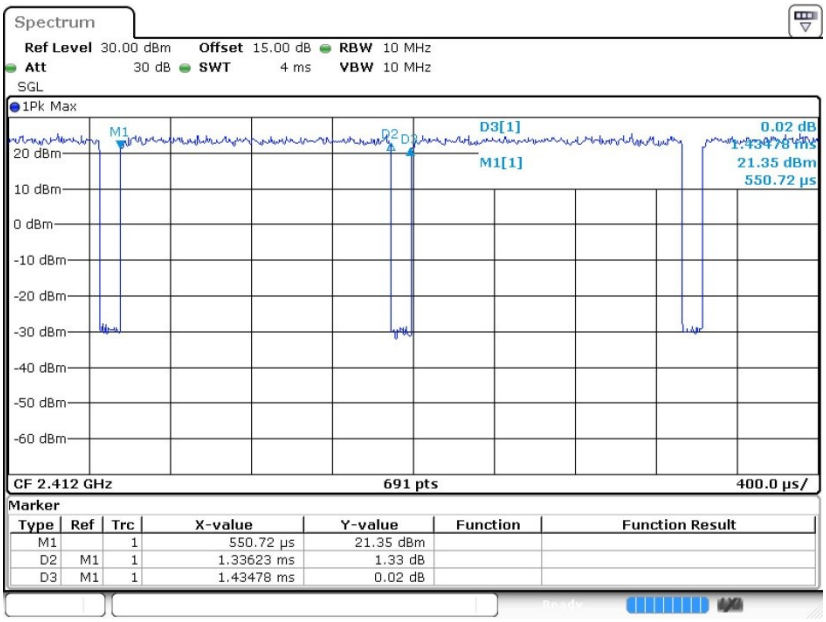
802.11b



802.11g



802.11n20


Spectrum
Ref Level 30.00 dBm Offset 15.00 dB RBW 10 MHz
Att 30 dB SWT 4 ms VBW 10 MHz
SGL
1Pk Max
M1
D2
D3
D3[1] 0.02 dB
1.43478 ms
M1[1] 21.35 dBm
550.72 µs
20 dBm
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
CF 2.412 GHz
691 pts
400.0 µs/
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 550.72 µs 21.35 dBm
D2 M1 1 1.33623 ms 1.33 dB
D3 M1 1 1.43478 ms 0.02 dB