Spot Check Evaluation

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TABLE OF CONTENTS

REVISION HISTORY 3
1. INTRODUCTION SECTION 4
2. DIFFERENCE SECTION 5
3. SPOT CHECK VERIFICATION DATA SECTION 6
4. REFERENCE DETAIL SECTION 8
APPENDIX A. SPOT CHECK TEST RESULT

REVISION HISTORY

VERSION	DESCRIPTION	ISSUED DATE
Rev.01	Initial issue of report	Feb. 07, 2017

1. Introduction Section

The original model (FCC ID: PY7-84773W) and the variant model (FCC ID: PY7-84795R) has identical PCB layout, antenna, SW implementation for Bluetooth/Wi-Fi/NFC/GPS. Based on their similarity, the FCC Part 15C (equipment class: DTS, DSS, DXX) and Part 15E (equipment class: NII) test data issued test data of PY7-84795R references the test data of PY7-84773W

The applicant takes full responsibility that the test data as referenced in this report represent compliance for this FCC ID (FCC ID: PY7-84795R).

2. Difference Section

The original model (FCC ID: PY7-84773W) and the variant model (FCC ID: PY7-84795R) has identical PCB layout, antenna, SW implementation for Bluetooth/Wi-Fi/NFC/GPS. The details of similarity and difference can be found in the Operating Description.

Cellular transmitter RF components are different in PY7-84795R, to support capability for different cellular bands.

The product specification is outlined in the following table:

FCC ID			PY7-84773W	PY7-84795R
Wireless Tech	**Mode**		**Frequency (MHz)**	
GSM	GSM Voice GPRS (GMSK) EDGE (8PSK)	Multi-Slot Class 12 DTM: No	850/1900	850/1900
UMTS	AMR/RCM12.2Kbps HSDPA/HSUPA/DC-HSDPA		B5/B2	B5/B2
LTE (FDD)	QPSK 16QAM		B5/B2/B7	B5/B2/B7
Wi-Fi	11b/11g/11n(HT20)		2412-2462	
	11a/11n(HT20)/11n(HT40)		5180-5240 5260-5320 5500-5720 5745-5825 *5600-5650 notched	
Bluetooth	V4.2 LE		2402-2480 MHz	
NFC	ASK		13.56 MHz	

3. Spot Check Verification Data Section

Summary of the spot check:

Test Item	Mode	PY7-84773W Worst Result	PY7-84795R Worst Result	Difference (dB)
Average Conducted Power (dBm)	802.11b	16.41	16.42	-0.01
	802.11g	14.81	14.86	-0.05
	11n HT20	13.89	13.73	0.16
	BT (1Mbps)	6.34	6.34	0
	BT (2Mbps)	4.27	4.25	0.02
	BT (3Mbps)	4.18	4.30	-0.12
	BT-LE	-0.29	-0.53	0.24
	11a, 5.2GHz	14.87	14.96	-0.09
	11n HT20, 5.2GHz	14.99	14.96	0.03
	11n HT40, 5.2GHz	12.44	12.31	0.13
	11a, 5.3GHz	14.99	14.99	0
	11n HT20, 5.3GHz	14.90	14.97	-0.07
	11n HT40, 5.3GHz	12.38	12.48	-0.1
	11a, 5.5GHz	14.96	14.94	0.02
	11n HT20, 5.5GHz	14.99	14.98	0.01
	11n HT40, 5.5GHz	12.48	12.43	0.05
	11a, 5.8GHz	14.98	14.97	0.01
	11n HT20, 5.8GHz	14.82	14.98	-0.16
	11n HT40, 5.8GHz	11.44	11.33	0.11
	S/N of test sample	RQ3002HXPA RQ3002J3KX	RQ3002H1GK RQ3002G82J	
	Test date	2016/10/6~2016/11/28	2016/10/6~2016/11/25	
Peak Radiated Spurious Emission (Band Edge) (dBuV/m)	802.11b	57.13	56.22	0.91
	802.11g	66.00	64.99	1.01
	BT (3Mbps)	51.99	50.87	1.12
	BT-LE	54.35	56.31	-1.96
	11n HT40, 5.2GHz	60.08	59.60	0.48
	11n HT40, 5.3GHz	63.27	62.33	0.94
	11n HT20, 5.5GHz	66.53	65.57	0.96
	11a, 5.8GHz	61.36	61.55	-0.19
	S/N of test sample	RQ3002HWLU RQ3002J3KX	RQ3002H1FP RQ3002G82J	
	Test date	2016/10/6~2016/11/28	2016/10/15~2016/11/28	
Average Radiated Spurious Emission (Band Edge) (dBuV/m)	802.11b	45.39	44.92	0.47
	802.11g	50.26	50.54	-0.28
	BT (3Mbps)	27.21	26.09	1.12
	BT-LE	43.64	45.82	-2.18
	11n HT40, 5.2GHz	50.65	49.54	1.11
	11n HT40, 5.3GHz	51.00	50.87	0.13
	11n HT20, 5.5GHz	50.69	50.94	-0.25
	S/N of test sample	RQ3002HWLU RQ3002J3KX	RQ3002H1FP RQ3002G82J	
	Test date	2016/10/6~2016/11/28	2016/10/15~2016/11/28	

Peak Radiated Spurious Emission (Harmonic) (dBuV/m)	802.11b	46.54	49.07	-2.53
	802.11g	42.82	45.41	-2.59
	BT (3Mbps)	42.23	42.39	-0.16
	BT-LE	44.02	43.40	0.62
	11n HT40, 5.2GHz	46.48	46.39	0.09
	11n HT40, 5.3GHz	47.06	47.72	-0.66
	11n HT20, 5.5GHz	56.76	54.35	2.41
	11a, 5.8GHz	53.55	51.35	2.2
	S/N of test sample	RQ3002HWLU RQ3002J3KX	RQ3002H1FP RQ3002G82J	
	Test date	2016/10/6~2016/11/28	2016/10/15~2016/11/28	
Average Radiated Spurious Emission (Harmonic) (dBuV/m)	11n HT20, 5.5GHz	41.35	40.55	0.8
	S/N of test sample	RQ3002HWLU	RQ3002H1FP	
	Test date	2016/10/8	2016/10/16	
NFC (dBuV/m)	RSE (9kHz to 30MHz)	41.11	39.71	1.4
	S/N of test sample	RQ3002HXP8	RQ3002H1JH	
	Test date	2016/11/8~2016/11/11	2016/11/8~2016/11/11	

Conclusion:

Radiated spurious emission test against the variant model for non-cellular part based on the worst-case condition from the original model was performed in this filing to demonstrate the test data from original model remains representative for the variant model.

Based on the spot check test result (power levels measured are within 0.5dB, and the worst case of RSE spot check verification based on the worst condition from the original model is within 3dB, and are compliance with the limits), the test data from the original model is representative for the variant model.

The unwanted, harmonics, radiated spurious emission is reported peak measurement only due to spurious lower than 20dB than the limit, 74dBuv/m, without further reporting the average measurement except for the 802.11n-HT20 5.5GHz (CH140).

The detail test results can be found in this document, Appendix A, hereafter.

4. Reference detail Section

Rule Part	Equipment Class	Wireless Technology	Frequency Band (MHz)	Reference FCC ID	Type Grant/Permissive Change	Reference Report Title	Reference Application	Reference Report Sections
15C	DTS	Bluetooth – LE Wii-Fi	2400~2483.5	PY7-84773W	Original Grant	FCC RF Test Report	PY7-84795R	Part 15C (FR692208-01B, FR692208-01C)
	DSS	Bluetooth	2400~2483.5	PY7-84773W	Original Grant	FCC RF Test Report	PY7-84795R	Part 15C (FR692208-01A)
	DXX	NFC	13.56	PY7-84773W	Original Grant	FCC RF Test Report	PY7-84795R	Part 15C (FR692208-01D)
15E	NII	Wi-Fi	5150~5250 5250~5350 5470~5725 5725~5850	PY7-84773W	Original Grant	FCC RF Test Report	PY7-84795R	Part 15E (FR692208-01E, FR692208-01F, FZ692208-01)

Appendix A. Spot Check Test Result

1.1 Conducted power

<2.4GHz WLAN>

	Mode	Channel	Frequency (MHz)	Data Rate	Tune-Up Limit	FCC ID PY7-84773W Average power (dBm)	FCC ID PY7-84795R Average power (dBm)
2.4GHz WLAN	802.11b	CH 1	2412	1Mbps	16.5	16.36	16.42
		CH 6	2437			16.41	16.40
		CH 11	2462			16.27	16.21
	802.11g	CH 1	2412	6Mbps	14.0	13.88	13.98
		CH 6	2437		15.0	14.63	14.86
		CH 11	2462			14.81	14.80
	802.11n-HT20	CH 1	2412	MCS0	13.5	13.04	13.37
		CH 6	2437			13.42	13.47
		CH 11	2462		14.0	13.89	13.73

<Bluetooth>

Mode	Channel	Frequency (MHz)	Tune-Up Limit	FCC ID PY7-84773W Average power (dBm)	FCC ID PY7-84795R Average power (dBm)
Bluetooth (1Mbps)	CH 00	2402	6.75	5.74	5.49
	CH 39	2441		6.34	6.34
	CH 78	2480		4.59	4.97
Bluetooth (2Mbps)	CH 00	2402	6.75	3.34	3.11
	CH 39	2441		4.27	4.25
	CH 78	2480		2.19	2.59
Bluetooth (3Mbps)	CH 00	2402	6.75	3.31	3.14
	CH 39	2441		4.18	4.30
	CH 78	2480		2.11	2.61
BLE (GFSK)	CH 00	2402	0.0	-1.98	-1.77
	CH 19	2440		-0.29	-0.53
	CH 39	2480		-1.93	-2.78

<5GHz WLAN>

	Mode	Channel	Frequency (MHz)	Data Rate	Tune-Up Limit	FCC ID PY7-84773W Average power (dBm)	FCC ID PY7-84795R Average power (dBm)
5.2GHz WLAN	802.11a	CH 36	5180	6Mbps	15.0	14.87	14.96
		CH 44	5220			14.85	14.82
		CH 48	5240			14.84	14.92
	802.11n-HT20	CH 36	5180	MCS0	15.0	14.99	14.96
		CH 44	5220			14.90	14.93
		CH 48	5240			14.89	14.85
	802.11n-HT40	CH 38	5190	MCS0	12.5	12.44	12.31
		CH 46	5230			12.42	12.24
5.3GHz WLAN	Mode	Channel	Frequency (MHz)	Data Rate	Tune-Up Limit	FCC ID PY7-84773W Average power (dBm)	FCC ID PY7-84795R Average power (dBm)
	802.11a	CH 52	5260	6Mbps	15.0	14.99	14.99
		CH 60	5300			14.80	14.97
		CH 64	5320			14.76	14.77
	802.11n-HT20	CH 52	5260	MCS0	15.0	14.90	14.97
		CH 60	5300			14.84	14.94
		CH 64	5320			14.81	14.95
	802.11n-HT40	CH 54	5270	MCS0	12.5	12.38	12.48
		CH 62	5310			12.34	12.41
5.5GHz WLAN	Mode	Channel	Frequency (MHz)	Data Rate	Tune-Up Limit	FCC ID PY7-84773W Average power (dBm)	FCC ID PY7-84795R Average power (dBm)
	802.11a	CH 100	5500	6Mbps	15.0	14.95	14.94
		CH 116	5580			14.96	14.82
		CH 140	5700			14.82	14.92
	802.11n-HT20	CH 100	5500	MCS0	15.0	14.99	14.98
		CH 116	5580			14.97	14.95
		CH 140	5700			14.83	14.97
	802.11n-HT40	CH 102	5510	MCS0	12.5	12.48	12.43
		CH 126	5630			12.43	12.31
		CH 134	5670			12.29	12.29

	Mode	Channel	Frequency (MHz)	Data Rate	Tune-Up Limit	FCC ID PY7-84773W Average power (dBm)	FCC ID PY7-84795R Average power (dBm)
5.8GHz WLAN	802.11a	CH 149	5745	MCS0	15.0	14.98	14.97
		CH 157	5785			14.91	14.85
		CH 165	5825			14.90	14.88
	802.11n-HT20	CH 149	5745	MCS0	15.0	14.82	14.98
		CH 157	5785			14.80	14.97
		CH 165	5825		14.5	14.37	14.33
	802.11n-HT40	CH 151	5755	MCS0	11.5	11.44	11.33
		CH 159	5795			11.41	11.24

1.2 Radiated Spurious Emission

2.4GHz BT/WLAN

Mode	Ch	Freq. (MHz)	Peak /Avg.	FCC ID PY7-84773W						FCC ID PY7-84795R					
				Band edge			Harmonic			Band edge			Harmonic		
				Frequency (MHz)	Level (dBuV/m)	Limit (dBuV/m)	Frequency (MHz)	Level (dBuV/m)	Limit (dBuV/m)	Frequency (MHz)	Level (dBuV/m)	Limit (dBuV/m)	Frequency (MHz)	Level (dBuV/m)	Limit (dBuV/m)
BT(3Mbps)	CH 39	2441	P	2486.77	51.99	74	7323	42.23	74	2486.07	50.87	74	7323	42.39	74
			A	2486.77	27.21	54	X	X	X	2486.07	26.09	54	X	X	X
BLE	CH 19	2440	P	2352.14	54.35	74	7320	44.02	74	2383.78	56.31	74	7320	43.4	74
			A	2494.47	43.64	54	X	X	X	2490.27	45.82	54	X	X	X
802.11b	CH 1	2412	P	2354.205	57.13	74	4824	46.54	74	2384.97	56.22	74	4824	49.07	74
			A	2390	45.39	54	X	X	X	2388.75	44.92	54	X	X	X
802.11g	CH 1	2412	P	2389.8	66	74	4824	42.82	74	2390	64.99	74	4824	45.41	74
			A	2389.905	50.26	54	X	X	X	2390	50.54	54	X	X	X

5.2GHz WLAN

Mode	Ch	Freq. (MHz)	Peak /Avg.	FCC ID PY7-84773W						FCC ID PY7-84795R					
				Band edge			Harmonic			Band edge			Harmonic		
				Frequency (MHz)	Level (dBuV/m)	Limit (dBuV/m)	Frequency (MHz)	Level (dBuV/m)	Limit (dBuV/m)	Frequency (MHz)	Level (dBuV/m)	Limit (dBuV/m)	Frequency (MHz)	Level (dBuV/m)	Limit (dBuV/m)
802.11n-HT40	CH 38	5190	P	5147.94	60.08	74	10380	46.48	74	5078.26	59.6	74	15570	46.39	74
			A	5150	50.65	54	X	X	X	5149.76	49.54	54	X	X	X

5.3GHz WLAN

Mode	Ch	Freq. (MHz)	Peak /Avg.	FCC ID PY7-84773W						FCC ID PY7-84795R					
				Band edge			Harmonic			Band edge			Harmonic		
				Frequency (MHz)	Level (dBuV/m)	Limit (dBuV/m)	Frequency (MHz)	Level (dBuV/m)	Limit (dBuV/m)	Frequency (MHz)	Level (dBuV/m)	Limit	Frequency (MHz)	Level (dBuV/m)	Limit
802.11n-HT40	CH 62	5310	P	5352.72	63.27	74	10620	47.06	74	5350.08	62.33	74	15930	47.72	74
			A	5350.08	51	54	X	X	X	5350.8	50.87	54	X	X	X

5.5GHz WLAN

Mode	Ch	Freq. (MHz)	Peak /Avg.	FCC ID PY7-84773W						FCC ID PY7-84795R					
				Band edge			Harmonic			Band edge			Harmonic		
				Frequency (MHz)	Level (dBuV/m)	Limit (dBuV/m)	Frequency (MHz)	Level (dBuV/m)	Limit (dBuV/m)	Frequency (MHz)	Level (dBuV/m)	Limit (dBuV/m)	Frequency (MHz)	Level (dBuV/m)	Limit (dBuV/m)
802.11n-HT20	CH 140	5700	P	5727.64	66.53	74	17100	56.76	74	5725.08	65.57	74	17100	54.35	74
			A	5725	50.69	54	17100	41.35	54	5725.24	50.94	54	17100	40.55	54

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5.8GHz WLAN

Mode	Ch	Freq. (MHz)	Peak /Avg.	FCC ID PY7-84773W						FCC ID PY7-84795R					
				Band edge			Harmonic			Band edge			Harmonic		
				Frequency (MHz)	Level (dBuV/m)	Limit (dBuV/m)	Frequency (MHz)	Level (dBuV/m)	Limit (dBuV/m)	Frequency (MHz)	Level (dBuV/m)	Limit (dBuV/m)	Frequency (MHz)	Level (dBuV/m)	Limit (dBuV/m)
802.11a	CH 157	5785	P	5946.6	61.36	68.2	17355	53.55	68.2	5932.4	61.55	68.2	17355	51.35	68.2
			-	X	X	X	X	X	X	X	X	X	X	X	X

BLE (Band Edge @ 3m)

BLE	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)
BLE CH 19 2440MHz		2318.26	55.68	-18.32	74	53.04	26.85	7.3	31.51	108	284	P	H
		2340.8	45.25	-8.75	54	42.46	26.92	7.37	31.5	108	284	A	H
	*	2440	93.42	-	-	90.19	27.22	7.49	31.48	108	284	P	H
	*	2440	92.39	-	-	89.16	27.22	7.49	31.48	108	284	A	H
		2490.9	56.14	-17.86	74	52.71	27.37	7.53	31.47	108	284	P	H
		2484.53	45.53	-8.47	54	42.12	27.35	7.53	31.47	108	284	A	H
		2383.78	56.31	-17.69	74	53.3	27.05	7.45	31.49	334	5	P	V
		2365.16	45.22	-8.78	54	42.34	27	7.37	31.49	334	5	A	V
	*	2440	90.41	-	-	87.18	27.22	7.49	31.48	334	5	P	V
	*	2440	89.42	-	-	86.19	27.22	7.49	31.48	334	5	A	V
		2497.76	56.24	-17.76	74	52.78	27.39	7.53	31.46	334	5	P	V
		2490.27	45.82	-8.18	54	42.39	27.37	7.53	31.47	334	5	A	V

BLE (Harmonic @ 3m)

BLE	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)
BLE CH 19 2440MHz		4880	39.09	-34.91	74	54.02	32.28	10.89	58.1	100	0	P	H
		7320	43.39	-30.61	74	51.31	37	14.18	59.1	100	0	P	H
													H
													H
		4880	38.74	-35.26	74	53.67	32.28	10.89	58.1	100	0	P	V
		7320	43.4	-30.6	74	51.32	37	14.18	59.1	100	0	P	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

2.4GHz 2400~2483.5MHz

BT(3M) (Band Edge @ 3m)

BT	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)
BT CH 39 2441MHz		2333.24	50.25	-23.75	74	47.57	26.89	7.3	31.51	100	159	P	H
		2333.24	25.47	-28.53	54	-	-	-	-	-	-	A	H
	*	2442	97.51	-	-	94.31	27.18	7.49	31.47	100	159	P	H
	*	2442	72.73	-	-	-	-	-	-	-	-	A	H
		2486.07	50.87	-23.13	74	47.55	27.26	7.53	31.47	100	159	P	H
		2486.07	26.09	-27.91	54	-	-	-	-	-	-	A	H
		2342.06	50.48	-23.52	74	47.68	26.93	7.37	31.5	400	82	P	V
		2342.06	25.7	-28.3	54	-	-	-	-	-	-	A	V
	*	2442	95.48	-	-	92.28	27.18	7.49	31.47	400	82	P	V
	*	2442	70.7	-	-	-	-	-	-	-	-	A	V
		2496.64	50.41	-23.59	74	47.04	27.3	7.53	31.46	400	82	P	V
		2496.64	25.63	-28.37	54	-	-	-	-	-	-	A	V

BT(3M) (Harmonic @ 3m)

BT	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)
BT CH 39 2441MHz		4882	38.82	-35.18	74	54.7	31.33	10.89	58.1	100	0	P	H
		4882	14.04	-39.96	54	-	-	-	-	-	-	A	H
		7323	42.39	-31.61	74	51.19	36.12	14.18	59.1	100	0	P	H
		7323	17.61	-36.39	54	-	-	-	-	-	-	A	H
		4882	38.22	-35.78	74	54.1	31.33	10.89	58.1	100	0	P	V
		4882	13.44	-40.56	54	-	-	-	-	-	-	A	V
		7323	41.95	-32.05	74	50.75	36.12	14.18	59.1	100	0	P	V
		7323	17.17	-36.83	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 802.11b (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)
802.11b CH 01 2412MHz		2384.97	56.22	-17.78	74	53.25	27.01	7.45	31.49	100	279	P	H
		2388.75	44.92	-9.08	54	41.91	27.05	7.45	31.49	100	279	A	H
	*	2412	106.95	-	-	103.9	27.09	7.45	31.49	100	279	P	H
	*	2412	102.33	-	-	99.28	27.09	7.45	31.49	100	279	A	H
		2363.76	56.21	-17.79	74	53.37	26.97	7.37	31.5	399	7	P	V
		2388.54	44.01	-9.99	54	41	27.05	7.45	31.49	399	7	A	V
	*	2412	100.59	-	-	97.54	27.09	7.45	31.49	399	7	P	V
	*	2412	95.96	-	-	92.91	27.09	7.45	31.49	399	7	A	V

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	48.87	-25.13	74	65.01	31.26	10.74	58.14	100	0	P	H
		4824	49.07	-24.93	74	65.21	31.26	10.74	58.14	100	0	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		2390	64.99	-9.01	74	61.98	27.05	7.45	31.49	100	280	P	H
		2390	50.54	-3.46	54	47.53	27.05	7.45	31.49	100	280	A	H
	*	2412	106.6	-	-	103.55	27.09	7.45	31.49	100	280	P	H
	*	2412	96.49	-	-	93.44	27.09	7.45	31.49	100	280	A	H
		2389.8	60.04	-13.96	74	57.03	27.05	7.45	31.49	392	345	P	V
		2390	46.93	-7.07	54	43.92	27.05	7.45	31.49	392	345	A	V
	*	2412	99.69	-	-	96.64	27.09	7.45	31.49	392	345	P	V
	*	2412	90.01	-	-	86.96	27.09	7.45	31.49	392	345	A	V

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	45.41	-28.59	74	60.63	32.18	10.74	58.14	100	0	P	H
		4824	44.11	-29.89	74	59.33	32.18	10.74	58.14	100	0	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Band 1 5150~5250MHz

WIFI 802.11n HT40 (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 HT40 CH 38 5190MHz		5078.26	59.6	-14.4	74	47.7	31.58	11.27	30.95	115	70	P	H
		5149.76	49.54	-4.46	54	37.63	31.65	11.21	30.95	115	70	A	H
	*	5190	97.83	-	-	85.92	31.68	11.18	30.95	115	70	P	H
	*	5190	86.98	-	-	75.07	31.68	11.18	30.95	115	70	A	H
		5421.36	59.14	-14.86	74	46.53	31.92	11.64	30.95	115	70	P	H
		5436.24	48.8	-5.2	54	36.18	31.93	11.64	30.95	115	70	A	H
		5132.86	59.45	-14.55	74	47.53	31.63	11.24	30.95	395	352	P	V
		5150	48.85	-5.15	54	36.94	31.65	11.21	30.95	395	352	A	V
	*	5190	98.52	-	-	86.61	31.68	11.18	30.95	395	352	P	V
	*	5190	87.99	-	-	76.08	31.68	11.18	30.95	395	352	A	V
		5362.32	58.89	-15.11	74	46.45	31.87	11.52	30.95	395	352	P	V
		5428.08	48.81	-5.19	54	36.2	31.92	11.64	30.95	395	352	A	V

Band 1 5150~5250MHz

WIFI 802.11n HT40 (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 HT40 CH 38 5190MHz		10380	46.26	-27.74	74	46.95	39.61	17.13	57.43	100	0	P	H
		15570	46.39	-27.61	74	44.99	38.22	21.64	58.46	100	0	P	H
		10380	46.35	-27.65	74	47.04	39.61	17.13	57.43	100	0	P	V
		15570	45.49	-28.51	74	44.09	38.22	21.64	58.46	100	0	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Band 2 5250~5350MHz

WIFI 802.11n HT40 (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 HT40 CH 62 5310MHz		5121.42	59.63	-14.37	74	46.86	32.48	11.24	30.95	400	331	P	H
		5007.8	49.12	-4.88	54	36.23	32.5	11.34	30.95	400	331	A	H
	*	5310	101.56	-	-	88.64	32.44	11.43	30.95	400	331	P	H
	*	5310	91.1	-	-	78.18	32.44	11.43	30.95	400	331	A	H
		5350.08	62.33	-11.67	74	49.33	32.43	11.52	30.95	400	331	P	H
		5350.8	50.87	-3.13	54	37.87	32.43	11.52	30.95	400	331	A	H
		5100.1	59.39	-14.61	74	46.62	32.48	11.24	30.95	303	176	P	V
		5141.7	49.02	-4.98	54	36.29	32.47	11.21	30.95	303	176	A	V
	*	5310	98.18	-	-	85.26	32.44	11.43	30.95	303	176	P	V
	*	5310	87.71	-	-	74.79	32.44	11.43	30.95	303	176	A	V
		5350.8	60.8	-13.2	74	47.8	32.43	11.52	30.95	303	176	P	V
		5350.56	50.36	-3.64	54	37.36	32.43	11.52	30.95	303	176	A	V

WIFI 802.11n HT40 (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 HT40 CH 62 5310MHz		10620	46.84	-27.16	74	46.57	40.05	17.4	57.18	100	0	P	H
		15930	45.41	-28.59	74	43.03	38.21	21.91	57.74	100	0	P	H
		10620	47.23	-26.77	74	46.96	40.05	17.4	57.18	100	0	P	V
		15930	47.72	-26.28	74	45.34	38.21	21.91	57.74	100	0	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Band 3 - 5470~5725MHz

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 140 5700MHz	*	5700	105.85	-	-	92.08	32.96	11.82	31.01	239	333	P	H
	*	5700	94.85	-	-	81.08	32.96	11.82	31.01	239	333	A	H
		5725.08	65.57	-8.43	74	51.72	33.03	11.84	31.02	239	333	P	H
		5725.24	50.94	-3.06	54	37.09	33.03	11.84	31.02	239	333	A	H
	*	5700	103.11	-	-	89.34	32.96	11.82	31.01	117	162	P	V
	*	5700	92.19	-	-	78.42	32.96	11.82	31.01	117	162	A	V
		5725.08	62.14	-11.86	74	48.29	33.03	11.84	31.02	117	162	P	V
		5725.32	50.02	-3.98	54	36.17	33.03	11.84	31.02	117	162	A	V

Band 3 - 5470~5725MHz

WIFI 802.11n HT40 (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 140 5700MHz		11400	47.37	-26.63	74	46.52	40.2	18.31	57.66	100	0	P	H
		17100	54.35	-19.65	74	46.4	41.62	22.99	56.66	209	21	P	H
		17100	40.55	-13.45	54	32.6	41.62	22.99	56.66	209	21	A	H
		11400	47.17	-26.83	74	46.32	40.2	18.31	57.66	100	0	P	V
		17100	49.46	-24.54	74	41.51	41.62	22.99	56.66	100	0	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Band 4 5725~5850MHz

WIFI 802.11a (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)
802.11a CH 157 5785MHz		5612.6	60.58	-7.62	68.2	47.08	32.72	11.77	30.99	246	330	P	H
		5681	60.88	-30.3	91.18	47.16	32.91	11.82	31.01	246	330	P	H
		5704.4	60.38	-46.05	106.43	46.58	32.97	11.84	31.01	246	330	P	H
		5720.6	60.36	-51.81	112.17	46.52	33.02	11.84	31.02	246	330	P	H
	*	5785	105	-	-	90.97	33.2	11.88	31.05	246	330	P	H
	*	5785	94.42	-	-	80.39	33.2	11.88	31.05	246	330	A	H
		5851.6	61.28	-57.27	118.55	46.93	33.38	12.03	31.06	246	330	P	H
		5857.8	60.73	-49.28	110.01	46.37	33.4	12.03	31.07	246	330	P	H
		5902.4	61.7	-23.19	84.89	46.94	33.53	12.31	31.08	246	330	P	H
		5925.6	61.21	-6.99	68.2	46.4	33.59	12.31	31.09	246	330	P	H
		5607.2	60.67	-7.53	68.2	47.19	32.7	11.77	30.99	100	173	P	V
		5681.6	60.35	-31.27	91.62	46.63	32.91	11.82	31.01	100	173	P	V
		5705	60.57	-46.03	106.6	46.78	32.97	11.84	31.02	100	173	P	V
		5723.4	59.54	-59.01	118.55	45.69	33.03	11.84	31.02	100	173	P	V
	*	5785	102.22	-	-	88.19	33.2	11.88	31.05	100	173	P	V
	*	5785	91.71	-	-	77.68	33.2	11.88	31.05	100	173	A	V
		5852.6	60.03	-56.24	116.27	45.67	33.39	12.03	31.06	100	173	P	V
		5863	60.79	-47.77	108.56	46.27	33.42	12.17	31.07	100	173	P	V
		5920.2	61.66	-10.08	71.74	46.86	33.58	12.31	31.09	100	173	P	V
		5932.4	61.55	-6.65	68.2	46.72	33.61	12.31	31.09	100	173	P	V

Band 4 5725~5850MHz

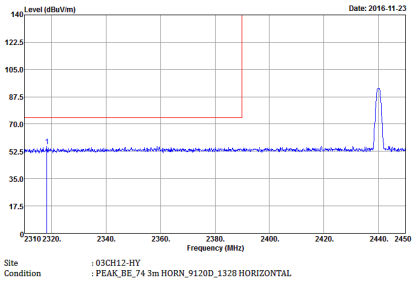
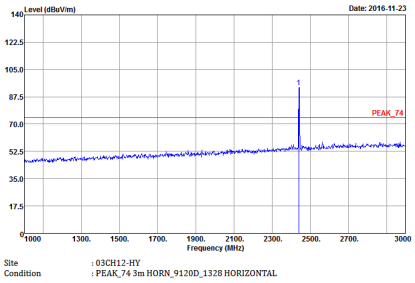
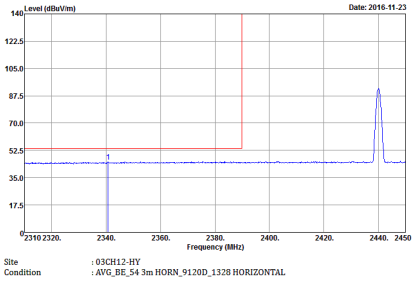
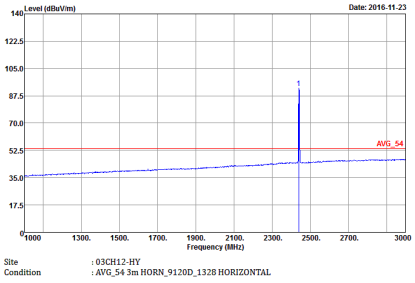
WIFI 802.11a (Harmonic @ 3m)

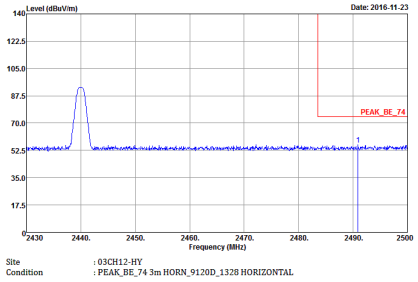
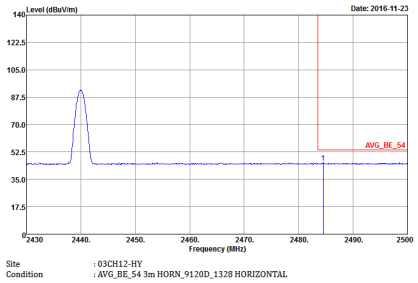
WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11a CH 157 5785MHz		11570	46.75	-27.25	74	46	40.06	18.49	57.8	100	0	P	H
		17355	51.35	-16.85	68.2	43.48	42.18	23.25	57.56	100	0	P	H
		11570	46.83	-27.17	74	46.08	40.06	18.49	57.8	100	0	P	V
		17355	50.89	-17.31	68.2	43.02	42.18	23.25	57.56	100	0	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

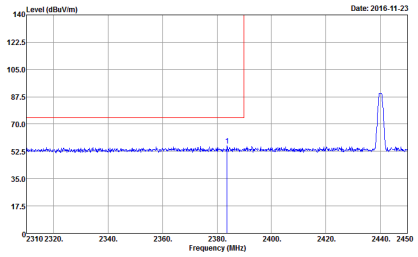
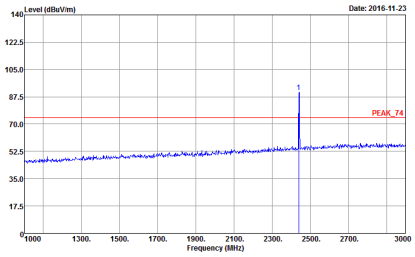
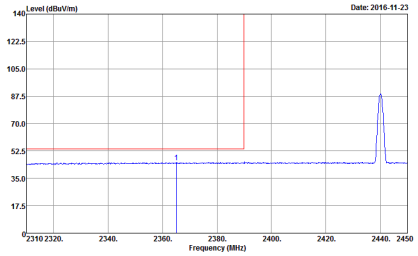
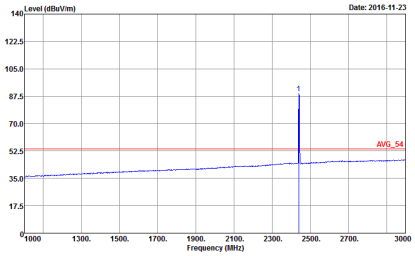
Note symbol

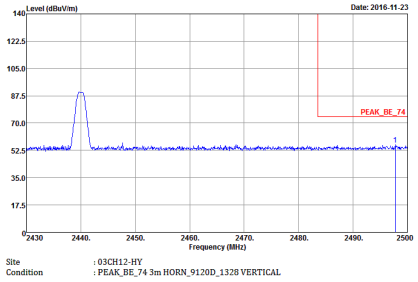
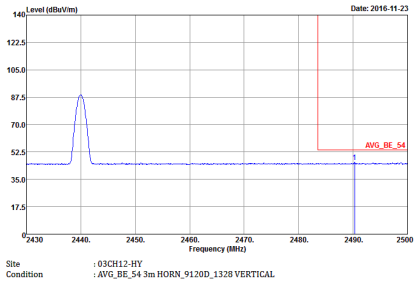
*	**Fundamental Frequency** which can be ignored. However, the level of any unwanted emissions shall not exceed the level of the fundamental frequency.
!	Test result is **over limit** line.
P/A	**P**eak or **A**verage
H/V	**H**orizontal or **V**ertical
-L	**Low channel location**
-R	**High channel location**

2.4GHz 2400~2483.5MHz
BLE (Band Edge @ 3m)

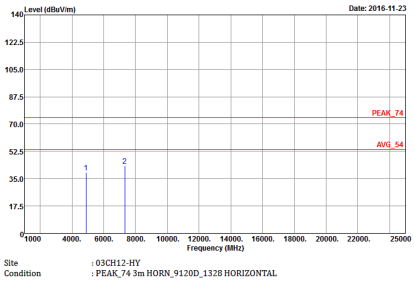
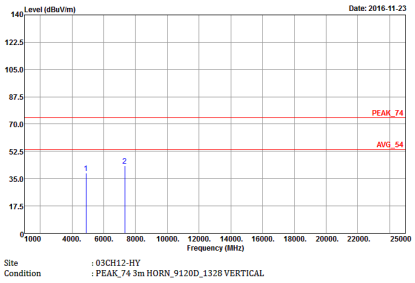
BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE CH19 2440MHz - L	
1	Horizontal	Fundamental
Peak		
Avg.		

BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE CH19 2440MHz - R	
1	Horizontal	Fundamental
Peak		Left blank
Avg.		Left blank

BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE CH19 2440MHz - L	
1	Vertical	Fundamental
Peak	 Site : 03CH12-HY Condition : PEAK_BE_74 3m HORN_9120D_1328 VERTICAL	 Site : 03CH12-HY Condition : PEAK_74 3m HORN_9120D_1328 VERTICAL
Avg.	 Site : 03CH12-HY Condition : AVG_BE_54 3m HORN_9120D_1328 VERTICAL	 Site : 03CH12-HY Condition : AVG_54 3m HORN_9120D_1328 VERTICAL

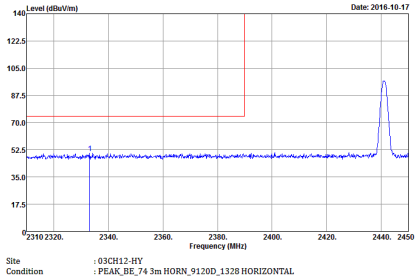
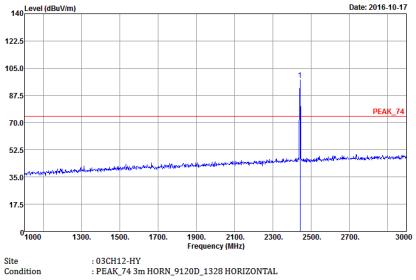
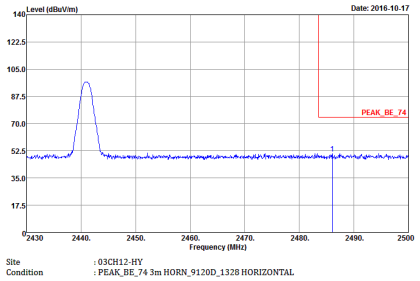
BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE CH19 2440MHz - R	
1	Vertical	Fundamental
Peak		Left blank
Avg.		Left blank

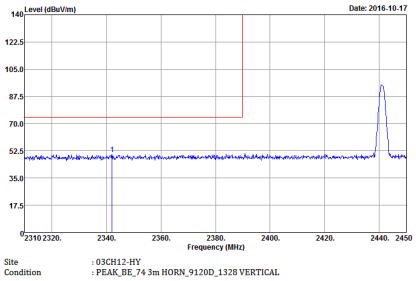
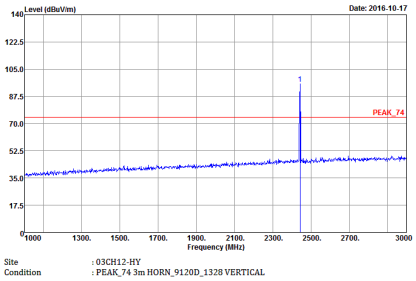
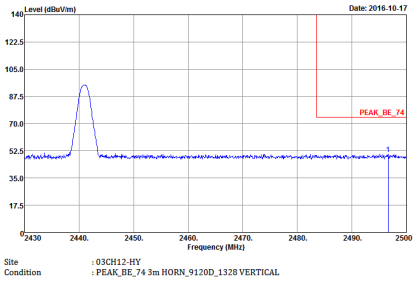
2.4GHz 2400~2483.5MHz
BLE (Harmonic @ 3m)

BLE	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	BLE CH19 2440MHz	
1	Horizontal	Vertical
Peak Avg.		

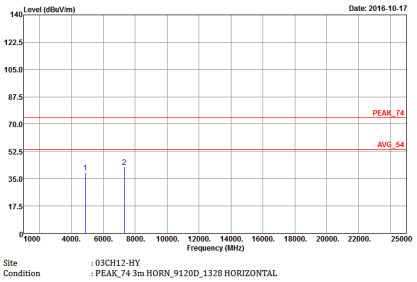
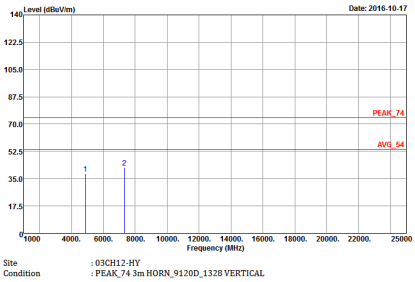
2.4GHz 2400~2483.5MHz

BT(3M) (Band Edge @ 3m)

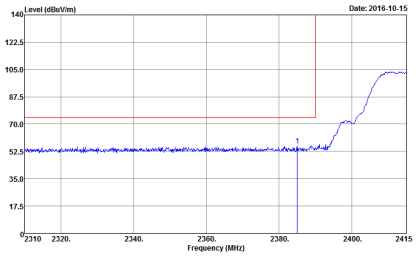
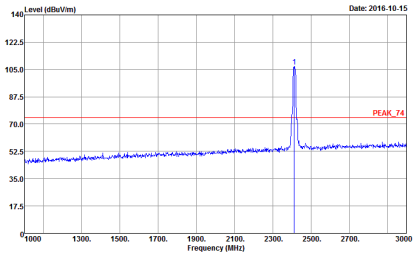
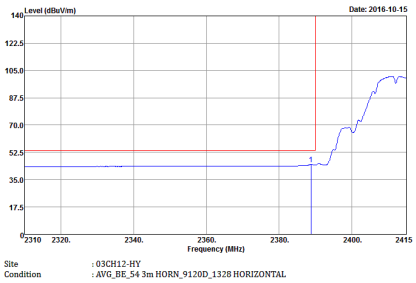
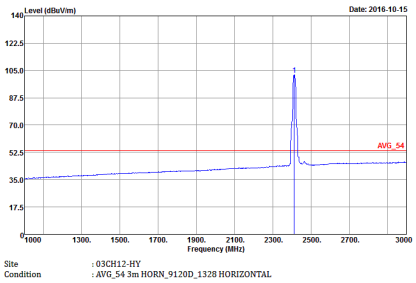
BT	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BT CH39 2441MHz	
1	Horizontal	Fundamental
Peak		
Peak		Left blank

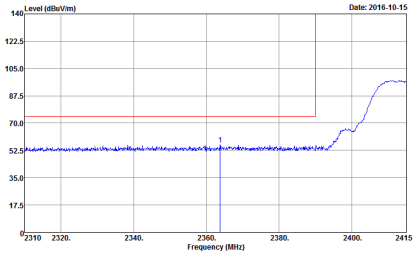
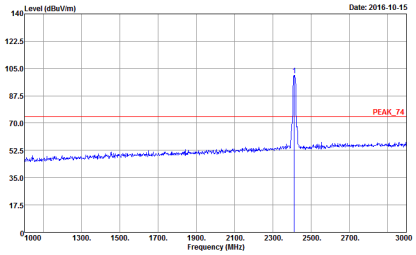
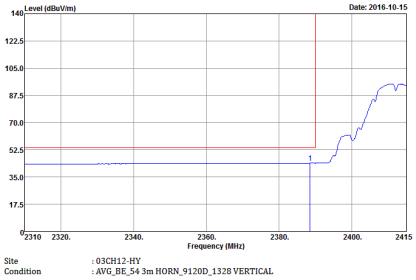
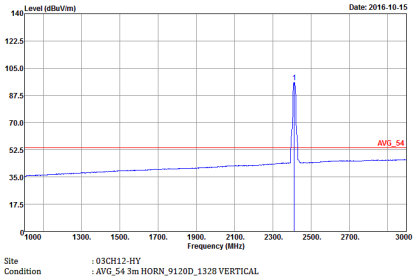
BT	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BT CH39 2441MHz	
1	Vertical	Fundamental
Peak		
Peak		Left blank

2.4GHz 2400~2483.5MHz
BT(3M) (Harmonic @ 3m)

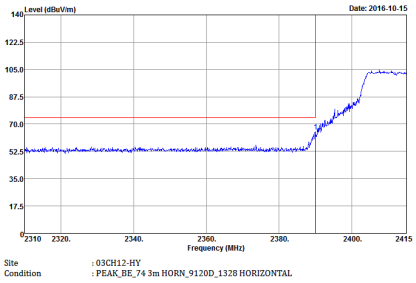
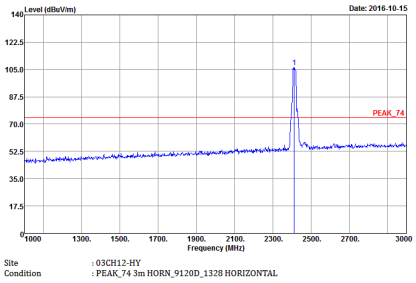
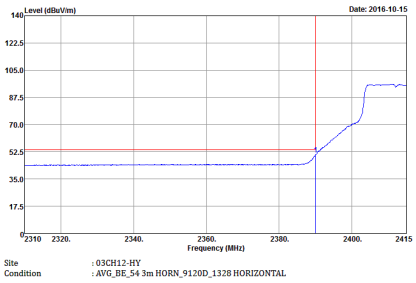
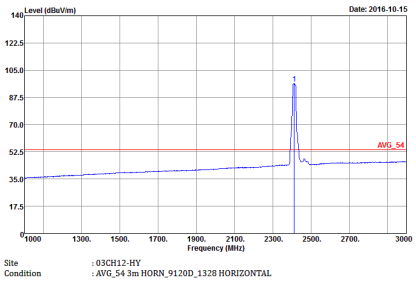
BT	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	BT CH39 2441MHz	
1	Horizontal	Vertical
Peak Avg.		

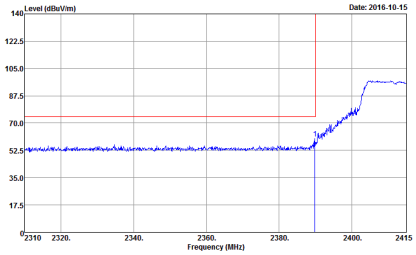
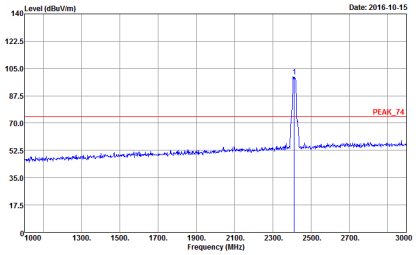
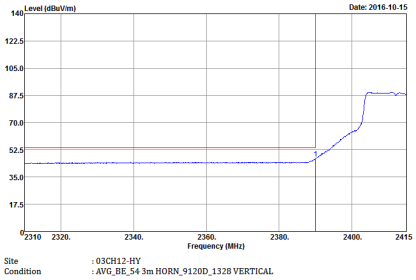
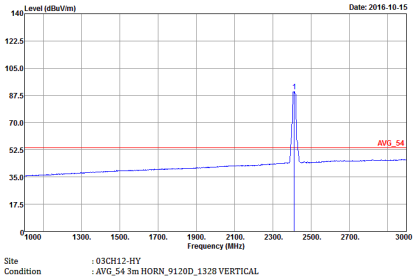
2.4GHz 2400~2483.5MHz
WIFI 802.11b (Band Edge @ 3m)

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

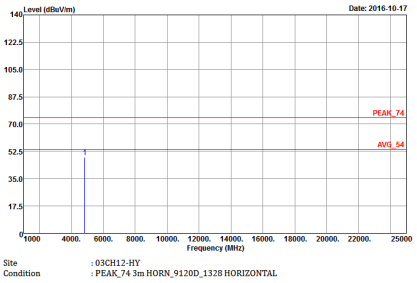
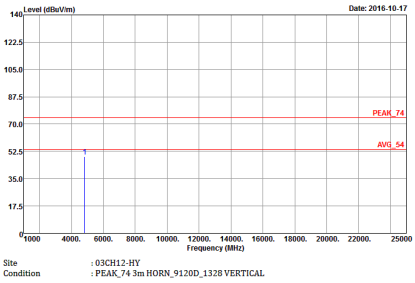
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH01 2412MHz	
1	Vertical	Fundamental
Peak		
Avg.		

2.4GHz 2400~2483.5MHz
WIFI 802.11g (Band Edge @ 3m)

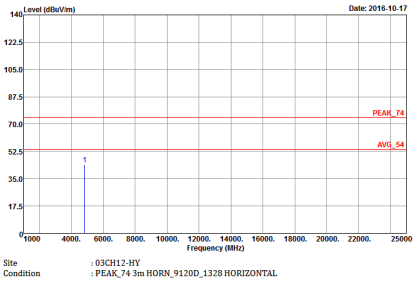
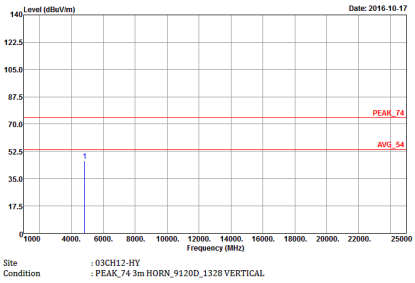
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11g CH01 2412MHz	
1	Horizontal	Fundamental
Peak		
Avg.		

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

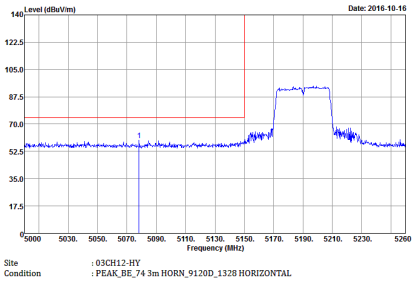
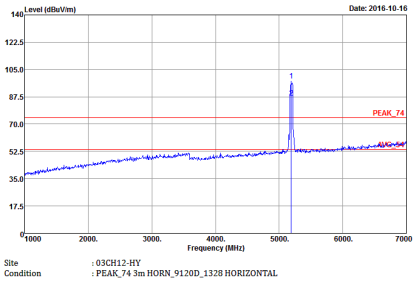
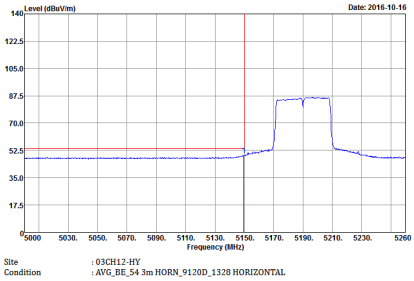
2.4GHz 2400~2483.5MHz
WIFI 802.11b (Harmonic @ 3m)

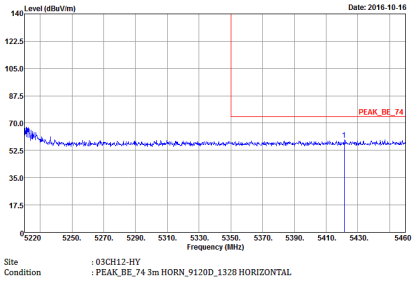
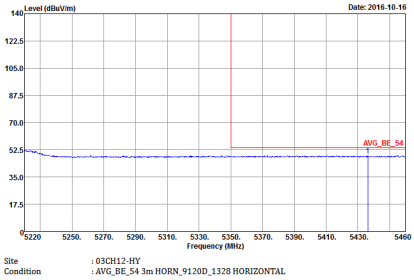
WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11b CH01 2412MHz	
1	Horizontal	Vertical
Peak Avg.		

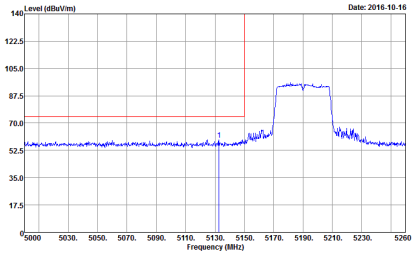
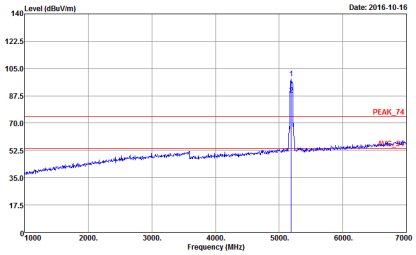
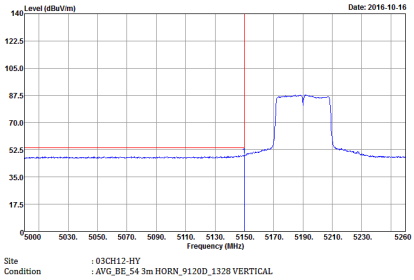
2.4GHz 2400~2483.5MHz
WIFI 802.11g (Harmonic @ 3m)

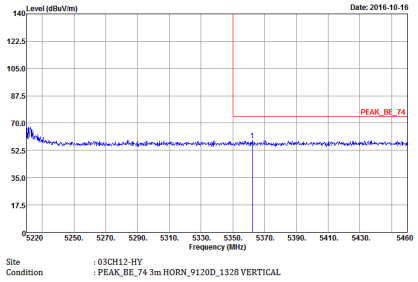
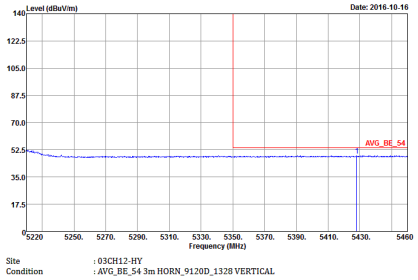
WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11g CH01 2412MHz	
1	Horizontal	Vertical
Peak Avg.		

Band 1 - 5150~5250MHz
WIFI 802.11n HT40 (Band Edge @ 3m)

WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11n HT40 CH38 5190MHz - L	
1	Horizontal	Fundamental
Peak		
Avg.		Left blank

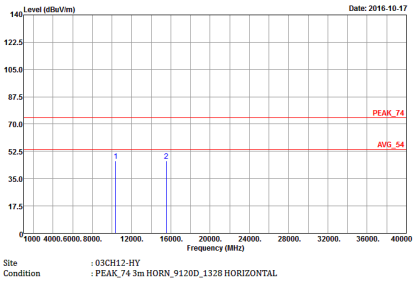
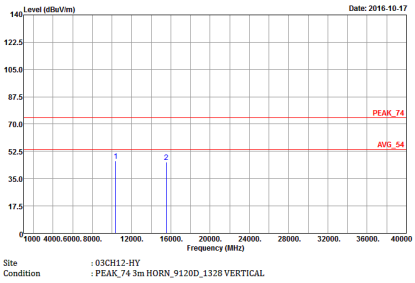
WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11n HT40 CH38 5190MHz - R	
1	Horizontal	Fundamental
Peak		Left blank
Avg.		Left blank

WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11n HT40 CH38 5190MHz - L	
1	Vertical	Fundamental
Peak		
Avg.		Left blank

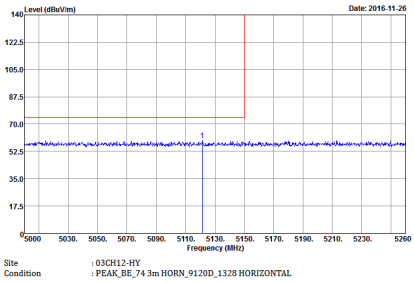
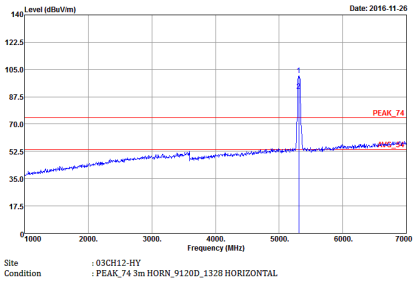
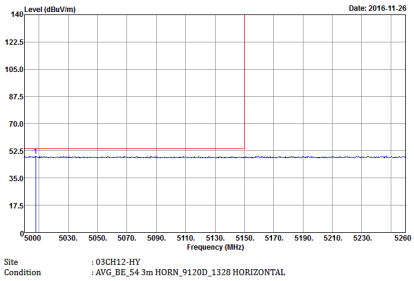
WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11n HT40 CH38 5190MHz - R	
1	Vertical	Fundamental
Peak		Left blank
Avg.		Left blank

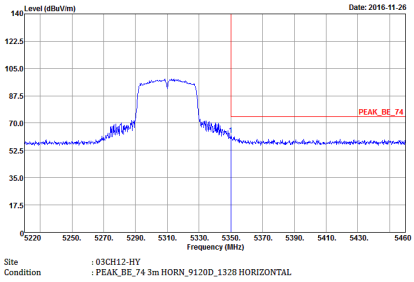
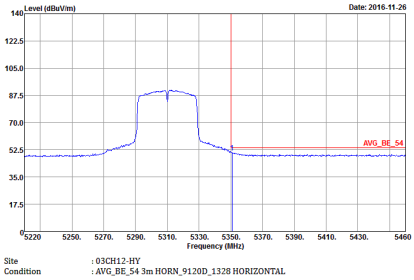
Band 1 - 5150~5250MHz

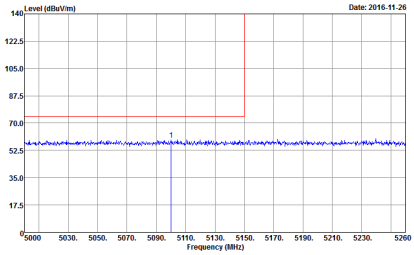
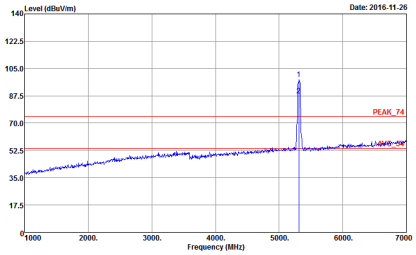
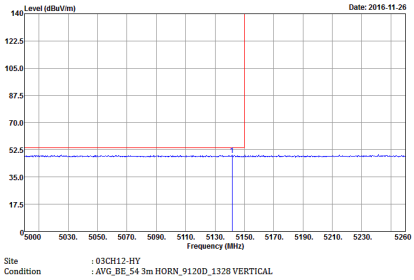
WIFI 802.11n HT40 (Harmonic @ 3m)

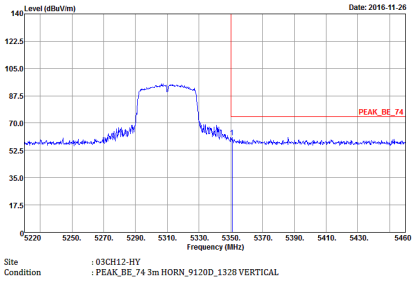
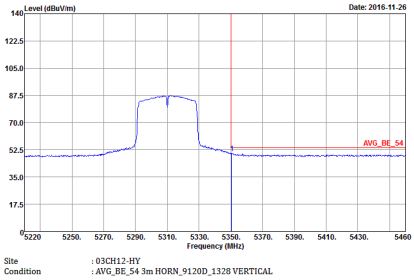
WIFI	Band 1 5150~5250MHz Harmonic @ 3m	
ANT	802.11n HT40 CH38 5190MHz	
1	Horizontal	Vertical
Peak Avg.		

Band 2 - 5250~5350MHz
WIFI 802.11n HT40 (Band Edge @ 3m)

WIFI	Band 2 5250~5350MHz Band Edge @ 3m	
ANT	802.11n HT40 CH62 5310 - L	
1	Horizontal	Fundamental
Peak		
Avg.		Left blank

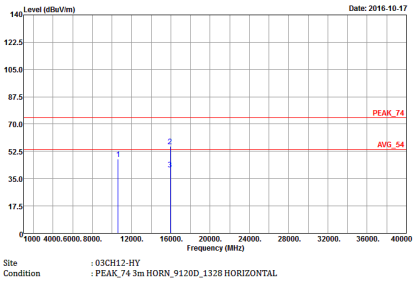
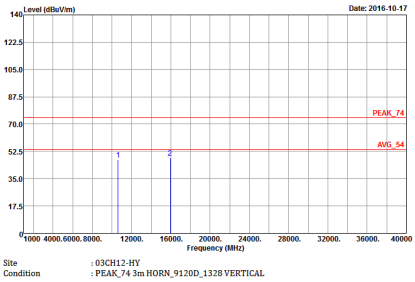
WIFI	Band 2 5250~5350MHz Band Edge @ 3m	
ANT	802.11n HT40 CH62 5310 - R	
1	Horizontal	Fundamental
Peak		Left blank
Avg.		Left blank

WIFI	Band 2 5250~5350MHz Band Edge @ 3m	
ANT	802.11n HT40 CH62 5310 - L	
1	Vertical	Fundamental
Peak		
Avg.		Left blank

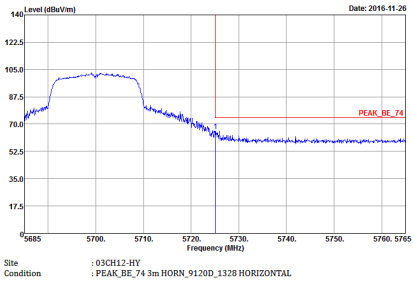
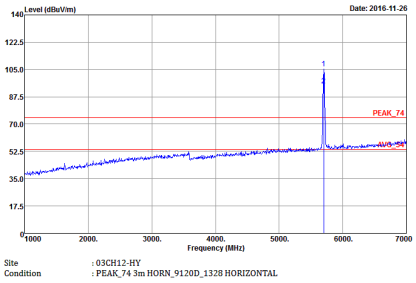
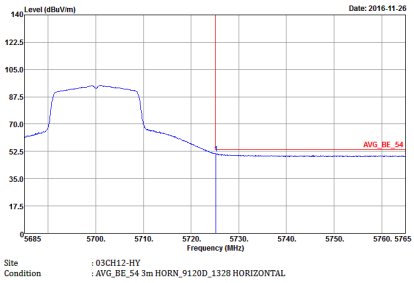
WIFI	Band 2 5250~5350MHz Band Edge @ 3m	
ANT	802.11n HT40 CH62 5310 - R	
1	Vertical	Fundamental
Peak		Left blank
Avg.		Left blank

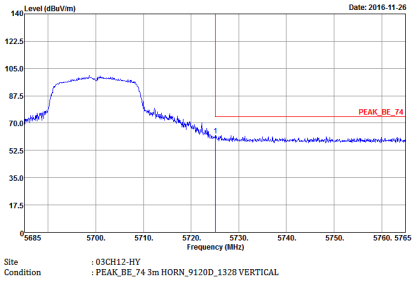
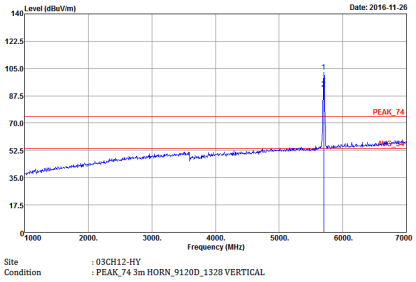
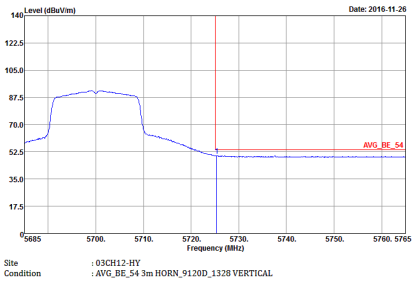
Band 2 - 5250~5350MHz

WIFI 802.11n HT40 (Harmonic @ 3m)

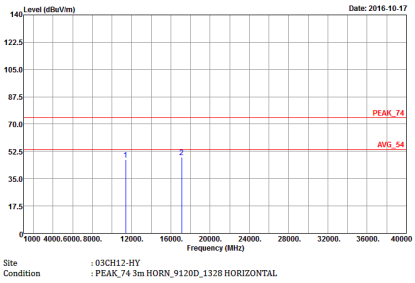
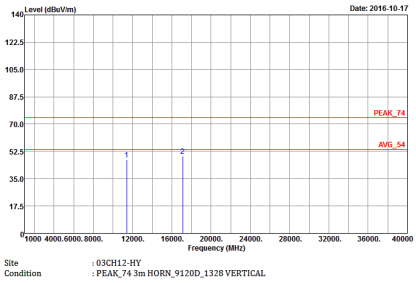
WIFI	Band 2 5250~5350MHz Harmonic @ 3m	
ANT	802.11n HT40 CH62 5310	
1	Horizontal	Vertical
Peak Avg.		

Band 3 - 5470~5725MHz
WIFI 802.11n HT20 (Band Edge @ 3m)

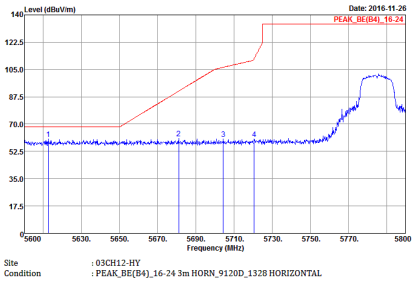
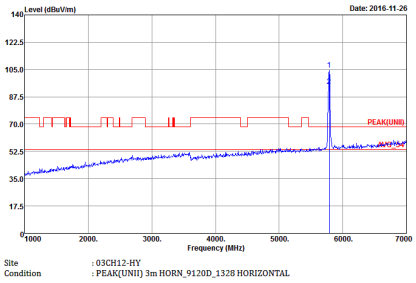
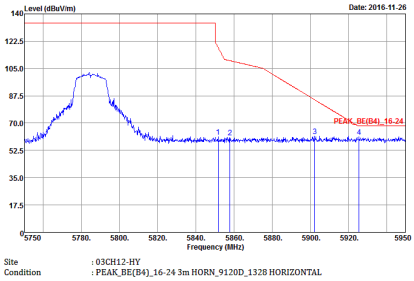
WIFI	Band 3 5470~5725MHz Band Edge @ 3m	
ANT	802.11n HT20 CH140 5700MHz	
1	Horizontal	Fundamental
Peak		
Avg.		Left blank

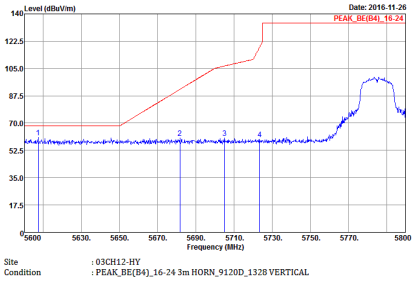
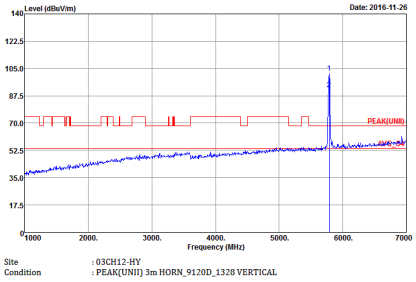
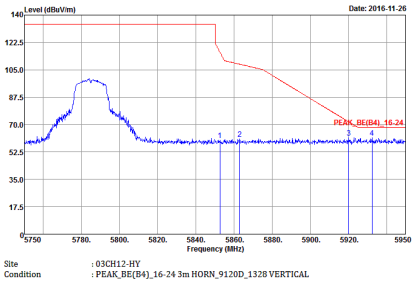
WIFI	Band 3 5470~5725MHz Band Edge @ 3m	
ANT	802.11n HT20 CH140 5700MHz	
1	Vertical	Fundamental
Peak.		
Avg.		Left blank

Band 3 - 5470~5725MHz
WIFI 802.11n HT20 (Harmonic @ 3m)

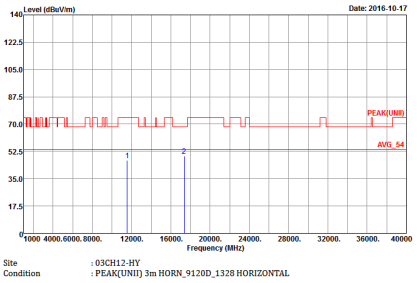
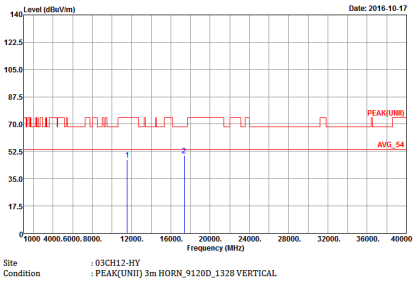
WIFI	Band 3 5470~5725MHz Harmonic @ 3m	
ANT	802.11n HT20 CH140 5700MHz	
1	Horizontal	Vertical
Peak Avg.		

Band 4 - 5725~5850MHz
WIFI 802.11a (Band Edge @ 3m)

WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH157 5785MHz	
1	Horizontal	Fundamental
Peak		
Peak		Left blank

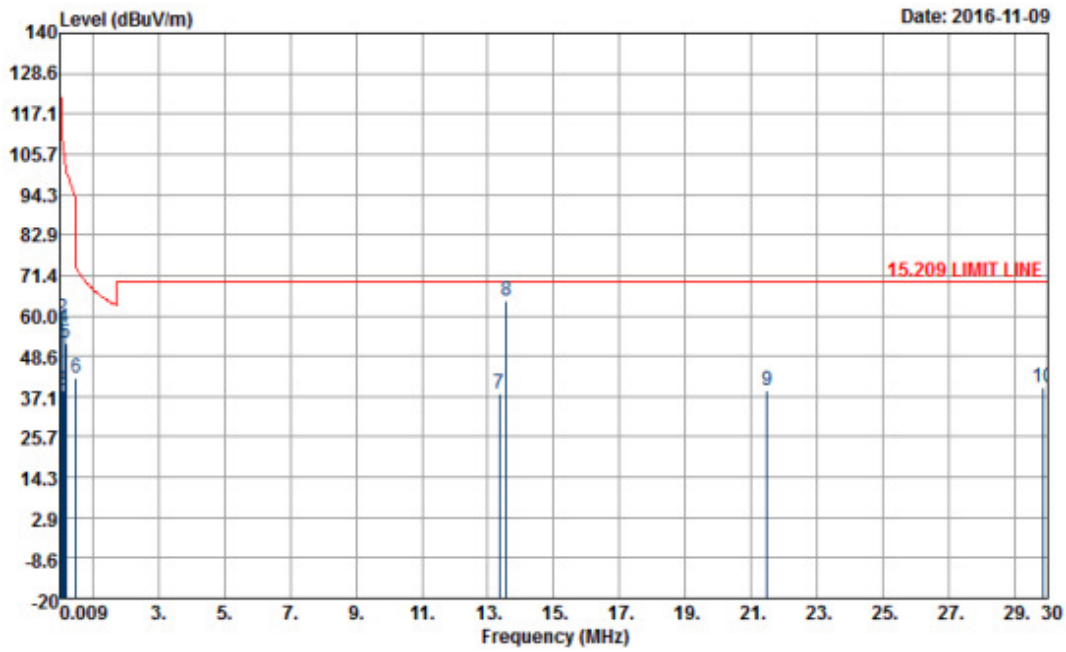
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH157 5785MHz	
1	Vertical	Fundamental
Peak		
Peak		Left blank

Band 4 - 5725~5850MHz
WIFI 802.11a (Harmonic @ 3m)

WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11a CH157 5785MHz	
1	Horizontal	Vertical
Peak Avg.		

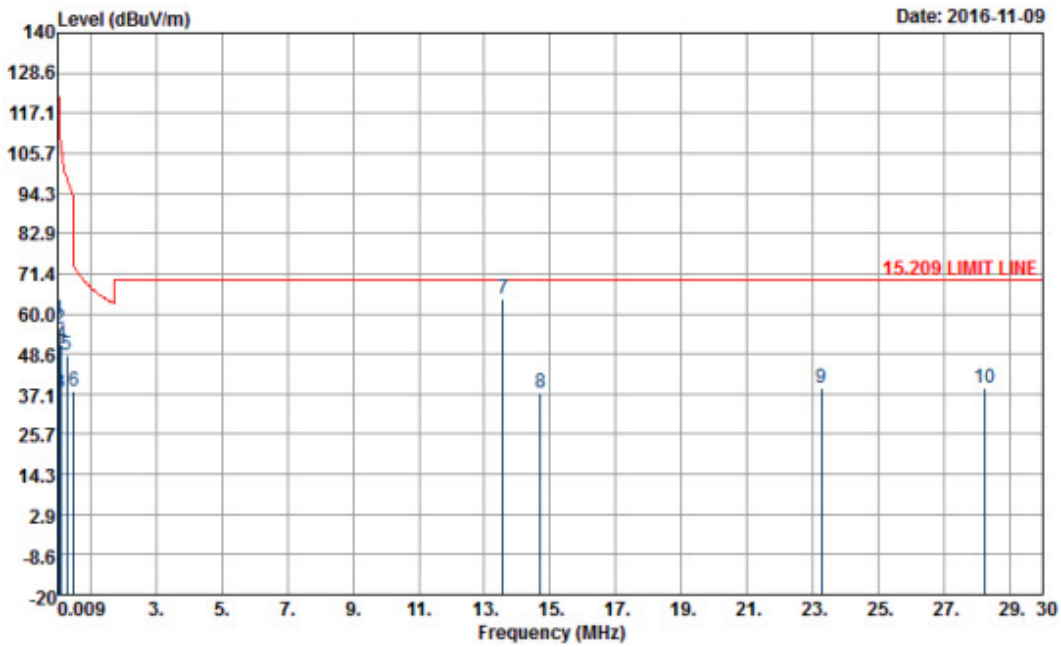
Results of Radiated Emissions (9 kHz~30MHz)

Test Mode :	NFC Tx	Polarization :	Horizontal



Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
0.01303	55.27	-70.04	125.31	31.69	22.9	0.68	-	-	Average
0.06465	59.47	-51.92	111.39	39.79	19	0.68	-	-	Average
0.09388	38.85	-69.3	108.15	19.37	18.8	0.68	-	-	QP
0.12928	56.66	-48.71	105.37	37.19	18.79	0.68	-	-	Average
0.19386	52.12	-49.73	101.85	32.68	18.76	0.68	-	-	Average
0.49751	42.49	-31.18	73.67	23.21	18.6	0.68	-	-	QP
13.352	37.86	-31.64	69.5	16.71	20.47	0.68	-	-	QP
13.56	64.23	-5.27	69.5	43.04	20.51	0.68	-	-	QP
21.481	38.67	-30.83	69.5	15.71	21.89	1.07	-	-	QP
29.84	39.71	-29.79	69.5	16.25	22.39	1.07	100	215	QP

Test Mode :	NFC Tx	Polarization :	Vertical



Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
0.01328	58.42	-66.72	125.14	34.84	22.9	0.68	-	-	Average
0.06465	55.8	-55.59	111.39	36.12	19	0.68	-	-	Average
0.09732	37.35	-70.49	107.84	17.87	18.8	0.68	-	-	QP
0.1184	51.36	-54.78	106.14	31.89	18.79	0.68	-	-	Average
0.29314	48.17	-50.09	98.26	28.78	18.71	0.68	-	-	Average
0.49	38.06	-35.74	73.8	18.78	18.6	0.68	-	-	QP
13.56	64.41	-5.09	69.5	43.22	20.51	0.68	-	-	QP
14.712	37.34	-32.16	69.5	15.92	20.74	0.68	-	-	QP
23.263	39	-30.5	69.5	15.94	21.99	1.07	100	164	QP
28.215	38.81	-30.69	69.5	15.45	22.29	1.07	-	-	QP

End of this report