Spot Check Evaluation

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REVISION HISTORY

VERSION	DESCRIPTION	ISSUED DATE
Rev.01	Initial issue of report	Feb. 22, 2017

1. Introduction Section

The original model (FCC ID: PY7-19719M) and the variant model (FCC ID: PY7-75946T) 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 PY7-75946T references the test data of PY7-19719M

The applicant takes full responsibility that the test data as referenced in this report represent compliance for this FCC ID (FCC ID: PY7-75946T).

2. Difference Section

The original model (FCC ID: PY7-19719M) and the variant model (FCC ID: PY7-75946T) 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 PY7-75946T, to support capability for different cellular bands.

The product specification is outlined in the following table:

FCC ID			PY7-19719M	PY7-75946T
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	PY7-19719M Worst Result	PY7-75946T Worst Result	Difference (dB)
Average Conducted Power (dBm)	802.11b	17.96	17.92	0.04
	802.11g	13.48	13.33	0.15
	11n HT20	12.73	12.91	-0.18
	BT (1Mbps)	6.74	6.64	0.1
	BT (2Mbps)	4.53	4.54	-0.01
	BT (3Mbps)	4.59	4.55	0.04
	BT-LE	0.26	0.50	-0.24
	11a, 5.2GHz	14.98	14.98	0
	11n HT20, 5.2GHz	14.90	14.98	-0.08
	11n HT40, 5.2GHz	10.69	10.76	-0.07
	11a, 5.3GHz	14.96	14.62	0.34
	11n HT20, 5.3GHz	14.86	14.64	0.22
	11n HT40, 5.3GHz	10.80	10.72	0.08
	11a, 5.5GHz	14.90	14.63	0.27
	11n HT20, 5.5GHz	14.98	14.64	0.34
	11n HT40, 5.5GHz	10.66	10.90	-0.24
	11a, 5.8GHz	14.97	14.97	0
	11n HT20, 5.8GHz	14.98	14.98	0
	11n HT40, 5.8GHz	10.91	10.87	0.04
	S/N of test sample	RQ3003BXX4	RQ3003BJB6	
	Test date	2016/12/2~2016/12/27	2016/12/6~2016/12/27	
Peak Radiated Spurious Emission (Band Edge) (dBuV/m)	802.11b	54.61	54.80	-0.19
	802.11n-HT20	61.00	59.19	1.81
	BT (1Mbps)	45.23	44.96	0.27
	BT-LE	54.09	54.69	-0.6
	11n HT40, 5.2GHz	57.39	57.58	-0.19
	11n HT40, 5.3GHz	58.48	59.37	-0.89
	11a, 5.5GHz	54.12	55.34	-1.22
	11a, 5.8GHz	52.04	51.31	0.73
	S/N of test sample	RQ3003BXJY RQ3003BXLZ RQ3003BXLU RQ3003CK58	RQ3003BJB6 RQ3003BJB0 RQ3003BGYD	
	Test date	2016/12/13~2017/1/25	2016/12/28~2017/01/18	
Average Radiated Spurious Emission (Band Edge) (dBuV/m)	802.11b	44.65	44.61	0.04
	802.11n-HT20	49.81	47.48	2.33
	BT (1Mbps)	20.41	20.14	0.27
	BT-LE	45.14	45.06	0.08
	11n HT40, 5.2GHz	50.86	50.64	0.22
	11n HT40, 5.3GHz	50.26	51.00	-0.74
	11a, 5.5GHz	46.68	45.97	0.71
	S/N of test sample	RQ3003BXJY RQ3003BXLZ RQ3003BXLU RQ3003CK58	RQ3003BJB6 RQ3003BJB0 RQ3003BGYD	
	Test date	2016/12/13~2017/1/25	2016/12/28~2017/01/18	

Peak Radiated Spurious Emission (Harmonic) (dBuV/m)	802.11b	37.87	40.25	-2.38
	802.11n-HT20	38.10	37.93	0.17
	BT (1Mbps)	40.12	37.92	2.2
	BT-LE	38.47	37.22	1.25
	11n HT40, 5.2GHz	41.86	42.13	-0.27
	11n HT40, 5.3GHz	45.99	43.43	2.56
	11a, 5.5GHz	60.32	59.97	0.35
	11a, 5.8GHz	50.63	48.47	2.16
	S/N of test sample	RQ3003BXJY RQ3003BXLZ RQ3003BXLU RQ3003CK58	RQ3003BJB6 RQ3003BJB0 RQ3003BGYD	
	Test date	2016/12/13~2017/1/25	2016/12/28~2017/01/18	
Average Radiated Spurious Emission (Harmonic) (dBuV/m)	11a, 5.5GHz	50.45	49.79	0.66
	S/N of test sample	RQ3003BXJY	RQ3003BJB6	
	Test date	2016/12/13~2017/1/25	2016/12/28~2017/01/18	
NFC (dBuV/m)	RSE (9kHz to 30MHz)	39.84	42.17	-2.33
	S/N of test sample	RQ3003A299	RQ3003BJ3T	
	Test date	2016/12/8~2016/12/14	2016/12/16	

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 802.11a 5.5GHz CH100.

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	PY7-19719M	Original Grant	FCC RF Test Report	PY7-75946T	Part 15C (FR692208-01B, FR692208-01C)
	DSS	Bluetooth	2400~2483.5	PY7-19719M	Original Grant	FCC RF Test Report	PY7-75946T	Part 15C (FR692208-01A)
	DXX	NFC	13.56	PY7-19719M	Original Grant	FCC RF Test Report	PY7-75946T	Part 15C (FR692208-01D)
15E	NII	Wi-Fi	5150~5250 5250~5350 5470~5725 5725~5850	PY7-19719M	Original Grant	FCC RF Test Report	PY7-75946T	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 PY7-19719M Average power (dBm)	FCC ID PY7-75946T Average power (dBm)
2.4GHz WLAN	802.11b	CH 1	2412	1Mbps	18	17.96	17.71
		CH 6	2437			17.57	17.56
		CH 11	2462			17.60	17.92
	802.11g	CH 1	2412	6Mbps	13.5	13.07	13.05
		CH 6	2437			13.48	13.33
		CH 11	2462			13.09	13.21
	802.11n-HT20	CH 1	2412	MCS0	13	12.73	12.85
		CH 6	2437			12.53	12.91
		CH 11	2462			12.59	12.88

<Bluetooth>

Mode	Channel	Frequency (MHz)	Tune-Up Limit	FCC ID PY7-19719M Average power (dBm)	FCC ID PY7-75946T Average power (dBm)
Bluetooth (1Mbps)	CH 00	2402	6.75	4.88	5.96
	CH 39	2441		6.74	6.64
	CH 78	2480		4.67	3.87
Bluetooth (2Mbps)	CH 00	2402	6.75	2.55	3.55
	CH 39	2441		4.53	4.54
	CH 78	2480		2.44	1.64
Bluetooth (3Mbps)	CH 00	2402	6.75	2.57	3.56
	CH 39	2441		4.59	4.55
	CH 78	2480		2.50	1.69
BLE (GFSK)	CH 00	2402	0.5	-1.55	-0.58
	CH 19	2440		0.26	0.50
	CH 39	2480		-2.15	-2.23

<5GHz WLAN>

	Mode	Channel	Frequency (MHz)	Data Rate	Tune-Up Limit	FCC ID PY7-19719M Average power (dBm)	FCC ID PY7-75946T Average power (dBm)
5.2GHz WLAN	802.11a	CH 36	5180	6Mbps	15	14.98	14.98
		CH 44	5220			14.70	14.97
		CH 48	5240			14.63	14.96
	802.11n-HT20	CH 36	5180	MCS0	15	14.90	14.98
		CH 44	5220			14.81	14.97
		CH 48	5240			14.74	14.84
	802.11n-HT40	CH 38	5190	MCS0	11	10.69	10.76
		CH 46	5230			10.53	10.57
	Mode	Channel	Frequency (MHz)	Data Rate	Tune-Up Limit	FCC ID PY7-19719M Average power (dBm)	FCC ID PY7-75946T Average power (dBm)
5.3GHz WLAN	802.11a	CH 52	5260	6Mbps	15	14.96	14.60
		CH 60	5300			14.94	14.58
		CH 64	5320			14.90	14.62
	802.11n-HT20	CH 52	5260	MCS0	15	14.83	14.63
		CH 60	5300			14.81	14.61
		CH 64	5320			14.86	14.64
	802.11n-HT40	CH 54	5270	MCS0	11	10.56	10.70
		CH 62	5310			10.80	10.72
	Mode	Channel	Frequency (MHz)	Data Rate	Tune-Up Limit	FCC ID PY7-19719M Average power (dBm)	FCC ID PY7-75946T Average power (dBm)
5.5GHz WLAN	802.11a	CH 100	5500	6Mbps	15	14.90	14.61
		CH 116	5580			14.76	14.57
		CH 140	5700			14.81	14.63
	802.11n-HT20	CH 100	5500	MCS0	15	14.98	14.55
		CH 116	5580			14.65	14.53
		CH 140	5700			14.85	14.64
	802.11n-HT40	CH 102	5510	MCS0	11	10.66	10.90
		CH 126	5630			10.65	10.88
		CH 134	5670			10.51	10.86

	Mode	Channel	Frequency (MHz)	Data Rate	Tune-Up Limit	FCC ID PY7-19719M Average power (dBm)	FCC ID PY7-75946T Average power (dBm)
5.8GHz WLAN	802.11a	CH 149	5745	MCS0	15	14.97	14.97
		CH 157	5785			14.95	14.89
		CH 165	5825			14.93	14.92
	802.11n-HT20	CH 149	5745	MCS0	15	14.98	14.98
		CH 157	5785			14.95	14.94
		CH 165	5825			14.48	14.34
	802.11n-HT40	CH 151	5755	MCS0	11	10.91	10.87
		CH 159	5795			10.90	10.86

1.2 Radiated Spurious Emission

2.4GHz BT/WLAN

Mode	Ch	Freq. (MHz)	Peak /Avg.	FCC ID PY7-19719M						FCC ID PY7-75946T					
				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(1Mbps)	CH 78	2480	P	2483.84	45.23	74	7440	40.12	74	2492	44.96	74	7440	37.92	74
			A	2483.84	20.41	54	X	X	X	2492	20.14	54	X	X	X
BLE	CH 39	2480	P	2489.28	54.09	74	7440	38.47	74	2487.8	54.69	74	7440	37.22	74
			A	2484.76	45.14	54	X	X	X	2497.08	45.06	54	X	X	X
802.11b	CH 11	2462	P	2495.96	54.61	74	4924	37.87	74	2490.68	54.8	74	4924	40.25	74
			A	2483.52	44.65	54	X	X	X	2484.2	44.61	54	X	X	X
802.11n-HT20	CH 11	2462	P	2483.8	61.00	74	4924	38.10	74	2484.28	59.19	74	7386	37.93	74
			A	2483.52	49.81	54	X	X	X	2483.52	47.48	54	X	X	X

5.2GHz WLAN

Mode	Ch	Freq. (MHz)	Peak /Avg.	FCC ID PY7-19719M						FCC ID PY7-75946T					
				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	5146.12	57.39	74	15570	41.86	74	5145.34	57.58	74	15570	42.13	74
			A	5148.72	50.86	54	X	X	X	5149.76	50.64	54	X	X	X

5.3GHz WLAN

Mode	Ch	Freq. (MHz)	Peak /Avg.	FCC ID PY7-19719M						FCC ID PY7-75946T					
				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	5350.08	58.48	74	15930	45.99	74	5354.4	59.37	74	15930	43.43	74
			A	5350.8	50.26	54	X	X	X	5350.08	51.00	54	X	X	X

5.5GHz WLAN

Mode	Ch	Freq. (MHz)	Peak /Avg.	FCC ID PY7-19719M						FCC ID PY7-75946T					
				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 100	5500	P	5461.2	54.12	74	16500	60.32	74	5465.04	55.34	74	16500	59.97	74
			A	5469.52	46.68	54	16500	50.45	54	5470	45.97	54	16500	49.79	54

5.8GHz WLAN

Mode	Ch	Freq. (MHz)	Peak /Avg.	FCC ID PY7-19719M						FCC ID PY7-75946T					
				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 165	5825	P	5935.2	52.04	68.2	17475	50.63	68.2	5932.8	51.31	68.2	17475	48.47	68.2
			X	X	X	X	X	X	X	X	X	X	X	X	X

2.4GHz 2400~2483.5MHz

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 39 2480MHz	*	2480	91.39	-	-	88.54	27.45	8.98	33.58	193	42	P	H
	*	2480	90.59	-	-	87.74	27.45	8.98	33.58	193	42	A	H
		2488.8	54.16	-19.84	74	51.26	27.5	8.98	33.58	193	42	P	H
		2499.32	45.05	-8.95	54	42.14	27.5	8.98	33.57	193	42	A	H
													H
													H
	*	2480	90.83	-	-	87.98	27.45	8.98	33.58	198	262	P	V
	*	2480	89.15	-	-	86.3	27.45	8.98	33.58	198	262	A	V
		2487.8	54.69	-19.31	74	51.79	27.5	8.98	33.58	198	262	P	V
		2497.08	45.06	-8.94	54	42.15	27.5	8.98	33.57	198	262	A	V
													V
													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 39 2480MHz		4960	32.68	-41.32	74	40.65	31.94	11.12	51.03	100	0	P	H
		7440	37.22	-36.78	74	37.41	37.44	12.88	50.51	100	0	P	H
													H
													H
		4960	31.86	-42.14	74	39.83	31.94	11.12	51.03	100	0	P	V
		7440	36.9	-37.1	74	37.09	37.44	12.88	50.51	100	0	P	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

BT(1M) (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 78 2480MHz		2480	99.35	-	-	96.5	27.45	8.98	33.58	100	357	P	H
		2480	74.53	-	-	-	-	-	-	-	-	A	H
	*	2489.72	44.12	-29.88	74	41.22	27.5	8.98	33.58	100	357	P	H
	*	2489.72	19.3	-34.7	54	-	-	-	-	-	-	A	H
													H
		2480	100.55	-	-	97.7	27.45	8.98	33.58	182	178	P	V
		2480	75.73	-	-	-	-	-	-	-	-	A	V
	*	2492	44.96	-29.04	74	42.05	27.5	8.98	33.57	182	178	P	V
	*	2492	20.14	-33.86	54	-	-	-	-	-	-	A	V
													V

BT(1M) (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 78 2480MHz		4960	33.58	-40.42	74	41.55	31.94	11.12	51.03	100	0	P	H
		4960	8.76	-45.24	54	-	-	-	-	-	-	A	H
		7440	37.92	-36.08	74	38.11	37.44	12.88	50.51	100	0	P	H
		7440	13.1	-40.9	54	-	-	-	-	-	-	A	H
		4960	32.36	-41.64	74	40.33	31.94	11.12	51.03	100	0	P	V
		4960	7.54	-46.46	54	-	-	-	-	-	-	A	V
		7440	37.37	-36.63	74	37.56	37.44	12.88	50.51	100	0	P	V
		7440	12.55	-41.45	54	-	-	-	-	-	-	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

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 11 2462MHz	*	2462	104.71	-	-	101.91	27.4	8.98	33.58	159	216	P	H
	*	2462	101.22	-	-	98.42	27.4	8.98	33.58	159	216	A	H
		2490.68	54.8	-19.2	74	51.9	27.5	8.98	33.58	159	216	P	H
		2484.2	44.61	-9.39	54	41.76	27.45	8.98	33.58	159	216	A	H
													H
													H
	*	2462	106.21	-	-	103.41	27.4	8.98	33.58	200	71	P	V
	*	2462	102.73	-	-	99.93	27.4	8.98	33.58	200	71	A	V
		2485.88	54.3	-19.7	74	51.45	27.45	8.98	33.58	200	71	P	V
		2483.92	44.53	-9.47	54	41.68	27.45	8.98	33.58	200	71	A	V
													V
													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 11 2462MHz		4924	40.25	-33.75	74	48.41	31.88	11	51.04	100	0	P	H
		7386	36.51	-37.49	74	36.76	37.38	12.88	50.51	100	0	P	H
													H
													H
		4924	37.38	-36.62	74	45.54	31.88	11	51.04	100	0	P	V
		7386	35.93	-38.07	74	36.18	37.38	12.88	50.51	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

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 11 2462MHz	*	2462	102.47	-	-	99.67	27.4	8.98	33.58	154	219	P	H
	*	2462	94.14	-	-	91.34	27.4	8.98	33.58	154	219	A	H
		2484.28	59.19	-14.81	74	56.34	27.45	8.98	33.58	154	219	P	H
		2483.52	47.48	-6.52	54	44.63	27.45	8.98	33.58	154	219	A	H
													H
													H
	*	2462	103.51	-	-	100.71	27.4	8.98	33.58	200	72	P	V
	*	2462	94.87	-	-	92.07	27.4	8.98	33.58	200	72	A	V
		2483.64	57.3	-16.7	74	54.45	27.45	8.98	33.58	200	72	P	V
		2483.52	46.52	-7.48	54	43.67	27.45	8.98	33.58	200	72	A	V
													V
													V

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 11 2462MHz		4924	33.36	-40.64	74	41.52	31.88	11	51.04	100	0	P	H
		7386	37.51	-36.49	74	37.76	37.38	12.88	50.51	100	0	P	H
													H
													H
		4924	32.06	-41.94	74	40.22	31.88	11	51.04	100	0	P	V
		7386	37.93	-36.07	74	38.18	37.38	12.88	50.51	100	0	P	V
													V
													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		5145.34	57.58	-16.42	74	47.22	32.21	11.18	33.03	228	145	P	H
		5149.76	50.64	-3.36	54	40.28	32.21	11.18	33.03	228	145	A	H
	*	5190	100.66	-	-	90.26	32.26	11.17	33.03	228	145	P	H
	*	5190	92.48	-	-	82.08	32.26	11.17	33.03	228	145	A	H
		5386.32	49.54	-24.46	74	38.71	32.54	11.31	33.02	228	145	P	H
		5456.88	42.45	-11.55	54	31.5	32.63	11.34	33.02	228	145	A	H
		5146.38	54.1	-19.9	74	43.74	32.21	11.18	33.03	115	9	P	V
		5148.72	46.69	-7.31	54	36.33	32.21	11.18	33.03	115	9	A	V
	*	5190	96.62	-	-	86.22	32.26	11.17	33.03	115	9	P	V
	*	5190	88.54	-	-	78.14	32.26	11.17	33.03	115	9	A	V
		5426.64	49.97	-24.03	74	39.07	32.58	11.34	33.02	115	9	P	V
		5458.08	42.22	-11.78	54	31.27	32.63	11.34	33.02	115	9	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 38 5190MHz		10380	42.05	-31.95	74	38.29	39.86	15.02	51.12	100	0	P	H
		15570	42.13	-31.87	74	37.53	38.21	18.19	51.8	100	0	P	H
													H
													H
		10380	41.12	-32.88	74	37.36	39.86	15.02	51.12	100	0	P	V
		15570	40.89	-33.11	74	36.29	38.21	18.19	51.8	100	0	P	V
													V
													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		5118.82	51.18	-22.82	74	40.86	32.16	11.19	33.03	237	147	P	H
		5071.24	43.16	-10.84	54	32.9	32.09	11.21	33.04	237	147	A	H
	*	5310	99.4	-	-	88.74	32.44	11.25	33.03	237	147	P	H
	*	5310	91.76	-	-	81.1	32.44	11.25	33.03	237	147	A	H
		5354.4	59.37	-14.63	74	48.63	32.49	11.28	33.03	237	147	P	H
		5350.08	51	-3	54	40.26	32.49	11.28	33.03	237	147	A	H
		5136.5	50.99	-23.01	74	40.64	32.19	11.19	33.03	135	330	P	V
		5044.2	42.93	-11.07	54	32.68	32.07	11.22	33.04	135	330	A	V
	*	5310	96.28	-	-	85.62	32.44	11.25	33.03	135	330	P	V
	*	5310	87.92	-	-	77.26	32.44	11.25	33.03	135	330	A	V
		5353.44	56.19	-17.81	74	45.45	32.49	11.28	33.03	135	330	P	V
		5350.08	49.09	-4.91	54	38.35	32.49	11.28	33.03	135	330	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	40.53	-33.47	74	36.63	39.9	15.19	51.19	100	0	P	H
		15930	41.69	-32.31	74	36.8	38.29	18.4	51.8	100	0	P	H
													H
													H
		10620	39.98	-34.02	74	36.08	39.9	15.19	51.19	100	0	P	V
		15930	43.43	-30.57	74	38.54	38.29	18.4	51.8	100	0	P	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Band 3 - 5470~5725MHz

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 100 5500MHz		5465.04	55.34	-18.66	74	44.33	32.65	11.38	33.02	221	150	P	H
		5470	45.97	-8.03	54	34.96	32.65	11.38	33.02	221	150	A	H
	*	5500	106.9	-	-	95.84	32.7	11.38	33.02	221	150	P	H
	*	5500	99.06	-	-	88	32.7	11.38	33.02	221	150	A	H
													H
													H
		5467.44	55.3	-18.7	74	44.29	32.65	11.38	33.02	122	338	P	V
		5468.72	44.88	-9.12	54	33.87	32.65	11.38	33.02	122	338	A	V
	*	5500	102.94	-	-	91.88	32.7	11.38	33.02	122	338	P	V
	*	5500	96.02	-	-	84.96	32.7	11.38	33.02	122	338	A	V
													V
													V

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 100 5500MHz		11000	41.82	-32.18	74	37.76	39.6	15.49	51.03	100	0	P	H
		16500	59.97	-14.03	74	53.37	39.2	19.27	51.87	282	47	P	H
		16500	48.2	-5.8	54	41.6	39.2	19.27	51.87	282	47	P	H
													H
		11000	41.69	-32.31	74	37.63	39.6	15.49	51.03	100	0	P	V
		16500	59.54	-14.46	74	52.94	39.2	19.27	51.87	203	159	P	V
		16500	49.79	-4.21	54	43.19	39.2	19.27	51.87	203	159	P	V
													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 165 5825MHz	*	5825	104.32	-	-	92.81	33.16	11.53	33.18	100	15	P	H
	*	5825	96.57	-	-	85.06	33.16	11.53	33.18	100	15	A	H
		5852.4	56.44	-60.29	116.73	44.92	33.18	11.53	33.19	100	15	P	H
		5857	54.13	-56.11	110.24	42.58	33.21	11.53	33.19	100	15	P	H
		5882	52.86	-47.14	100	41.24	33.23	11.6	33.21	100	15	P	H
		5932.8	51.31	-16.89	68.2	39.57	33.3	11.67	33.23	100	15	P	H
													H
	*	5825	107.94	-	-	96.43	33.16	11.53	33.18	100	360	P	V
	*	5825	99.46	-	-	87.95	33.16	11.53	33.18	100	360	A	V
		5850.8	58.38	-62	120.38	46.86	33.18	11.53	33.19	100	360	P	V
		5869.8	55.69	-50.96	106.65	44.09	33.21	11.6	33.21	100	360	P	V
		5892.2	53.76	-38.68	92.44	42.12	33.26	11.6	33.22	100	360	P	V
		5937.8	51.26	-16.94	68.2	39.53	33.3	11.67	33.24	100	360	P	V
													V

WIFI 802.11a (Harmonic @ 3m)

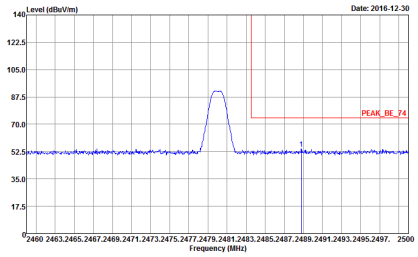
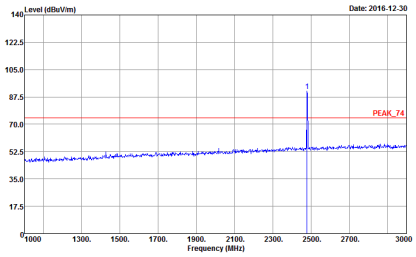
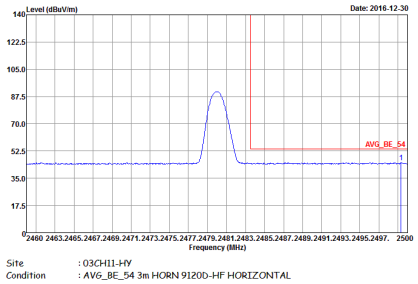
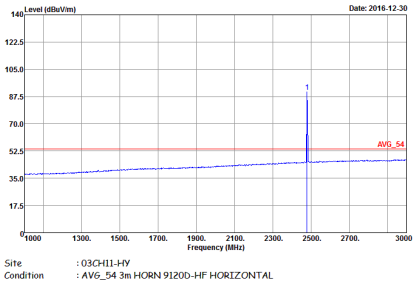
WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11a CH 165 5825MHz		11650	40.7	-33.3	74	36.98	39.04	15.97	51.29	100	0	P	H
		17475	48.47	-19.73	68.2	35.82	43.68	20.99	52.02	100	0	P	H
													H
		11650	41.39	-32.61	74	37.67	39.04	15.97	51.29	100	0	P	V
		17475	48.2	-20	68.2	35.55	43.68	20.99	52.02	100	0	P	V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

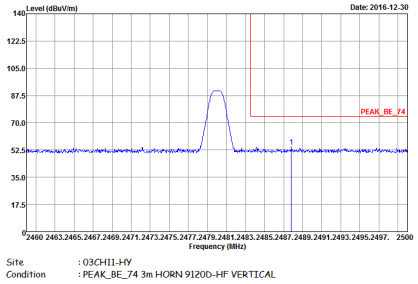
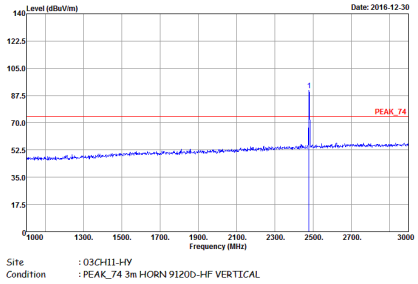
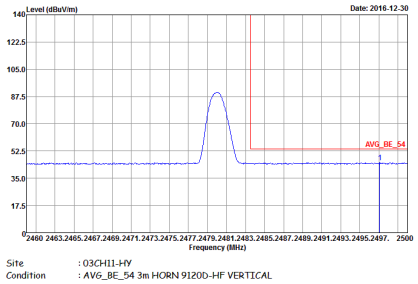
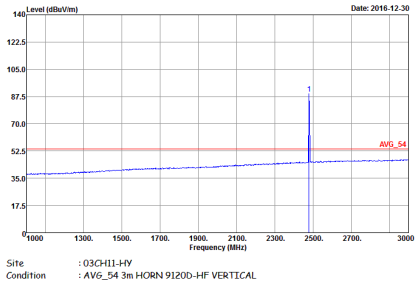
Note symbol

*	**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

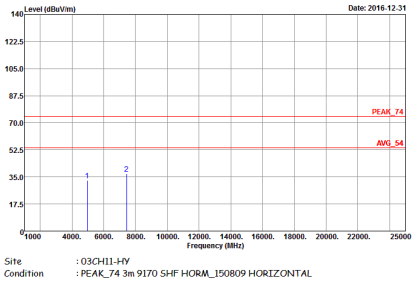
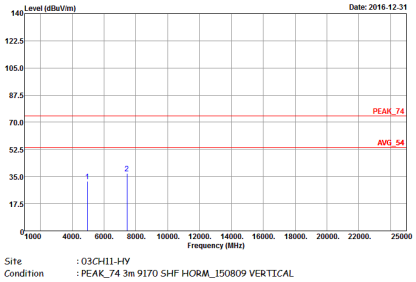
2.4GHz 2400~2483.5MHz

BLE (Band Edge @ 3m)

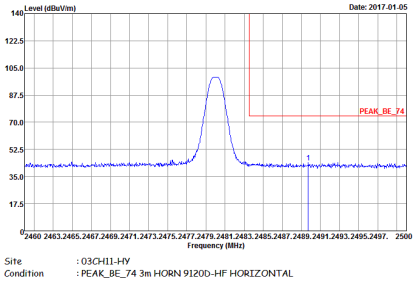
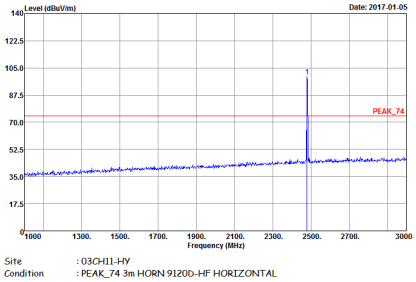
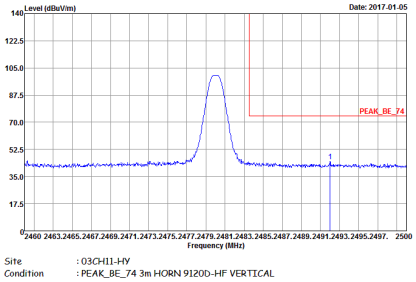
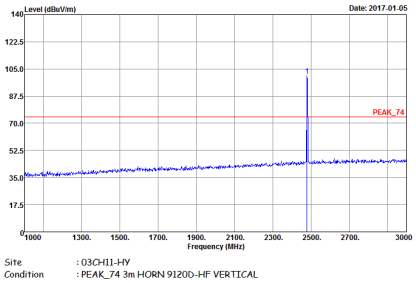
BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE CH39 2480MHz	
1	Horizontal	Fundamental
Peak		
Avg.		

BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE CH39 2480MHz	
1	Vertical	Fundamental
Peak		
Avg.		

BLE (Harmonic @ 3m)

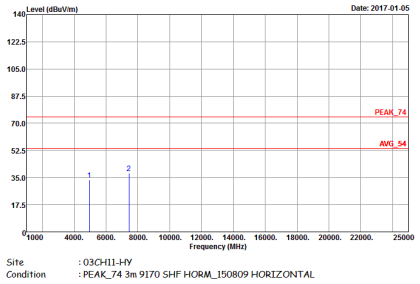
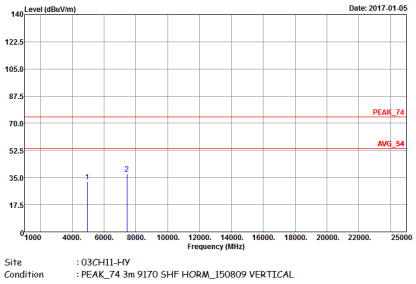
BLE	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	BLE CH39 2480MHz	
1	Horizontal	Vertical
Peak		

BT(1M) (Band Edge @ 3m)

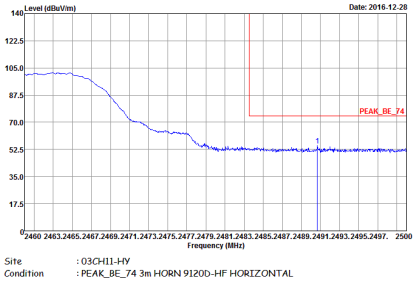
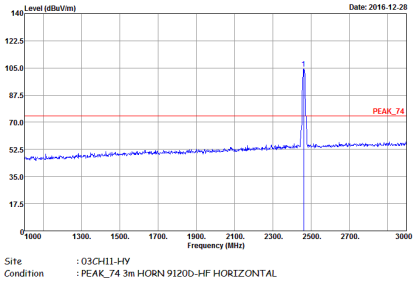
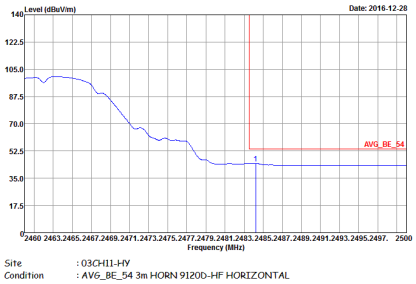
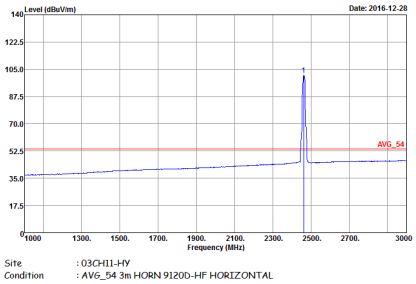
BT	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BT CH78 2480MHz	
1	Horizontal	Fundamental
Peak		
1	Vertical	Fundamental
Peak		

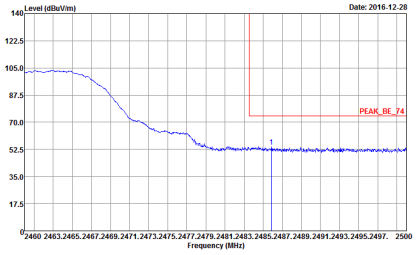
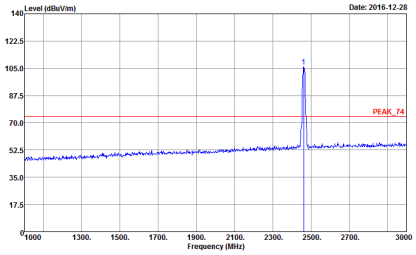
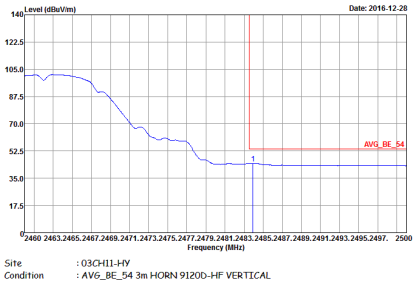
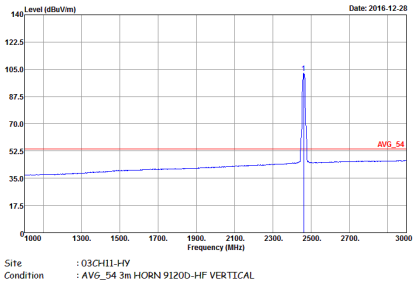
2.4GHz 2400~2483.5MHz

BT(1M) (Harmonic @ 3m)

BT	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	BT CH78 2480MHz	
1	Horizontal	Vertical
Peak Avg.		

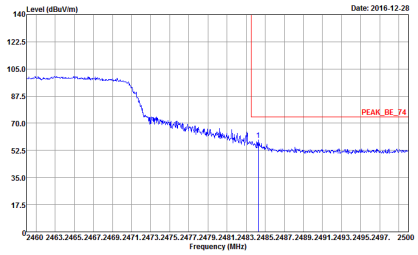
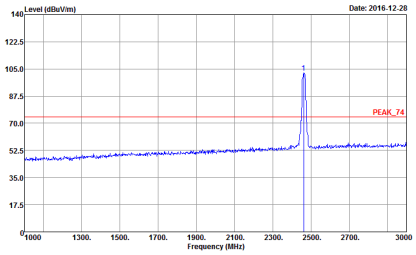
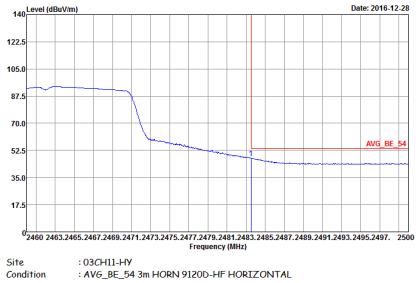
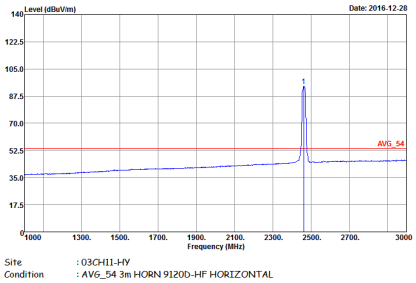
WIFI 802.11b (Band Edge @ 3m)

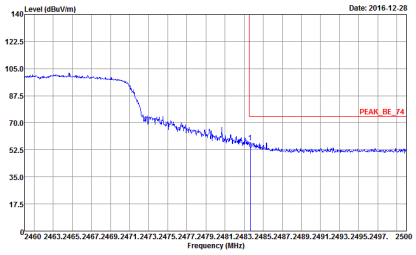
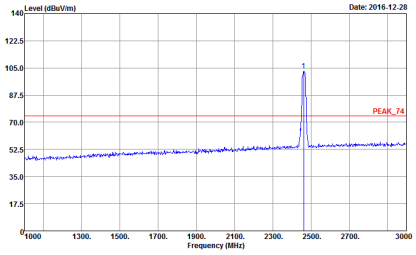
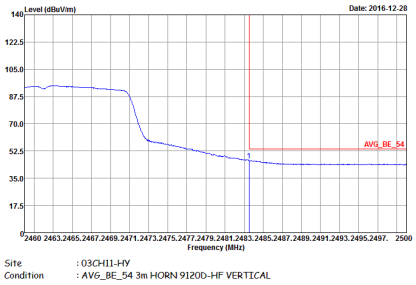
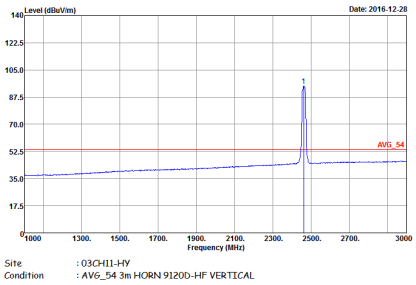
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH11 2462MHz	
1	Horizontal	Fundamental
Peak		
Avg.		

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

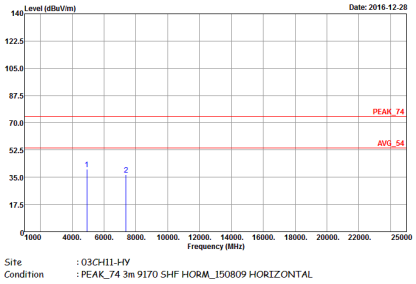
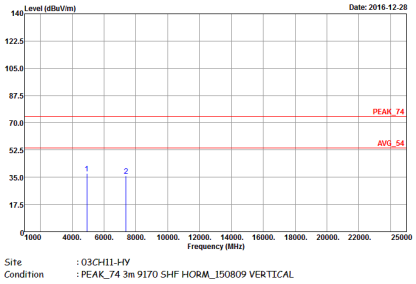
2.4GHz 2400~2483.5MHz

WIFI 802.11n HT20 (Band Edge @ 3m)

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

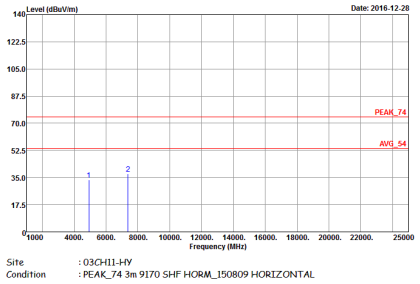
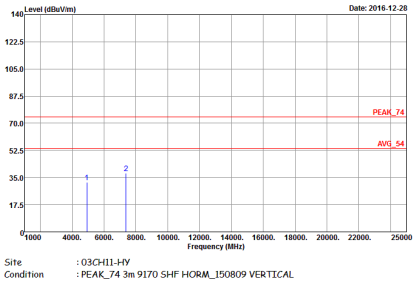
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT20 CH11 2462MHz	
1	Vertical	Fundamental
Peak		
Avg.		

WIFI 802.11b (Harmonic @ 3m)

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

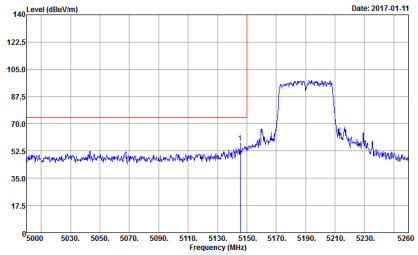
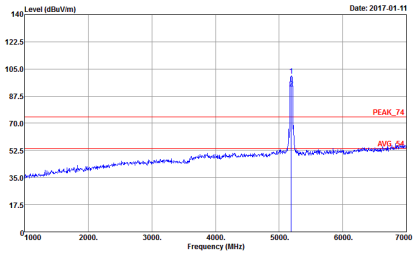
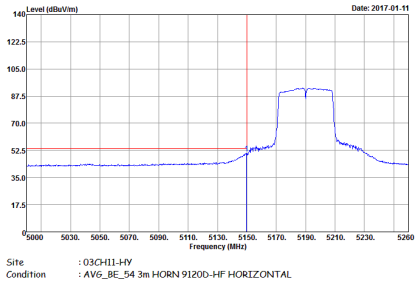
2.4GHz 2400~2483.5MHz

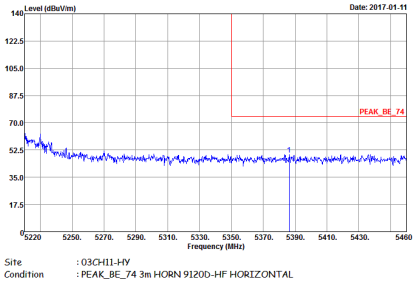
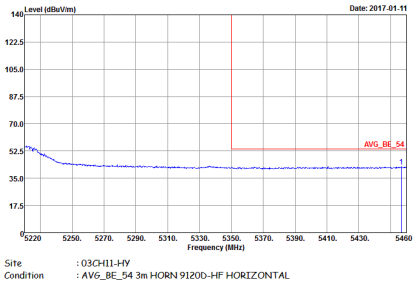
WIFI 802.11n HT20 (Harmonic @ 3m)

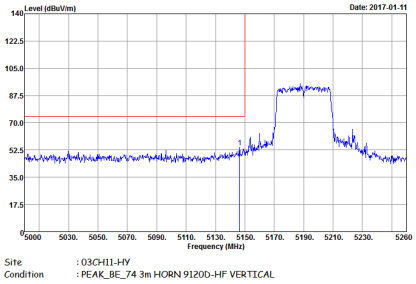
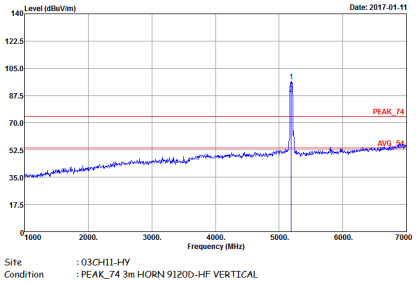
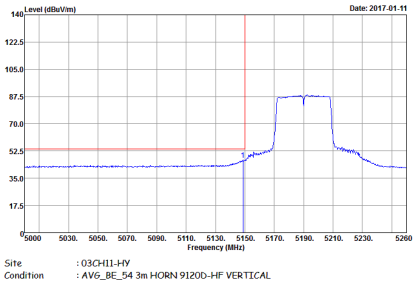
WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11n HT20 CH11 2462MHz	
1	Horizontal	Vertical
Peak Avg.		

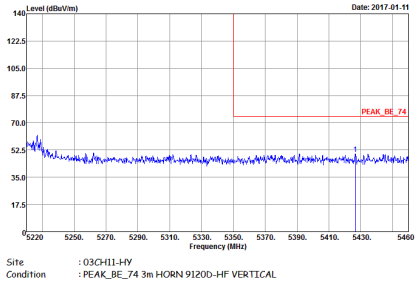
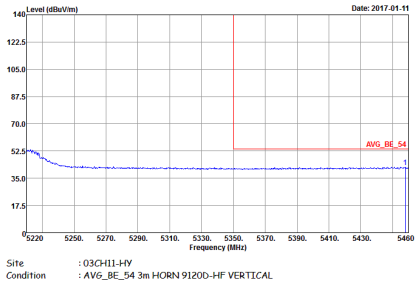
Band 1 - 5150~5250MHz

WIFI 802.11n HT40 (Band Edge @ 3m)

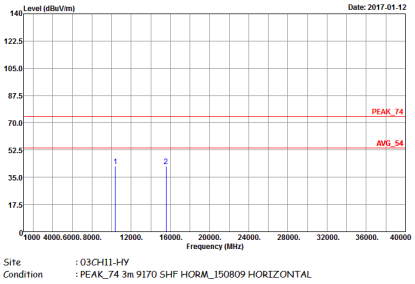
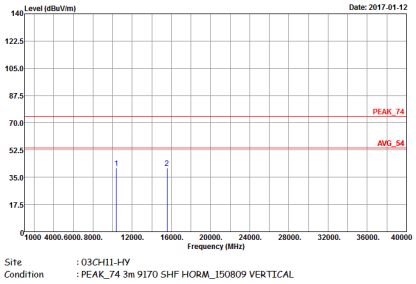
WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11n HT40 CH38 5190MHz - L	
1	Horizontal	Fundamental
Peak		
Avg.		Left blank

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

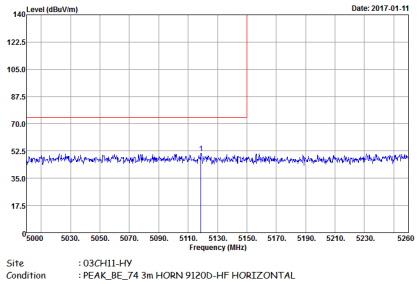
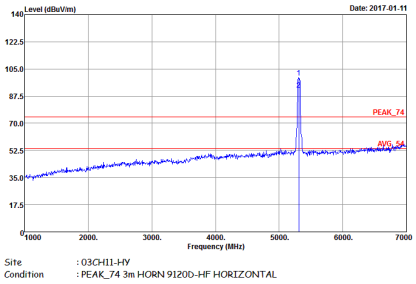
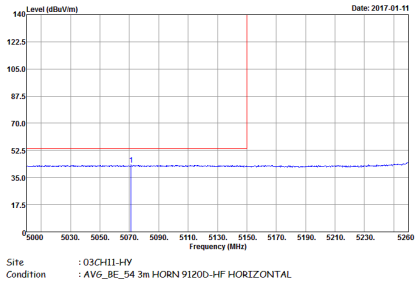
WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11n HT40 CH38 5190MHz - R	
1	Vertical	Fundamental
Peak		Left blank
Avg.		Left blank

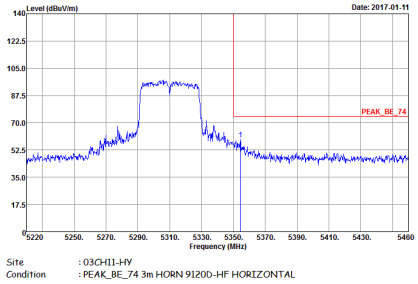
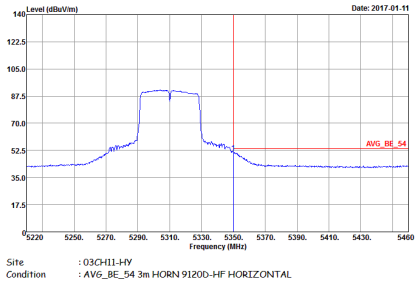
WIFI 802.11n HT40 (Harmonic @ 3m)

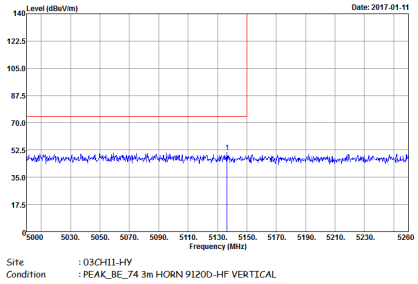
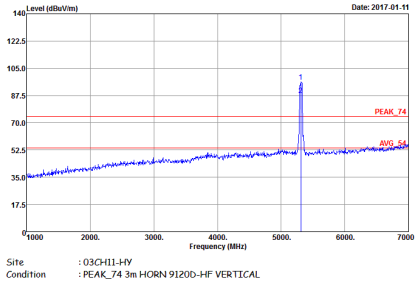
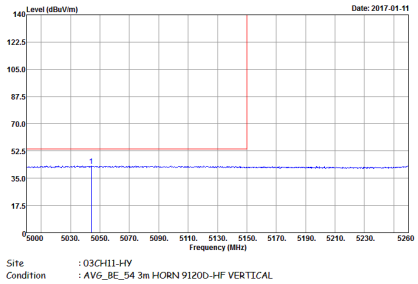
WIFI	Band 1 5150~5250MHz Harmonic @ 3m	
ANT	802.11n HT40 CH38 5190MHz	
1	Horizontal	Vertical
Peak Avg.		

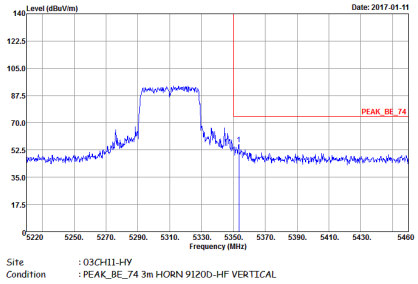
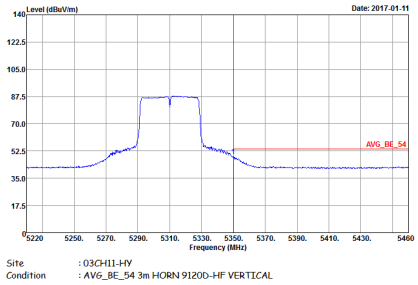
Band 2 - 5250~5350MHz

WIFI 802.11n HT40 (Band Edge @ 3m)

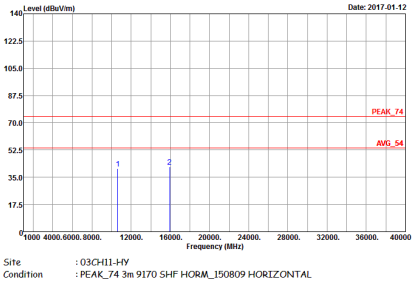
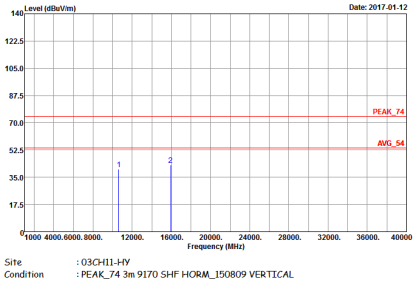
WIFI	Band 2 5250~5350MHz Band Edge @ 3m	
ANT	802.11n HT40 CH62 5310 - L	
1	Horizontal	Fundamental
Peak		
Avg.		Left blank

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

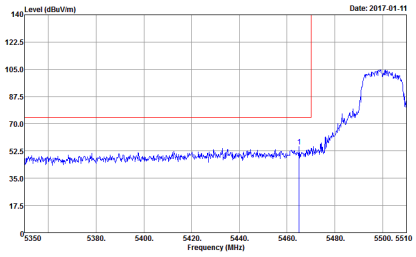
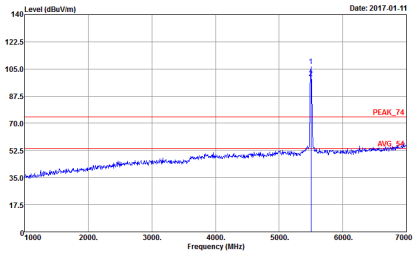
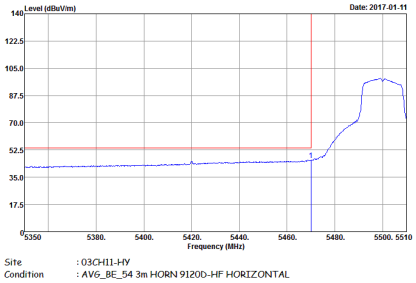
WIFI	Band 2 5250~5350MHz Band Edge @ 3m	
ANT	802.11n HT40 CH62 5310 - R	
1	Vertical	Fundamental
Peak		Left blank
Avg.		Left blank

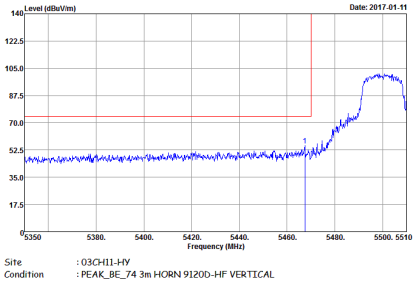
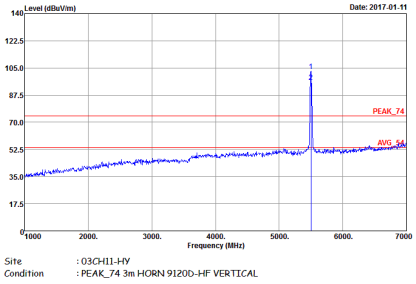
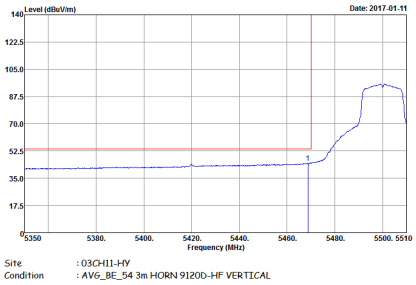
WIFI 802.11n HT40 (Harmonic @ 3m)

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

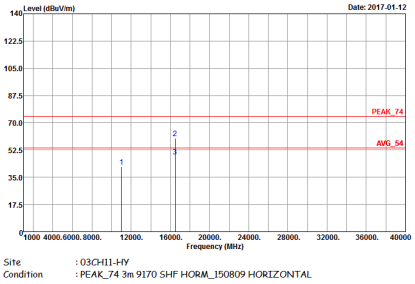
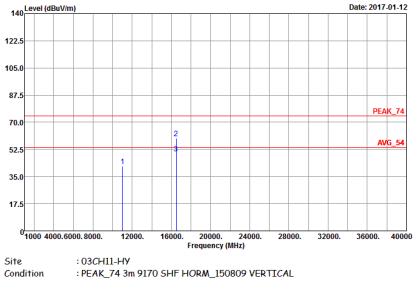
Band 3 - 5470~5725MHz

WIFI 802.11a (Band Edge @ 3m)

WIFI	Band 3 5470~5725MHz Band Edge @ 3m	
ANT	802.11a CH100 5500MHz	
1	Horizontal	Fundamental
Peak		
Avg.		Left blank

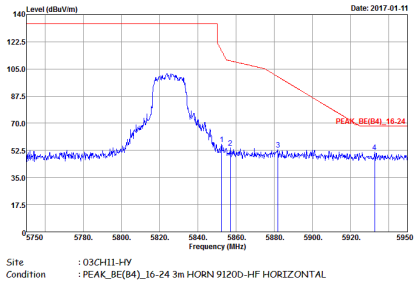
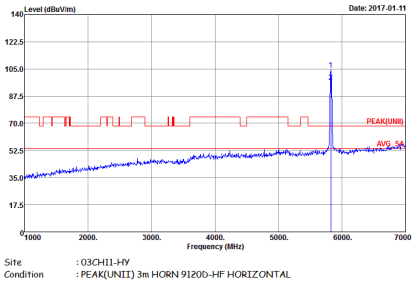
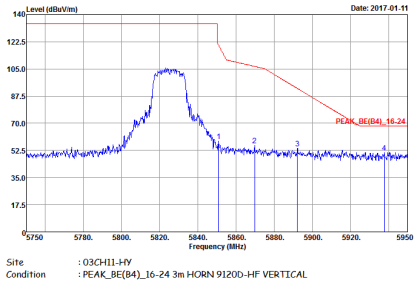
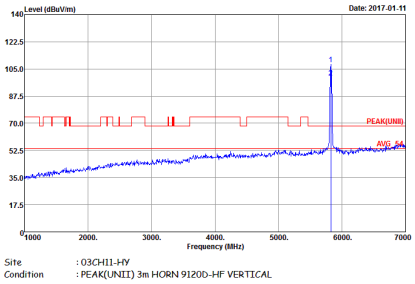
WIFI	Band 3 5470~5725MHz Band Edge @ 3m	
ANT	802.11a CH100 5500MHz	
1	Vertical	Fundamental
Peak		
Avg.		Left blank

WIFI 802.11a (Harmonic @ 3m)

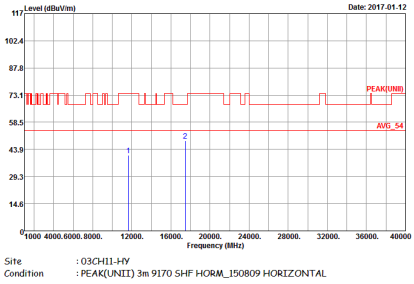
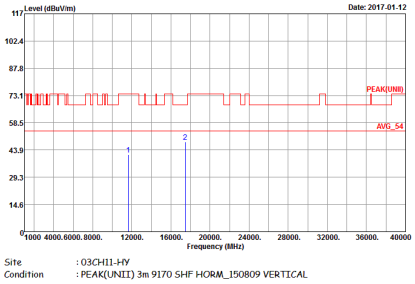
WIFI	Band 3 5470~5725MHz Harmonic @ 3m	
ANT	802.11a CH100 5500MHz	
1	Horizontal	Vertical
Peak Avg.		

Band 4 - 5725~5850MHz

WIFI 802.11a (Band Edge @ 3m)

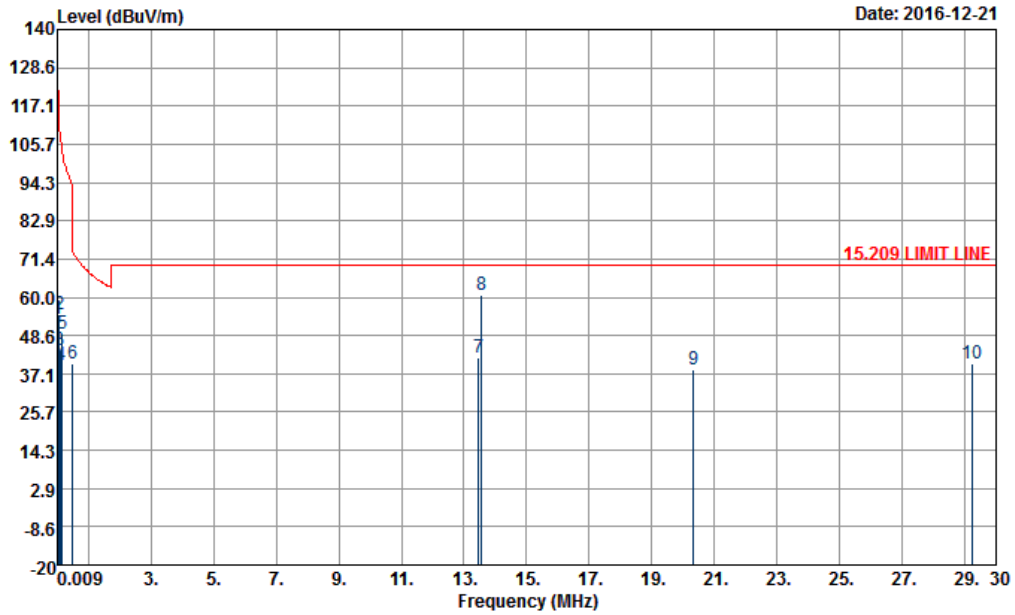
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH165 5825MHz	
1	Horizontal	Fundamental
Peak		
1	Vertical	Fundamental
Peak		

WIFI 802.11a (Harmonic @ 3m)

WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11a CH165 5825MHz	
1	Horizontal	Vertical
Peak Avg.		

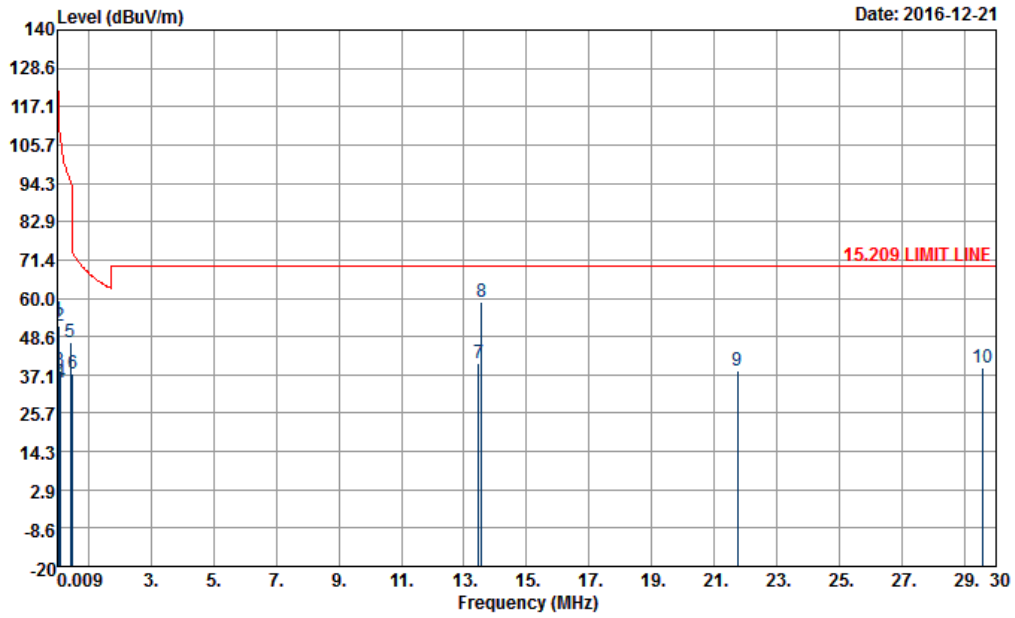
Results of Radiated Emissions (9 kHz~30MHz)

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
0.03782	53.35	-62.7	116.05	33.47	19.2	0.68			Average
0.07344	55.05	-55.24	110.29	35.37	19	0.68			Average
0.09358	44.1	-64.08	108.18	24.62	18.8	0.68			QP
0.11116	39.75	-66.94	106.69	20.27	18.8	0.68			Average
0.15408	49.1	-54.75	103.85	29.65	18.77	0.68			Average
0.49	40.03	-33.77	73.8	20.75	18.6	0.68			QP
13.456	42.17	-27.33	69.5	21	20.49	0.68	100	194	QP
13.56	60.63	-8.87	69.5	39.44	20.51	0.68			QP
20.329	38.44	-31.06	69.5	15.55	21.82	1.07			QP
29.23	39.95	-29.55	69.5	16.53	22.35	1.07			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
0.01318	53.57	-71.64	125.21	29.99	22.9	0.68			Average
0.0753	51.58	-58.49	110.07	31.9	19	0.68			Average
0.09066	38.19	-70.27	108.46	18.71	18.8	0.68			QP
0.11364	35.02	-71.47	106.49	15.54	18.8	0.68			Average
0.41724	46.94	-48.26	95.2	27.63	18.63	0.68			Average
0.49	37.3	-36.5	73.8	18.02	18.6	0.68			QP
13.464	40.68	-28.82	69.5	19.51	20.49	0.68	100	232	QP
13.56	59.02	-10.48	69.5	37.83	20.51	0.68			QP
21.742	38.49	-31.01	69.5	15.52	21.9	1.07			QP
29.575	39.24	-30.26	69.5	15.8	22.37	1.07			QP

End of this report