

FCC TEST REPORT

for

Shenzhen KTC Technology Co., Ltd.

8" PAD

Model Number: 800P***(* can be A-Z or 0-9 or blank to denote various customer demand)

FCC ID: ROU00003

Prepared for : Shenzhen KTC Technology Co., Ltd.
Address : Northern Wuhe Road, Gangtou, Buji, Longgang,
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Report No. : 13KWE07731F
Date of Test : Jul. 7~ 13, 2013
Date of Report : Jul. 15, 2013

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Keyway Testing Technology Co., Ltd.

Applicant:	SHENZHEN KTC TECHNOLOGY CO.,LTD		
Address:	Northern Wuhe Road, Gangtou,Buji,Longgang,Shenzhen, China		
Manufacturer:	SHENZHEN KTC TECHNOLOGY CO.,LTD		
Address:	Northern Wuhe Road, Gangtou,Buji,Longgang,Shenzhen, China		
E.U.T:	8" PAD		
Model Number:	800P***(* can be A-Z or 0-9 or blank to denote various customer demand)		
Trade Name:	-----	Serial No.:	-----
Date of Receipt:	Jul. 3, 2013	Date of Test:	Jul. 3~ 13, 2013
Test Specification:	FCC Part 15, Subpart C: Oct. 1, 2012 ANSI C63.4:2009		
Test Result:	The equipment under test was found to be compliance with the requirements of the standards applied.		
Issue Date: Jul. 15, 2013			
Tested by:	Reviewed by:	Approved by:	
			
Andy Gao / Engineer	Jade Yang/ Supervisor	Chris Du / Manager	
Other Aspects:	None.		
Abbreviations: OK/P=passed fail/F=failed n.a/N=not applicable E.U.T=equipment under tested			
This test report is based on a single evaluation of one sample of above mentioned products. It is not permitted to be duplicated in extracts without written approval of Keyway Testing Technology Co., Ltd.			

1. GENERAL PRODUCT INFORMATION

1.1. Product Function

Refer to Technical Construction Form and User Manual.

1.2. Description of Device (EUT)

Product Name:	8" PAD
Model No.:	800P***(* can be A-Z or 0-9 or blank to denote various customer demand)
Operation Frequency:	Bluetooth:2402~2480MHz WIFI:2412MHz~2462MHz (802.11b/802.11g/802.11n(H20)) 2422MHz~2452MHz (802.11n(H40)) GSM 850MHz: Tx: 824.20 - 848.80MHz (at intervals of 200kHz); Rx: 869.20 - 893.80MHz (at intervals of 200kHz) GSM 1900MHz: Tx: 1850.20 - 1909.80MHz (at intervals of 200kHz); Rx: 1930.20 - 1989.80MHz (at intervals of 200kHz) WCDMA 850MHz Tx: 826.4 - 846.6MHz (at intervals of 00kHz); Rx: 871.4 - 891.6MHz (at intervals of 200kHz)
Channel numbers:	Bluetooth:79 Channels WIFI:13 Channel for 802.11b/g/n(HT20), 7 Channel for 802.11n(HT40)
Channel separation:	Bluetooth:1M WIFI:5M
Modulation technology:	Bluetooth: FHSS(GFSK 1Mbps),Pi/4DQPSK(EDR 2Mbps), 8-DQPSK(EDR 3Mbps) WIFI: Direct Sequence Spread Spectrum (DSSS) Orthogonal Frequency Division Multiplexing(OFDM) GSM/GPRS Mode with GMSK Modulation WCDMA Mode with QPSK Modulation HSDPA Mode with QPSK Modulation HSUPA Mode with QPSK Modulation
Antenna Type:	Integral(BT &WIFI) PIFA Antenna (GSM&WCDMA)
Antenna gain:	3.4dBi (BT &WIFI) -2.42dBi (GSM&WCDMA)
Power supply:	DC 5V from adapter
Multislot Class	12
EGPRS Class	12

Adapter

Description	:	Switching Adapter
M/N	:	ASSA1b-050200
System Input Voltage	:	AC 100-240V/50-60Hz 0.45A
Output	:	5V 2000mA

1.3. Difference between Model Numbers

Note: 800P*** (800: express screen size is 8 inches; "P": express Pad; * can be any alphanumeric represent different customer code or the sales area, not affect the product performance)

1.4. Independent Operation Modes

The basic operation modes are:

1.4.1. EUT work continues TX mode and frequency as below:

Modulation	Channel	Frequency
FHSS, Pi/4DQPSK, 8-DQPSK	Low	2402MHz
	Middle	2441MHz
	High	2480MHz

Note: Bluetooth signal has 9 packages DH1, DH3, DH5, 2DH1, 2DH3, 2DH5, 3DH1, 3DH3, 3DH5, DH5 package is largest; we are testing DH5 in the report.

2. TEST SUMMARY

Test Items	Test Requirement	Result
Conducted Emissions	15.207	PASS
Radiated Emissions	15.205(a) 15.209 15.247(d)	PASS
20dB Bandwidth	15.247(a)(1)	PASS
Frequency Separation	15.247(a)(1)	PASS
Maximum Peak Output Power	15.247(b)(1)	PASS
Number of Hopping Frequency	15.247(a)(1)(iii)	PASS
Dwell time	15.247(a)(1)(iii)	PASS
Emissions from out of band	15.247(d)	PASS
Antenna Requirement	15.203	PASS

3. TEST SITES

3.1. Test Facilities

Lab Qualifications : 944 Shielded Room built by ETS-Lindgren, USA
Date of completion: March 28, 2011

966 Chamber built by ETS-Lindgren, USA
Date of completion: March 28, 2011

Certificated by TUV Rheinland, Germany.
Registration No.: UA 50207153
Date of registration: July 13, 2011

Certificated by UL, USA
Registration No.: 100567-237
Date of registration: September 1, 2011

Certificated by Intertek
Registration No.: 2011-RTL-L1-31
Date of registration: October 11, 2011

Certificated by Industry Canada
Registration No.: 9868A
Date of registration: December 8, 2011

Certificated by FCC, USA
Registration No.: 370994
Date of registration: February 21, 2012

Certificated by CNAS China
Registration No.: CNAS L5783
Date of registration: August 8, 2012

Name of Firm : Keyway Testing Technology Co., Ltd.

Site Location : Baishun Industrial Zone, Zhangmutou Town,
Dongguan, Guangdong, China

3.2. List of Test and Measurement Instruments

3.2.1. For conducted emission at the mains terminals test

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
EMI Test Receiver	Rohde&Schwarz	ESCI	101156	May 9,13	May 9,14
Artificial Mains Network	Rohde&Schwarz	ENV216	101315	May 9,13	May 9,14
Artificial Mains Network (AUX)	Rohde&Schwarz	ENV216	101314	May 9,13	May 9,14
RF Cable	FUJIKURA	3D-2W	944 Cable	May 9,13	May 9,14

3.2.2. For radiated emission test (Below 1GHz)

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
EMI Test Receiver	Rohde&Schwarz	ESCI	101156	May 9,13	May 9,14
Bilog Antenna	ETS-LINDGREEN	3142D	135452	May 20,13	May 20,14
Spectrum Analyzer	Agilent	E4411B	MY4511304	May 9,13	May 9,14
3m Semi-anechoic Chamber	ETS-LINDGREEN	966	KW01	May 9,13	May 9,14
Signal Amplifier	SONOMA	310	187016	May 9,13	May 9,14
Signal Amplifier	Agilent	8449B	3008A00251	May 9,13	May 9,14
RF Cable	IMRO	IMRO-400	966 Cable 1#	N/A	N/A
MULTI-DEVICE Controller	ETS-LINDGREEN	2090	126913	N/A	N/A

3.2.3. For above 1GHz radiated emission, output power, band edge, 20dB bandwidth test

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
Horn Antenna	DAZE	ZN30701	11003	May. 11,13	May. 11,14
Horn Antenna	SCHWARZBECK	BBHA9170	9170-068	May. 11,13	May. 11,14
Spectrum Analyzer	Agilent	8593E	3911A04271	May. 9,13	May. 9,14
Spectrum Analyzer	Agilent	E4408B	MY44211125	May. 9,13	May. 9,14
3m Semi-anechoic Chamber	ETS-LINDGREN	966	KW01	May. 9,13	May. 9,14
Signal Amplifier	DAZE	ZN3380C	11001	May. 9,13	May. 9,14
Signal Amplifier	Agilent	8449B	3008A00251	May. 9,13	May. 9,14
High Pass filter	Micro	HPM50111	324216	May. 9,13	May. 9,14
Power Meter	R&S	NRVS	101824	May. 9,13	May. 9,14
Peak and Avg Power Sensor	Rohde&Schwarz	URV5-Z7	100655	May. 9,13	May. 9,14
RF Cable	IMRO	IMRO-400	966 Cable 1#	May. 9,13	May. 9,14
MULTI-DEVICE Controller	ETS-LINDGREN	2090	126913	N/A	N/A
Antenna Holder	ETS-LINDGREN	2070B	00109601	N/A	N/A

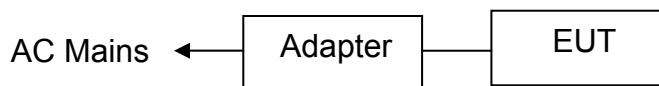
4. TEST SET-UP AND OPERATION MODES

4.1. Principle of Configuration Selection

Emission: The equipment under test (EUT) was configured to measure its highest possible radiation level. The test modes were adapted accordingly in reference to the Operating Instructions.

4.2. Block Diagram of Test Set-up

System Diagram of Connections between EUT and Simulators



(EUT: 8" PAD)

4.3. Test Operation Mode and Test Software

None.

4.4. Special Accessories and Auxiliary Equipment

None.

4.5. Countermeasures to Achieve EMC Compliance

None.

5. EMISSION TEST RESULTS

5.1. Conducted Emission at the Mains Terminals Test

5.1.1. Limit 15.209 limits

FREQUENCY OF EMISSION (MHz)	CONDUCTED LIMIT (dB μ V)	
	Quasi-peak	Average
0.15-0.5	66 to 56	56 to 46
0.5-5	56	46
5-30	60	50

5.1.2. Test Setup

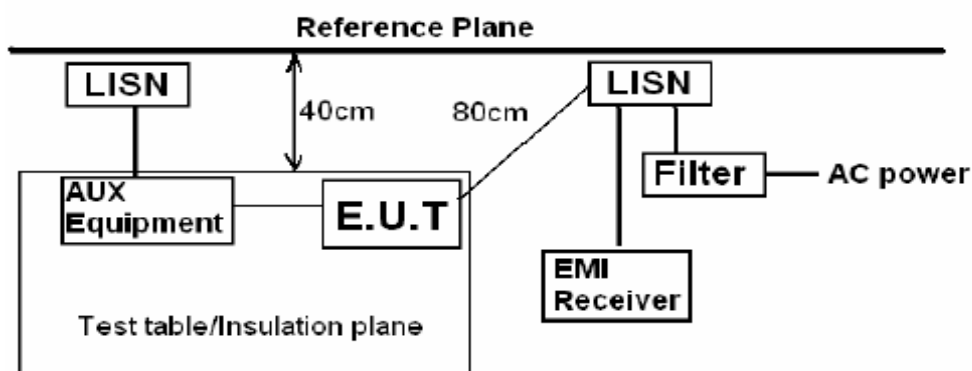
The EUT was put on a wooden table which was 0.8 m high above the ground and connected to the AC mains through the Artificial Mains Network (AMN). Where the mains cable supplied by the manufacture was longer than 0.8 m, the excess was folded back and forth parallel to the cable at the centre so as to form a bundle no longer than 0.4 m.

The EUT was kept 0.4 m from any other earthed conducting surface. Both sides of AC line were checked to find out the maximum conducted emission levels according to the test procedure during the conducted emission test.

The frequency range from 150 kHz to 30 MHz was investigated.

The bandwidth of the test receiver was set at 9 kHz.

Pretest for all mode, The test data of the worst case condition(s) was reported on the following page.



Remark:
 E.U.T: Equipment Under Test
 LISN: Line Impedance Stabilization Network
 Test table height=0.8m

5.1.3. Test Mode

Set EUT in TX mode.

Test Data



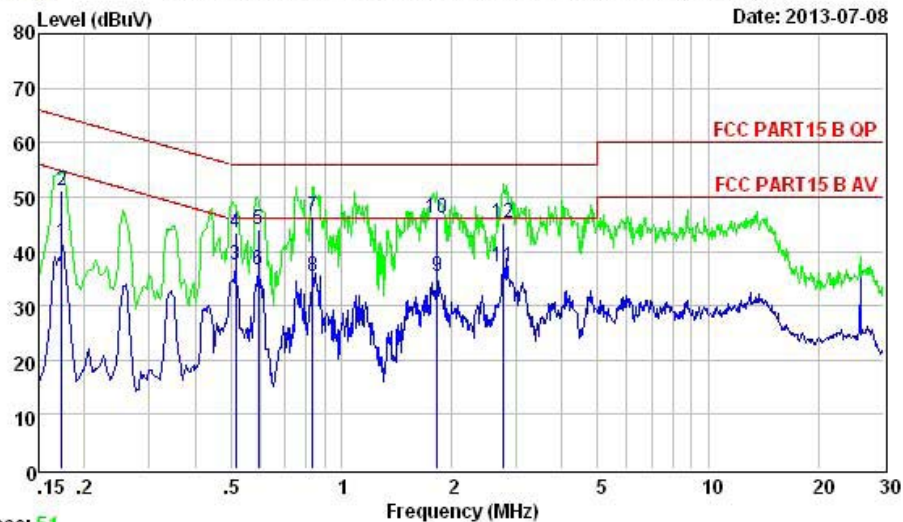
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Data: 52

File: F:\944 Data\conduction\13Report\13KW060701SS-PAD.EM6 (60)

Date: 2013-07-08



Trace: 51

Site : 944 Shielded Room
Condition : FCC PART15 B QP NEUTRAL
EUT : 8" PAD
POWER : DC 5V from adapter input AC 120V/60Hz
M/N : 800P11B
Test Engineer: Andy
Comment : Temp:24.9'; Humi:56%; Press:101.52kPa
Test Mode : TX mode(BT)

			Limit	Over	
Freq	Level	Line	Limit	Limit	Remark
MHz	dBuV	dBuV		dB	
1	0.173	41.52	54.81	-13.29	Average
2	0.173	51.10	64.81	-13.71	QP
3	0.516	37.50	46.00	-8.50	Average
4	0.516	43.40	56.00	-12.60	QP
5	0.594	44.10	56.00	-11.90	QP
6	0.595	36.50	46.00	-9.50	Average
7	0.834	46.30	56.00	-9.70	QP
8	0.835	35.30	46.00	-10.70	Average
9	1.829	35.30	46.00	-10.70	Average
10	1.829	46.20	56.00	-9.80	QP
11	2.750	37.30	46.00	-8.70	Average
12	2.750	45.10	56.00	-10.90	QP



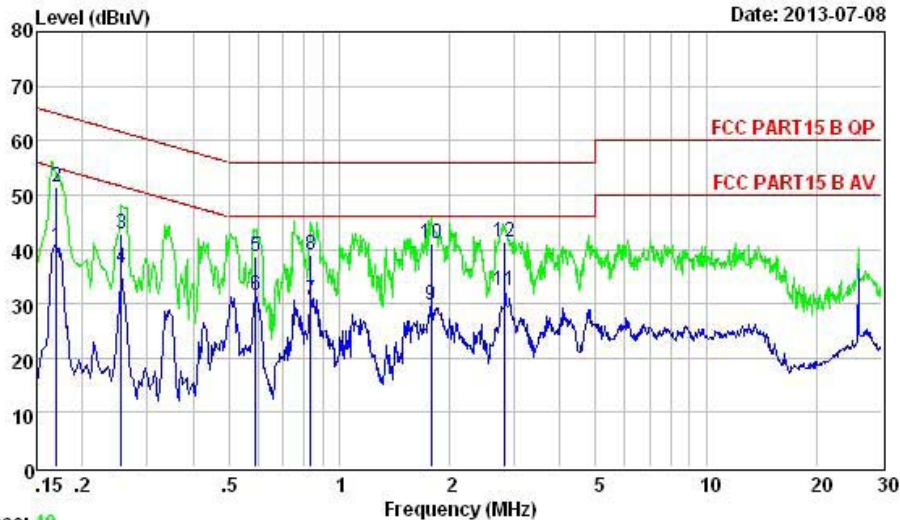
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Data: 50

File: F:\944 Data\conduction\13Report\13KW060701SS-PAD.EM6 (60)

Date: 2013-07-08



Trace: 49
Site : 944 Shielded Room
Condition : FCC PART15 B QP LINE
EUT : 8" PAD
POWER : DC 5V from adapter input AC 120V/60Hz
M/N : 800P11B
Test Engineer: Andy
Comment : Temp:24.9'; Humi:56%; Press:101.52kPa
Test Mode : TX mode (BT)

	Freq	Level	Limit	Over	Remark
	MHz	dBuV	dBuV	dB	
1	0.169	40.30	54.99	-14.69	Average
2	0.169	51.40	64.99	-13.59	QP
3	0.255	42.70	61.59	-18.89	QP
4	0.255	36.50	51.58	-15.08	Average
5	0.593	38.70	56.00	-17.30	QP
6	0.593	31.50	46.00	-14.50	Average
7	0.838	30.60	46.00	-15.40	Average
8	0.838	38.90	56.00	-17.10	QP
9	1.779	29.70	46.00	-16.30	Average
10	1.779	40.90	56.00	-15.10	QP
11	2.816	32.42	46.00	-13.58	Average
12	2.816	41.30	56.00	-14.70	QP

5.2. Radiated Emission Test

5.2.1. Limit 15.209 limits

FREQUENCY MHz	DISTANCE Meters	FIELD STRENGTHS LIMIT	
		$\mu\text{V}/\text{m}$	$\text{dB}(\mu\text{V})/\text{m}$
30 ~ 88	3	100	40.0
88 ~ 216	3	150	43.5
216 ~ 960	3	200	46.0
960 ~ 1000	3	500	54.0
Above 1000	3	74.0 $\text{dB}(\mu\text{V})/\text{m}$ (Peak) 54.0 $\text{dB}(\mu\text{V})/\text{m}$ (Average)	

5.2.2. Restricted bands of operation

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
¹ 0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 - 156.52525	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2690 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.17	3260 - 3267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.2	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	322 - 335.4	3600 - 4400	(²)

All the emissions appearing within 15.205 restricted frequency bands shall not exceed the limits shown in 15.209, all the other emissions shall be at least 20dB below the fundamental emissions, or comply with 15.209 limits.

5.2.3. Test setup

The EUT was placed on a turn table which was 0.8 m above the ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT was set 3 m away from the receiving antenna which was mounted on an antenna tower. The measuring antenna moved up and down to find out the maximum emission level. It moved from 1 m to 4 m for both horizontal and vertical polarizations.

The EUT was tested in the Chamber Site. It was pre-scanned with a Peak detector from the spectrum, and all the final readings from the test receiver were measured with the Quasi-Peak detector.

The bandwidth of the EMI test receiver is set at 120kHz for frequency range from 30MHz to 1000 MHz.

The bandwidth of the Spectrum's VBW is set at 3MHz and RBW is set at 1MHz for peak emissions measurement above 1GHz and 1MHz RBW, 10Hz VBW for average emissions measure above 1GHz.

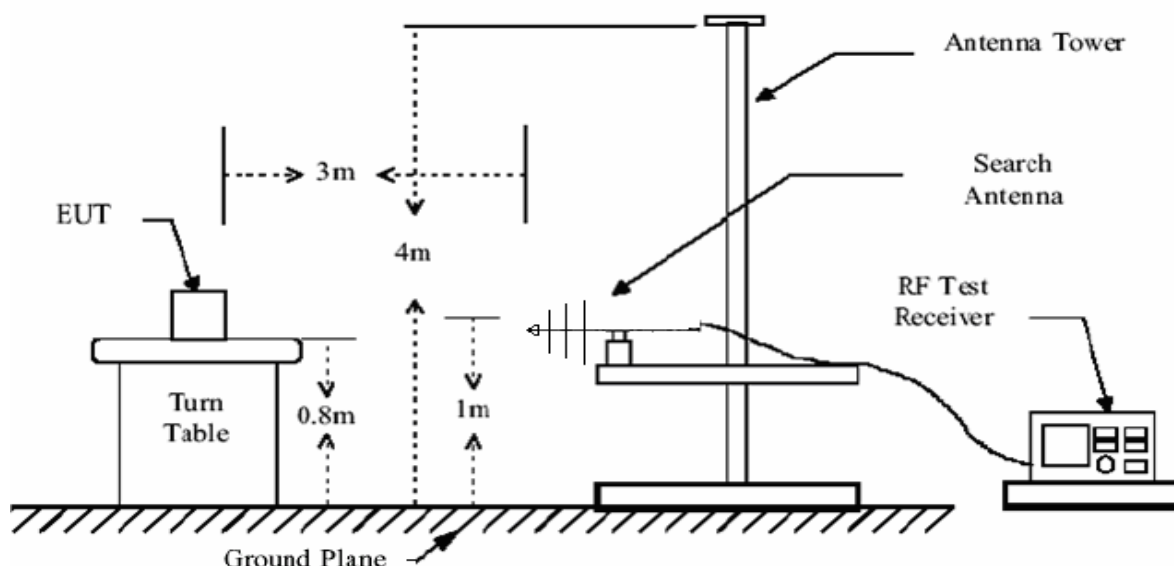
The frequency range from 30MHz to 10th harmonic (25GHz) are checked. and no any emissions were found from 18GHz to 25 GHz, So the radiated emissions from 18GHz to 25GHz were not record.

Notes: 1. Emission Level = Antenna Factor + Cable Loss + Meter Reading-Preamp Factor.

2. Measurement Uncertainty: ± 3.2 dB at a level of confidence of 95%.

3. For emissions above 1GHz, if peak level comply with average limit, then the average level is deemed to comply with average limit.

4. For emissions below 1GHz, pretest for all mode, The test data of the worst case condition(s) was reported on the following pages.



Test Data



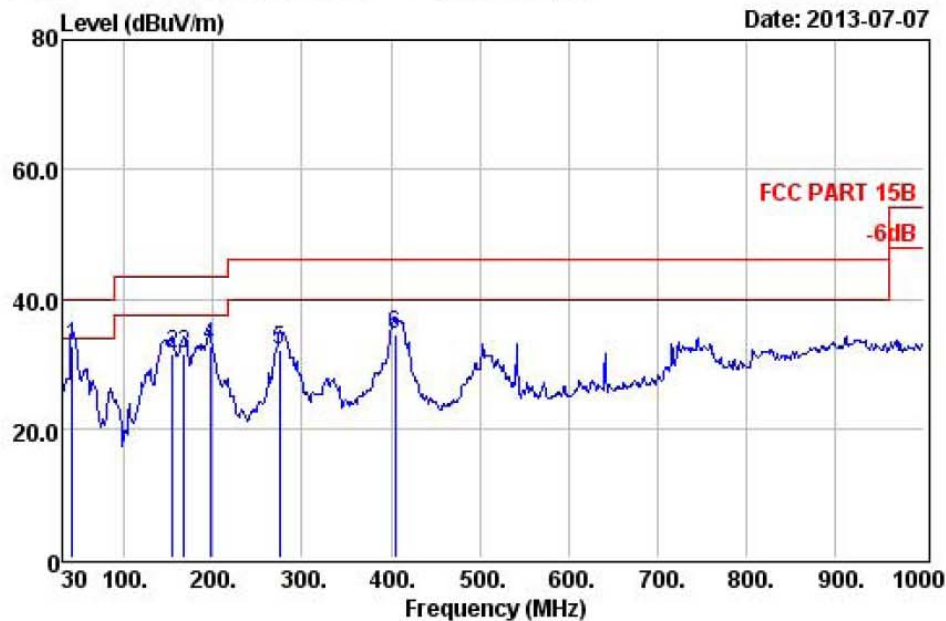
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Data: 82

File: D:\966 data\K\kuanguan.EM6 (97)

Date: 2013-07-07



Site : 966 Chamber
Condition: FCC PART 15B 3m 3142D VERTICAL
EUT : 8" PAD
M/N : 800P11B
Power : DC 5V from adapter input AC 120V/60Hz
Test By : Andy
Comment : Temp:24.8'C Humi:56% Press:101.52kPa
Test Mode: BT mode

		Preamp	Read	Cable&Antenna		Limit	Over	
	Freq	Factor	Level	Loss	Factor	Line	Limit	Remark
	MHz		dBuV	dB	dB/m	dBuV/m	dBuV/m	dB
1	41.64	31.38	51.26	0.56	12.23	32.67	40.00	-7.33 QP
2	154.16	31.25	52.52	1.22	9.08	31.57	43.50	-11.93 QP
3	167.74	31.20	51.48	1.30	9.90	31.48	43.50	-12.02 QP
4	196.84	31.11	51.51	1.46	10.72	32.58	43.50	-10.92 QP
5	274.44	30.95	48.36	1.78	13.00	32.19	46.00	-13.81 QP
6	405.39	30.63	46.37	2.37	16.47	34.58	46.00	-11.42 QP



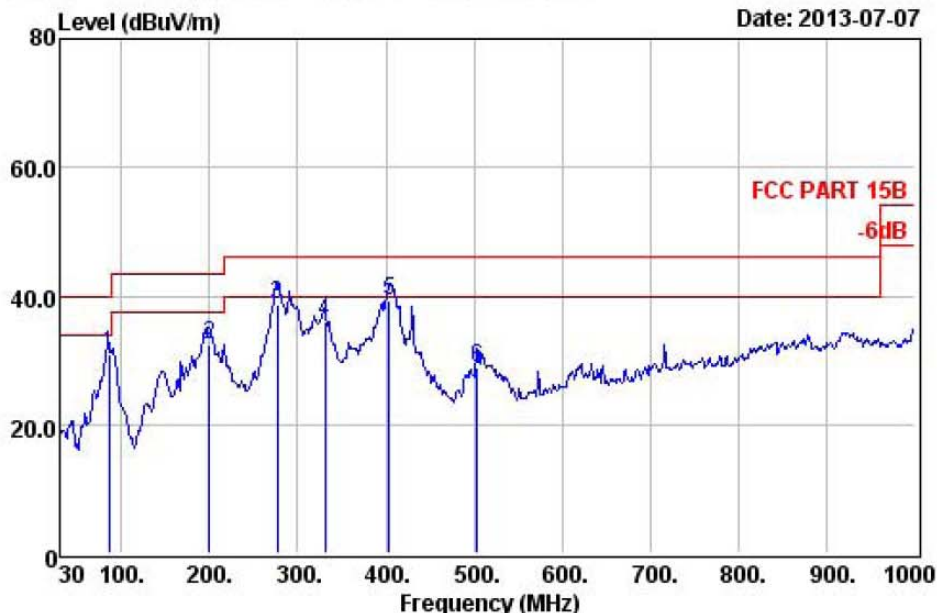
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Data: 83

File: D:\966 data\K\kuanguan.EM6 (97)

Date: 2013-07-07



Site : 966 Chamber
Condition: FCC PART 15B 3m 3142D HORIZONTAL
EUT : 8" PAD
M/N : 800P11B
Power : DC 5V from adapter input AC 120V/60Hz
Test By : Andy
Comment : Temp:24.8'C Humi:56% Press:101.52kPa
Test Mode: BT mode

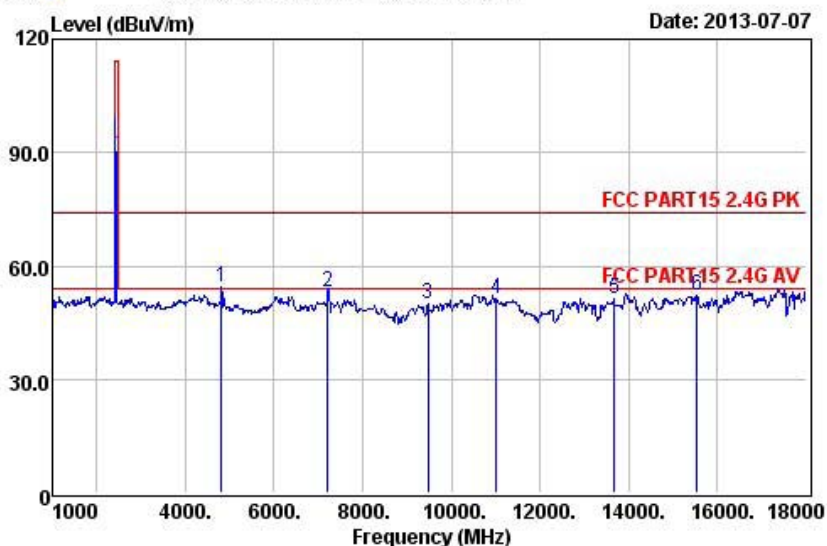
		Preamp	Read	CableAntenna		Limit	Over	
	Freq	Factor	Level	Loss	Factor	Level	Line	Limit
	MHz	dB	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB
1	86.26	31.35	52.56	0.94	8.69	30.84	40.00	-9.16 QP
2	199.75	31.10	51.17	1.46	10.98	32.51	43.50	-10.99 QP
3	277.35	30.94	54.84	1.78	13.08	38.76	46.00	-7.24 QP
4	330.70	30.78	49.90	2.02	14.73	35.87	46.00	-10.13 QP
5	403.45	30.63	51.03	2.37	16.41	39.18	46.00	-6.82 QP
6	503.36	30.60	37.95	2.85	18.77	28.97	46.00	-17.03 QP



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Data: 76 File: D:\966 data\K\kuanguan.EM6 (97)



Site : 966 Chamber
Condition: FCC PART15 2.4G PK 3m ZN30701 VERTICAL
EUT : 8" PAD
M/N : 800P11B
Power : DC 5V from adapter input AC 120V/60Hz
Test By : Andy
Comment : Temp:24.8'C Humi:54% Press:101.29kPa
Test Mode: BT(GFSK) 2402MHz

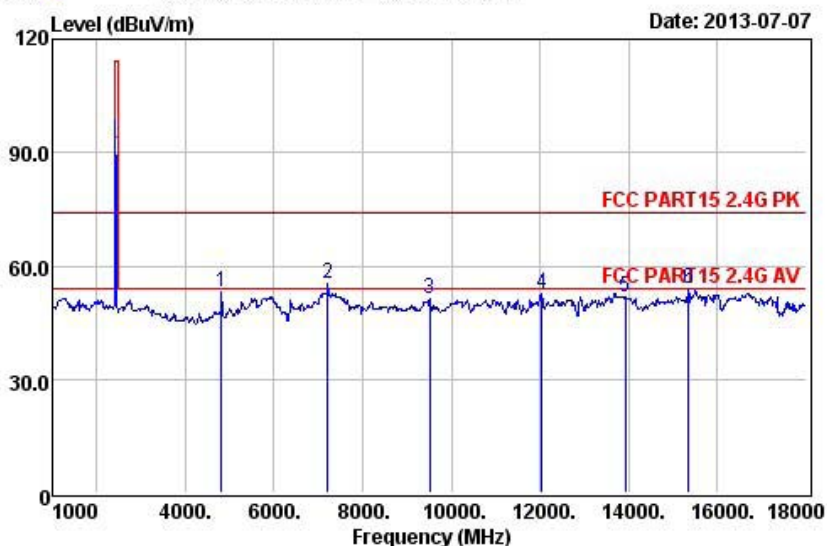
		Preamp	Read	CableAntenna		Limit	Over	
	Freq	Factor	Level	Loss	Factor	Level	Line	Limit Remark
	MHz		dB	dB	dB/m	dBuV/m	dBuV/m	dB
1	4804.00		27.49	37.08	11.96	32.94	54.49	74.00 -19.51 Peak
2	7206.00		27.94	27.03	16.61	37.28	52.98	74.00 -21.02 Peak
3	9466.00		28.59	23.47	16.92	37.96	49.76	74.00 -24.24 Peak
4	11013.00		28.90	23.36	17.17	39.51	51.14	74.00 -22.86 Peak
5	13665.00		29.33	18.36	18.98	43.17	51.18	74.00 -22.82 Peak
6	15535.00		29.63	23.10	20.34	38.53	52.34	74.00 -21.66 Peak



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Data: 77 File: D:\966 data\K\kuanguan.EM6 (97)



Site : 966 Chamber
Condition: FCC PART15 2.4G PK 3m ZN30701 HORIZONTAL
EUT : 8" PAD
M/N : 800P11B
Power : DC 5V from adapter input AC 120V/60Hz
Test By : Andy
Comment : Temp:24.8'C Humi:56% Press:101.52kPa
Test Mode: BT(GFSK) 2402MHz

		Preamp	Read	Cable	Antenna	Limit	Over	
	Freq	Factor	Level	Loss	Factor	Level	Line	Limit Remark
	MHz		dB	dB	dB/m	dBuV/m	dBuV/m	dB
1	4808.00		27.49	35.65	11.96	32.94	53.06	74.00 -20.94 Peak
2	7205.00		27.94	29.46	16.61	37.28	55.41	74.00 -18.59 Peak
3	9517.00		28.61	24.93	16.92	38.01	51.25	74.00 -22.75 Peak
4	12033.00		29.01	24.71	17.40	39.41	52.51	74.00 -21.49 Peak
5	13920.00		29.38	18.48	19.27	43.42	51.79	74.00 -22.21 Peak
6	15348.00		29.60	24.72	20.23	38.43	53.78	74.00 -20.22 Peak

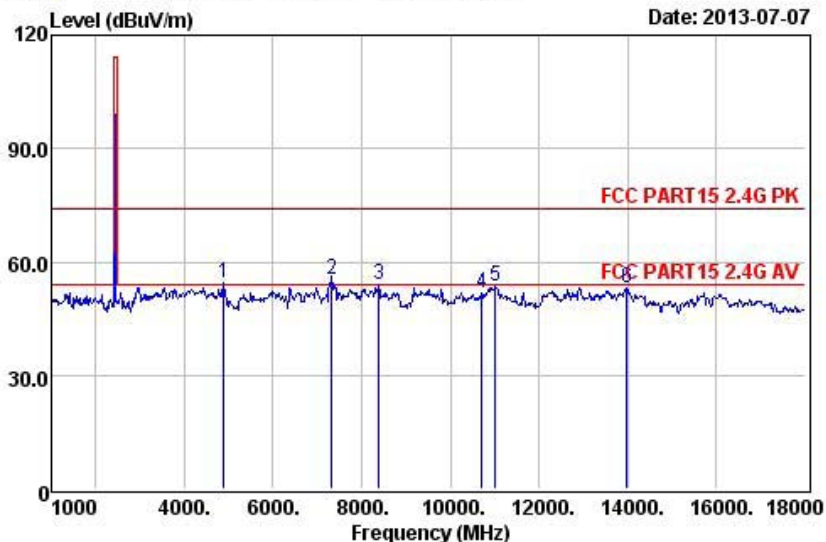


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Data: 78 File: D:\966 data\K\kuanguan.EM6 (97)

Date: 2013-07-07



Site : 966 Chamber
Condition: FCC PART15 2.4G PK 3m ZN30701 VERTICAL
EUT : 8" PAD
M/N : 800P11B
Power : DC 5V from adapter input AC 120V/60Hz
Test By : Andy
Comment : Temp:24.8'C Humi:56% Press:101.52kPa
Test Mode: BT(GFSK) 2441MHz

		Preamp	Read	Cable	Antenna	Limit	Over	
	Freq	Factor	Level	Loss	Factor	Level	Line	Limit Remark
	MHz		dB	dB	dB/m	dBuV/m	dBuV/m	dB
1	4882.00		27.53	36.91	12.14	33.11	54.63	74.00 -19.37 Peak
2	7323.00		27.96	29.24	16.62	37.33	55.23	74.00 -18.77 Peak
3	8395.00		28.22	28.54	16.75	36.72	53.79	74.00 -20.21 Peak
4	10707.00		28.87	24.33	17.11	39.32	51.89	74.00 -22.11 Peak
5	11013.00		28.90	25.61	17.17	39.51	53.39	74.00 -20.61 Peak
6	13971.00		29.39	19.72	19.33	43.47	53.13	74.00 -20.87 Peak

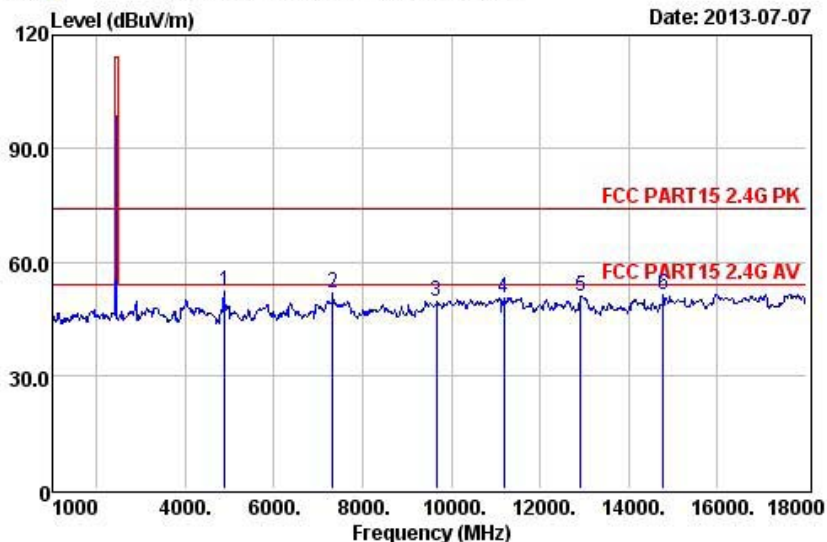


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Data: 79 File: D:\966 data\K\kuanguan.EM6 (97)

Date: 2013-07-07



Site : 966 Chamber
Condition: FCC PART15 2.4G PK 3m ZN30701 HORIZONTAL
EUT : 8" PAD
M/N : 800P11B
Power : DC 5V from adapter input AC 120V/60Hz
Test By : Andy
Comment : Temp:24.8'C Humi:56% Press:101.52kPa
Test Mode: BT(GFSK) 2441MHz

		Preamp	Read	Cable	Antenna	Limit	Over	
	Freq	Factor	Level	Loss	Factor	Level	Line	Limit Remark
	MHz		dB	dB	dB/m	dBuV/m	dBuV/m	dB
1	4882.00		27.53	34.31	12.14	33.11	52.03	74.00 -21.97 Peak
2	7323.00		27.96	25.71	16.62	37.33	51.70	74.00 -22.30 Peak
3	9670.00		28.67	23.33	16.94	38.14	49.74	74.00 -24.26 Peak
4	11183.00		28.92	22.65	17.20	39.65	50.58	74.00 -23.42 Peak
5	12917.00		29.18	21.56	18.14	40.50	51.02	74.00 -22.98 Peak
6	14770.00		29.52	21.29	19.85	39.48	51.10	74.00 -22.90 Peak

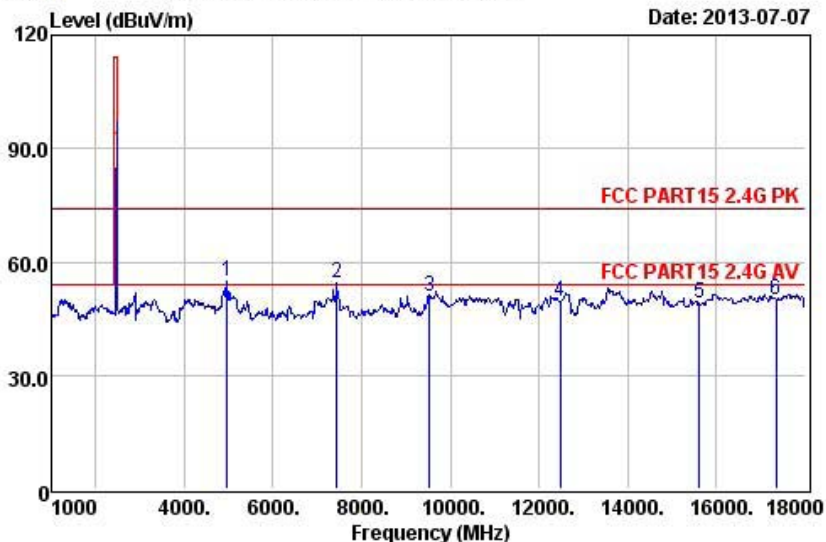


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Data: 80 File: D:\966 data\K\kuanguan.EM6 (97)

Date: 2013-07-07



Site : 966 Chamber
Condition: FCC PART15 2.4G PK 3m ZN30701 VERTICAL
EUT : 8" PAD
M/N : 800P11B
Power : DC 5V from adapter input AC 120V/60Hz
Test By : Andy
Comment : Temp:24.8'C Humi:56% Press:101.52kPa
Test Mode: BT(GFSK) 2480MHz

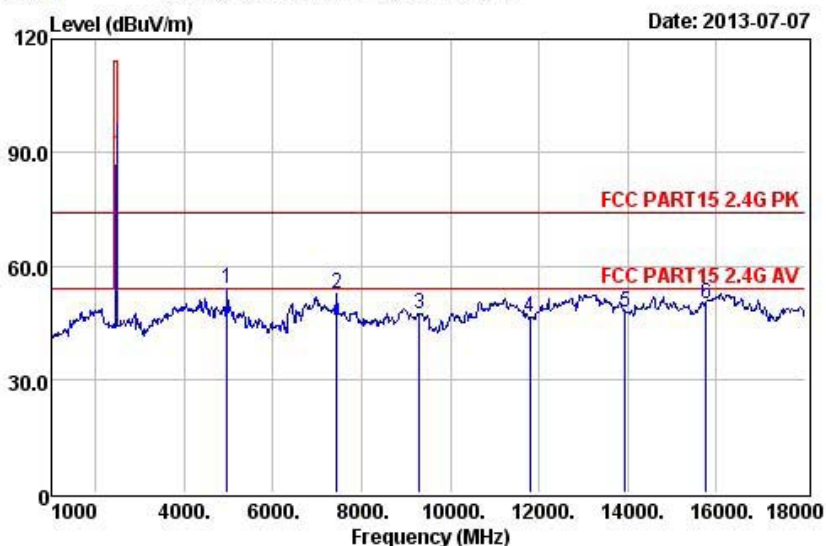
		Preamp	Read	Cable	Antenna	Limit	Over	
	Freq	Factor	Level	Loss	Factor	Level	Line	Limit Remark
	MHz		dB	dB	dB/m	dBuV/m	dBuV/m	dB
1	4962.00		27.58	36.99	12.36	33.32	55.09	74.00 -18.91 Peak
2	7443.00		27.99	28.61	16.62	37.38	54.62	74.00 -19.38 Peak
3	9534.00		28.61	24.65	16.92	38.03	50.99	74.00 -23.01 Peak
4	12475.00		29.09	21.38	17.77	39.50	49.56	74.00 -24.44 Peak
5	15620.00		29.64	19.30	20.40	38.86	48.92	74.00 -25.08 Peak
6	17337.00		30.24	13.64	21.64	45.13	50.17	74.00 -23.83 Peak



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Data: 81 File: D:\966 data\K\kuanguan.EM6 (97)



Site : 966 Chamber
Condition: FCC PART15 2.4G PK 3m ZN30701 HORIZONTAL
EUT : 8" PAD
M/N : 800P11B
Power : DC 5V from adapter input AC 120V/60Hz
Test By : Andy
Comment : Temp:24.8'C Humi:56% Press:101.52kPa
Test Mode: BT(GFSK) 2480MHz

		Preamp	Read	Cable	Antenna	Limit	Over	
	Freq	Factor	Level	Loss	Factor	Level	Line	Limit Remark
	MHz		dB	dB	dB/m	dBuV/m	dBuV/m	dB
1	4962.00		27.58	35.81	12.36	33.32	53.91	74.00 -20.09 Peak
2	7443.00		27.99	26.84	16.62	37.38	52.85	74.00 -21.15 Peak
3	9296.00		28.52	21.31	16.90	37.75	47.44	74.00 -26.56 Peak
4	11795.00		28.98	18.26	17.33	39.61	46.22	74.00 -27.78 Peak
5	13937.00		29.39	14.53	19.29	43.43	47.86	74.00 -26.14 Peak
6	15773.00		29.67	19.86	20.49	39.45	50.13	74.00 -23.87 Peak

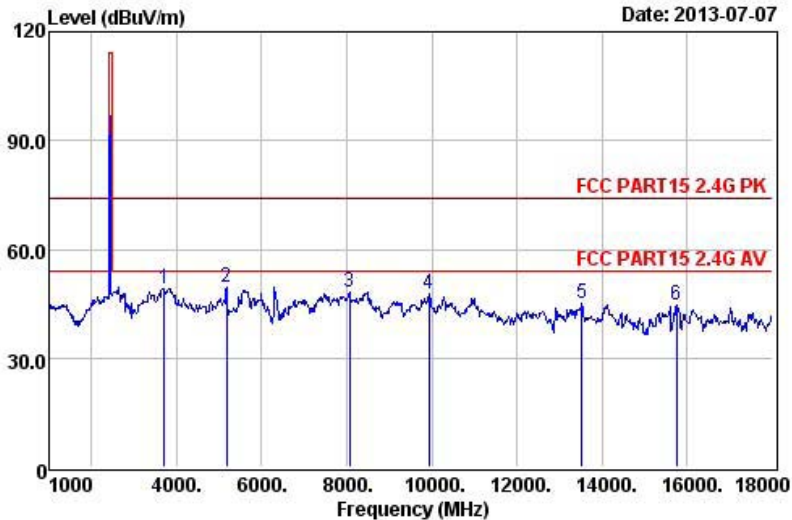


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Data: 86 File: D:\966 data\K\kuanguan.EM6 (97)

Date: 2013-07-07



Site : 966 Chamber
Condition: FCC PART15 2.4G PK 3m ZN30701 VERTICAL
EUT : 8" PAD
M/N : 800P11B
Power : DC 5V from adapter input AC 120V/60Hz
Test By : Andy
Comment : Temp:24.8'C Humi:56% Press:101.52kPa
Test Mode: BT(Pi/4DQPSK) 2402MHz

		Preamp	Read	Cable	Antenna		Limit	Over	
	Freq	Factor	Level	Loss	Factor	Level	Line	Limit	Remark
	MHz	dB	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB	
1	3703.00	26.85	34.94	10.13	30.91	49.13	74.00	-24.87	Peak
2	5165.00	27.62	30.72	12.88	33.63	49.61	74.00	-24.39	Peak
3	8055.00	28.12	22.98	16.67	36.44	47.97	74.00	-26.03	Peak
4	9925.00	28.77	21.15	16.96	38.34	47.68	74.00	-26.32	Peak
5	13529.00	29.31	12.42	18.81	43.03	44.95	74.00	-29.05	Peak
6	15739.00	29.66	14.37	20.47	39.32	44.50	74.00	-29.50	Peak

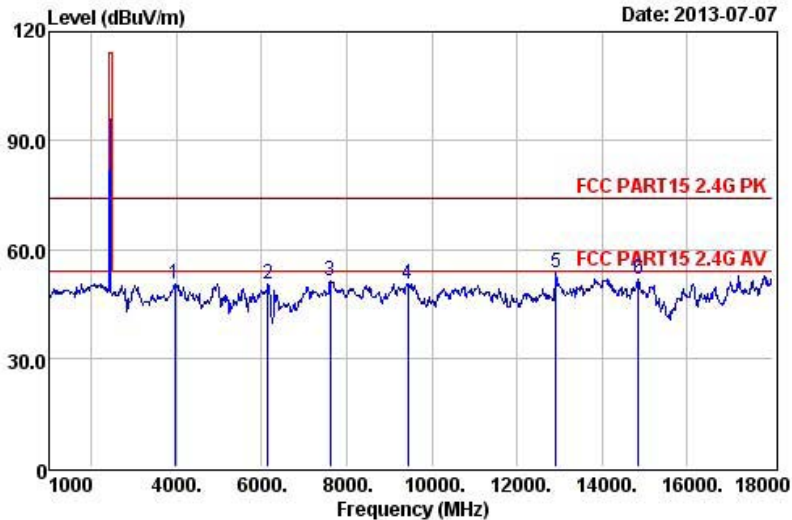


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Data: 87 File: D:\966 data\K\kuanguan.EM6 (97)

Date: 2013-07-07



Site : 966 Chamber
Condition: FCC PART15 2.4G PK 3m ZN30701 HORIZONTAL
EUT : 8" PAD
M/N : 800P11B
Power : DC 5V from adapter input AC 120V/60Hz
Test By : Andy
Comment : Temp:24.8'C Humi:56% Press:101.52kPa
Test Mode: BT(Pi/4DQPSK) 2402MHz

		Preamp	Read	Cable	Antenna		Limit	Over	
	Freq	Factor	Level	Loss	Factor	Level	Line	Limit	Remark
	MHz	dB	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB	
1	3958.00	26.98	35.41	10.43	31.43	50.29	74.00	-23.71	Peak
2	6151.00	27.73	26.00	16.60	35.41	50.28	74.00	-23.72	Peak
3	7613.00	28.02	25.35	16.63	37.17	51.13	74.00	-22.87	Peak
4	9432.00	28.57	24.23	16.91	37.92	50.49	74.00	-23.51	Peak
5	12917.00	29.18	24.14	18.14	40.50	53.60	74.00	-20.40	Peak
6	14855.00	29.53	22.03	19.91	39.13	51.54	74.00	-22.46	Peak

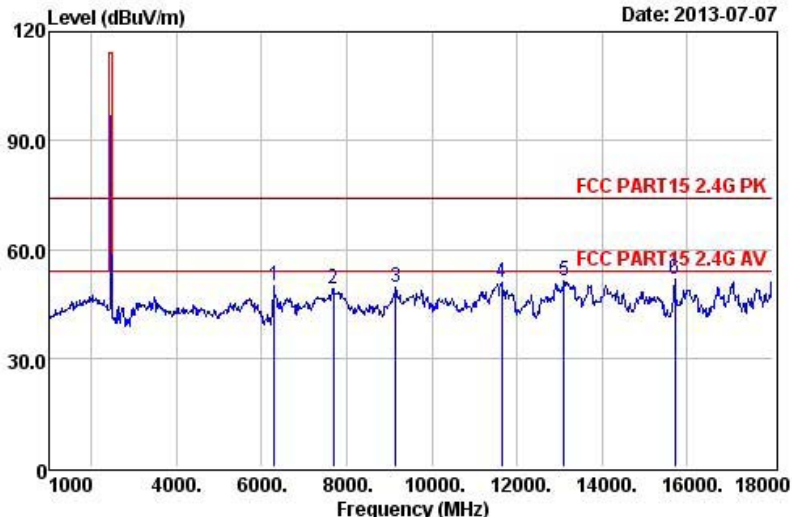


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Data: 88 File: D:\966 data\K\kuanguan.EM6 (97)

Date: 2013-07-07



Site : 966 Chamber
Condition: FCC PART15 2.4G PK 3m ZN30701 HORIZONTAL
EUT : 8" PAD
M/N : 800P11B
Power : DC 5V from adapter input AC 120V/60Hz
Test By : Andy
Comment : Temp:24.8'C Humi:56% Press:101.52kPa
Test Mode: BT(Pi/4DQPSK) 2440MHz

		Preamp	Read	Cable	Antenna		Limit	Over	
	Freq	Factor	Level	Loss	Factor	Level	Line	Limit	Remark
	MHz	dB	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB	
1	6287.00	27.76	25.47	16.60	35.60	49.91	74.00	-24.09	Peak
2	7681.00	28.04	23.46	16.64	37.03	49.09	74.00	-24.91	Peak
3	9143.00	28.46	23.48	16.89	37.57	49.48	74.00	-24.52	Peak
4	11642.00	28.96	22.82	17.29	39.76	50.91	74.00	-23.09	Peak
5	13104.00	29.22	20.95	18.34	41.18	51.25	74.00	-22.75	Peak
6	15705.00	29.66	21.71	20.44	39.19	51.68	74.00	-22.32	Peak

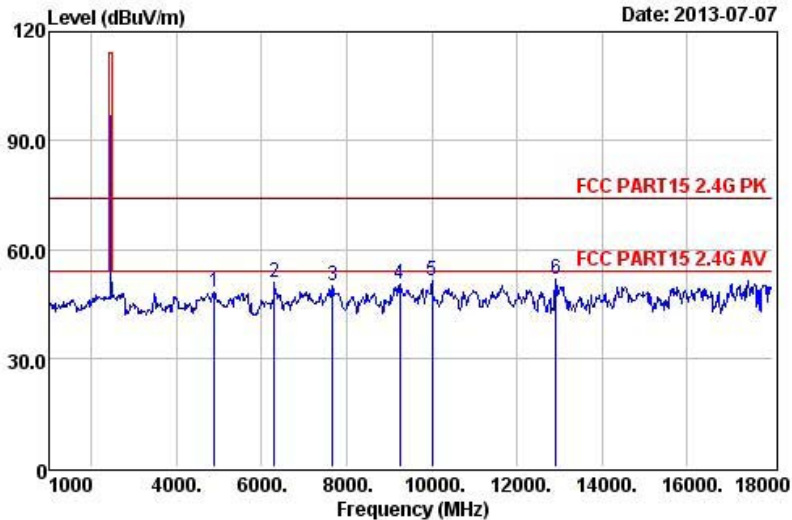


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Data: 89 File: D:\966 data\K\kuanguan.EM6 (97)

Date: 2013-07-07



Site : 966 Chamber
Condition: FCC PART15 2.4G PK 3m ZN30701 VERTICAL
EUT : 8" PAD
M/N : 800P11B
Power : DC 5V from adapter input AC 120V/60Hz
Test By : Andy
Comment : Temp:24.8'C Humi:56% Press:101.52kPa
Test Mode: BT(Pi/4DQPSK) 2440MHz

		Preamp	Read	Cable	Antenna		Limit	Over	
	Freq	Factor	Level	Loss	Factor	Level	Line	Limit	Remark
	MHz	dB	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB	
1	4893.00	27.54	30.55	12.19	33.15	48.35	74.00	-25.65	Peak
2	6287.00	27.76	26.47	16.60	35.60	50.91	74.00	-23.09	Peak
3	7664.00	28.03	24.17	16.64	37.07	49.85	74.00	-24.15	Peak
4	9245.00	28.50	24.27	16.90	37.69	50.36	74.00	-23.64	Peak
5	10010.00	28.80	24.88	16.97	38.43	51.48	74.00	-22.52	Peak
6	12917.00	29.18	22.14	18.14	40.50	51.60	74.00	-22.40	Peak

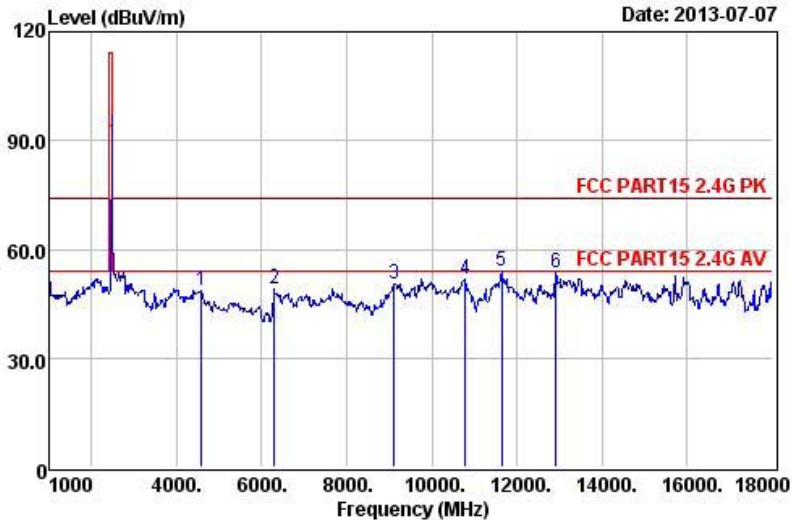


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Data: 90 File: D:\966 data\K\kuanguan.EM6 (97)

Date: 2013-07-07



Site : 966 Chamber
Condition: FCC PART15 2.4G PK 3m ZN30701 VERTICAL
EUT : 8" PAD
M/N : 800P11B
Power : DC 5V from adapter input AC 120V/60Hz
Test By : Andy
Comment : Temp:24.8'C Humi:56% Press:101.52kPa
Test Mode: BT(Pi/4DQPSK) 2480MHz

		Preamp	Read	Cable	Antenna		Limit	Over	
	Freq	Factor	Level	Loss	Factor	Level	Line	Limit	Remark
	MHz	dB	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB	
1	4587.00	27.36	32.23	11.49	32.41	48.77	74.00	-25.23	Peak
2	6287.00	27.76	24.47	16.60	35.60	48.91	74.00	-25.09	Peak
3	9109.00	28.44	24.55	16.89	37.52	50.52	74.00	-23.48	Peak
4	10792.00	28.88	24.29	17.12	39.38	51.91	74.00	-22.09	Peak
5	11642.00	28.96	25.82	17.29	39.76	53.91	74.00	-20.09	Peak
6	12917.00	29.18	24.14	18.14	40.50	53.60	74.00	-20.40	Peak

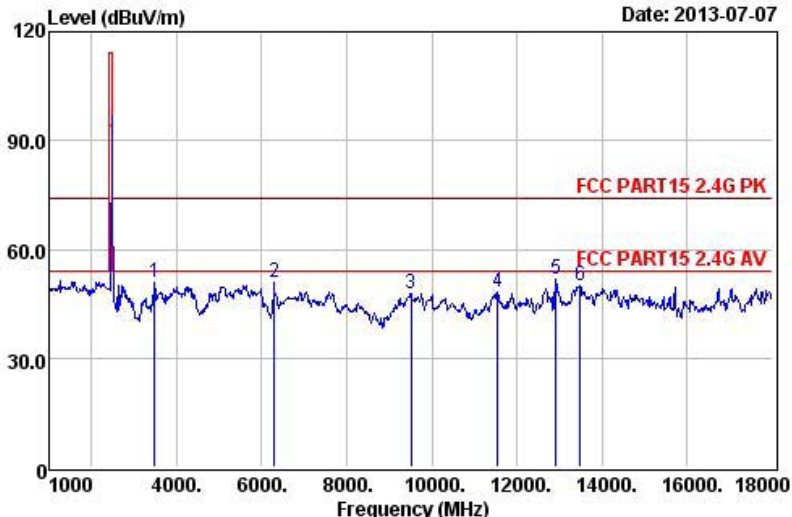


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Data: 91 File: D:\966 data\K\kuanguan.EM6 (97)

Date: 2013-07-07



Site : 966 Chamber
Condition: FCC PART15 2.4G PK 3m ZN30701 HORIZONTAL
EUT : 8" PAD
M/N : 800P11B
Power : DC 5V from adapter input AC 120V/60Hz
Test By : Andy
Comment : Temp:24.8'C Humi:56% Press:101.52kPa
Test Mode: BT(Pi/4DQPSK) 2480MHz

		Preamp	Read	Cable	Antenna		Limit	Over	
	Freq	Factor	Level	Loss	Factor	Level	Line	Limit	Remark
	MHz	dB	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB	
1	3482.00	26.74	36.93	9.98	30.48	50.65	74.00	-23.35	Peak
2	6287.00	27.76	26.47	16.60	35.60	50.91	74.00	-23.09	Peak
3	9517.00	28.61	21.50	16.92	38.01	47.82	74.00	-26.18	Peak
4	11540.00	28.95	20.16	17.27	39.87	48.35	74.00	-25.65	Peak
5	12917.00	29.18	22.14	18.14	40.50	51.60	74.00	-22.40	Peak
6	13478.00	29.29	17.55	18.75	42.92	49.93	74.00	-24.07	Peak

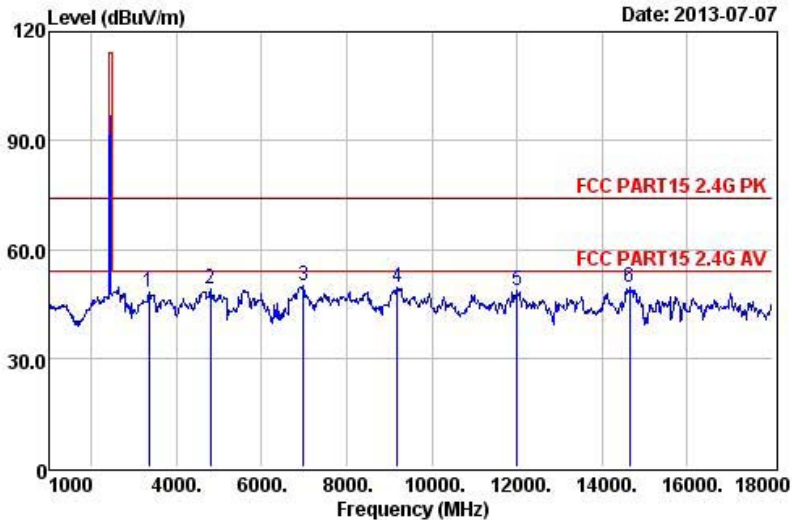


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Data: 92 File: D:\966 data\K\kuanguan.EM6 (97)

Date: 2013-07-07



Site : 966 Chamber
Condition: FCC PART15 2.4G PK 3m ZN30701 VERTICAL
EUT : 8" PAD
M/N : 800P11B
Power : DC 5V from adapter input AC 120V/60Hz
Test By : Andy
Comment : Temp:24.8'C Humi:56% Press:101.52kPa
Test Mode: BT(8-DPSK) 2402MHz

		Preamp	Read	Cable	Antenna		Limit	Over	
	Freq	Factor	Level	Loss	Factor	Level	Line	Limit	Remark
	MHz	dB	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB	
1	3346.00	26.67	34.41	9.97	30.34	48.05	74.00	-25.95	Peak
2	4791.00	27.48	31.75	11.92	32.90	49.09	74.00	-24.91	Peak
3	6984.00	27.90	23.99	16.60	37.16	49.85	74.00	-24.15	Peak
4	9177.00	28.47	23.42	16.89	37.61	49.45	74.00	-24.55	Peak
5	11999.00	29.00	20.64	17.36	39.40	48.40	74.00	-25.60	Peak
6	14651.00	29.50	19.48	19.78	39.97	49.73	74.00	-24.27	Peak

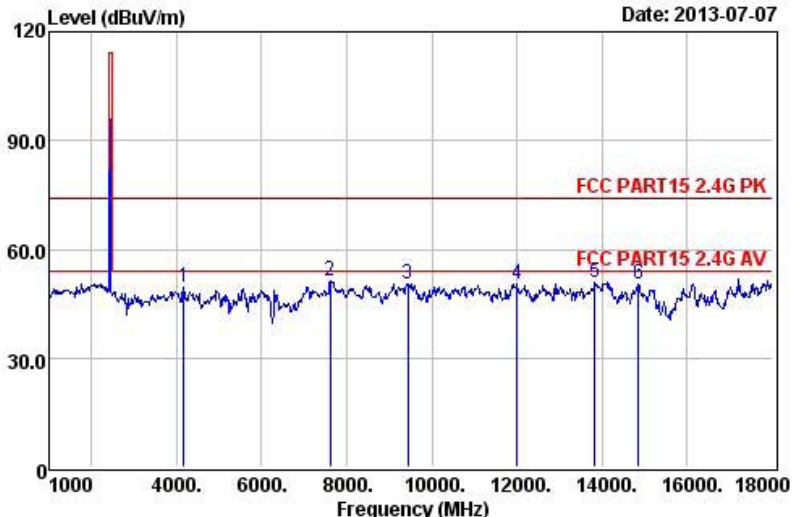


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Data: 93 File: D:\966 data\K\kuanguan.EM6 (97)

Date: 2013-07-07



Site : 966 Chamber
Condition: FCC PART15 2.4G PK 3m ZN30701 HORIZONTAL
EUT : 8" PAD
M/N : 800P11B
Power : DC 5V from adapter input AC 120V/60Hz
Test By : Andy
Comment : Temp:24.8'C Humi:56% Press:101.52kPa
Test Mode: BT(8-DPSK) 2402MHz

		Preamp	Read	Cable	Antenna		Limit	Over	
	Freq	Factor	Level	Loss	Factor	Level	Line	Limit	Remark
	MHz	dB	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB	
1	4162.00	27.10	34.07	10.70	31.73	49.40	74.00	-24.60	Peak
2	7613.00	28.02	25.35	16.63	37.17	51.13	74.00	-22.87	Peak
3	9432.00	28.57	24.23	16.91	37.92	50.49	74.00	-23.51	Peak
4	11999.00	29.00	22.64	17.36	39.40	50.40	74.00	-23.60	Peak
5	13835.00	29.37	17.64	19.16	43.33	50.76	74.00	-23.24	Peak
6	14855.00	29.53	21.03	19.91	39.13	50.54	74.00	-23.46	Peak

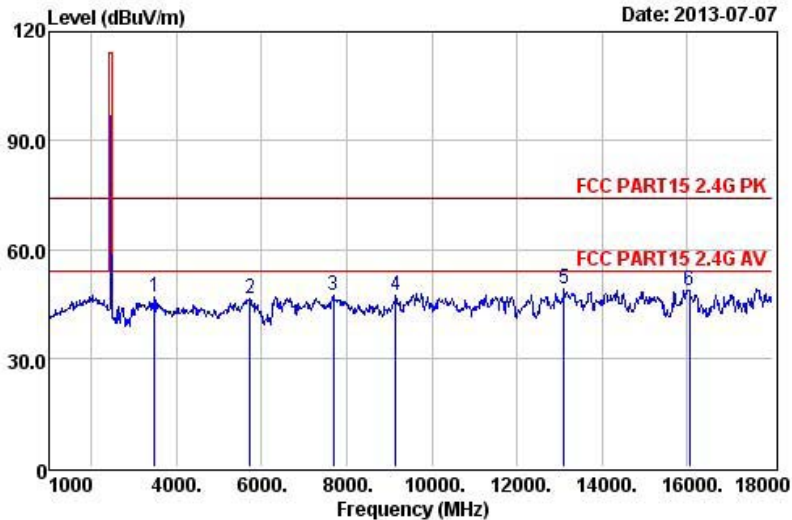


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Data: 94 File: D:\966 data\K\kuanguan.EM6 (97)

Date: 2013-07-07



Site : 966 Chamber
Condition: FCC PART15 2.4G PK 3m ZN30701 HORIZONTAL
EUT : 8" PAD
M/N : 800P11B
Power : DC 5V from adapter input AC 120V/60Hz
Test By : Andy
Comment : Temp:24.8'C Humi:56% Press:101.52kPa
Test Mode: BT(8-DPSK) 2440MHz

		Preamp	Read	Cable	Antenna		Limit	Over	
	Freq	Factor	Level	Loss	Factor	Level	Line	Limit	Remark
	MHz	dB	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB	
1	3482.00	26.74	32.93	9.98	30.48	46.65	74.00	-27.35	Peak
2	5726.00	27.67	24.46	15.05	34.59	46.43	74.00	-27.57	Peak
3	7681.00	28.04	21.46	16.64	37.03	47.09	74.00	-26.91	Peak
4	9143.00	28.46	21.48	16.89	37.57	47.48	74.00	-26.52	Peak
5	13104.00	29.22	18.95	18.34	41.18	49.25	74.00	-24.75	Peak
6	16045.00	29.72	17.26	20.66	40.61	48.81	74.00	-25.19	Peak

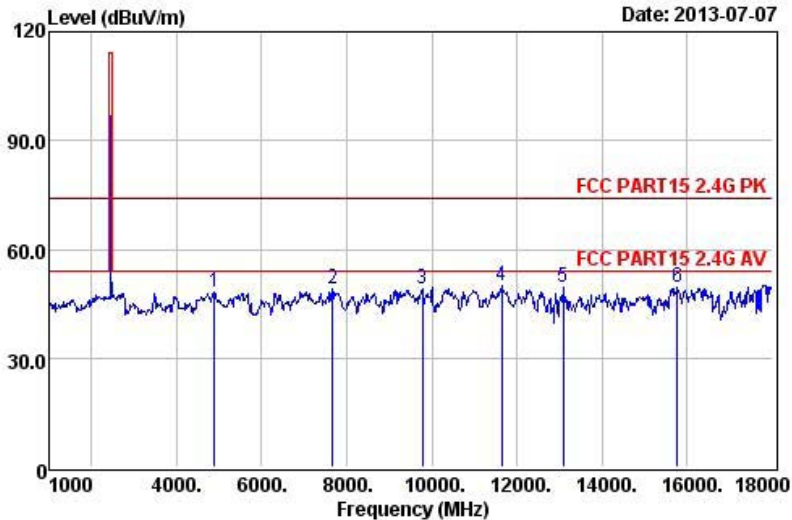


**Keyway
Testing**

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Tel: 0769-87182258
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Data: 95 File: D:\966 data\K\kuanguan.EM6 (97)

Date: 2013-07-07



Site : 966 Chamber
Condition: FCC PART15 2.4G PK 3m ZN30701 VERTICAL
EUT : 8" PAD
M/N : 800P11B
Power : DC 5V from adapter input AC 120V/60Hz
Test By : Andy
Comment : Temp:24.8'C Humi:56% Press:101.52kPa
Test Mode: BT(8-DPSK) 2440MHz

		Preamp	Read	Cable	Antenna		Limit	Over	
	Freq	Factor	Level	Loss	Factor	Level	Line	Limit	Remark
	MHz	dB	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB	
1	4893.00	27.54	30.55	12.19	33.15	48.35	74.00	-25.65	Peak
2	7664.00	28.03	23.17	16.64	37.07	48.85	74.00	-25.15	Peak
3	9772.00	28.71	22.50	16.94	38.22	48.95	74.00	-25.05	Peak
4	11642.00	28.96	21.82	17.29	39.76	49.91	74.00	-24.09	Peak
5	13087.00	29.22	19.29	18.32	41.10	49.49	74.00	-24.51	Peak
6	15773.00	29.67	19.43	20.49	39.45	49.70	74.00	-24.30	Peak

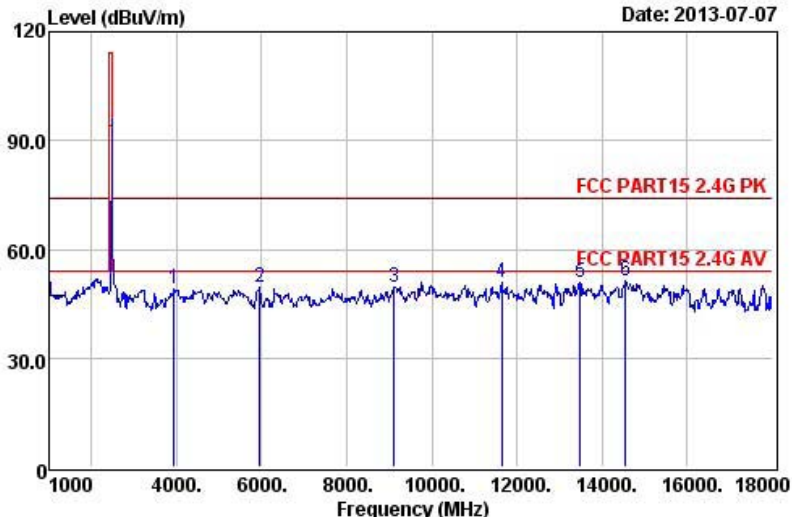


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Data: 96 File: D:\966 data\K\kuanguan.EM6 (97)

Date: 2013-07-07



Site : 966 Chamber
Condition: FCC PART15 2.4G PK 3m ZN30701 VERTICAL
EUT : 8" PAD
M/N : 800P11B
Power : DC 5V from adapter input AC 120V/60Hz
Test By : Andy
Comment : Temp:24.8'C Humi:56% Press:101.52kPa
Test Mode: BT(8-DPSK) 2480MHz

		Preamp	Read	Cable	Antenna		Limit	Over	
	Freq	Factor	Level	Loss	Factor	Level	Line	Limit	Remark
	MHz	dB	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB	
1	3941.00	26.97	34.17	10.41	31.40	49.01	74.00	-24.99	Peak
2	5947.00	27.69	25.60	16.36	35.09	49.36	74.00	-24.64	Peak
3	9109.00	28.44	23.55	16.89	37.52	49.52	74.00	-24.48	Peak
4	11642.00	28.96	22.82	17.29	39.76	50.91	74.00	-23.09	Peak
5	13478.00	29.29	18.55	18.75	42.92	50.93	74.00	-23.07	Peak
6	14549.00	29.48	20.80	19.71	40.39	51.42	74.00	-22.58	Peak

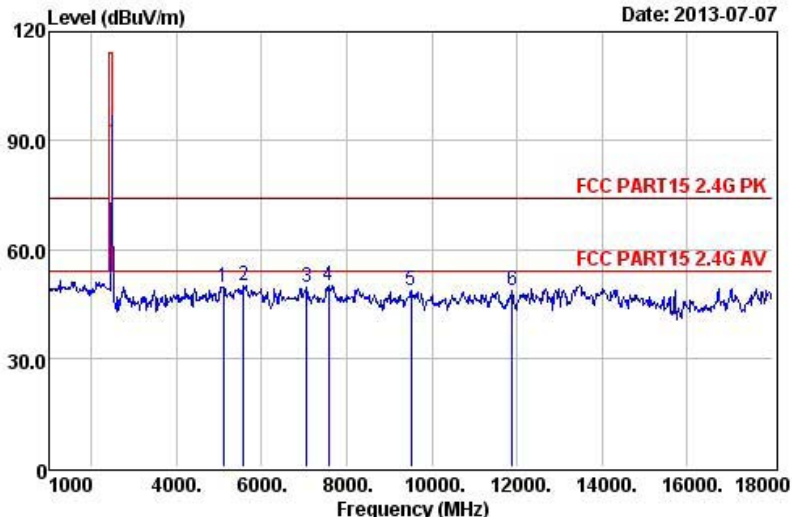


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Data: 97 File: D:\966 data\K\kuanguan.EM6 (97)

Date: 2013-07-07

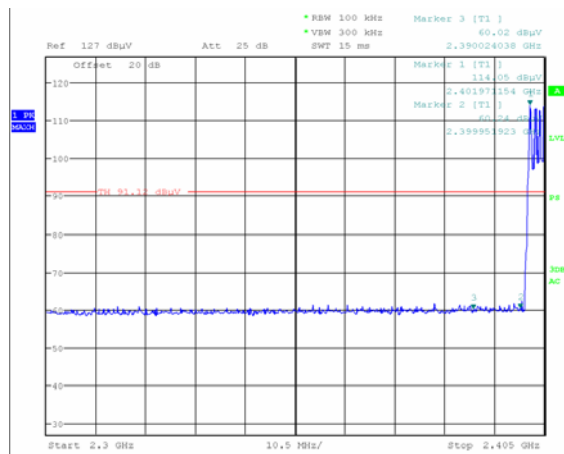
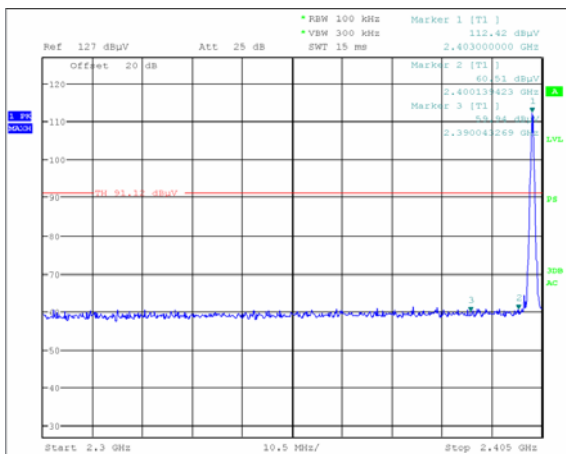
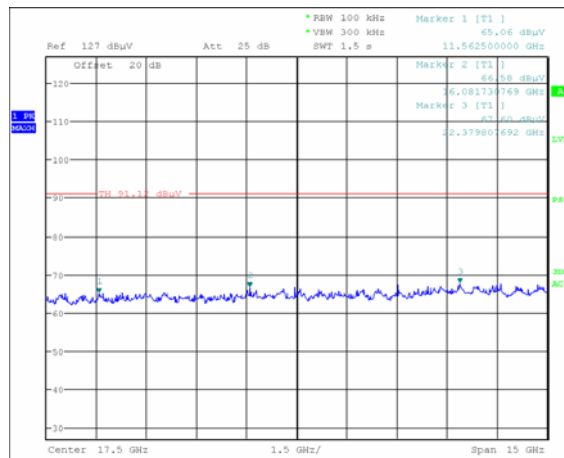
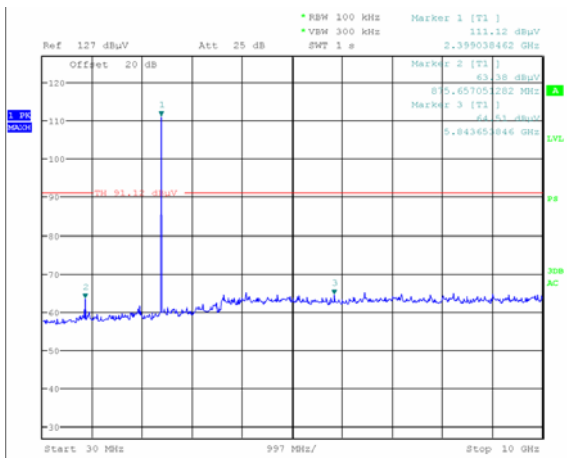


Site : 966 Chamber
Condition: FCC PART15 2.4G PK 3m ZN30701 HORIZONTAL
EUT : 8" PAD
M/N : 800P11B
Power : DC 5V from adapter input AC 120V/60Hz
Test By : Andy
Comment : Temp:24.8'C Humi:56% Press:101.52kPa
Test Mode: BT(8-DPSK) 2480MHz

		Preamp	Read	Cable	Antenna		Limit	Over	
	Freq	Factor	Level	Loss	Factor	Level	Line	Limit	Remark
	MHz	dB	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB	
1	5097.00	27.61	30.89	12.68	33.54	49.50	74.00	-24.50	Peak
2	5573.00	27.66	29.15	14.25	34.25	49.99	74.00	-24.01	Peak
3	7052.00	27.91	23.49	16.60	37.22	49.40	74.00	-24.60	Peak
4	7579.00	28.02	24.25	16.63	37.23	50.09	74.00	-23.91	Peak
5	9517.00	28.61	22.50	16.92	38.01	48.82	74.00	-25.18	Peak
6	11880.00	28.99	20.83	17.34	39.52	48.70	74.00	-25.30	Peak

For conducted test

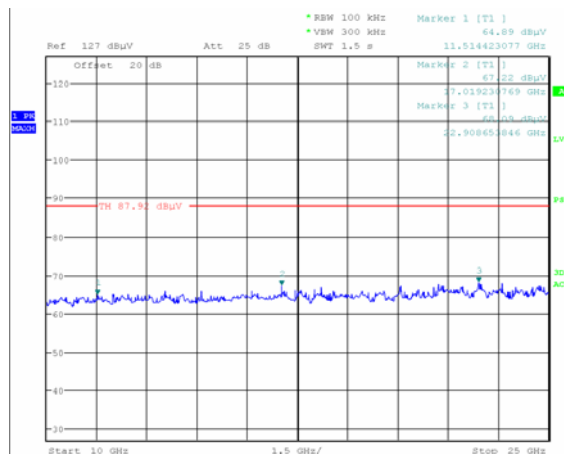
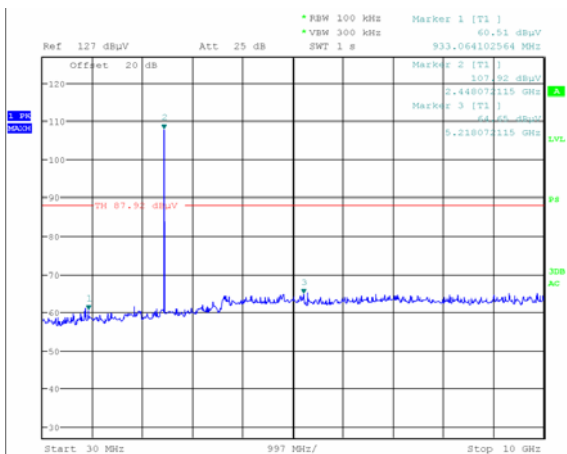
GFSK 2402MHz



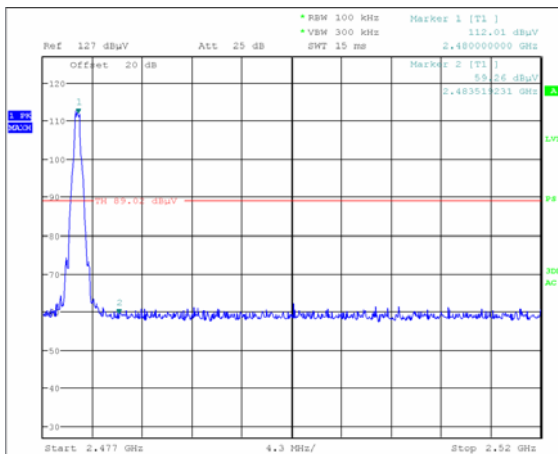
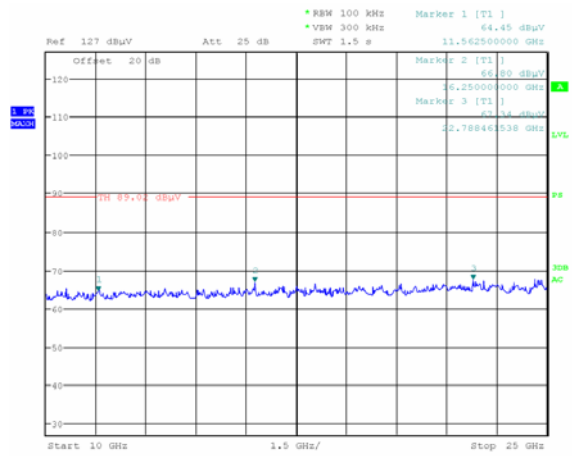
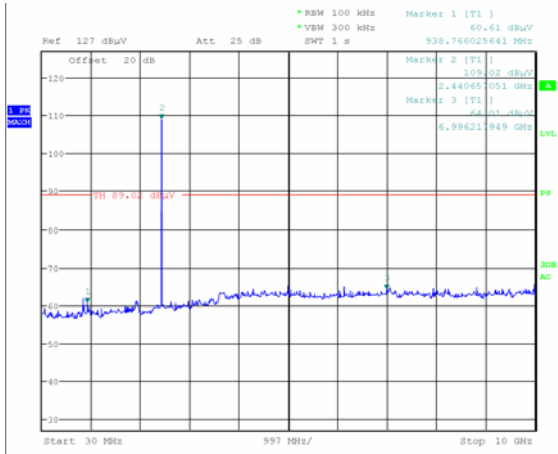
Bandedge @ GFSK

Bandedge with hopping on @ GFSK

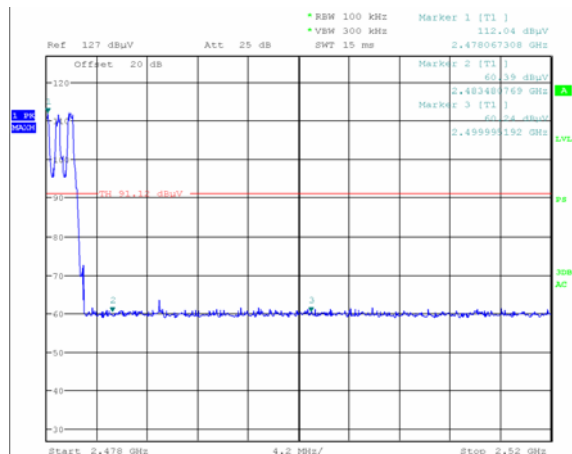
GFSK 2441MHz



GFSK 2480MHz

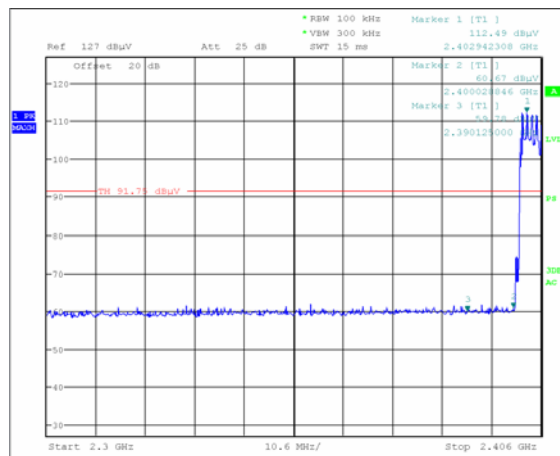
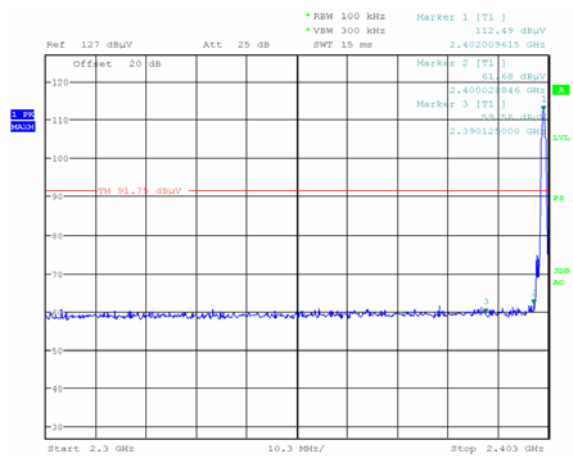
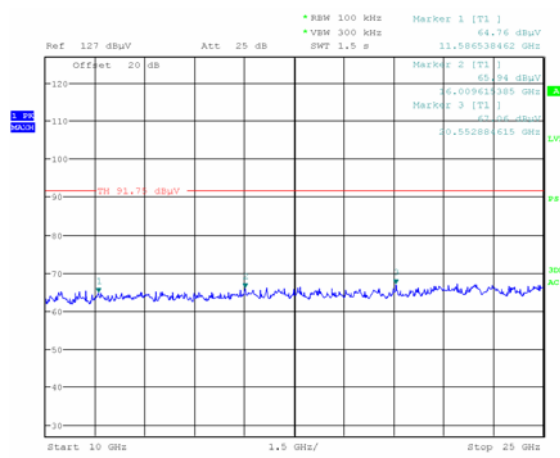
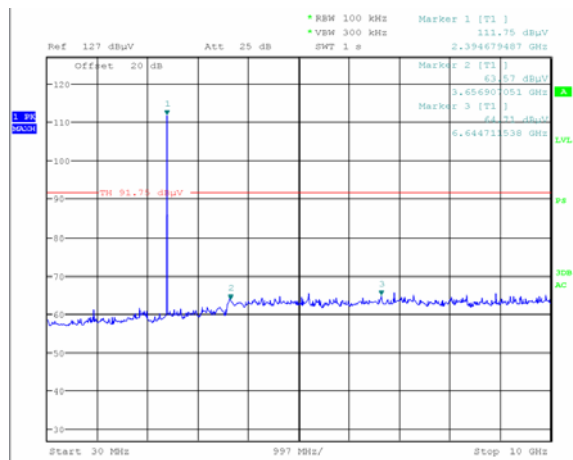


Bandedge @ GFSK



Bandedge with hopping on @ GFSK

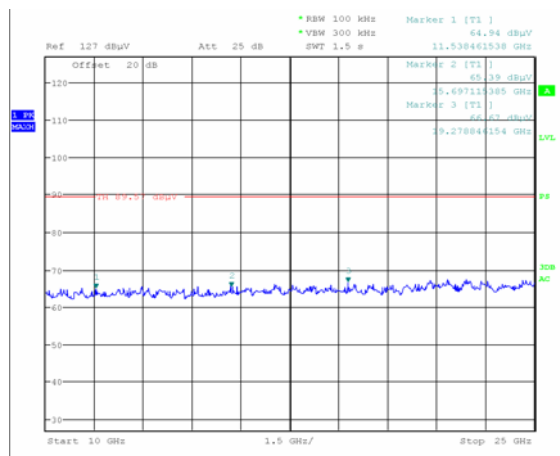
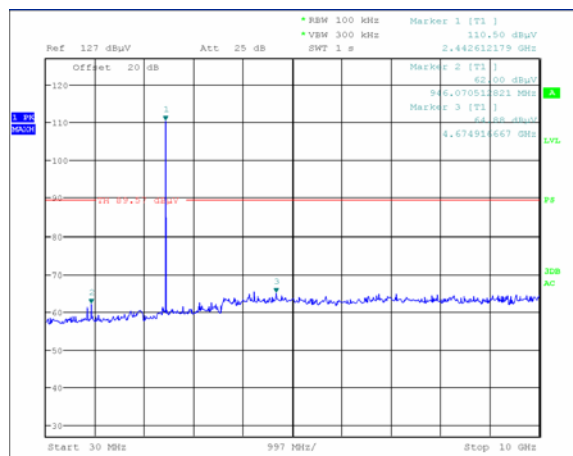
Pi/4dQPSK 2402MHz



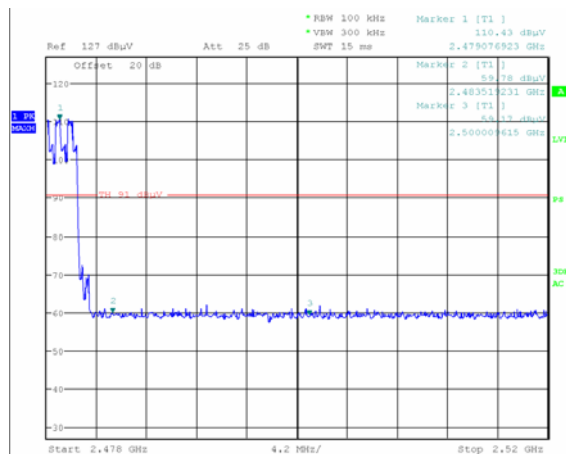
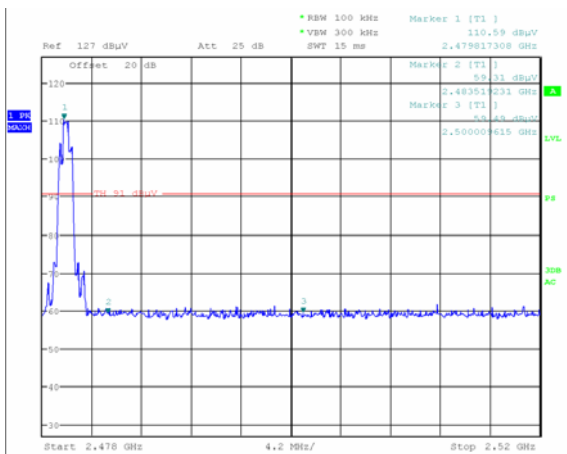
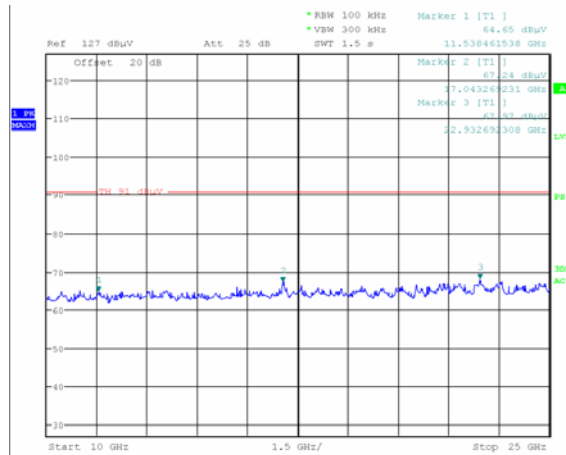
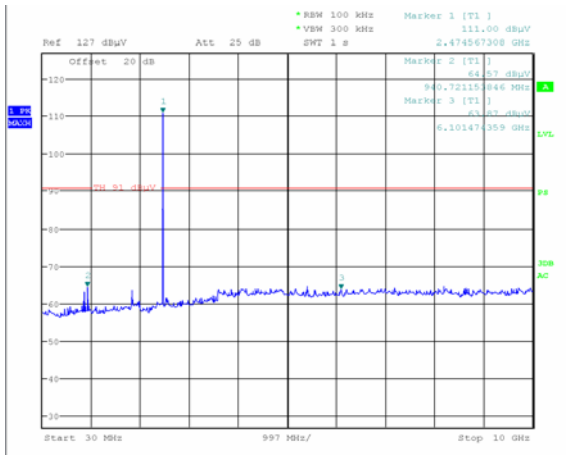
Bandedge @ Pi/4dQPSK

Bandedge with hopping on @ Pi/4dQPSK

Pi/4dQPSK 2441MHz



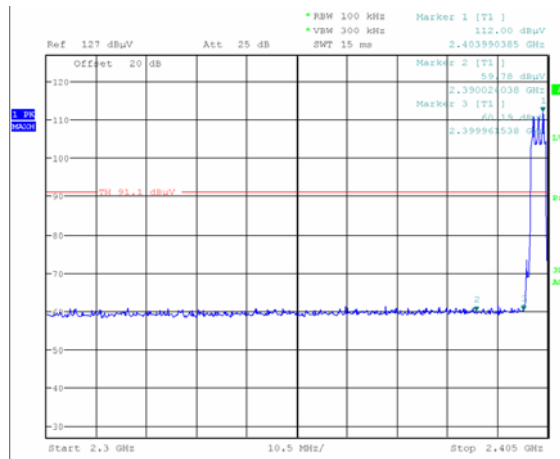
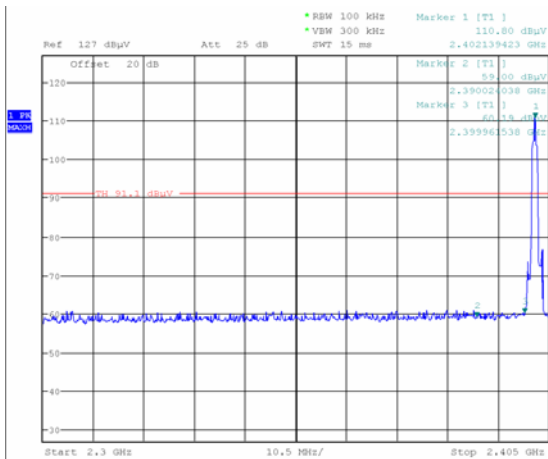
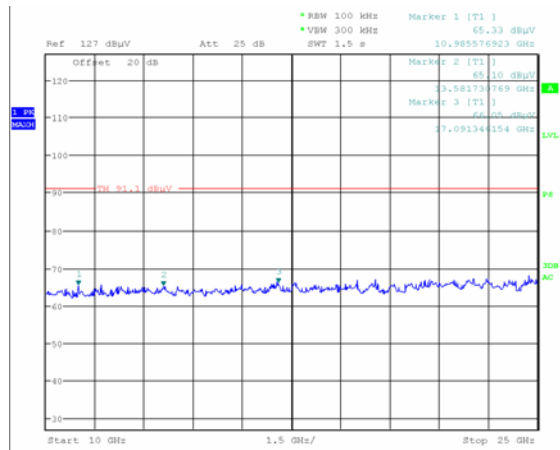
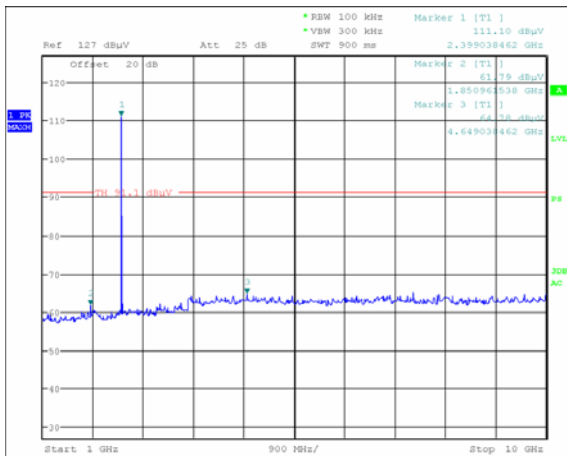
Pi/4dDQPSK 2480MHz



Bandedge @ Pi/4dDQPSK

Bandedge with hopping on @ Pi/4dDQPSK

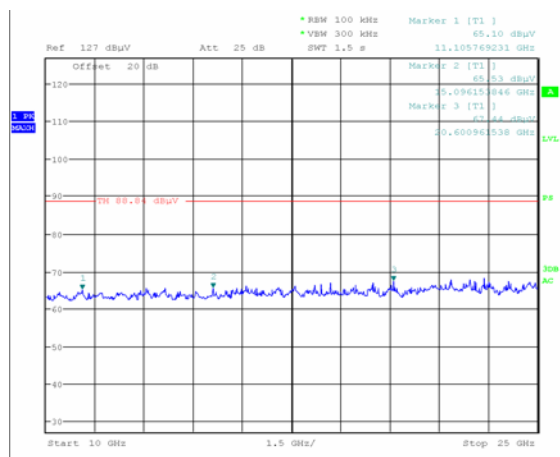
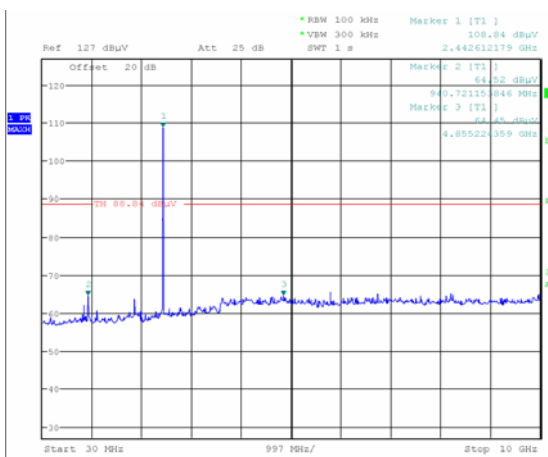
8-DQPSK 2402MHz



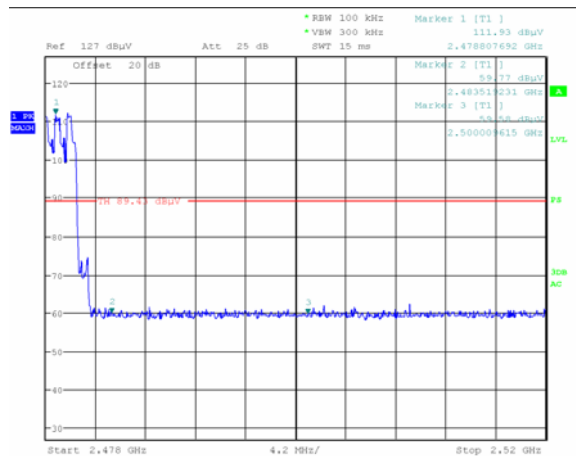
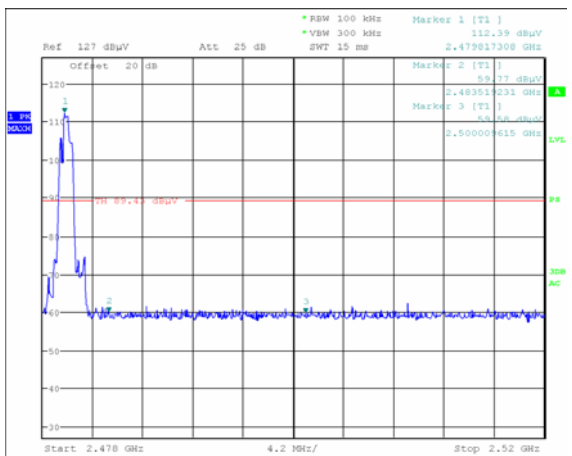
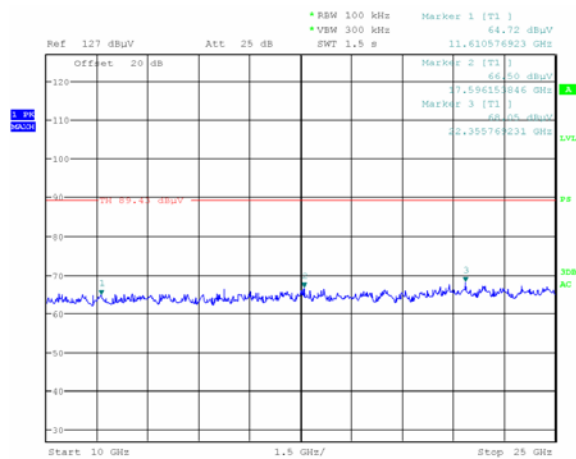
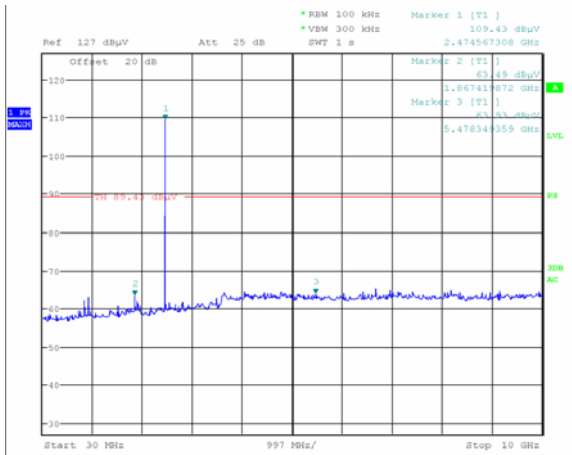
Bandedge @ 8-DQPSK

Bandedge with hopping on @ 8-DQPSK

8-DQPSK 2441MHz



8-DQPSK 2480MHz



Bandedge @ 8-DQPSK

Bandedge with hopping on @ 8-DQPSK

6. 20DB OCCUPY BANDWIDTH

6.1. Limits

According to FCC Section 15.247(a)(1), the 20dB bandtidth is known as the 99% emission bandwidth, or 20dB bandwidth($10 \cdot \log 1\% = 20\text{dB}$)taking the RF output power

6.2. Test setup

1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum, During the measurement, the Bluetooth module of the EUT is activated and controlled by the software, and is set to operate under test mode transmitting 339 bytes DH5 packages at maximum power.

2. Set the spectrum analyzer:

Span: approximately 2 to 3 times the 20dB bandwidth, centered on a hopping channel

RBW $\geq 1\%$ of the 20dB bandwidth

VBW \geq RBW

Sweep=auto

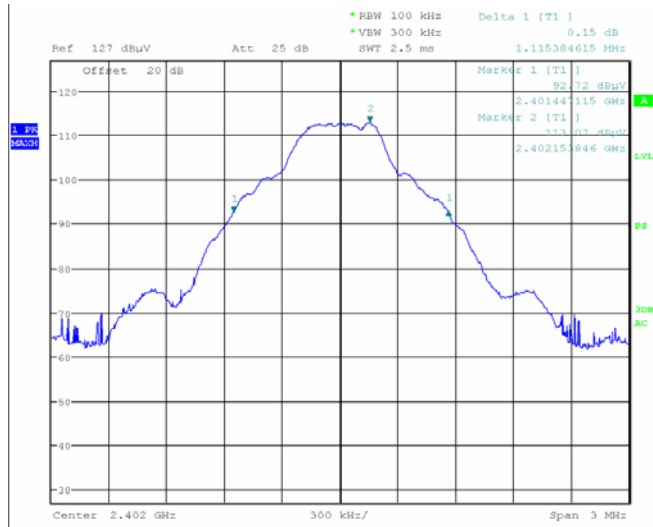
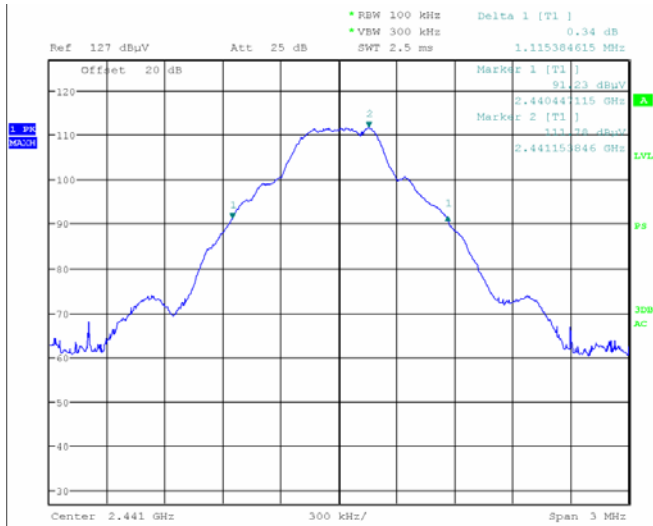
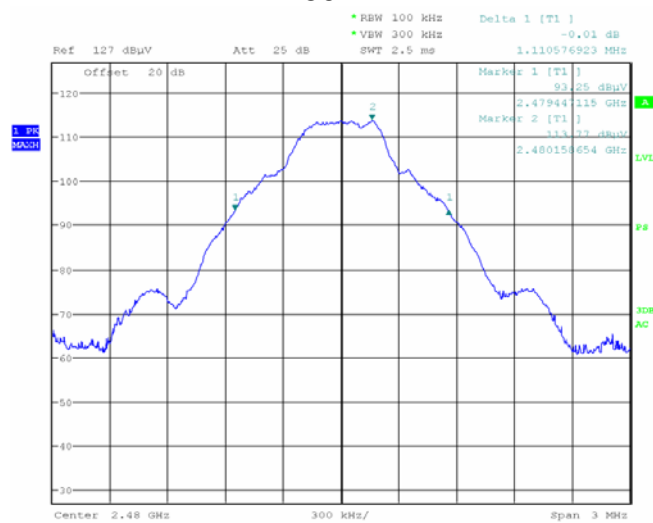
Detector function=peak

Trace=max hold

Test data:

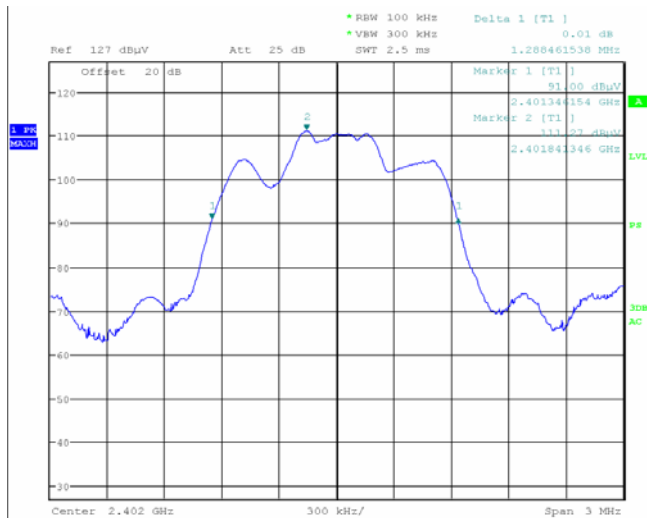
	Channel Frequency (MHz)	20dB Bandwidth (MHz)
GFSK	2402	1.115
	2441	1.115
	2480	1.111
Pi/4DQPSK	2402	1.293
	2441	1.274
	2480	1.288
8-QPSK	2402	1.269
	2441	1.284
	2480	1.279

Test plot as follows:

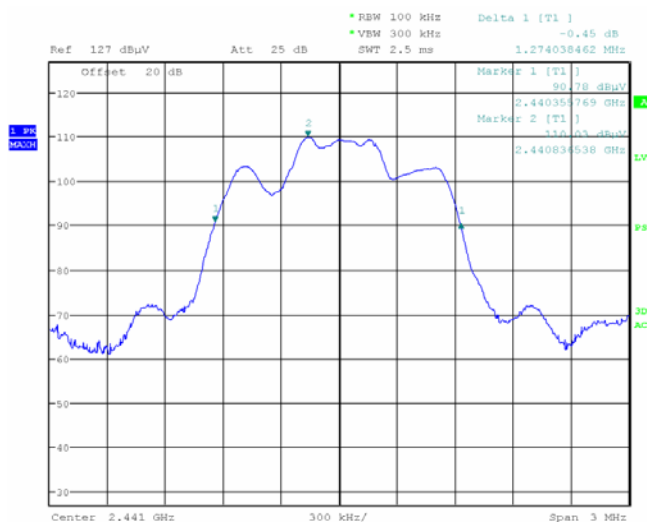
GFSK**2402MHz****2441 MHz****2480 MHz**

Pi/4DQPSK

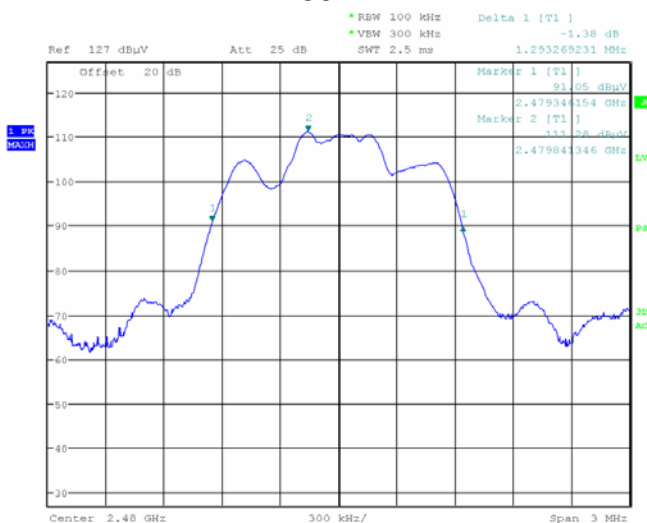
2402 MHz



2441 MHz

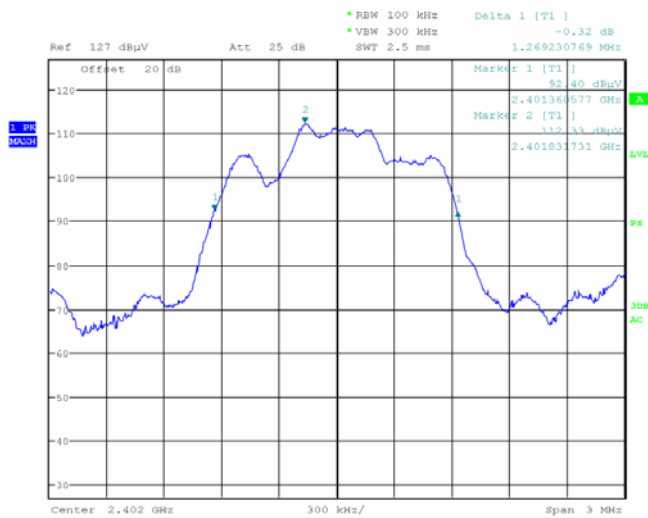


2480 MHz

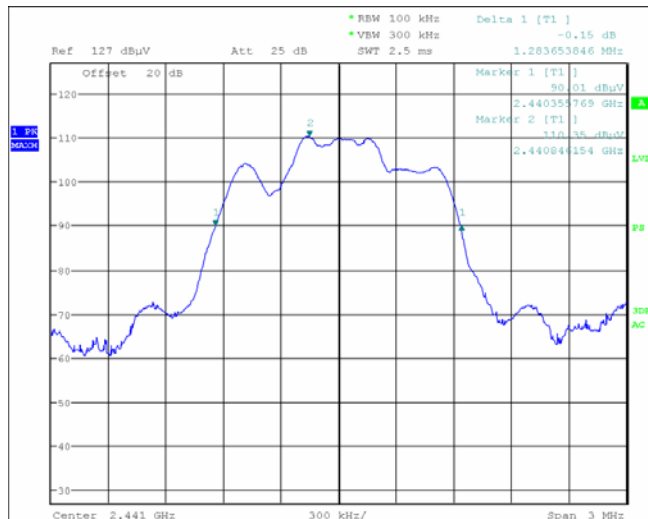


8-QPSK

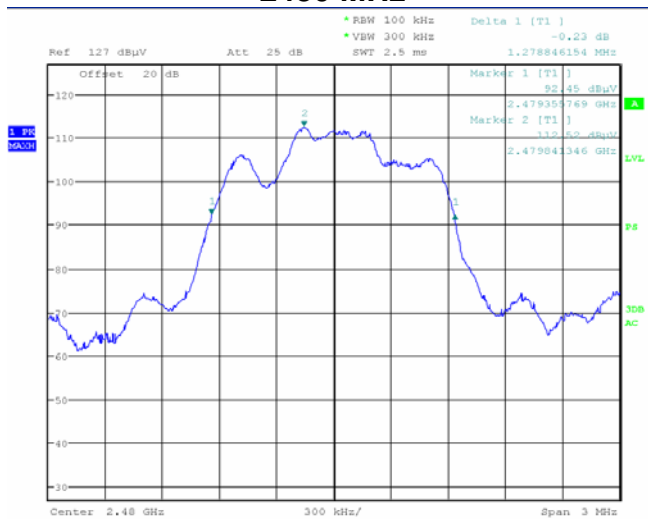
2402 MHz



2441 MHz



2480 MHz



7. FREQUENCY SEPARATION

7.1. Limits

According to FCC Section 15.247(a)(1), Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater.

7.2. Test setup

1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum, During the measurement, the Bluetooth module of the EUT is activated and controlled by the software, and is set to operate under test mode transmitting 339 bytes DH5 packages at maximum power.

2. Set the spectrum analyzer:

Span: wide enough to capture the peaks of two adjacent channels

RBW \geq 1% of the span

VBW \geq RBW

Sweep=auto

Detector function=peak

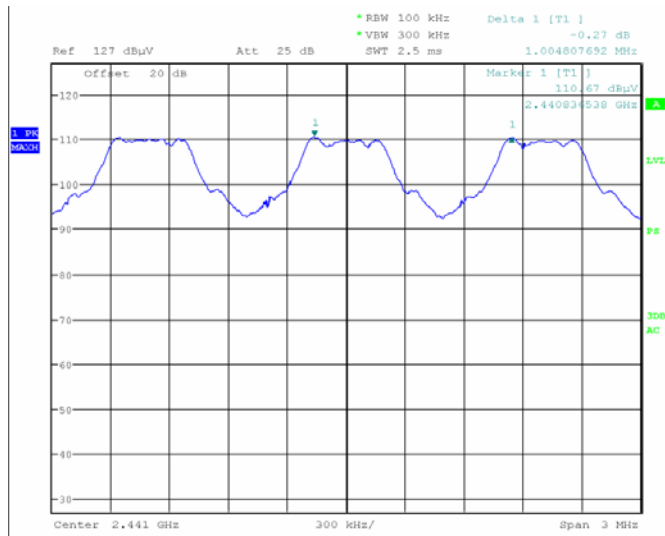
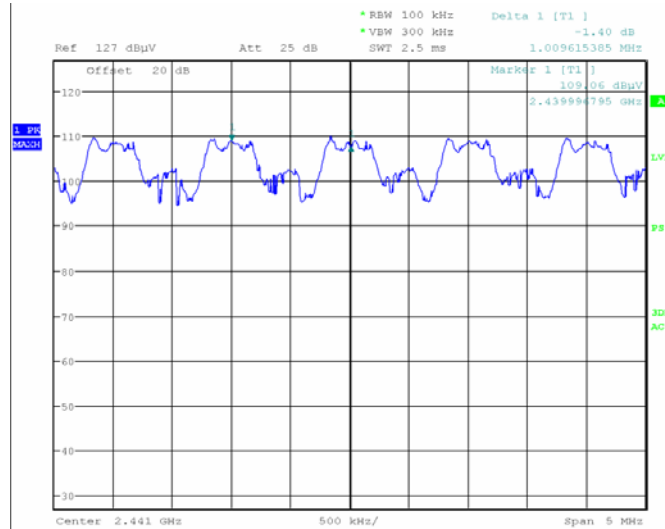
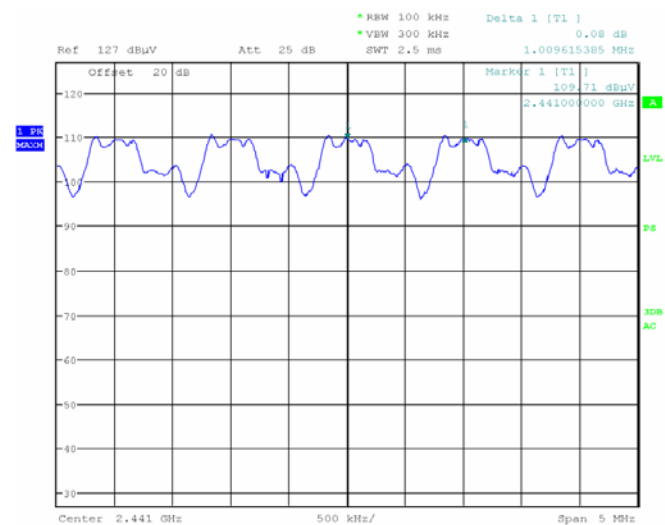
Trace=max hold

Test data:

	Separation (MHz)	Result
GFSK	1.005	PASS
Pi/4DQPSK	1.010	PASS
8-QPSK	1.010	PASS

Note: we pretest low, middle, high channel. The middle channel's data record in the report.

Test plot as follows:

GFSK**Pi/4DQPSK****8-QPSK**

8. MAXIMUM PEAK OUTPUT POWER

8.1. Limits

According to FCC Section 15.247(b)(1), For frequency hopping systems operating in the 2400–2483.5 MHz band employing at least 75 non-overlapping hopping channels, and all frequency hopping systems in the 5725–5850 MHz band: 1 watt. for all other frequency hopping systems in the 2400–2483.5 MHz band: 0.125 watts.

8.2. Test setup

1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the power meter, during the measurement, the Bluetooth module of the EUT is activated and controlled by the software, and is set to operate under test mode transmitting 339 bytes DH5 packages at maximum power.

Test data:

	Channel Frequency (MHz)	Peak output Power		Limit (dBm)		Result
		dBm	W	dBm	W	
GFSK	2402	3.03	0.002009	20.97	0.125	Pass
	2441	2.58	0.001811	20.97	0.125	Pass
	2480	2.42	0.001746	20.97	0.125	Pass
Pi/4DQPSK	2402	2.35	0.001718	20.97	0.125	Pass
	2441	2.67	0.001849	20.97	0.125	Pass
	2480	2.57	0.001758	20.97	0.125	Pass
8-QPSK	2402	2.45	0.001758	20.97	0.125	Pass
	2441	2.35	0.001718	20.97	0.125	Pass
	2480	2.27	0.001687	20.97	0.125	Pass

9. NUMBER OF HOPPING FREQUENCY

9.1. Limits

According to FCC Section 15.247(a)(1)(iii), Frequency hopping systems in the 2400–2483.5 MHz band shall use at least 15 channels.

9.2. Test setup

1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum, During the measurement, the Bluetooth module of the EUT is activated and controlled by the software, and is set to operate under test mode transmitting 339 bytes DH5 packages at maximum power.

2. Set the spectrum analyzer:

Span: the frequency band of operation

RBW \geq 1% of the span

VBW \geq RBW

Sweep=auto

Detector function=peak

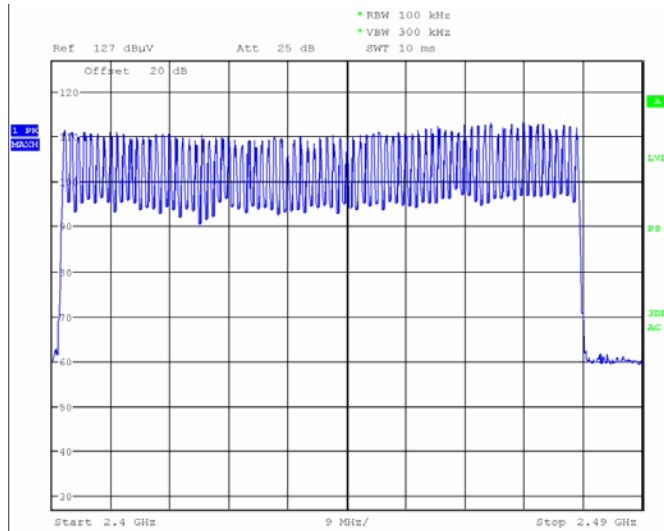
Trace=max hold

Test data:

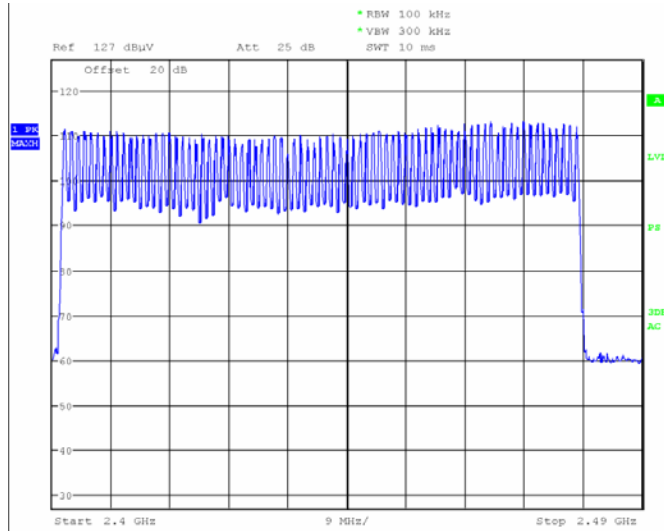
	Measured channel numbers	Limit	Result
GFSK	79	15	PASS
Pi/4DQPSK			PASS
8-QPSK			PASS

Test plot as follows:

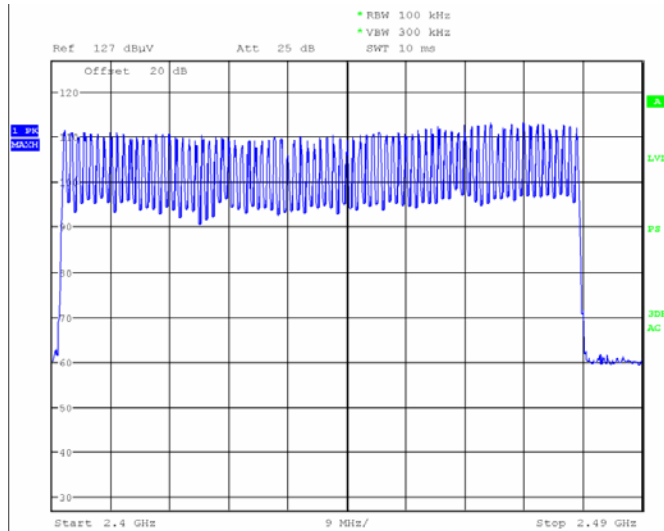
GFSK



Pi/4DQPSK



8-QPSK



10.DWELL TIME

10.1. Limits

According to FCC Section 15.247(a)(1)(iii), Frequency hopping systems in the 2400–2483.5 MHz band shall use at least 15 channels. The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed. Frequency hopping systems may avoid or suppress transmissions on a particular hopping frequency provided that a minimum of 15 channels are used.

10.2. Test setup

1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum, During the measurement, the Bluetooth module of the EUT is activated and controlled by the software, and is set to operate under test mode transmitting 339 bytes DH5 packages at maximum power.

2. Set the spectrum analyzer:

Span= 0Hz

RBW =100 kHz

VBW = 300 kHz

Sweep=auto

Detector function=peak

Test data:

Dwell time = Pulse wide x (Hopping rate / Number of channels) x Period

The test period: $T = 0.4(s) * 79 = 31.6 (s)$

DH5 Packet permit maximum $1600 / 79 / 6$ hops per second in each channel (5 time slots RX, 1 time slot TX).

DH3 Packet permit maximum $1600 / 79 / 4$ hops per second in each channel (3 time slots RX, 1 time slot TX).

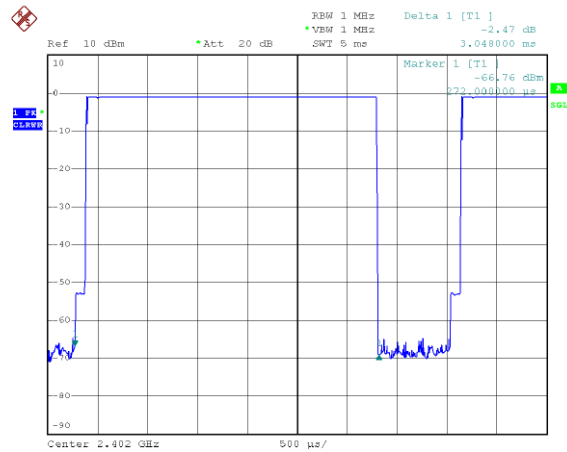
DH1 Packet permit maximum $1600 / 79 / 2$ hops per second in each channel (1 time slot RX, 1 time slot TX). So, the Dwell Time can be calculated as follows:

Data Packet	Dwell Time(s)
DH5	$1600/79/6*31.6*(MkrDelta)/1000$
DH3	$1600/79/4*31.6*(MkrDelta)/1000$
DH1	$1600/79/2*31.6*(MkrDelta)/1000$

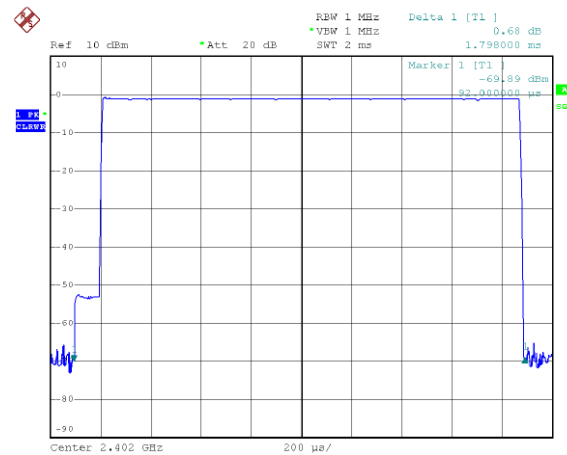
Test plot as follows:

Item	Data Packet	Mkr Delta(ms)	Dwell Time(s)	Limits(s)	Result
GFSK	DH5	3.048	0.325	0.400	PASS
	DH3	1.798	0.288	0.400	PASS
	DH1	0.530	0.170	0.400	PASS

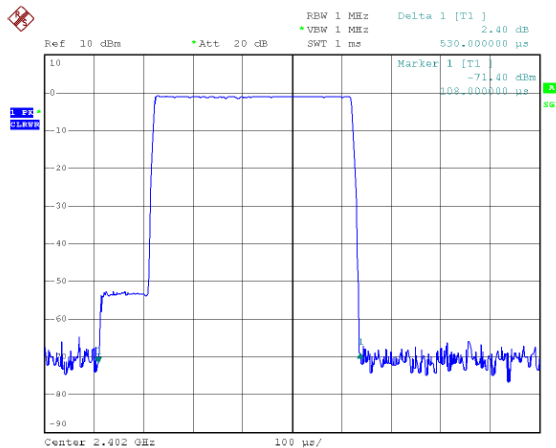
DH5



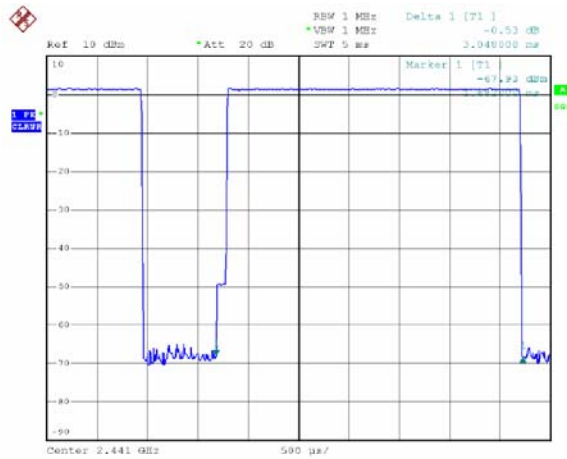
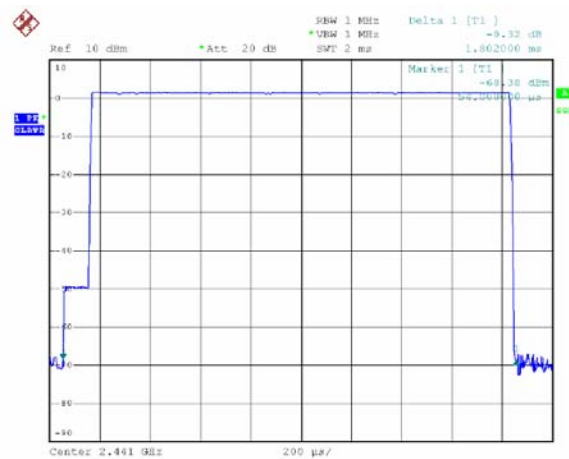
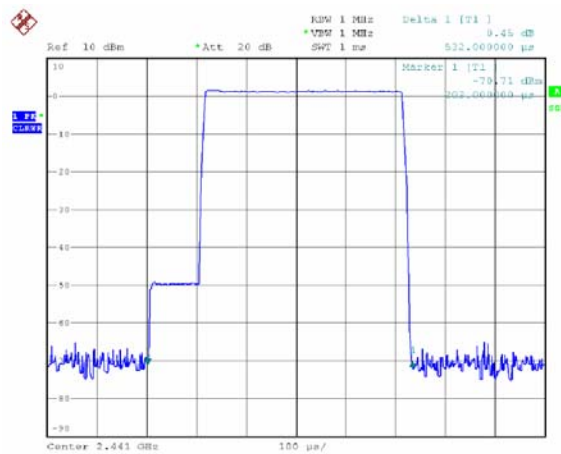
DH3



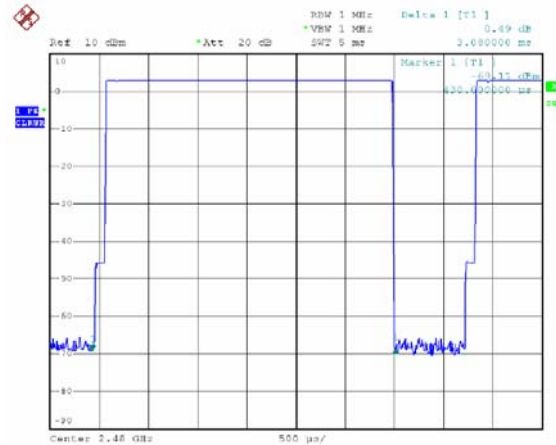
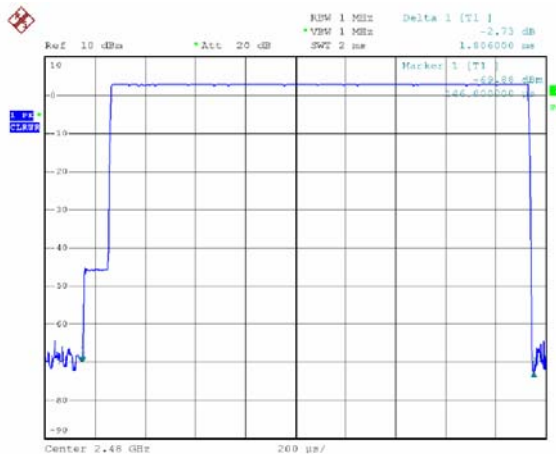
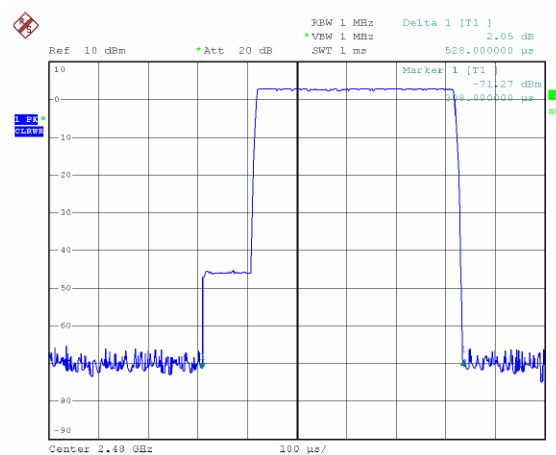
DH1



Item	Data Packet	Mkr Delta(ms)	Dwell Time(s)	Limits(s)	Result
Pi/4DQPSK	DH5	3.080	0.325	0.400	PASS
	DH3	1.802	0.288	0.400	PASS
	DH1	0.532	0.170	0.400	PASS

DH5**DH3****DH1**

Item	Data Packet	Mkr Delta(ms)	Dwell Time(s)	Limits(s)	Result
8-QPSK	DH5	3.080	0.329	0.400	PASS
	DH3	1.806	0.289	0.400	PASS
	DH1	0.528	0.169	0.400	PASS

DH5**DH3****DH1**

11. BAND EDGE COMPLIANCE TEST

11.1. Limits

According to FCC Section 15.247(d), In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement

11.2. Test setup

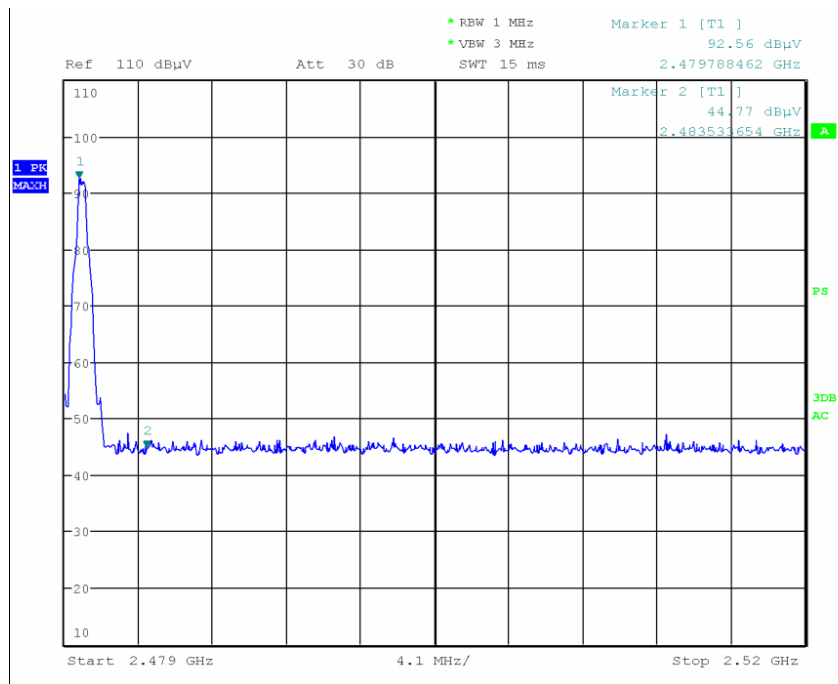
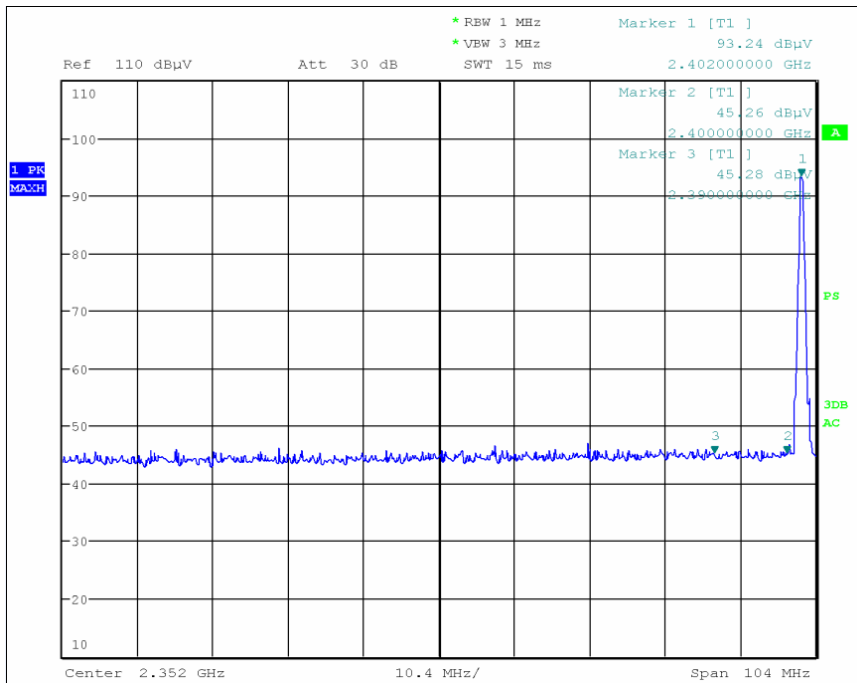
1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum.
2. Set to span from the lowest frequency generated in the device up to and including the tenth harmonic of the highest fundamental frequency

The bandwidth of the Spectrum's VBW is set at 3MHz and RBW is set at 1MHz for peak emissions measurement above 1GHz and 1MHz RBW, 10Hz VBW for average emissions measure.

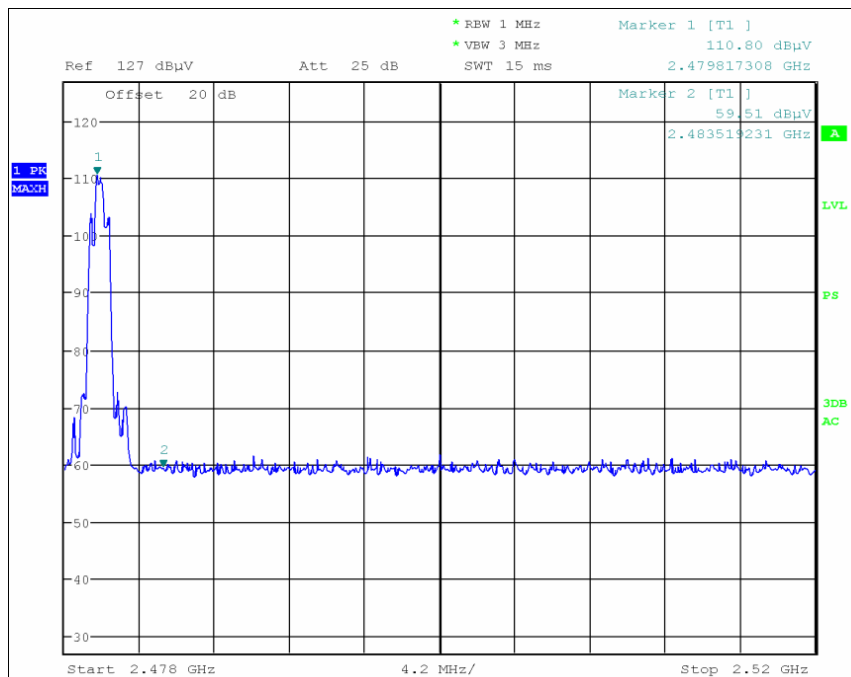
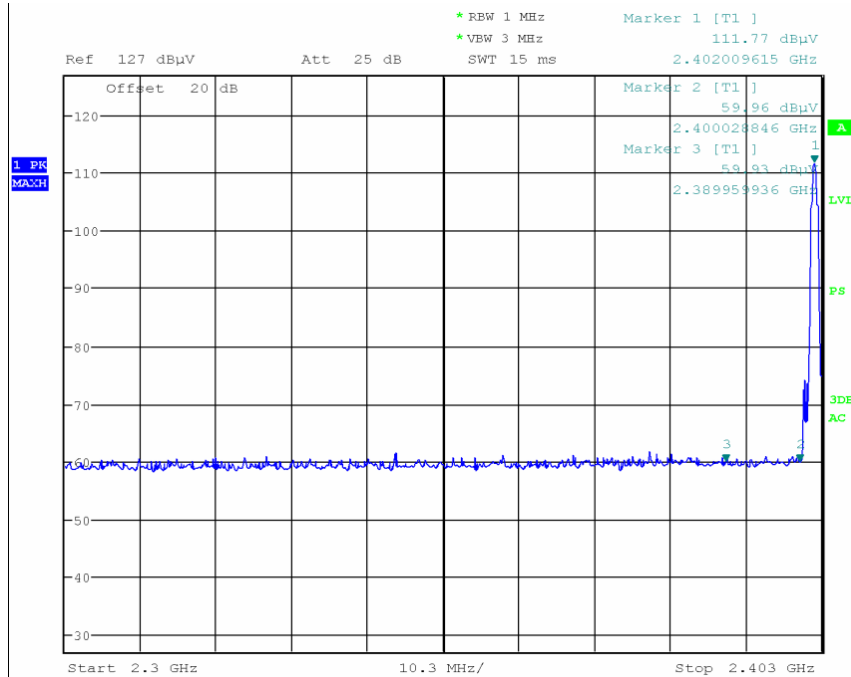
Note: If the PK measured levels comply with average limit, then the average level were deemed to comply with average limit.

Test plot as follows:

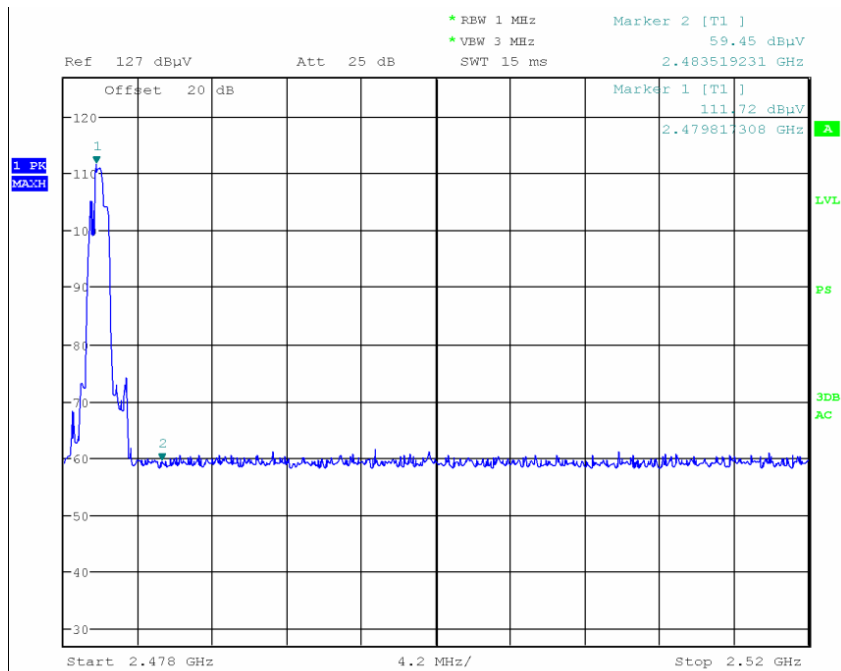
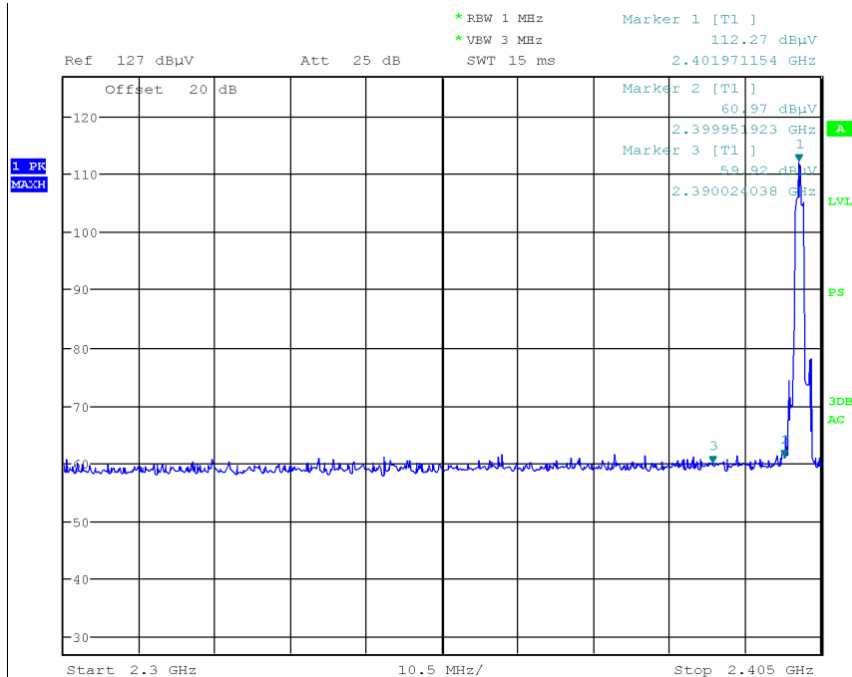
GFSK



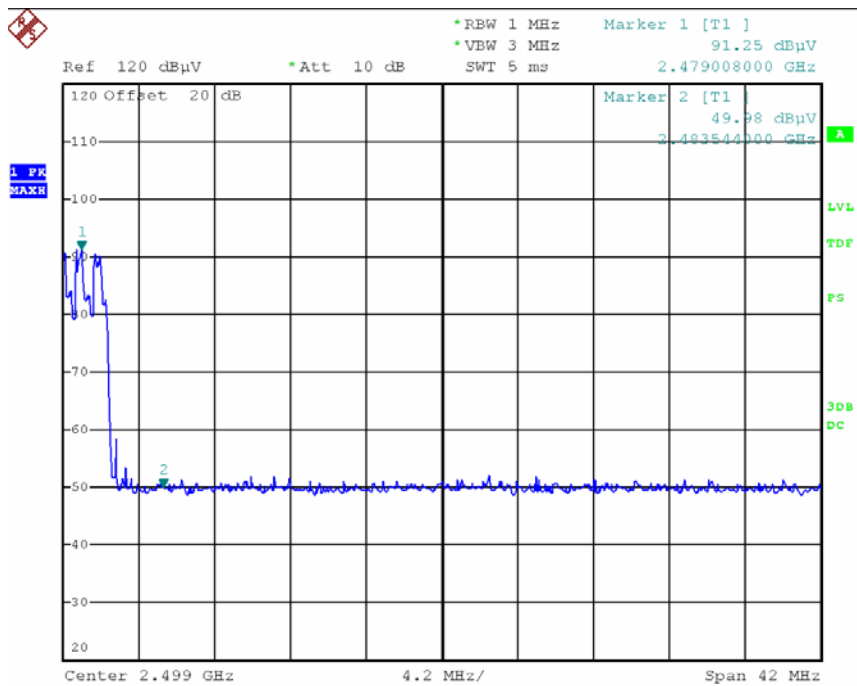
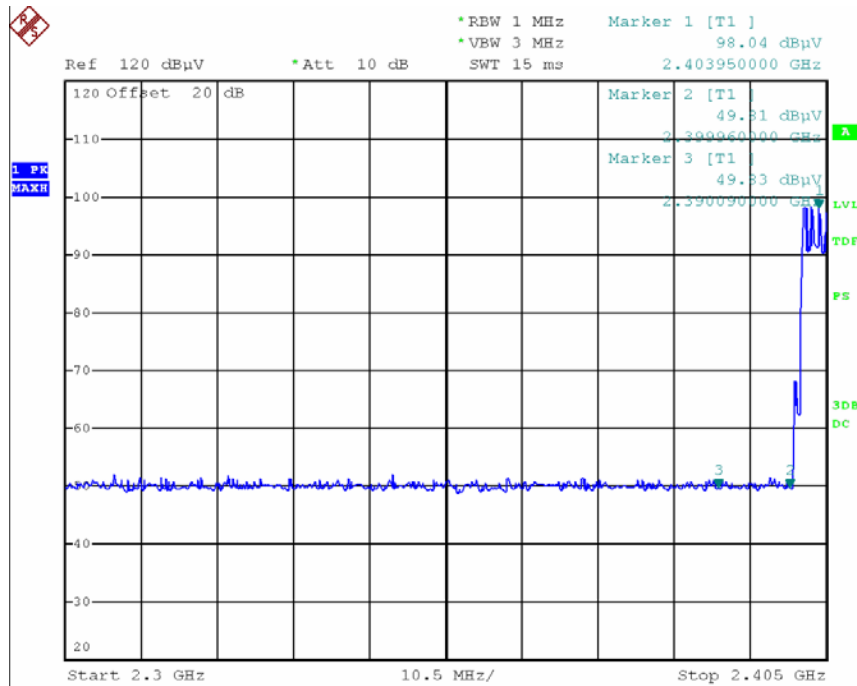
Pi/4DQPSK



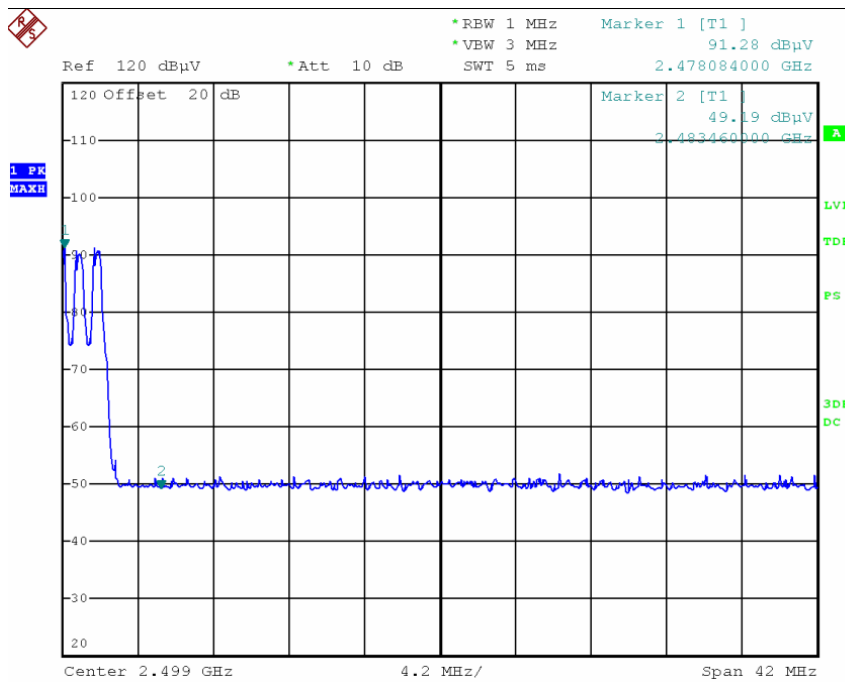
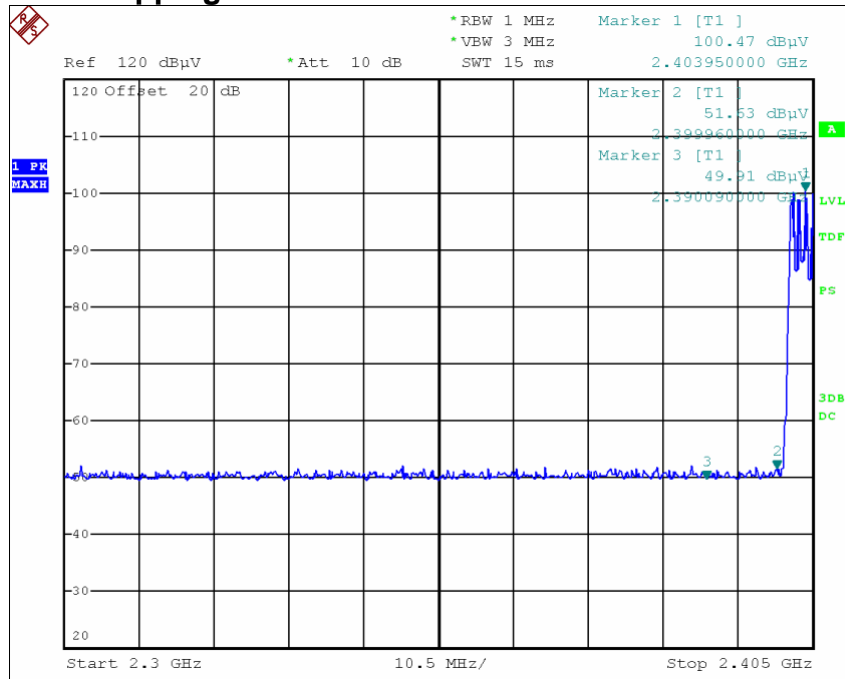
8-QPSK



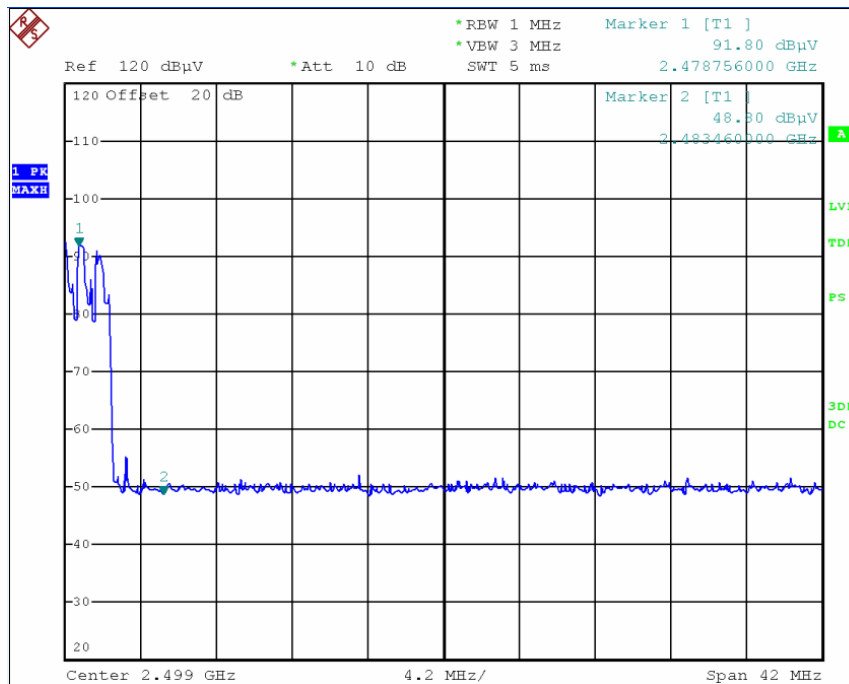
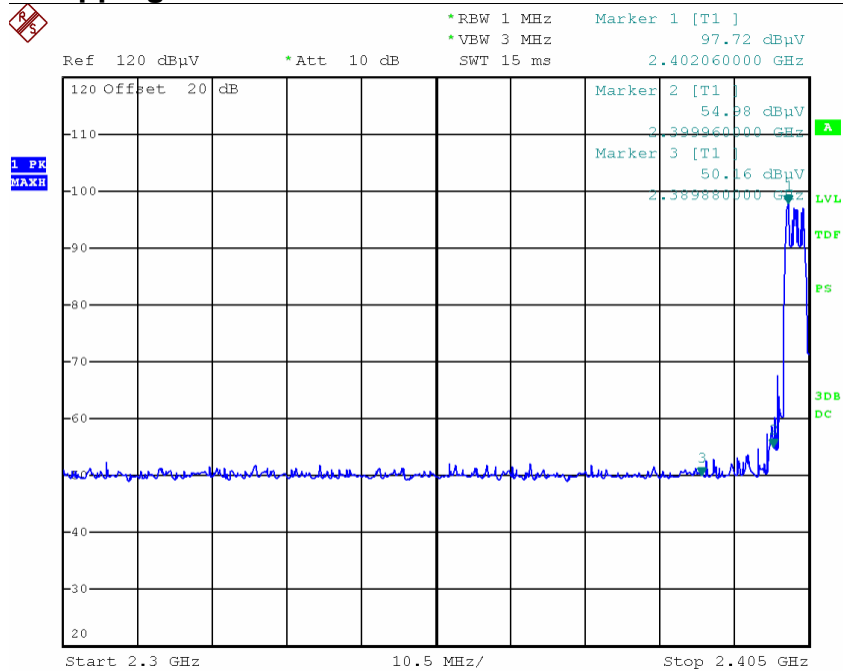
GFSK Hopping



Pi/4DQPSK Hopping



8-QPSK Hopping



12. ANTENNA REQUIREMENTS

12.1.Limits

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

12.2. Result

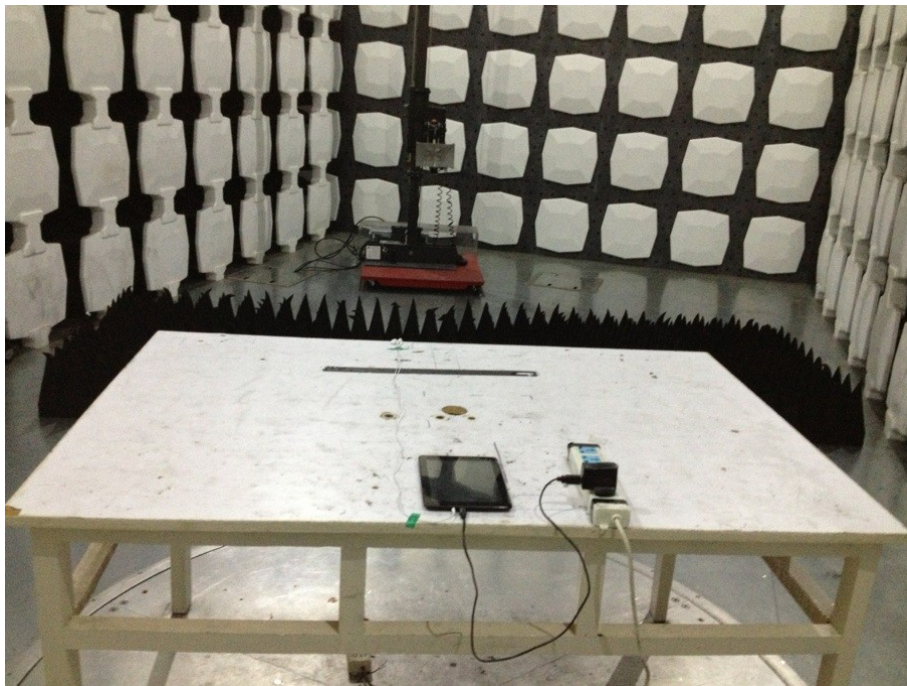
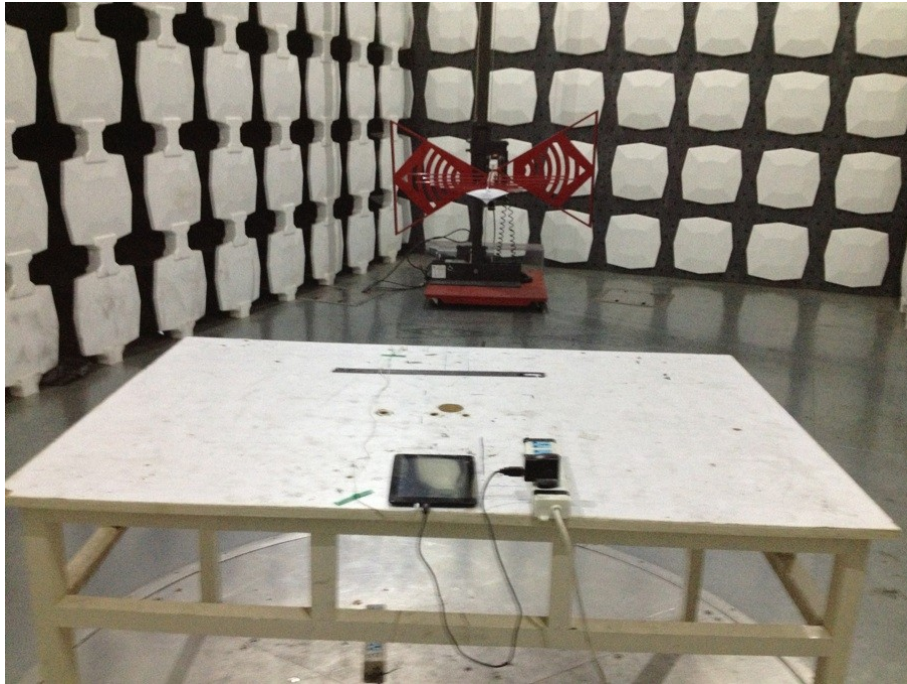
The antennas used for this product are integral Patch Antenna and that no antenna other than that furnished by the responsible party shall be used with the device, the maximum peak gain of the transmit antenna is only 3.4 dBi.

13. PHOTOGRAPHS OF TEST SET-UP

13.1. Set-up for Conducted Emission Test



13.2. Set-up for Radiated Emission Test



14. PHOTOGRAPHS OF THE EUT

Figure 1
General Appearance of the EUT

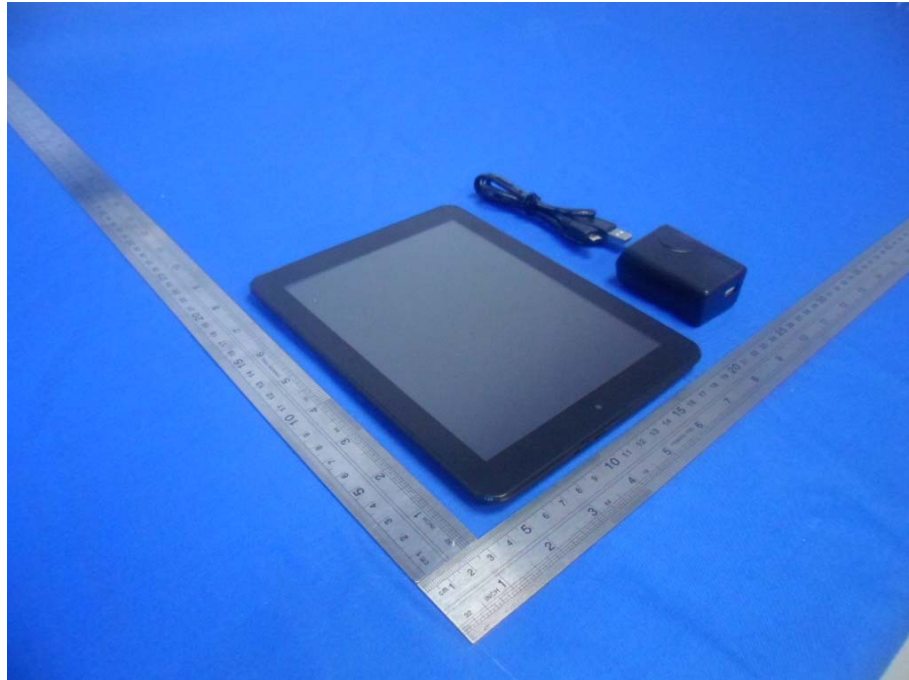


Figure 2
General Appearance of the EUT



Figure 3
General Appearance of the EUT



Figure 4
General Appearance of the EUT



Figure 5
General Appearance of the Adapter



Figure 6
General Appearance of the PCB



Figure 7
General Appearance of the PCB

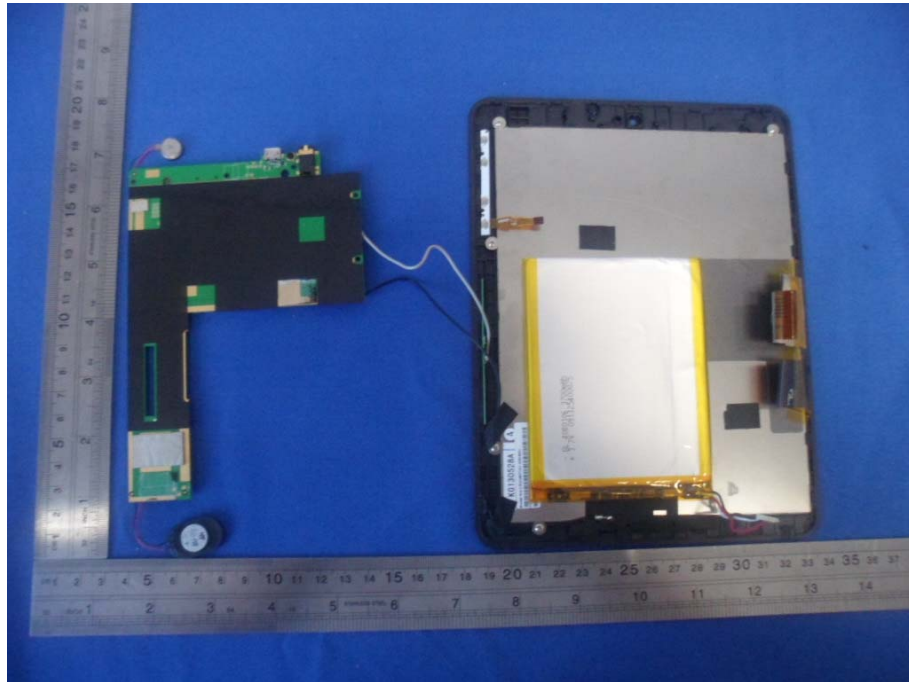


Figure 8
General Appearance of the PCB



Figure 9
General Appearance of the PCB



END.