



FCC Test Report

Part 15 subpart C

Client Information:

Applicant: Home-Tech Union Manufactory Limited
Applicant add.: No.9, Bangsheng 3rd Road, Xinya Street, Huadu, Guangzhou, Guangdong, China

Product Information:

Product Name: Rechargeable party speaker
TQ-FW883, TQ-FW881, TQ-FW882, MCP-75, MCP-70, MCP-212, MCP-50, MCP-100, SP-10RBT, AWP6406, AWP6407, AKJ7809-P, AKJ780E-P, KUBE-60, BOOSTKUBE-WH, BOOSTKUBE-BK, BT9300, PA-905U, HT-X034, HT-103D, HT-105D, HT-108D, HT-601S, HT-603, HT-605, HT-M6, HT-M8, HT-Q1, HT-Q2, HT-872, HT-N88, HT-812, HT-602, HT-601, HT-Q8, HT-Q10, HT-Q12, HT-N91S, HT-N93
Model No.:
Brand Name: H&A; PURE ACOUSTICS; Audio 2000's; ibiza sound; BooST; Dolphin; TECHMAN; LENOXX; DIXON; HOME-TECH
FCC ID: 2ALAKTQ-FW883

Standards: CFR 47 FCC PART 15 SUBPART C:2017 section 15.247

Prepared By:

UL Verification Services (Guangzhou) Co., Ltd, Song Shan Lake Branch

Add. : Room 101, Building 10, Innovation Technology Park, Song Shan Lake Hi tech Development Zone, Dongguan, 523808, China

Date of Receipt: Oct. 13, 2017 Date of Test: Oct. 14, 2017~ Oct. 22, 2017

Date of Issue: Oct. 23, 2017 Test Result: Pass

This device described above has been tested by STS, and the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.

This report shall not be reproduced except in full, without the written approval of UL Verification Services (Guangzhou) Co., Ltd, Song Shan Lake Branch.

Test by:

Reviewed by:

Approved by:



1 Contents

	Page
COVER PAGE	
1 CONTENTS.....	2
2 TEST SUMMARY.....	4
2.1 COMPLIANCE WITH FCC PART 15 SUBPART C	4
2.2 TEST LOCATION	4
2.3 MEASUREMENT UNCERTAINTY	5
3 TEST FACILITY	6
3.1 DEVIATION FROM STANDARD	6
3.2 ABNORMALITIES FROM STANDARD CONDITIONS	6
4 GENERAL INFORMATION	7
4.1 GENERAL DESCRIPTION OF EUT	7
4.2 DESCRIPTION OF TEST CONDITIONS	10
4.3 TEST PERIPHERAL LIST	11
4.4 EUT PERIPHERAL LIST	11
5 EQUIPMENTS LIST FOR ALL TEST ITEMS.....	12
6 TEST RESULT.....	14
6.1 ANTENNA REQUIREMENT	14
6.1.1 Standard requirement.....	14
6.1.2 EUT Antenna.....	14
6.2 CONDUCTION EMISSIONS MEASUREMENT.....	15
6.2.1 Applied procedures / Limit.....	15
6.2.2 Test procedure	15
6.2.3 Test setup.....	15
6.2.4 Test results	16
6.3 RADIATED EMISSIONS MEASUREMENT.....	18
6.3.1 Applied procedures / Limit.....	18
6.3.2 Test setup.....	19
6.3.3 Test procedure	21
6.3.4 Test Result	22
6.3.5 TEST RESULTS (Restricted Bands Requirements).....	28
6.4 BANDWIDTH TEST	30
6.4.1 Applied procedures / Limit.....	30
6.4.2 Test procedure	30
6.4.3 Deviation from standard	30
6.4.4 Test setup.....	30
6.4.5 Test results	31
6.5 CARRIER FREQUENCIES SEPARATED.....	37



6.5.1	Applied procedures / Limit.....	37
6.5.2	Test procedure	37
6.5.3	Deviation from standard	37
6.5.4	Test setup.....	37
6.5.5	Test results.....	38
6.6	HOPPING CHANNEL NUMBER	42
6.6.1	Applied procedures / Limit.....	42
6.6.2	Test procedure	42
6.6.3	Deviation from standard	42
6.6.4	Test setup.....	42
6.6.5	Test result.....	43
6.7	DWELL TIME	45
6.7.1	Applied procedures / Limit.....	45
6.7.2	Test procedure	45
6.7.3	Deviation from standard	45
6.7.4	Test setup.....	45
6.7.5	Test result.....	46
6.8	MAXIMUM PEAK OUTPUT POWER	52
6.8.1	Applied procedures / Limit.....	52
6.8.2	Test procedure	52
6.8.3	Deviation from standard	52
6.8.4	Test setup.....	52
6.8.5	Test results	53
6.9	BAND EDGE.....	59
6.9.1	Applied procedures / Limit.....	59
6.9.2	Test procedure	59
6.9.3	Deviation from standard	59
6.9.4	Test setup.....	59
6.9.5	Test results	60
6.10	CONDUCTED SPURIOUS EMISSIONS	64
6.10.1	Applied procedures / Limit.....	64
6.10.2	Test procedure	64
6.10.3	Deviation from standard	64
6.10.4	Test setup.....	64
6.10.5	Test results	65
7	PHOTOGRAPHS	77
7.1	RADIATED EMISSION TEST SETUP	77
7.2	CONDUCTED EMISSIONS TEST SETUP	78
7.3	EUT CONSTRUCTIONAL DETAILS	79



2 Test Summary

2.1 Compliance with FCC Part 15 subpart C

Test	Test Requirement	Standard Paragraph	Result
Antenna Requirement	FCC Part 15 C:2017	Section 15.247(c)	PASS
Conduction Emissions	FCC Part 15 C:2017	Section 15.207(a)	PASS
Radiated Emissions	FCC Part 15 C:2017	Section 15.247(d)	PASS
Carrier Frequencies Separated	FCC Part 15 C:2017	Section 15.247(a)(1)	PASS
Hopping Channel Number	FCC Part 15 C:2017	Section 15.247(a)(1) (iii)	PASS
Dwell Time	FCC Part 15 C:2017	Section 15.247(a)(1) (iii)	PASS
Maximum Peak Output Power	FCC Part 15 C:2017	Section 15.247(b)	PASS
Band edge	FCC Part 15 C:2017	Section 15.247(d)	PASS
Conducted Spurious Emissions	FCC Part 15 C:2017	Section 15.247(d)	PASS
Note:			
	(1)Reference to the ANSI C63.10:2013.		

2.2 Test Location

All tests were performed at:

Shenzhen STS Test Services Co., Ltd.
1/F., Building B, Zhuoke Science Park, No.190, Chongqing Road,
Fuyong Street, Bao'an District, Shenzhen, Guangdong, China



2.3 Measurement Uncertainty

All measurements involve certain levels of uncertainties, the maximum value of the uncertainty as below:

No.	Item	Uncertainty
1	Conducted Emission Test	±2.67dB
2	Radiated Emission Test	±3.02dB
3	RF power,conducted	±0.71dB
4	RF power density,conducted	±1.57dB
5	Spurious emissions,conducted	±0.63dB
6	All emissions,radiated(<1G)	±3.97dB
7	All emissions,radiated(>1G)	±3.03dB



3 Test Facility

The test facility is recognized, certified or accredited by the following organizations:

CNAS Registration No.: L7649; FCC Registration No.: 625569

IC Registration No.: 12108A; A2LA Certificate No.: 4338.01

3.1 Deviation from standard

None

3.2 Abnormalities from standard conditions

None



4 General Information

4.1 General Description of EUT

Manufacturer:	Home-Tech Union Manufactory Limited
Manufacturer Address:	No.9, Bangsheng 3rd Road, Xinya Street, Huadu, Guangzhou, Guangdong, China
EUT Name:	Rechargeable party speaker
Model No:	TQ-FW883
Derivative model No. :	TQ-FW881, TQ-FW882,MCP-75,MCP-70, MCP-212, MCP-50, MCP-100, SP-10RBT, AWP6406, AWP6407, AKJ7809-P, AKJ780E-P, KUBE-60, BOOSTKUBE-WH, BOOSTKUBE-BK, BT9300,PA-905U, HT-X034, HT-103D, HT-105D, HT-108D, HT-601S, HT-603, HT-605, HT-M6, HT-M8, HT-Q1, HT-Q2, HT-872, HT-N88, HT-812, HT-602, HT-601, HT-Q8, HT-Q10, HT-Q12, HT-N91S, HT-N93
Brand Name:	H&A; PURE ACOUSTICS; Audio 2000's; ibiza sound; BooST; Dolphin; TECHMAN; LENOXX; DIXON; HOME-TECH
Operation frequency:	2402 MHz to 2480 MHz
NUMBER OF CHANNEL:	79
Modulation Technology:	GFSK, $\pi/4$ -DQPSK, 8DPSK(1/2/3Mbps)
Bluetooth version:	BT 2.1+EDR
H/W No.:	DY-004 V3
S/W No.:	4.2.10
Antenna Type:	PCB antenna
Antenna Gain:	Maximum -0.68 dBi
Power Supply Range:	Adaptor Input: 100-240Vac, 50/60Hz 0.5A; Output:DC9V, 1.33A or DC 7.4 V from battery
Power Supply:	AC 120V/60Hz
Power Cord:	1.0 m x 2 wires unscreened DC cable
Output power (max) :	1Mbps:0.03dBm
	2Mbps:-1.45dBm
	3Mbps:-1.30dBm



Note:	
	<p>1. For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.</p>
	<p>2. According to the confirmation from the applicant, since the electrical circuit design, layout, components used and internal wiring were identical for the all models, with only the shell size of different. Therefore only one model TQ-FW883 was tested in this report.</p>



Description of Channel:					
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
00	2402	27	2429	54	2456
01	2403	28	2430	55	2457
02	2404	29	2431	56	2458
03	2405	30	2432	57	2459
04	2406	31	2433	58	2460
05	2407	32	2434	59	2461
06	2408	33	2435	60	2462
07	2409	34	2436	61	2463
08	2410	35	2437	62	2464
09	2411	36	2438	63	2465
10	2412	37	2439	64	2466
11	2413	38	2440	65	2467
12	2414	39	2441	66	2468
13	2415	40	2442	67	2469
14	2416	41	2443	68	2470
15	2417	42	2444	69	2471
16	2418	43	2445	70	2472
17	2419	44	2446	71	2473
18	2420	45	2447	72	2474
19	2421	46	2448	73	2475
20	2422	47	2449	74	2476
21	2423	48	2450	75	2477
22	2424	49	2451	76	2478
23	2425	50	2452	77	2479
24	2426	51	2453	78	2480
25	2427	52	2454		
26	2428	53	2455		

4.2 Description of Test conditions

- (1) EUT was tested in normal configuration (Please See following Block diagram)

1. Block diagram of EUT configuration(TX Mode)



Note:

1. The EUT was programmed to be in continuously transmitting mode with fully-charged battery and the transmit duty cycle is not less than 98%.
2. Using the notebook and the transform board to control the fixed transmitting frequency and other test mode. After finishing the test setting, the notebook and the transform board will be removed during measurements.

- (2) E.U.T. test conditions:

15.31(e): For intentional radiators, measurements of the variation of the input power or the radiated signal level of the fundamental frequency component of the emission, as appropriate, shall be performed with the supply voltage varied between 85% and 115% of the nominal rated supply voltage. For battery operated equipment, the equipment tests shall be performed using a new battery.

- (3) Test frequencies:

According to the 15.31(m) Measurements on intentional radiators or receivers, other than TV broadcast receivers, shall be performed and. If required reported for each band in which the device can be operated with the device operating at the number of frequencies in each band specified in the following table:

Frequency range over which device operates	Number of frequencies	Location in the range of operation
1 MHz or less	1	Middle
1 to 10 MHz	2	1 near top and 1 near bottom
More than 10 MHz	3	1 near top, 1 near middle and 1 near bottom

- (4) Frequency range of radiated measurements:

According to the 15.33, the test range will be up to the tenth harmonic of the highest fundamental frequency.

- (5) Pre-test the EUT in all transmitting mode at the lowest (2402 MHz), middle (2441 MHz) and highest (2480 MHz) channel with different data packet and conducted to determine the worst-case mode, only the worst-case results(1Mbps/3Mbps) are recorded in this report.



4.3 Test Peripheral List

No.	Equipment	Manufacturer	EMC Compliance	Model No.	Serial No.	Power cord	signal cable
1	Notebook	ASUS	N/A	X401A	X16-960 72	N/A	N/A
2	USB line	N/A	N/A	N/A	N/A	0.3m/unshielded /detachable	N/A
3	Transform board	N/A	N/A	N/A	N/A	N/A	N/A

4.4 EUT Peripheral List

No.	Equipment	Manufacturer	EMC Compliance	Model No.	Serial No.	Power cord	Remark
1	Switching Power Adapter	N/A	N/A	BI12T-0901 33-BdU	N/A	1.0m/unshielded /detachable(AC)	N/A



5 Equipments List for All Test Items

Radiation Test equipment

Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
EMI Test Receiver	R&S	ESW	101535	2017.06.01	2018.05.31
Bilog Antenna	TESEQ	CBL6111D	34678	2017.03.24	2018.03.23
Horn Antenna	Schwarzbeck	BBHA 9120D	9120D-1343	2017.03.06	2018.03.05
SHF-EHF Horn Antenna (15G-40GHz)	BBHA 9170	SCHWARZBECK	BBHA9170367	2017.05.02	2018.05.01
Temperature & Humidity	HH660	Mieo	N/A	2016.10.25	2017.10.24
Temperature & Humidity	HH660	Mieo	N/A	2016.10.25	2017.10.24
Pre-mplifier (0.1M-3GHz)	EM	EM330	60538	2017.03.12	2018.03.11
PreAmplifier (1G-26.5GHz)	Agilent	8449B	60538	2016.10.23	2017.10.22
Pre-mplifier (18G-40G)	MINI-CIRCUITS	AP-040G	1382501	2017.05.15	2018.05.14
Operational Manual Passive Loop (9K--30MHz)	ETS	6512	00165355	2017.03.06	2018.03.05
Radiation Cable (9K--1000MHz)	EM	R01	N/A	2017.03.12	2018.03.11
Radiation Cable (1000M--40000MHz)	EM	R02	N/A	2017.03.12	2018.03.11

Conduction Test equipment

Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
Test Receiver	R&S	ESCI	101427	2016.10.23	2017.10.22
LISN	R&S	ENV216	101242	2016.10.26	2017.10.25
conduction Cable (9K--30MHz)	EM	C01	N/A	2017.03.12	2018.03.11



RF Connected Test

Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
Spectrum Analyzer	Agilent	E4407B	MY50140340	2017.03.11	2018.03.10
EMI Test Receiver	R&S	ESW	101535	2017.06.01	2018.05.31
Temporary antenna connector	Yunye	SM-KK	N/A	N/A	N/A

Note: The temporary antenna connector is soldered on the PCB board in order to perform conducted tests and this temporary antenna connector is listed in the equipment list.



6 Test Result

6.1 Antenna Requirement

6.1.1 Standard requirement

15.203 requirement: For intentional device, according to 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.

15.247(c) (1)(i) requirement: (i) Systems operating in the 2400-2483.5 MHz band that is used exclusively for fixed. Point-to-point operations may employ transmitting antennas with directional gain greater than 6dBi provided the maximum conducted output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6dBi.

6.1.2 EUT Antenna

The antenna is layout on PCB in the EUT and no consideration of replacement. Antenna gain is Max. -0.68 dBi from 2.4GHz to 2.5GHz.

6.2 Conduction Emissions Measurement

6.2.1 Applied procedures / Limit

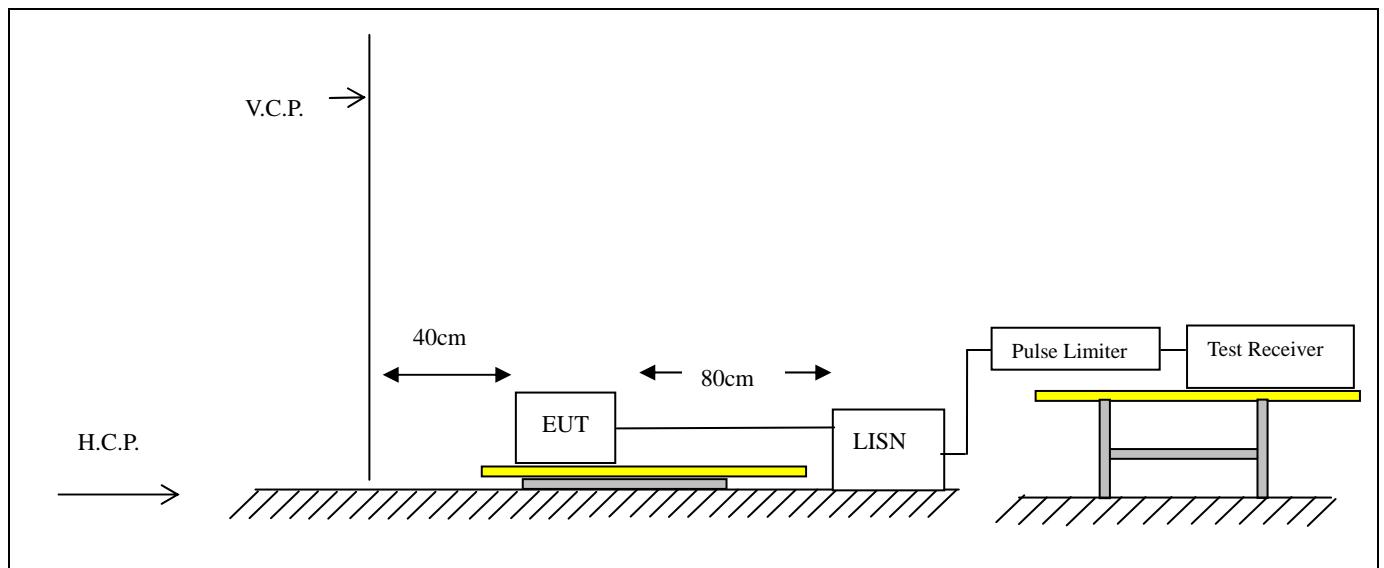
Frequency of Emission (MHz)	Conducted Limit (dB μ V)	
	Quasi-peak	Average
0.15-0.5	66 to 56 *	56 to 46 *
0.5-5	56	46
5-30	60	50

Note: Decreases with the logarithm of the frequency.

6.2.2 Test procedure

EUT was placed upon a wooden test table 0.1m above the horizontal metal reference plane and 0.4m from the vertical ground plane, and it was connected to an AMN. The closest distance between the boundary of the EUT and the surface of the AMN is 0.8m. All peripherals were connected to another AMN, and placed at a distance of 10cm from each other. A receiver was connected to the RF output port of the AMN. Both average and quasi-peak value were detected.

6.2.3 Test setup





6.2.4 Test results

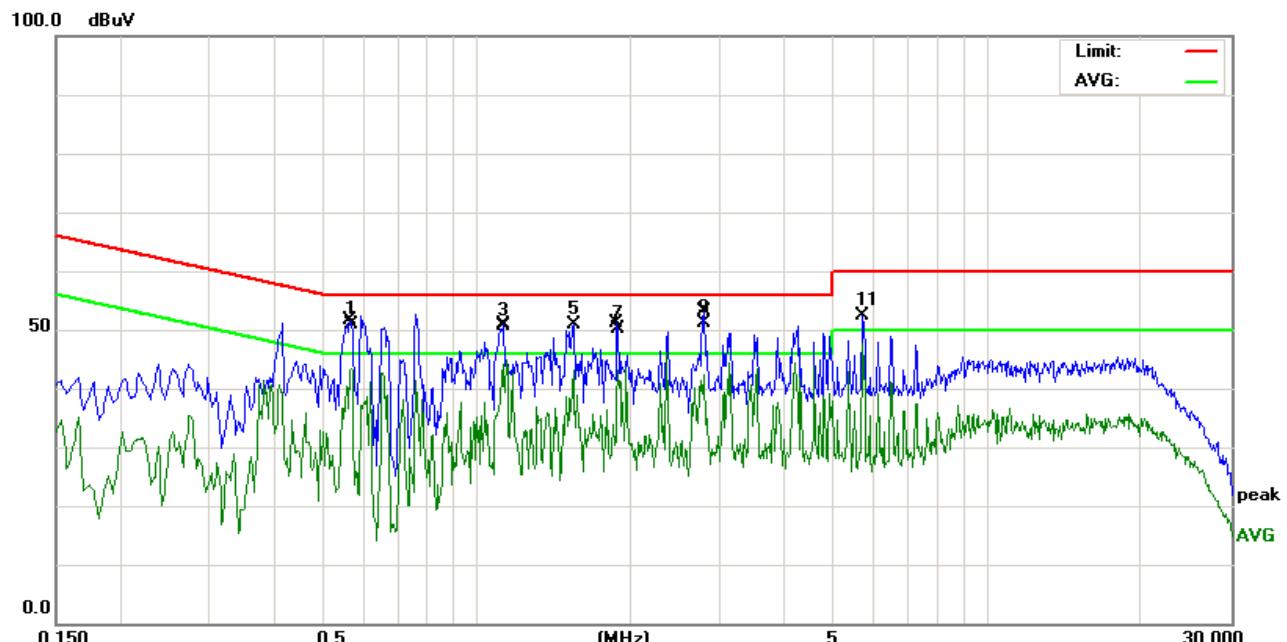
Test By: Sean she

EUT:	Rechargeable party speaker	Model Name. :	TQ-FW883
Temperature:	26 °C	Relative Humidity:	54%
Pressure:	1010hPa	Test Date :	2017-10-20
Test Mode:	TX (1Mbps) CH00 (worst case)	Phase :	Line
Test Voltage :	DC 9V from adapter, AC 120V/60Hz for adapter		

Frequency (MHz)	Reading (dBuV)	Correct Factor(dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
0.5695	41.00	10.00	51.00	56.00	-5.00	QP
0.5695	30.34	10.00	40.34	46.00	-5.66	AVG
1.1253	40.81	9.94	50.75	56.00	-5.25	QP
1.1253	31.10	9.94	41.04	46.00	-4.96	AVG
1.5500	40.93	9.97	50.90	56.00	-5.10	QP
1.5500	33.02	9.97	42.99	46.00	-3.01	AVG
1.8893	40.06	9.99	50.05	56.00	-5.95	QP
1.8893	30.22	9.99	40.21	46.00	-5.79	AVG
2.7860	41.22	10.03	51.25	56.00	-4.75	QP
2.7860	32.27	10.03	42.30	46.00	-3.70	AVG
5.7099	42.23	10.12	52.35	60.00	-7.65	QP
5.7099	35.41	10.12	45.53	50.00	-4.47	AVG

Remark:

1. Margin = Result (Result =Reading + Factor)-Limit



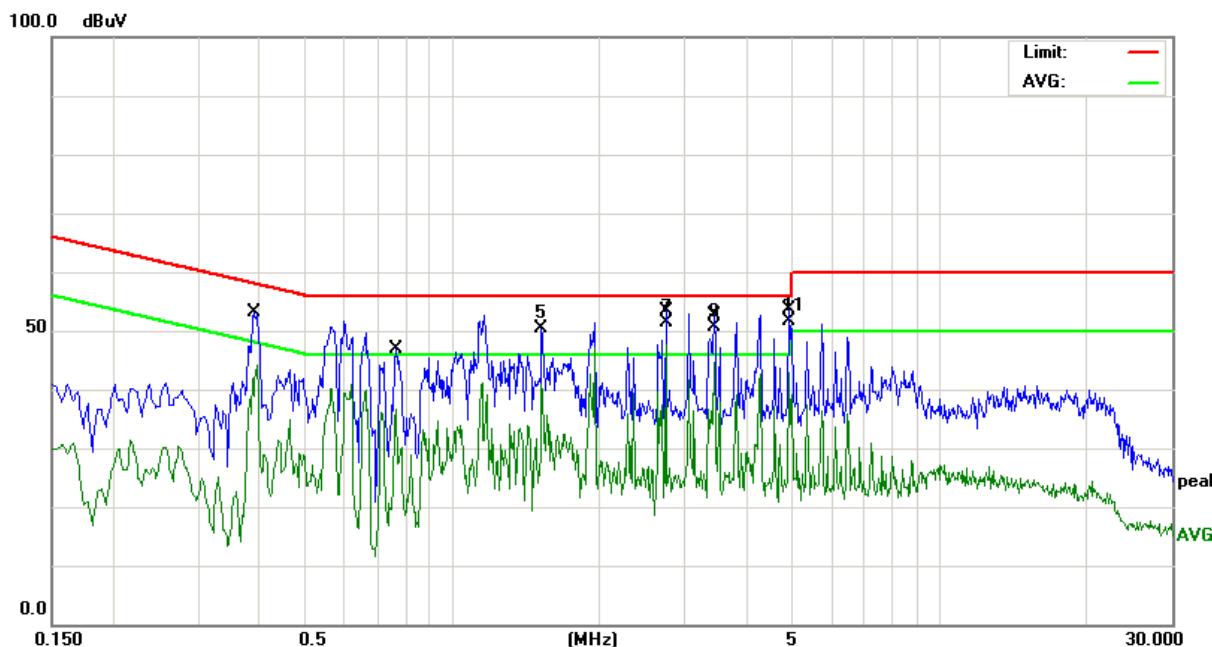


EUT:	Rechargeable party speaker	Model Name. :	TQ-FW883
Temperature:	26 °C	Relative Humidity:	54%
Pressure:	1010hPa	Test Date :	2017-10-20
Test Mode:	TX (1Mbps) CH00 (worst case)	Phase :	Neutral
Test Voltage :	DC 9V from adapter, AC 120V/60Hz for adapter		

Frequency (MHz)	Reading (dBuV)	Correct Factor(dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
0.3955	42.62	10.13	52.75	57.95	-5.20	QP
0.3955	34.02	10.13	44.15	47.95	-3.80	AVG
0.7660	36.94	9.97	46.91	56.00	-9.09	QP
0.7660	26.54	9.97	36.51	46.00	-9.49	AVG
1.5260	40.38	9.97	50.35	56.00	-5.65	QP
1.5260	30.91	9.97	40.88	46.00	-5.12	AVG
2.7458	41.39	10.03	51.42	56.00	-4.58	QP
2.7458	32.53	10.03	42.56	46.00	-3.44	AVG
3.4380	40.54	10.04	50.58	56.00	-5.42	QP
3.4380	31.63	10.04	41.67	46.00	-4.33	AVG
4.9138	41.54	10.11	51.65	56.00	-4.35	QP
4.9138	32.82	10.11	42.93	46.00	-3.07	AVG

Remark:

1. Margin = Result (Result =Reading + Factor)–Limit





6.3 Radiated Emissions Measurement

6.3.1 Applied procedures / Limit

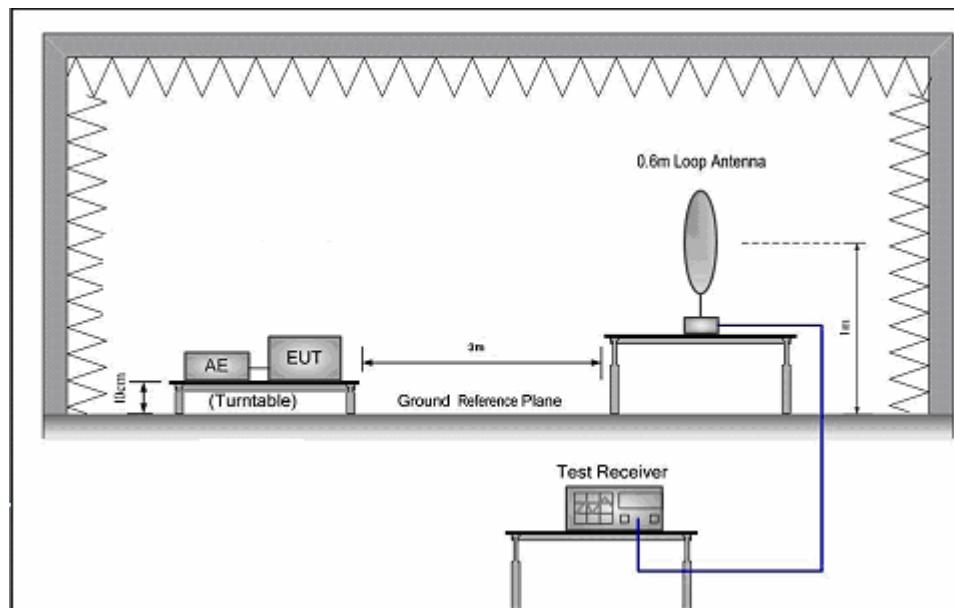
15.247(d) In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

Frequency of Emission (MHz)	Field Strength		Measurement Distance (meters)
	$\mu\text{V/m}$	$\text{dB}\mu\text{V/m}$	
0.009-0.49	2400/F(kHz)		300
0.49-1.705	24000/F(kHz)		30
1.705-30	30		30
30-88	100	40	3
88-216	150	43.5	3
216-960	200	46	3
Above 960	500	54	3

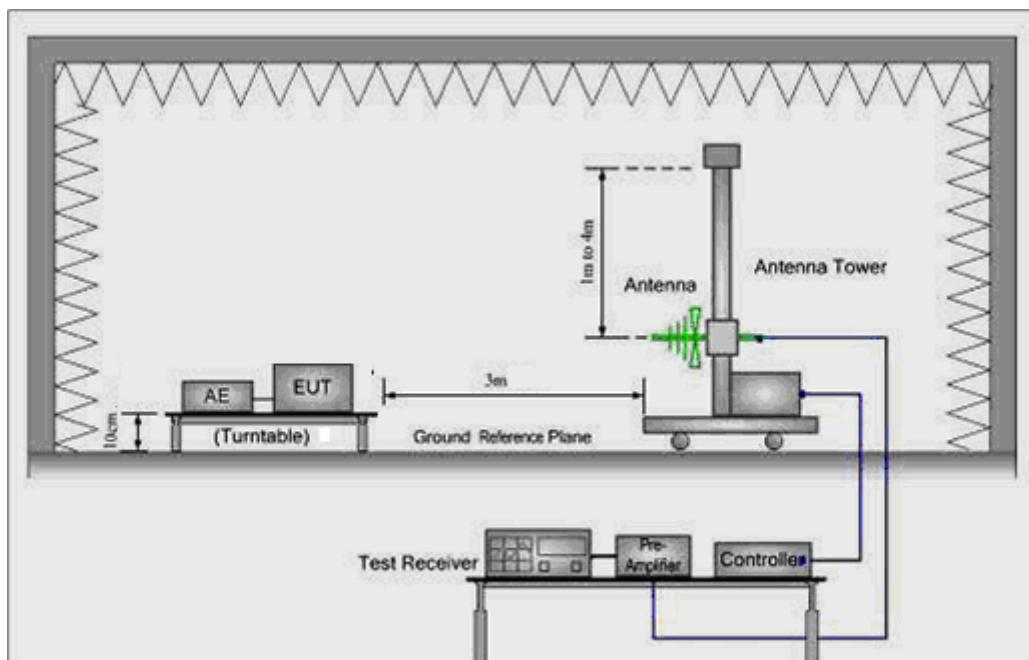
6.3.2 Test setup

Test Configuration:

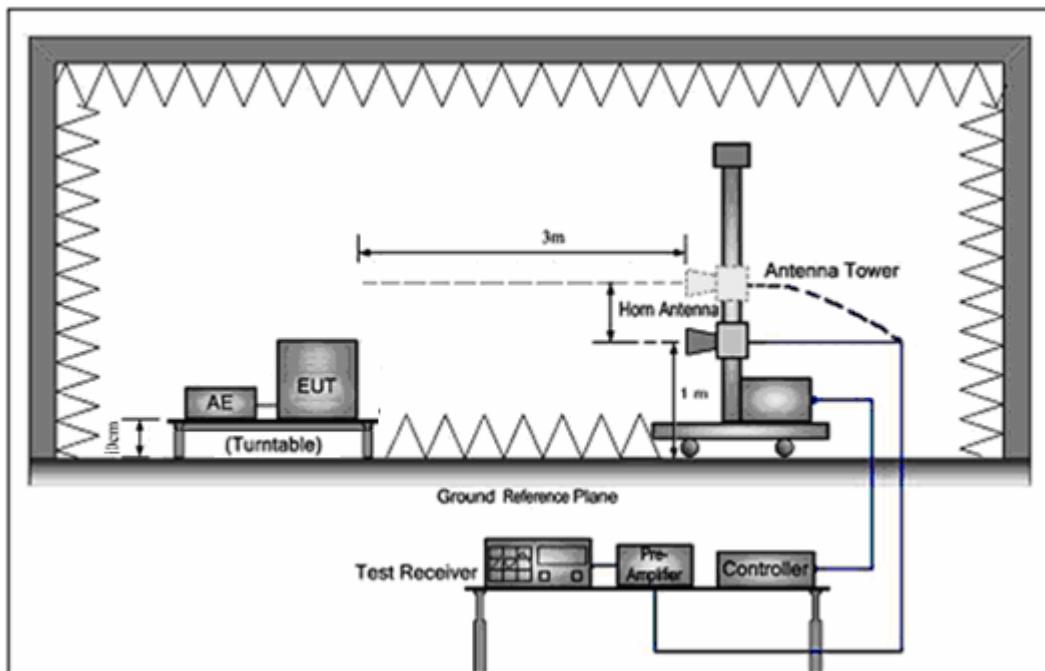
- 1) 9 kHz to 30 MHz emissions:



- 2) 30 MHz to 1 GHz emissions:



3) 1 GHz to 25 GHz emissions:





6.3.3 Test procedure

- a. The EUT was placed on the top of a wooden table 0.1 meters (for measurement at frequency below 1GHz) and a wooden table 0.1 meters (for measurement at frequency above 1GHz) above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter, for the test frequency of above 1GHz, horn antenna opening in the test would have been facing the EUT when rise or fall) and the table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet. The resolution bandwidth and video bandwidth of the test receiver was 1MHz and 1MHz for Peak detection at frequency above 1GHz.
- g. Test the EUT in the lowest channel (2402MHz), the middle channel (2441MHz), the Highest channel (2480MHz)
- h. Repeat above procedures until all frequencies measured was complete.

For measurement at frequency above 1GHz

Place the measurement antenna away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response. The measurement antenna may have to be higher or lower than the EUT, depending on the radiation pattern of the emission and staying aimed at the emission source for receiving the maximum signal. The final measurement antenna elevation shall be that which maximizes the emissions. The measurement antenna elevation for maximum emissions shall be restricted to a range of heights of from 1 m to 4 m above the ground or reference ground plane.

In 18GHz to 25GHz, The EUT was checked by Horn ANT. But the test result at least have 20dB margin. The EUT was tested in Chamber Site.



6.3.4 Test Result

Radiated Emissions Test Data Below 30MHz

Test By: Sean she

EUT:	Rechargeable party speaker	Model Name :	TQ-FW883
Temperature:	25 °C	Test Data	2017-10-20
Pressure:	1005 hPa	Relative Humidity:	60%
Test Mode :	TX	Test Voltage :	DC 7.4V from battery
Measurement Distance	3 m	Frenqucy Range	9KHz to 30MHz
RBW/VBW	9KHz~150KHz/RB 200Hz for QP, 150KHz~30MHz/RB 9KHz for QP		

Freq. (MHz)	Reading (dBuV/m)	Limit (dBuV/m)	Margin (dB)	State P/F	Test Result
--	--	--	--	--	PASS
--	--	--	--	--	PASS

Note:

The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

Distance extrapolation factor = $40 \log(\text{specific distance}/\text{test distance})$ (dB); Limit line = specific limits(dBuV) + distance extrapolation factor.

**Radiated Emissions Test Data Below 1GHz**

EUT:	Rechargeable party speaker	Model Name :	TQ-FW883
Temperature:	25 °C	Test Data	2017-10-20
Pressure:	1010 hPa	Relative Humidity:	60%
Test Mode :	TX (1Mbps) CH00 (worst case)	Test Voltage :	DC 7.4V from battery
Measurement Distance	3 m	Frenqucy Range	30MHz to 1GHz
RBW/VBW	100KHz / 300KHz for spectrum, RBW=120KHz for receiver.		

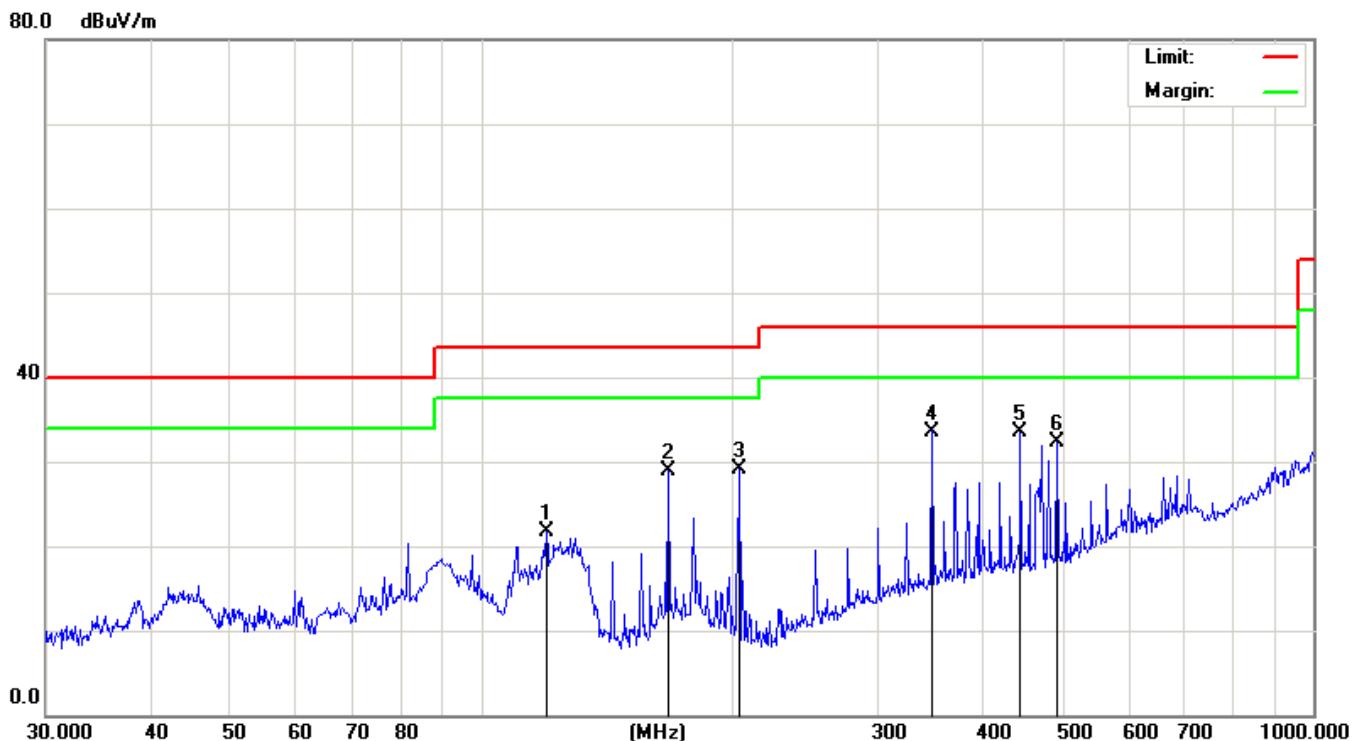
(a) Antenna polarization: Horizontal

Frequency (MHz)	Reading Level (dBuV)	Correct Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector Type
119.8555	36.55	-14.90	21.65	43.50	-21.85	QUASIPEAK
167.8241	42.80	-13.90	28.90	43.50	-14.60	QUASIPEAK
204.2375	45.96	-16.86	29.10	43.50	-14.40	QUASIPEAK
348.0274	41.72	-8.12	33.60	46.00	-12.40	QUASIPEAK
444.8514	40.22	-6.79	33.43	46.00	-12.57	QUASIPEAK
492.4685	37.88	-5.60	32.28	46.00	-13.72	QUASIPEAK

Note:

Measurement Level = Reading Level + Factor

Remark: Factor = Antenna Factor + Cable Loss - Pre-amplifier



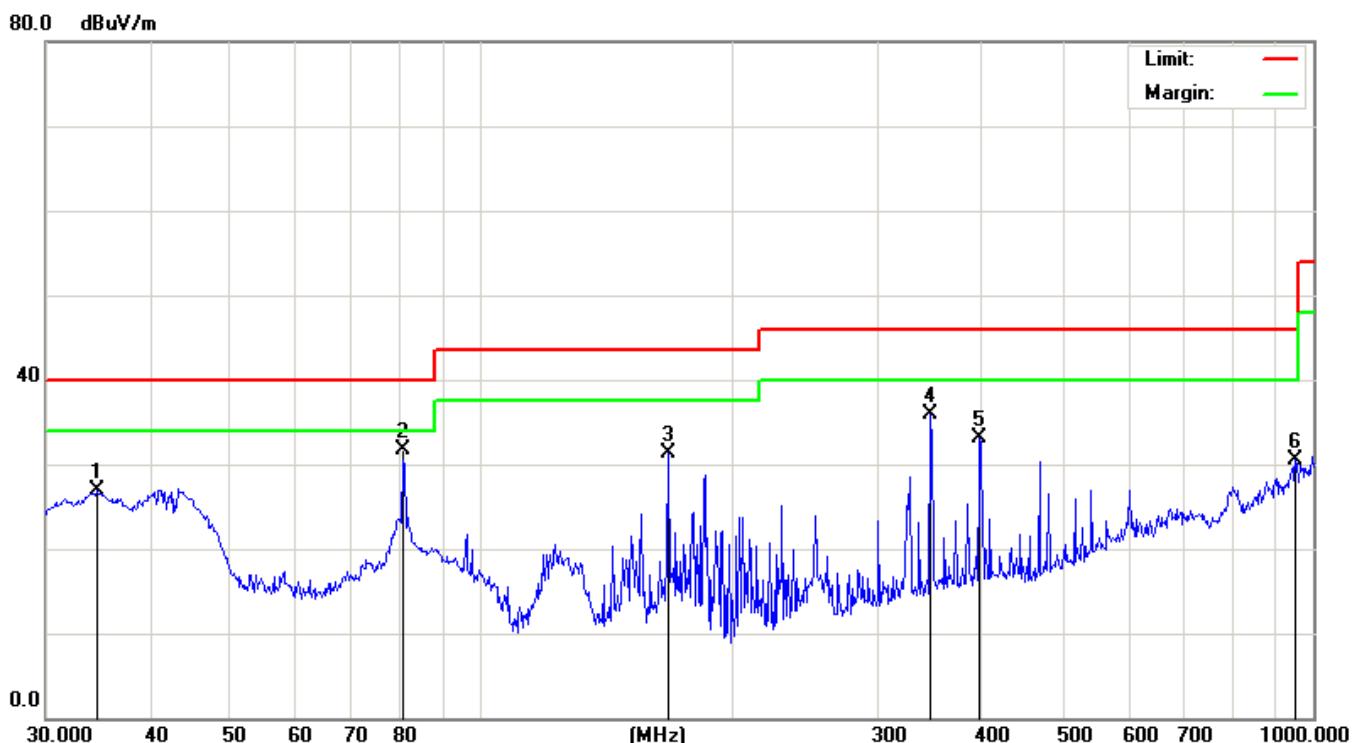
(b) Antenna polarization: Vertical

Frequency (MHz)	Reading Level (dBuV)	Correct Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector Type
34.6385	43.80	-16.85	26.95	40.00	-13.05	QUASIPEAK
80.7833	50.80	-19.02	31.78	40.00	-8.22	QUASIPEAK
167.8240	46.52	-15.12	31.40	43.50	-12.10	QUASIPEAK
346.8091	44.20	-8.20	36.00	46.00	-10.00	QUASIPEAK
397.6333	39.34	-6.24	33.10	46.00	-12.90	QUASIPEAK
952.0937	26.73	3.77	30.50	46.00	-15.50	QUASIPEAK

Note:

Measurement Level = Reading Level + Factor

Remark: Factor = Antenna Factor + Cable Loss - Pre-amplifier



**(1GHz~25GHz) Restricted band and Spurious emission Requirements**

EUT:	Rechargeable party speaker	Model Name :	TQ-FW883
Temperature:	25 °C	Test Data	2017-10-20
Pressure:	1010 hPa	Relative Humidity:	60%
Test Mode :	1Mbps	Test Voltage :	DC 7.4V from battery
Measurement Distance	3 m	Frenqucy Range	1GHz to 25GHz
RBW/VBW	1MHz/1MHz for Peak, 1MHz/10Hz for Average.		

GFSK Low Channel

Frequency (MHz)	Reading (dB μ V)	Antenna Amplifier (dB)	Loss (dB)	Corrected Factor (dB/m)	Emission Level (dB)	Limits (dB μ V/m)	Margin (dB)	Comment	
								Type	Comment
Low Channel (2402 MHz)									
3264.76	47.96	44.70	6.70	28.20	-9.80	38.16	74.00	-35.84	PK Vertical
3264.76	38.99	44.70	6.70	28.20	-9.80	29.19	54.00	-24.81	AV Vertical
3264.74	47.78	44.70	6.70	28.20	-9.80	37.98	74.00	-36.02	PK Horizontal
3264.74	39.44	44.70	6.70	28.20	-9.80	29.64	54.00	-24.36	AV Horizontal
4804.54	57.63	44.20	9.04	31.60	-3.56	54.07	74.00	-19.93	PK Vertical
4804.54	46.86	44.20	9.04	31.60	-3.56	43.30	54.00	-10.70	AV Vertical
4804.39	59.86	44.20	9.04	31.60	-3.56	56.30	74.00	-17.70	PK Horizontal
4804.39	48.53	44.20	9.04	31.60	-3.56	44.97	54.00	-9.03	AV Horizontal
5359.66	45.64	44.20	9.86	32.00	-2.34	43.30	74.00	-30.70	PK Vertical
5359.66	36.41	44.20	9.86	32.00	-2.34	34.07	54.00	-19.93	AV Vertical
5359.78	46.75	44.20	9.86	32.00	-2.34	44.41	74.00	-29.59	PK Horizontal
5359.78	38.87	44.20	9.86	32.00	-2.34	36.53	54.00	-17.47	AV Horizontal
7205.83	50.94	43.50	11.40	35.50	3.40	54.34	74.00	-19.66	PK Vertical
7205.83	38.15	43.50	11.40	35.50	3.40	41.55	54.00	-12.45	AV Vertical
7205.70	49.63	43.50	11.40	35.50	3.40	53.03	74.00	-20.97	PK Horizontal
7205.70	36.55	43.50	11.40	35.50	3.40	39.95	54.00	-14.05	AV Horizontal
9608.02	40.36	43.60	14.30	39.50	10.20	50.56	74.00	-23.44	PK Vertical
9608.02	29.72	43.60	14.30	39.50	10.20	39.92	54.00	-14.08	AV Vertical
9608.22	40.33	43.60	14.30	39.50	10.20	50.53	74.00	-23.47	PK Horizontal
9608.22	30.28	43.60	14.30	39.50	10.20	40.48	54.00	-13.52	AV Horizontal



GFSK Mid Channel

Frequency (MHz)	Reading (dB μ V)	Amplifier (dB)	Loss (dB)	Antenna Factor	Corrected Factor	Emission Level (dB μ V/m)	Emission Limits (dB μ V/m)	Margin (dB)	Type	Comment
				(dB/m)	(dB)	(dB μ V/m)	(dB μ V/m)	(dB)	(dB)	
Mid Channel (2441 MHz)										
3264.36	46.75	44.70	6.70	28.20	-9.80	36.95	74.00	-37.05	PK	Vertical
3264.36	38.85	44.70	6.70	28.20	-9.80	29.05	54.00	-24.95	AV	Vertical
3264.68	48.45	44.70	6.70	28.20	-9.80	38.65	74.00	-35.35	PK	Horizontal
3264.68	39.67	44.70	6.70	28.20	-9.80	29.87	54.00	-24.13	AV	Horizontal
4882.32	58.75	44.20	9.04	31.60	-3.56	55.19	74.00	-18.81	PK	Vertical
4882.32	47.78	44.20	9.04	31.60	-3.56	44.22	54.00	-9.78	AV	Vertical
4882.48	59.97	44.20	9.04	31.60	-3.56	56.41	74.00	-17.59	PK	Horizontal
4882.48	47.86	44.20	9.04	31.60	-3.56	44.30	54.00	-9.70	AV	Horizontal
5359.36	46.86	44.20	9.86	32.00	-2.34	44.52	74.00	-29.48	PK	Vertical
5359.36	38.68	44.20	9.86	32.00	-2.34	36.34	54.00	-17.66	AV	Vertical
5359.77	45.99	44.20	9.86	32.00	-2.34	43.65	74.00	-30.35	PK	Horizontal
5359.77	36.63	44.20	9.86	32.00	-2.34	34.29	54.00	-19.71	AV	Horizontal
7313.12	50.02	43.50	11.40	35.50	3.40	53.42	74.00	-20.58	PK	Vertical
7313.12	38.48	43.50	11.40	35.50	3.40	41.88	54.00	-12.12	AV	Vertical
7313.81	49.67	43.50	11.40	35.50	3.40	53.07	74.00	-20.93	PK	Horizontal
7313.81	35.72	43.50	11.40	35.50	3.40	39.12	54.00	-14.88	AV	Horizontal
9758.42	43.53	43.60	14.30	39.50	10.20	53.73	74.00	-20.27	PK	Vertical
9758.42	30.34	43.60	14.30	39.50	10.20	40.54	54.00	-13.46	AV	Vertical
9758.29	40.68	43.60	14.30	39.50	10.20	50.88	74.00	-23.12	PK	Horizontal
9758.29	29.36	43.60	14.30	39.50	10.20	39.56	54.00	-14.44	AV	Horizontal



GFSK High Channel

Frequency (MHz)	Reading (dB μ V)	Amplifier (dB)	Loss (dB)	Antenna Factor (dB/m)	Corrected Factor (dB)	Emission Level (dB μ V/m)	Emission Limits (dB μ V/m)	Margin (dB)	Type	Comment
High Channel (2480 MHz)										
3264.44	47.36	44.70	6.70	28.20	-9.80	37.56	74.00	-36.44	PK	Vertical
3264.44	38.52	44.70	6.70	28.20	-9.80	28.72	54.00	-25.28	AV	Vertical
3264.68	46.87	44.70	6.70	28.20	-9.80	37.07	74.00	-36.93	PK	Horizontal
3264.68	35.96	44.70	6.70	28.20	-9.80	26.16	54.00	-27.84	AV	Horizontal
4960.69	60.71	44.20	9.04	31.60	-3.56	57.15	74.00	-16.85	PK	Vertical
4960.69	47.69	44.20	9.04	31.60	-3.56	44.13	54.00	-9.87	AV	Vertical
4960.58	59.33	44.20	9.04	31.60	-3.56	55.77	74.00	-18.23	PK	Horizontal
4960.58	47.34	44.20	9.04	31.60	-3.56	43.78	54.00	-10.22	AV	Horizontal
5359.47	45.34	44.20	9.86	32.00	-2.34	43.00	74.00	-31.00	PK	Vertical
5359.47	37.21	44.20	9.86	32.00	-2.34	34.87	54.00	-19.13	AV	Vertical
5359.99	45.36	44.20	9.86	32.00	-2.34	43.02	74.00	-30.98	PK	Horizontal
5359.99	37.89	44.20	9.86	32.00	-2.34	35.55	54.00	-18.45	AV	Horizontal
7439.86	48.93	43.50	11.40	35.50	3.40	52.33	74.00	-21.67	PK	Vertical
7439.86	36.73	43.50	11.40	35.50	3.40	40.13	54.00	-13.87	AV	Vertical
7439.91	50.44	43.50	11.40	35.50	3.40	53.84	74.00	-20.16	PK	Horizontal
7439.91	35.99	43.50	11.40	35.50	3.40	39.39	54.00	-14.61	AV	Horizontal
9919.70	40.82	43.60	14.30	39.50	10.20	51.02	74.00	-22.98	PK	Vertical
9919.70	29.26	43.60	14.30	39.50	10.20	39.46	54.00	-14.54	AV	Vertical
9920.08	39.92	43.60	14.30	39.50	10.20	50.12	74.00	-23.88	PK	Horizontal
9920.08	30.93	43.60	14.30	39.50	10.20	41.13	54.00	-12.87	AV	Horizontal

Note:

- 1) Scan with GFSK, π/4-DQPSK,8DPSK,the worst case is GFSK Mode
- 2) Factor = Antenna Factor + Cable Loss – Pre-amplifier.
Emission Level = Reading + Factor
- 3) The frequency emission of peak points that did not show above the forms are at least 20dB below the limit, the frequency emission is mainly from the environment noise.



6.3.5 TEST RESULTS (Band edge Requirements)

Frequency (MHz)	Reading (dB μ V)	Amplifier (dB)	Loss (dB)	Antenna Factor (dB/m)	Corrected Factor (dB)	Emission				
						Level (dB μ V/m)	Limits (dB μ V/m)	Margin (dB)	Detector Type	Comment
GFSK										
2390.00	55.53	43.80	4.91	25.90	-12.99	42.54	74.00	-31.46	PK	Vertical
2390.00	42.11	43.80	4.91	25.90	-12.99	29.12	54.00	-24.88	AV	Vertical
2390.00	58.86	43.80	4.91	25.90	-12.99	45.87	74.00	-28.13	PK	Horizontal
2390.00	43.35	43.80	4.91	25.90	-12.99	30.36	54.00	-23.64	AV	Horizontal
2483.50	55.09	43.80	5.12	25.90	-12.78	42.31	74.00	-31.69	PK	Vertical
2483.50	44.87	43.80	5.12	25.90	-12.78	32.09	54.00	-21.91	AV	Vertical
2483.50	56.33	43.80	5.12	25.90	-12.78	43.55	74.00	-30.45	PK	Horizontal
2483.50	43.61	43.80	5.12	25.90	-12.78	30.83	54.00	-23.17	AV	Horizontal
$\pi/4$ -DQPSK										
2390.00	56.63	43.80	4.91	25.90	-12.99	43.64	74.00	-30.36	PK	Vertical
2390.00	44.63	43.80	4.91	25.90	-12.99	31.64	54.00	-22.36	AV	Vertical
2390.00	55.87	43.80	4.91	25.90	-12.99	42.88	74.00	-31.12	PK	Horizontal
2390.00	42.43	43.80	4.91	25.90	-12.99	29.44	54.00	-24.56	AV	Horizontal
2483.50	56.96	43.80	5.12	25.90	-12.78	44.18	74.00	-29.82	PK	Vertical
2483.50	44.47	43.80	5.12	25.90	-12.78	31.69	54.00	-22.31	AV	Vertical
2483.50	57.63	43.80	5.12	25.90	-12.78	44.85	74.00	-29.15	PK	Horizontal
2483.50	45.05	43.80	5.12	25.90	-12.78	32.27	54.00	-21.73	AV	Horizontal
8DPSK										
2390.00	54.64	43.80	4.91	25.90	-12.99	41.65	74.00	-32.35	PK	Vertical
2390.00	42.29	43.80	4.91	25.90	-12.99	29.30	54.00	-24.70	AV	Vertical
2390.00	54.26	43.80	4.91	25.90	-12.99	41.27	74.00	-32.73	PK	Horizontal
2390.00	43.36	43.80	4.91	25.90	-12.99	30.37	54.00	-23.63	AV	Horizontal
2483.50	57.63	43.80	5.12	25.90	-12.78	44.85	74.00	-29.15	PK	Vertical
2483.50	45.75	43.80	5.12	25.90	-12.78	32.97	54.00	-21.03	AV	Vertical
2483.50	55.13	43.80	5.12	25.90	-12.78	42.35	74.00	-31.65	PK	Horizontal
2483.50	43.43	43.80	5.12	25.90	-12.78	30.65	54.00	-23.35	AV	Horizontal
Low measurement frequencies is range from 2300 to 2403 MHz, high measurement frequencies is range from 2479 to 2500 MHz.										
Only show the worst point data of the emissions in the frequency 2300-2403 MHz and 2479-2500 MHz.										



Hopping Band edge

Frequency (MHz)	Reading (dB μ V)	Amplifier (dB)	Loss (dB)	Antenna Factor (dB/m)	Corrected Factor (dB)	Emission				
						Level (dB μ V/m)	Limits (dB μ V/m)	Margin (dB)	Detector Type	Comment
GFSK										
2390.00	54.63	43.80	4.91	25.90	-12.99	41.64	74.00	-32.36	PK	Vertical
2390.00	43.61	43.80	4.91	25.90	-12.99	30.62	54.00	-23.38	AV	Vertical
2390.00	57.54	43.80	4.91	25.90	-12.99	44.55	74.00	-29.45	PK	Horizontal
2390.00	42.37	43.80	4.91	25.90	-12.99	29.38	54.00	-24.62	AV	Horizontal
2483.50	53.43	43.80	5.12	25.90	-12.78	40.65	74.00	-33.35	PK	Vertical
2483.50	42.45	43.80	5.12	25.90	-12.78	29.67	54.00	-24.33	AV	Vertical
2483.50	55.73	43.80	5.12	25.90	-12.78	42.95	74.00	-31.05	PK	Horizontal
2483.50	41.64	43.80	5.12	25.90	-12.78	28.86	54.00	-25.14	AV	Horizontal
$\pi/4$ -DQPSK										
2390.00	56.64	43.80	4.91	25.90	-12.99	43.65	74.00	-30.35	PK	Vertical
2390.00	44.36	43.80	4.91	25.90	-12.99	31.37	54.00	-22.63	AV	Vertical
2390.00	55.41	43.80	4.91	25.90	-12.99	42.42	74.00	-31.58	PK	Horizontal
2390.00	40.44	43.80	4.91	25.90	-12.99	27.45	54.00	-26.55	AV	Horizontal
2483.50	55.75	43.80	5.12	25.90	-12.78	42.97	74.00	-31.03	PK	Vertical
2483.50	43.43	43.80	5.12	25.90	-12.78	30.65	54.00	-23.35	AV	Vertical
2483.50	56.47	43.80	5.12	25.90	-12.78	43.69	74.00	-30.31	PK	Horizontal
2483.50	43.49	43.80	5.12	25.90	-12.78	30.71	54.00	-23.29	AV	Horizontal
8DPSK										
2390.00	54.88	43.80	4.91	25.90	-12.99	41.89	74.00	-32.11	PK	Vertical
2390.00	41.87	43.80	4.91	25.90	-12.99	28.88	54.00	-25.12	AV	Vertical
2390.00	54.06	43.80	4.91	25.90	-12.99	41.07	74.00	-32.93	PK	Horizontal
2390.00	42.16	43.80	4.91	25.90	-12.99	29.17	54.00	-24.83	AV	Horizontal
2483.50	56.23	43.80	5.12	25.90	-12.78	43.45	74.00	-30.55	PK	Vertical
2483.50	45.30	43.80	5.12	25.90	-12.78	32.52	54.00	-21.48	AV	Vertical
2483.50	54.92	43.80	5.12	25.90	-12.78	42.14	74.00	-31.86	PK	Horizontal
2483.50	41.42	43.80	5.12	25.90	-12.78	28.64	54.00	-25.36	AV	Horizontal
Low measurement frequencies is range from 2300 to 2403 MHz,high measurement frequencies is range from 2479 to 2500 MHz.										
Only show the worst point data of the emissions in the frequency 2300-2403 MHz and 2479-2500 MHz.										



6.4 BANDWIDTH TEST

6.4.1 Applied procedures / Limit

FCC Part15 15.247,Subpart C				
Section	Test Item	Limit	FrequencyRange (MHz)	Result
15.247(a)(1)	Bandwidth	(20dB bandwidth)	2400-2483.5	PASS

Spectrum Parameter	Set
Attenuation	A
Span Frequency	> Measurement Bandwidth or Channel Separation
RB	30 kHz (20dB Bandwidth) / 30 kHz (Channel Separation)
VB	100 kHz (20dB Bandwidth) / 100 kHz (Channel Separation)
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

6.4.2 Test procedure

- The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below.
- Span = approximately 2 to 3 times the 20 dB bandwidth, centered on a hopping channel
 $RBW \geq 1\%$ of the 20 dB bandwidth, $VBW \geq RBW$, Sweep = auto, Detector function = peak
Trace = max hold

6.4.3 Deviation from standard

No deviation.

6.4.4 Test setup



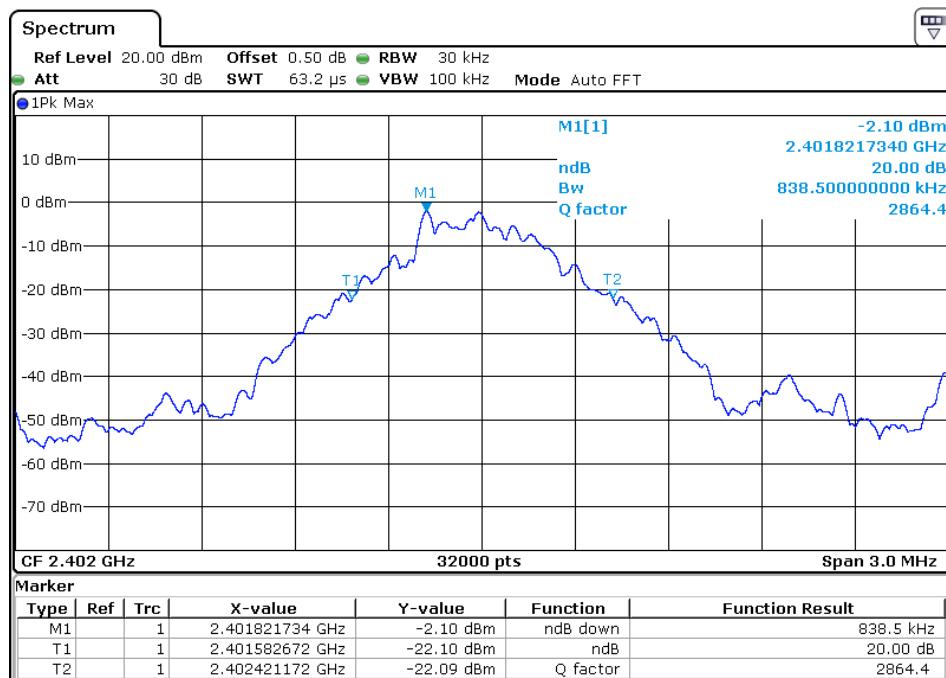
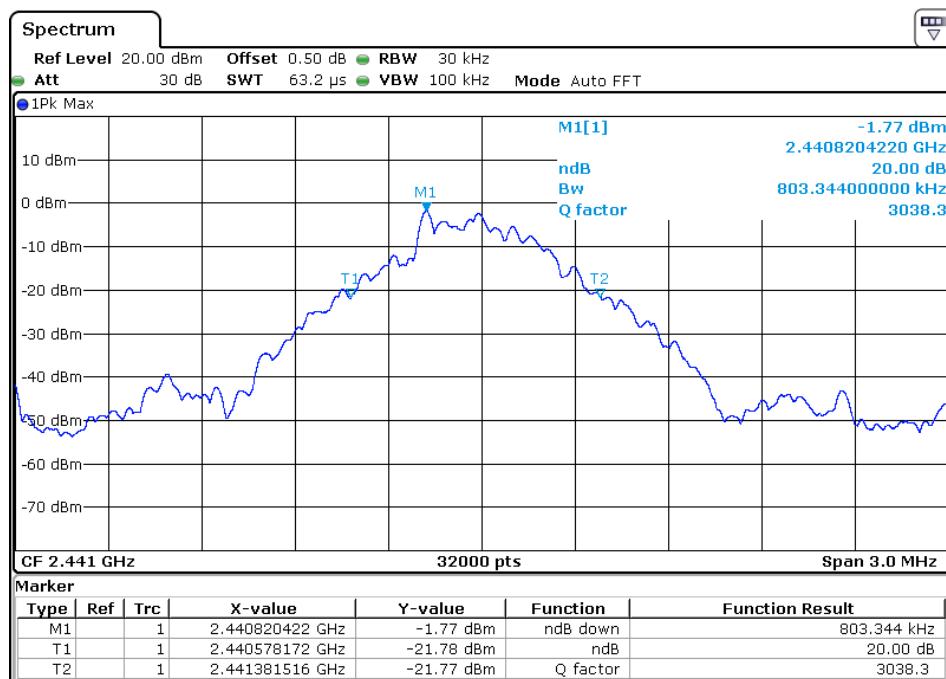


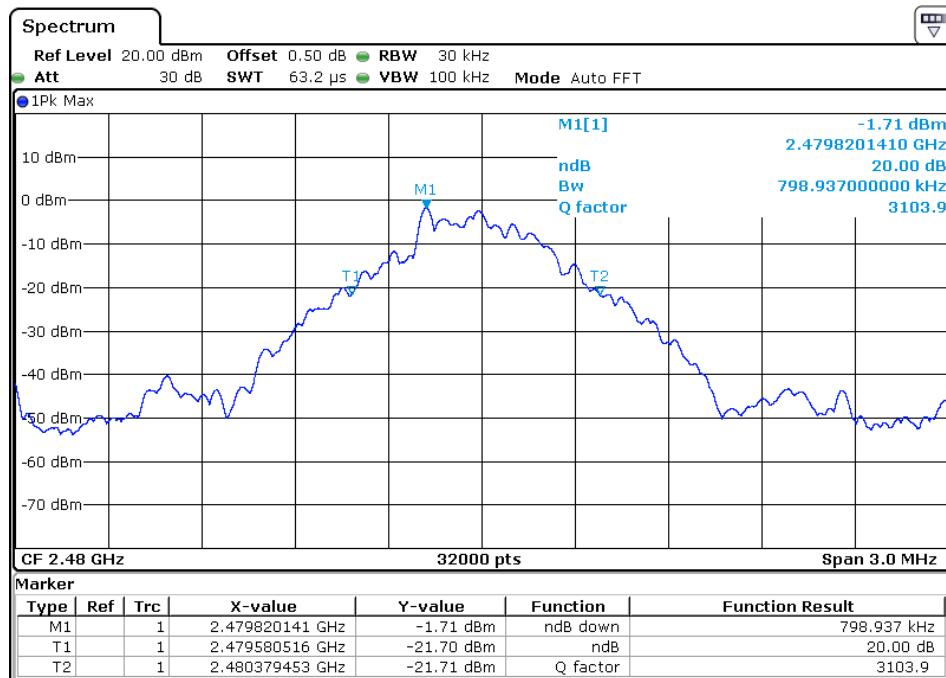
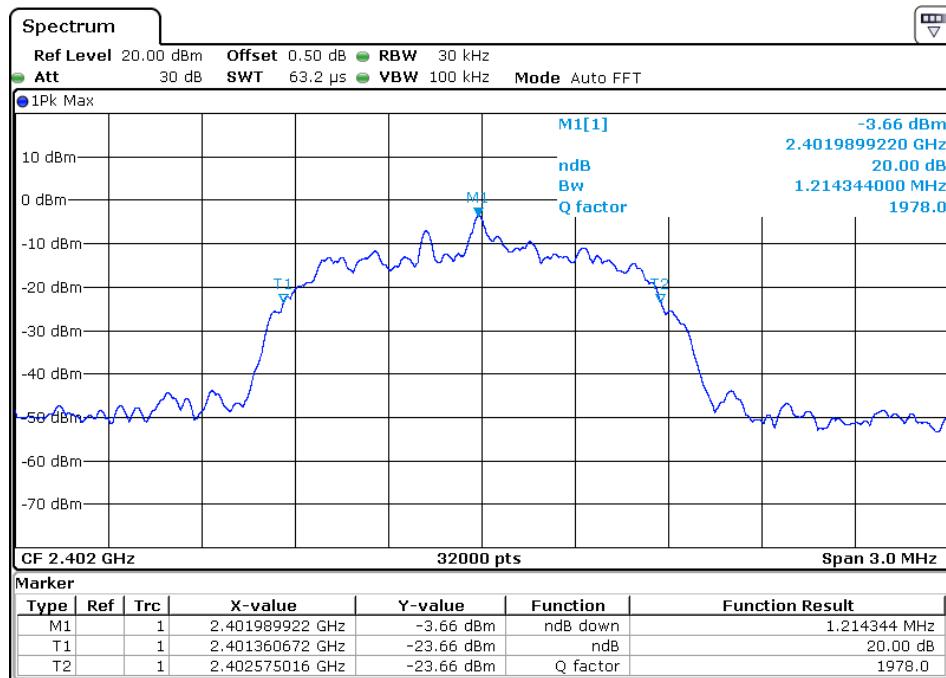
6.4.5 Test results

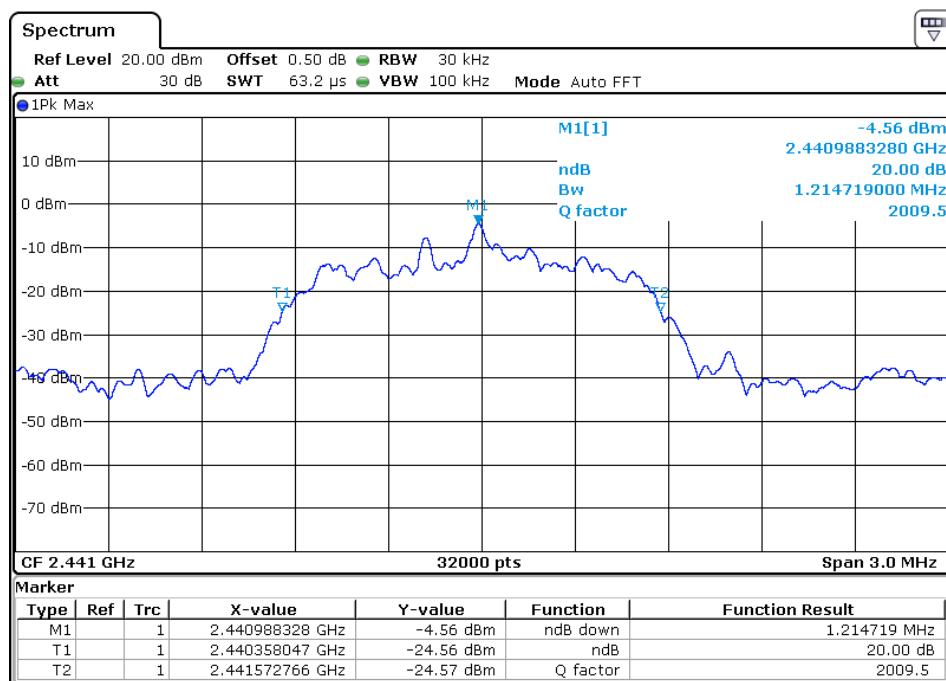
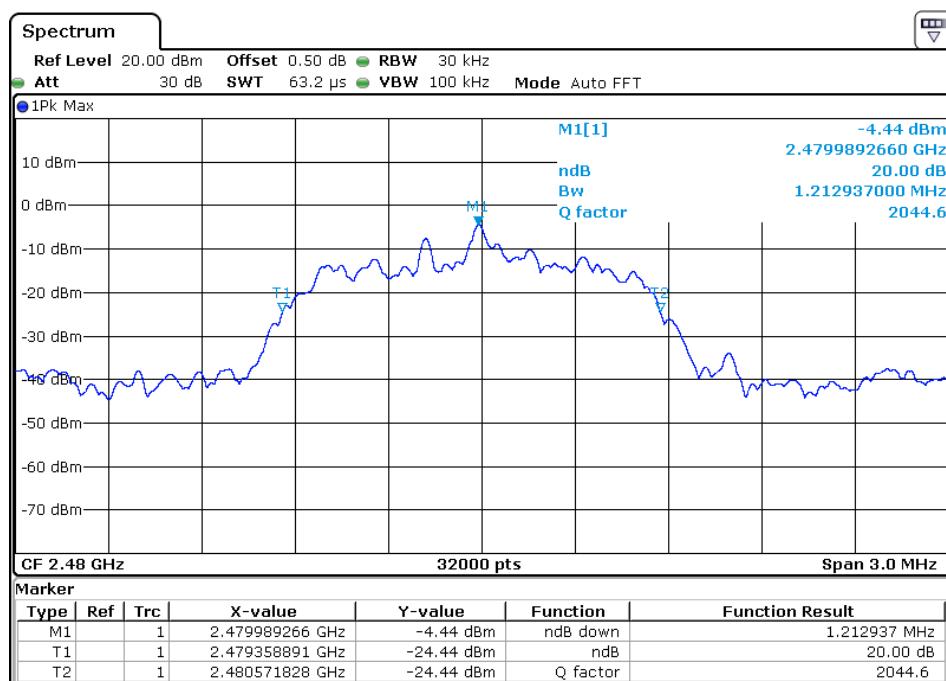
Test By: Sean she

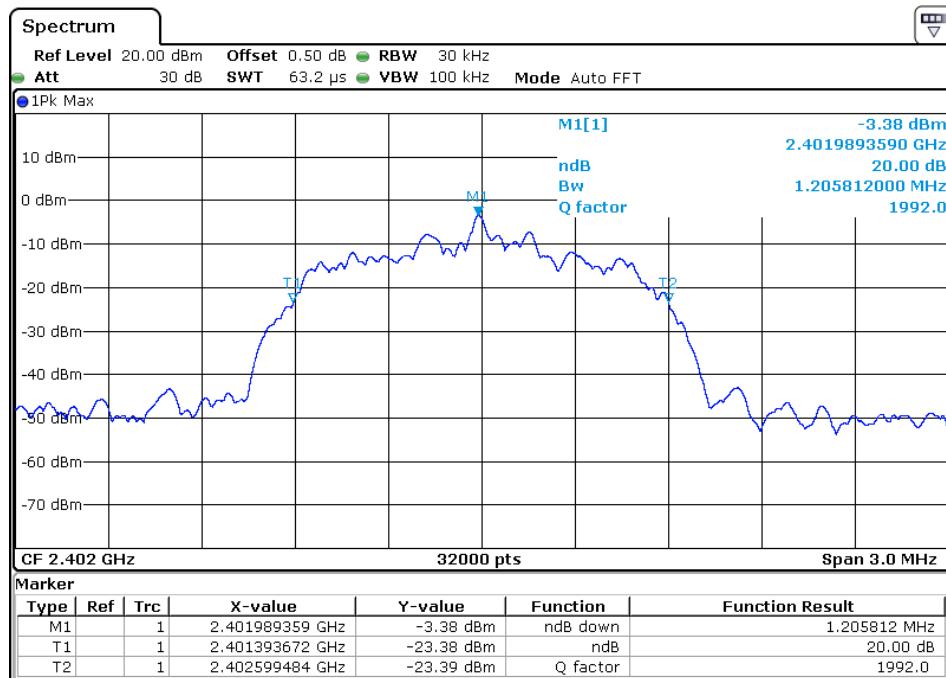
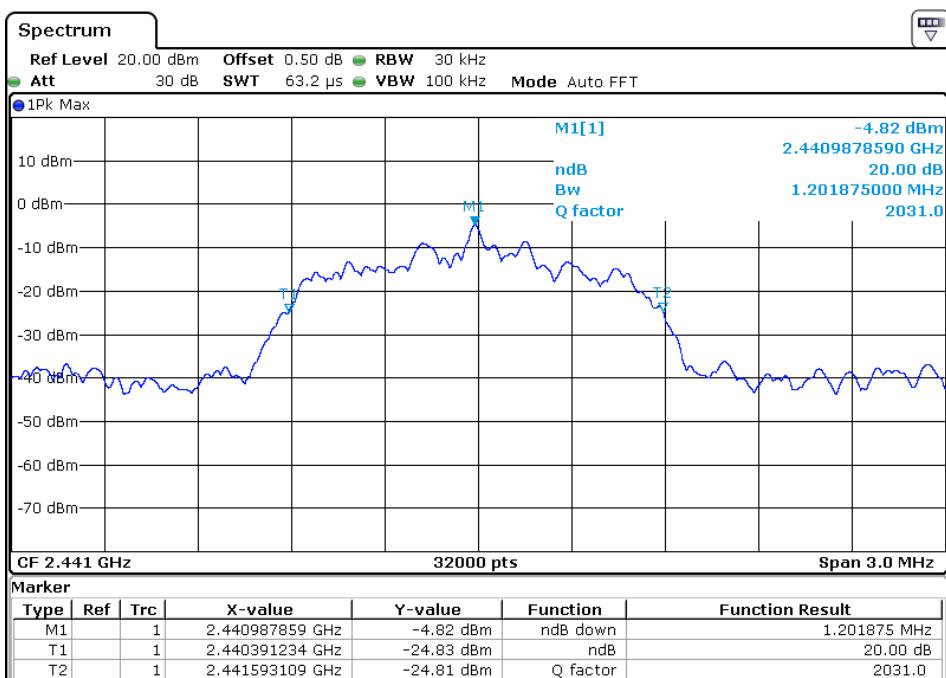
EUT:	Rechargeable party speaker	Model Name :	TQ-FW883
Temperature:	26 °C	Relative Humidity:	53%
Pressure:	1010 hPa	Test Power :	DC 7.4V from battery
Test Mode :	TX 1Mbps/ 2Mbps/ 3Mbps		

Channel		Channel frequency (MHz)	20dB bandwidth (KHz)	Limit (KHz)	Conclusion
GFSK (1Mbps)	Low	2402	838.5	N/A	Pass
	Middle	2441	803.344	N/A	Pass
	High	2480	798.937	N/A	Pass
$\pi/4$ -DQPSK (2Mbps)	Low	2402	1214.344	N/A	Pass
	Middle	2441	1214.719	N/A	Pass
	High	2480	1212.937	N/A	Pass
8DPSK (3Mbps)	Low	2402	1205.812	N/A	Pass
	Middle	2441	1201.875	N/A	Pass
	High	2480	1202.812	N/A	Pass

**CH00-1Mbps****CH 39-1Mbps**

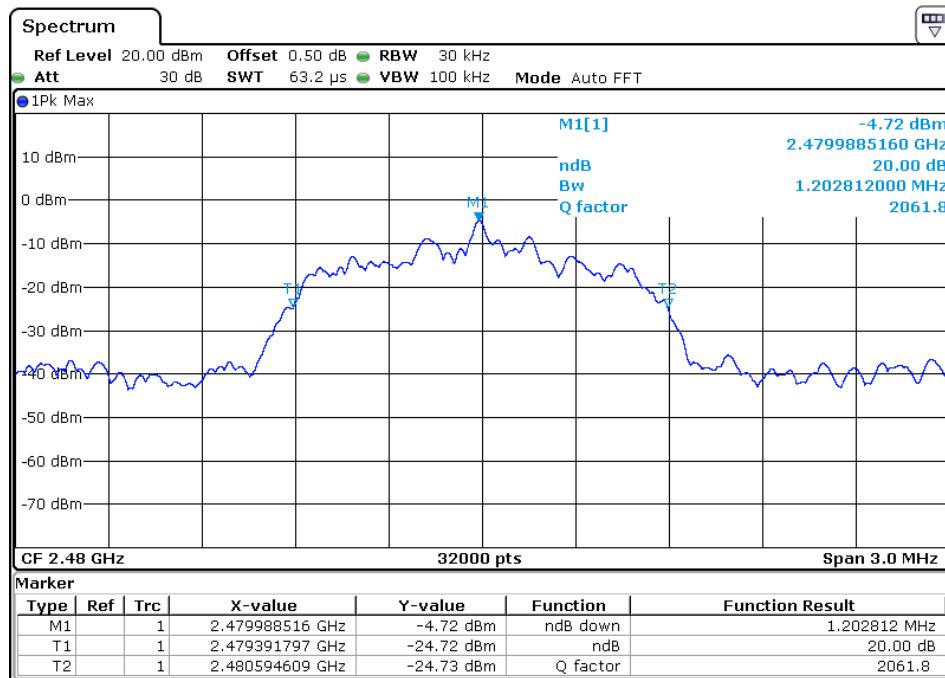
**CH 78-1Mbps****CH00-2Mbps**

**CH 39-2Mbps****CH 78-2Mbps**

**CH 00-3Mbps****CH 39-3Mbps**



CH 78-3Mbps



6.5 Carrier Frequencies Separated

6.5.1 Applied procedures / Limit

Frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 20 dB bandwidth of the hopping channel, whichever is greater.

Spectrum	Setting
Attenuation	Auto
Span	> 20 dB Bandwidth or Channel Separation
RB	30 kHz (20dB Bandwidth) / 30 kHz (Channel Separation)
VB	100 kHz (20dB Bandwidth) / 100 kHz (Channel Separation)
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

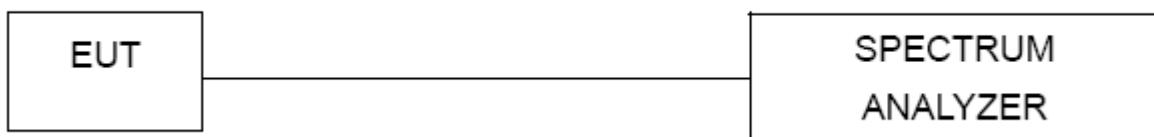
6.5.2 Test procedure

- The transmitter output (antenna port) was connected to the spectrum analyser in peak hold mode.
- The resolution bandwidth of 30 kHz and the video bandwidth of 100 kHz were utilised for 20 dB bandwidth measurement.
- The resolution bandwidth of 30 kHz and the video bandwidth of 100 kHz were utilised for channel separation measurement.

6.5.3 Deviation from standard

No deviation.

6.5.4 Test setup





6.5.5 Test results

Test By: Sean she

EUT:	Rechargeable party speaker	Model Name :	TQ-FW883
Temperature:	26 °C	Relative Humidity:	53%
Pressure:	1010 hPa	Test Power :	DC 7.4V from battery
Test Mode :	TX 1Mbps/ 3Mbps		

For GFSK(1Mbps)

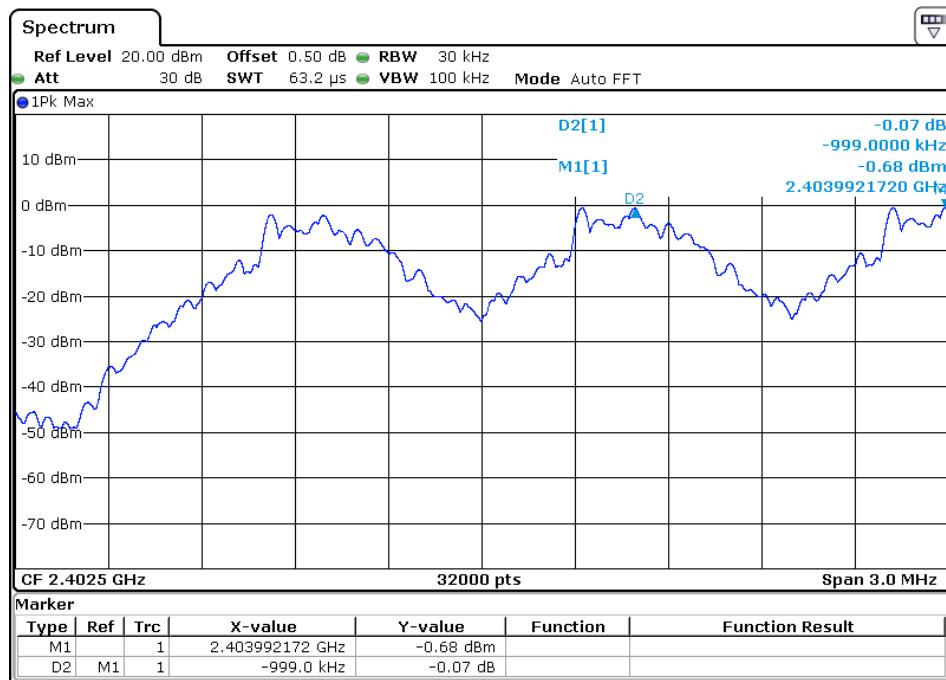
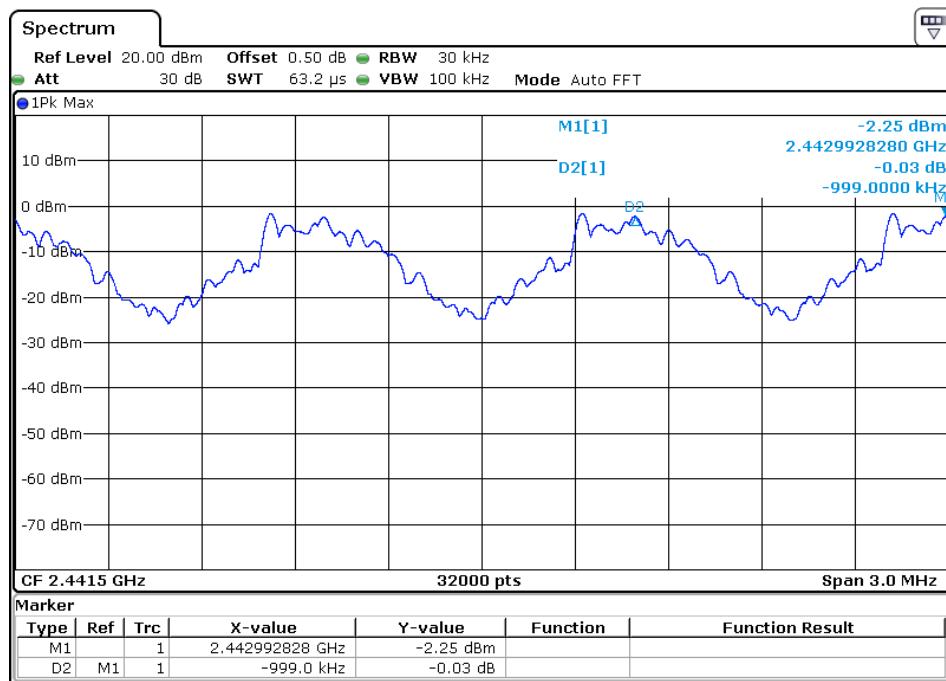
Frequency	Ch. Separation (MHz)	Limit	Result
2402 MHz	0.999	838.5	Complies
2441 MHz	0.999	803.344	Complies
2480 MHz	0.999	798.937	Complies

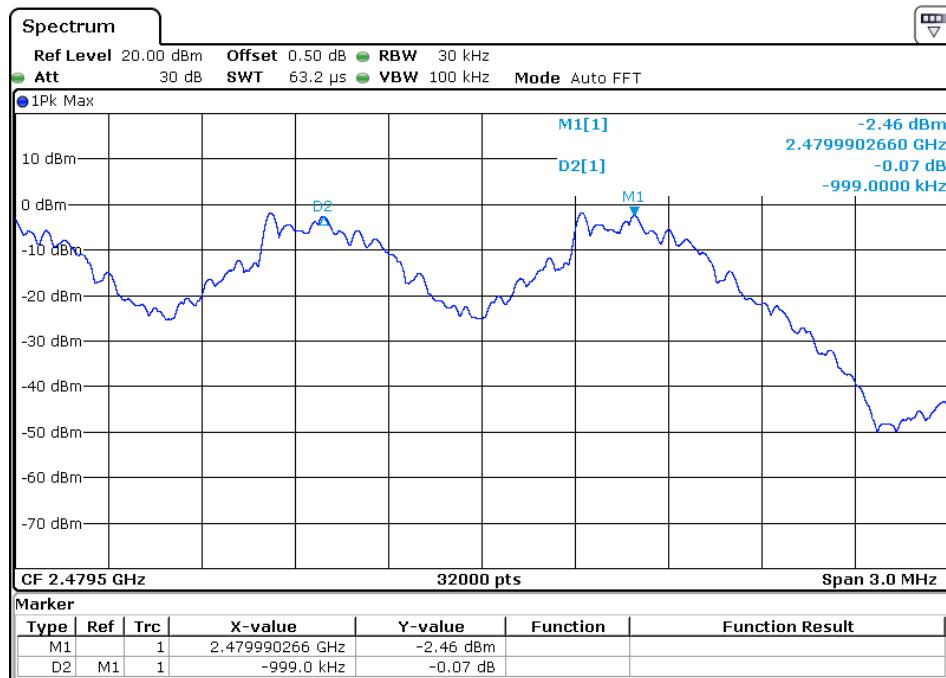
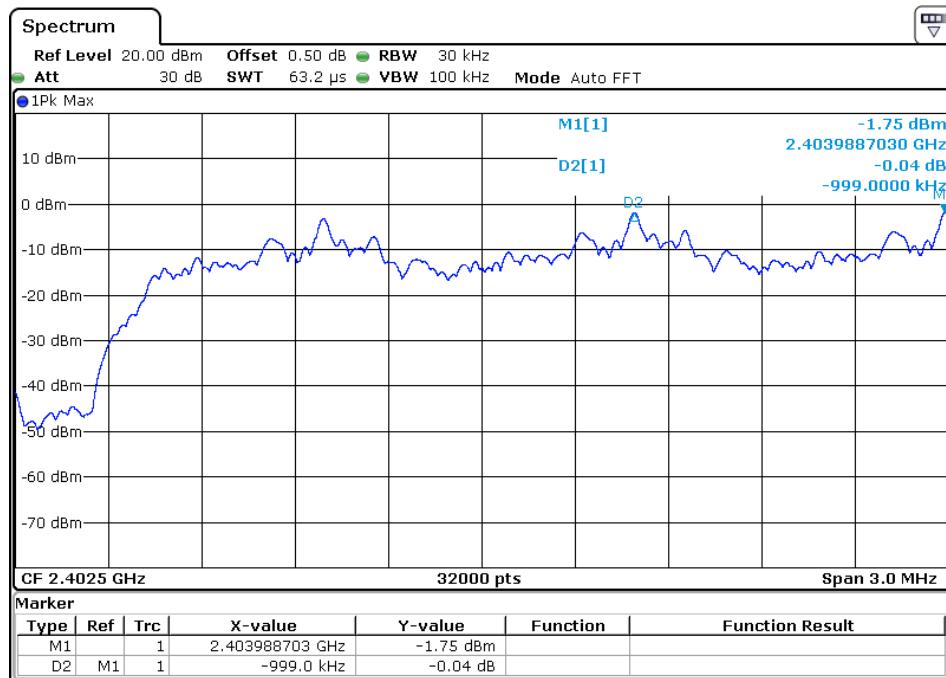
Ch. Separation Limits: > 20dB bandwidth

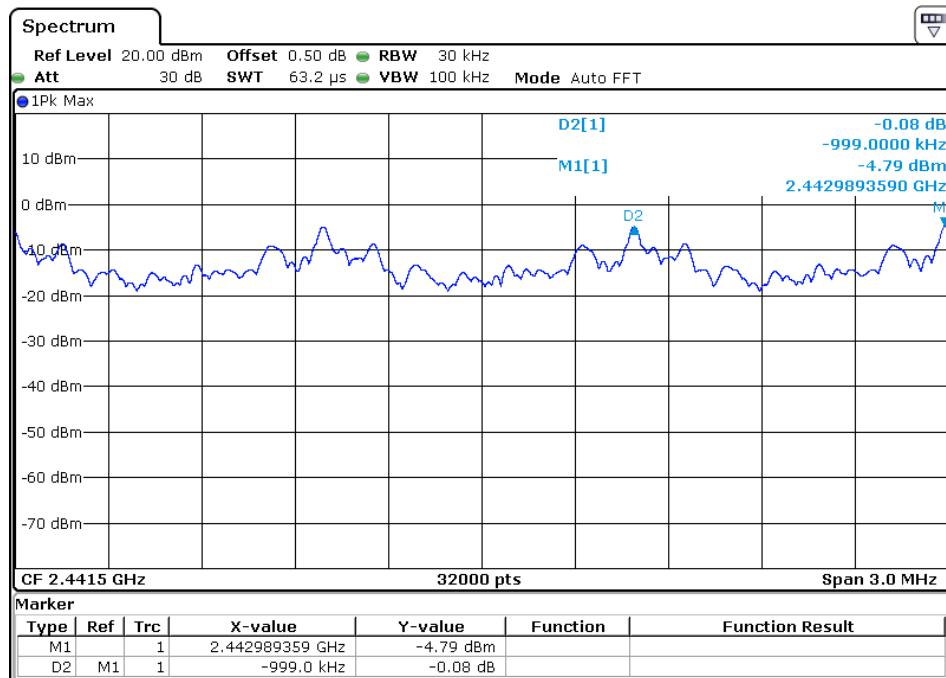
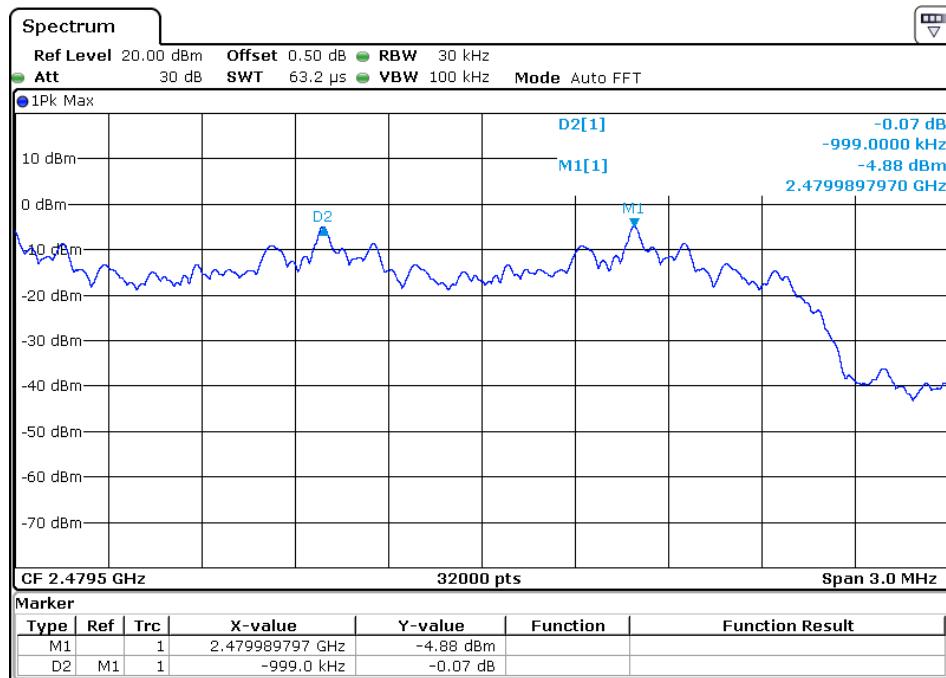
For 8DPSK(3Mbps)

Frequency	Ch. Separation (MHz)	Limit	Result
2402 MHz	0.999	803.87467	Complies
2441 MHz	0.999	801.25	Complies
2480 MHz	0.999	801.87467	Complies

Ch. Separation Limits: > two-thirds 20dB bandwidth

**CH 00-1Mbps****CH 39-1Mbps**

**CH 78-1Mbps****CH 00-3Mbps**

**CH 39-3Mbps****CH 78-3Mbps**



6.6 Hopping Channel Number

6.6.1 Applied procedures / Limit

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.

6.6.2 Test procedure

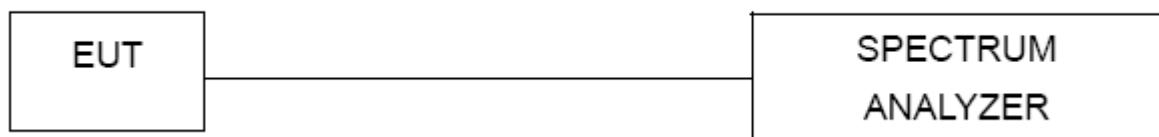
- (1) Connected the antenna port to the Spectrum Analyzer , set the Spectrum Analyzer as Span = the frequency band of operation, RBW =100 KHz, VBW \geq RBW Sweep = auto Detector function = peak, Trace = max hold
- (2) The EUT should be have its hopping function enabled. Maxhold and record hopping channels It may prove necessary to break the span up to sections, in order to clearly show all of the hopping frequencies.

Spectrum Parameters	Setting
Attenuation	Auto
Span Frequency	> Operating FrequencyRange
RB	100KHz
VB	300KHz
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

6.6.3 Deviation from standard

No deviation.

6.6.4 Test setup





6.6.5 Test result

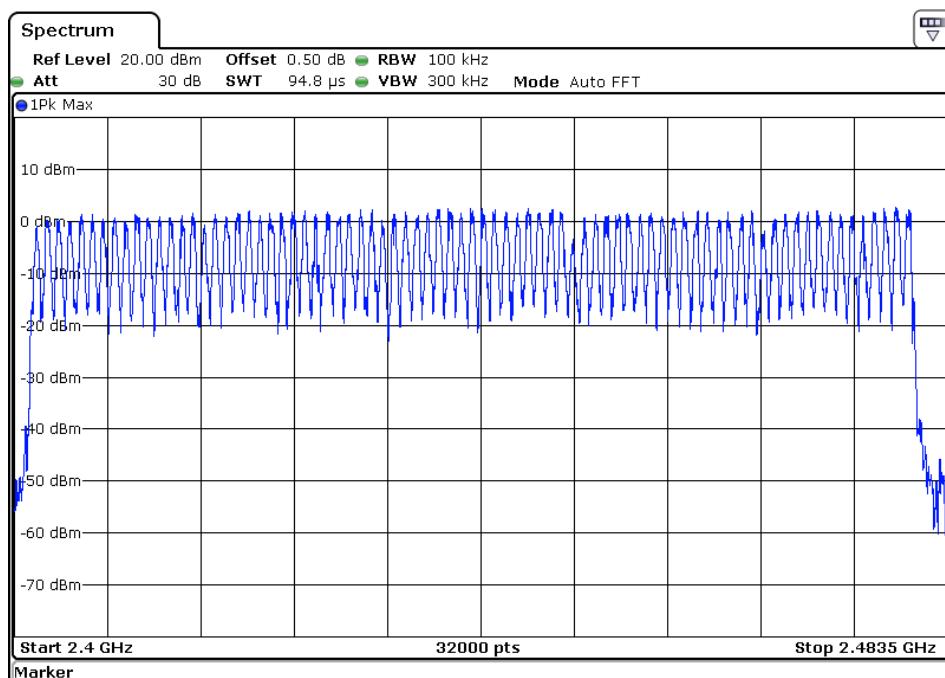
Test By: Sean she

Hopping Channel Number result		
Operating Mode: 1Mbps/ 3Mbps Mode		Test date:2017-10-20
Result	Limit	Conclusion
79	15	Pass

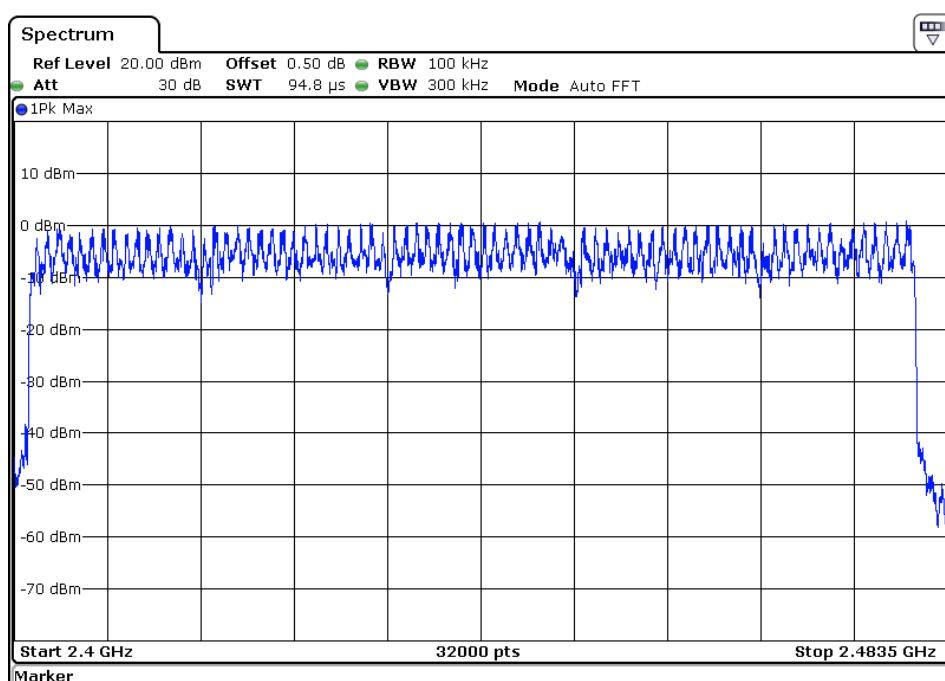


EUT:	Rechargeable party speaker	Model Name :	TQ-FW883
Temperature:	26 °C	Relative Humidity:	53%
Pressure:	1010 hPa	Test Power :	DC 7.4V from battery
Test Mode :	TX 1Mbps/ 3Mbps		

1Mbps



3Mbps





6.7 Dwell time

6.7.1 Applied procedures / Limit

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.

6.7.2 Test procedure

- (1) Place the EUT on the table in the chamber or connect the antenna port of the EUT to spectrum analyzer and set it in transmitting mode.
- (2) Set RBW of spectrum analyzer to 1MHz, $VBW \geq RBW$
- (3) Use a video trigger with the trigger level set to enable triggering only on full pulses.
- (4) Sweep Time is more than once pulse time.
- (5) Set the center frequency on any frequency would be measure and set the frequency span to zero span.
- (6) Measure the maximum time duration of one single pulse.
- (7) Set the EUT for DH5, DH3 and DH1 packet transmitting.
- (8) Measure the maximum time duration of one single pulse.
- (9) A Period Time = $79 * 0.4 = 31.6$ S
DH1 Time Slot: Reading * $(1600/2) * 31.6 / 79$
DH3 Time Slot: Reading * $(1600/4) * 31.6 / 79$
DH5 Time Slot: Reading * $(1600/6) * 31.6 / 79$

6.7.3 Deviation from standard

No deviation.

6.7.4 Test setup



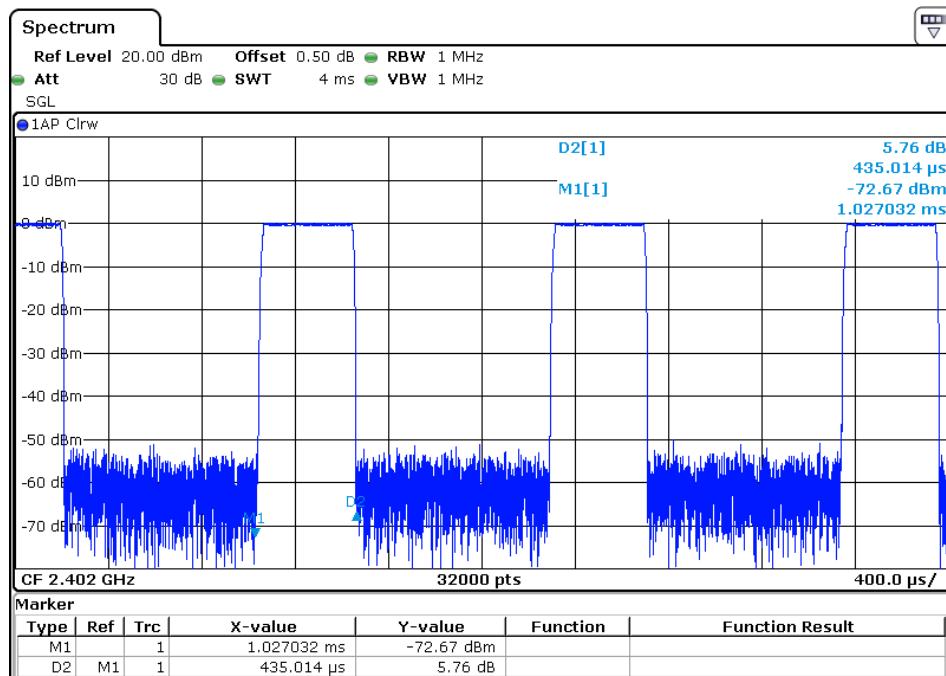
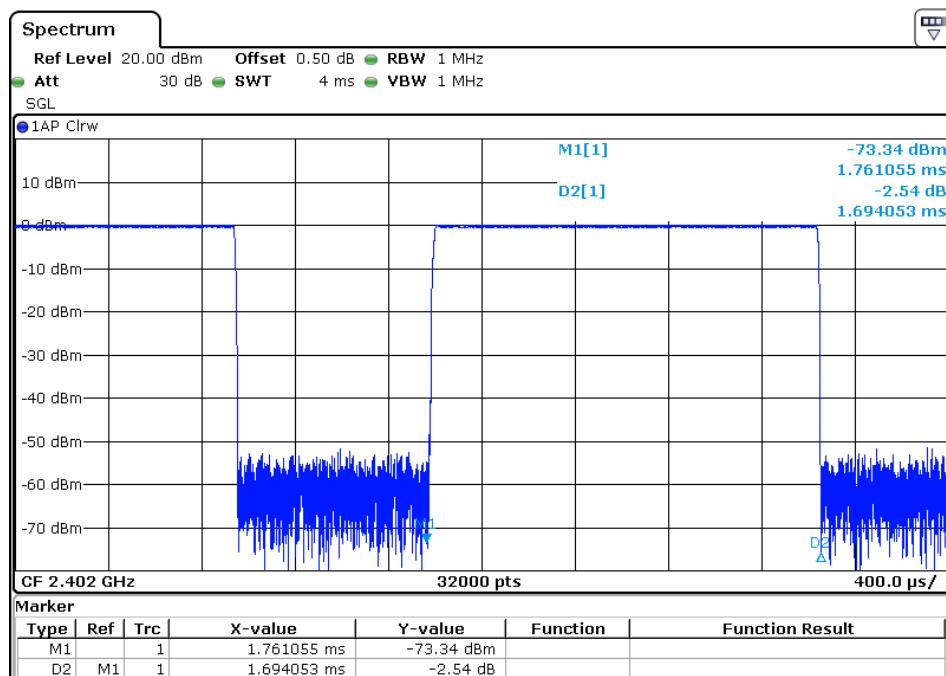


6.7.5 Test result

Test By: Sean she

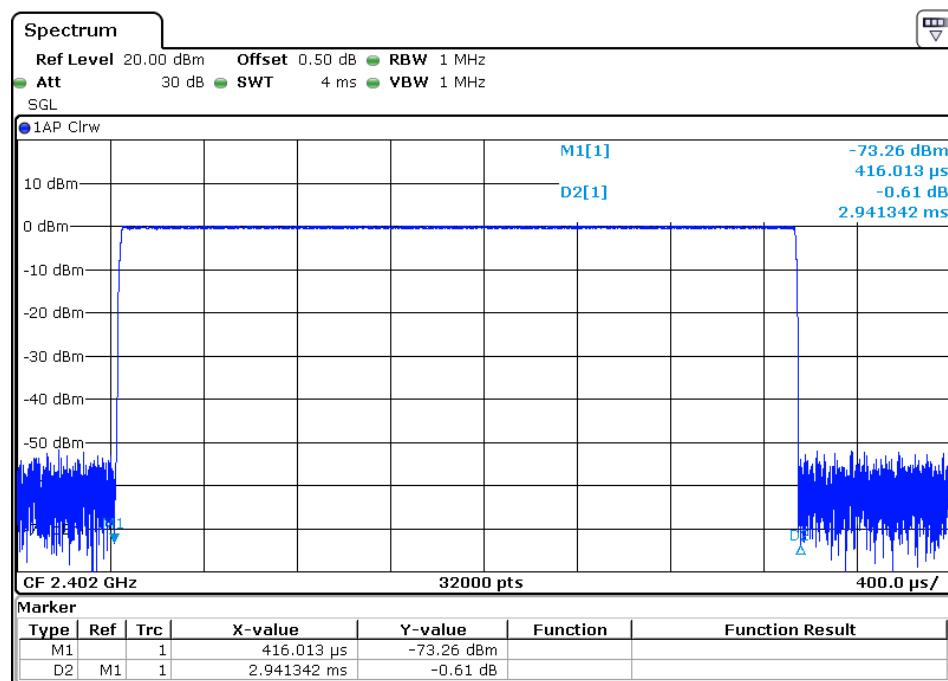
EUT:	Rechargeable party speaker	Model Name :	TQ-FW883
Temperature:	26 °C	Relative Humidity:	53%
Pressure:	1010 hPa	Test Power :	DC 7.4V from battery
Test Mode :	CH00-DH1/DH3/DH5 (1Mbps Mode)		

Data Packet	Frequency	Pulse Duration (ms)	Dwell Time (ms)	Limits (s)
DH1	2402 MHz	0.435	139.2	0.4000
DH3	2402 MHz	1.694	271.04	0.4000
DH5	2402 MHz	2.941	313.7067	0.4000

**CH 00- DH1****CH 00- DH3**



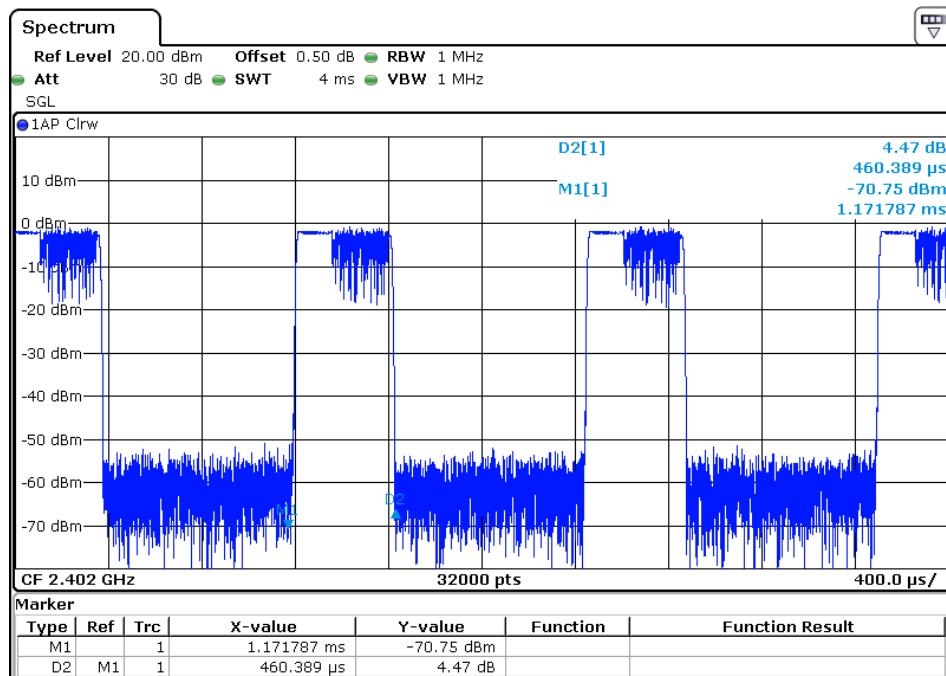
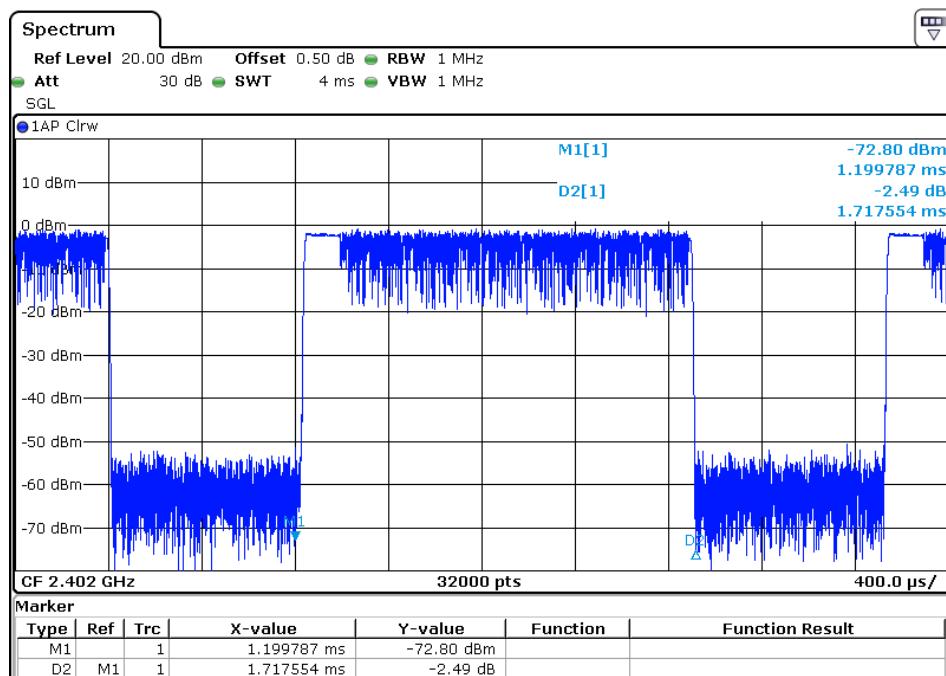
CH 00- DH5





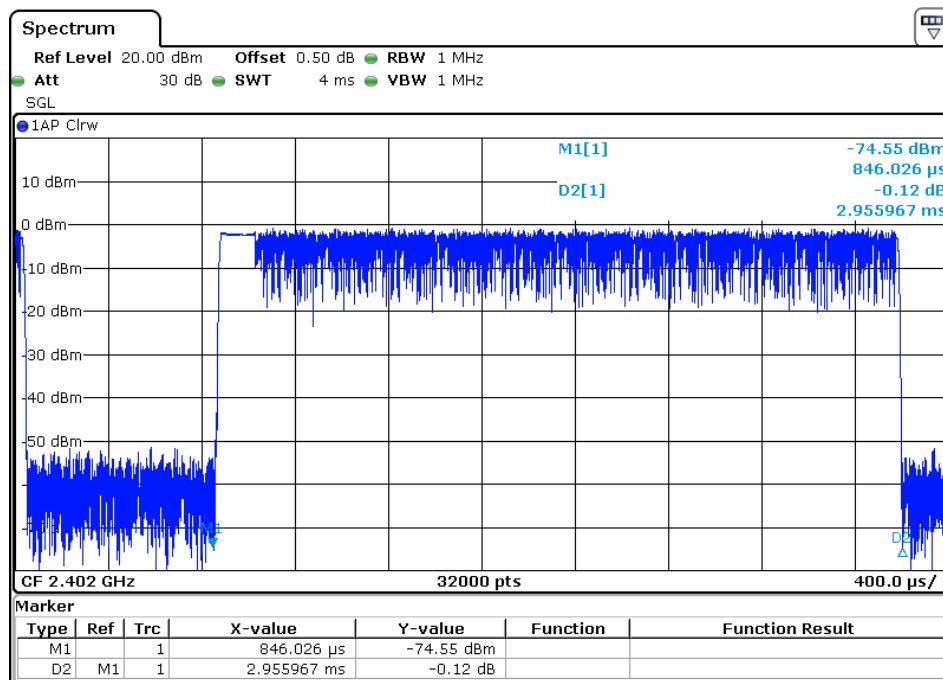
EUT:	Rechargeable party speaker	Model Name :	TQ-FW883
Temperature:	26 °C	Relative Humidity:	53%
Pressure:	1010 hPa	Test Power :	DC 7.4V from battery
Test Mode :	CH00-3DH1/3DH3/3DH5 (3Mbps Mode)		

Data Packet	Frequency	Pulse Duration (ms)	Dwell Time (ms)	Limits (s)
3DH1	2402 MHz	0.460	147.2	0.4000
3DH3	2402 MHz	1.718	274.88	0.4000
3DH5	2402 MHz	2.956	315.3067	0.4000

**CH 00- DH1****CH 00- DH3**



CH 00- DH5



6.8 Maximum Peak Output Power

6.8.1 Applied procedures / Limit

15.247(a) (1) Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater. Alternatively, frequency hopping systems operating in the 2400–2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW.

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: 1watt. For all other frequency hopping systems in the 2400-2483.5 MHz band: 0.125 watts.

6.8.2 Test procedure

- (1) Connected the antenna port to the Spectrum Analyzer, set the Spectrum Analyzer as
- (2) Span = approximately 5 times the 20 dB bandwidth, centered on a hopping channel
- (3) RBW > the 20 dB bandwidth of the emission being measured, $VBW \geq RBW$, Sweep = auto
- (4) Detector function = peak, Trace = max hold
- (5) The EUT should be transmitting at its maximum data rate. Allow the trace to stabilize. Use the marker-to-peak function to set the marker to the peak of the emission. The indicated level is the peak output power.
- (6) The above procedure shall be repeated at the lowest, the middle, and the highest frequency of the stated frequency range with modulated mode. Also shall be performed at different modes of operation.

6.8.3 Deviation from standard

No deviation.

6.8.4 Test setup





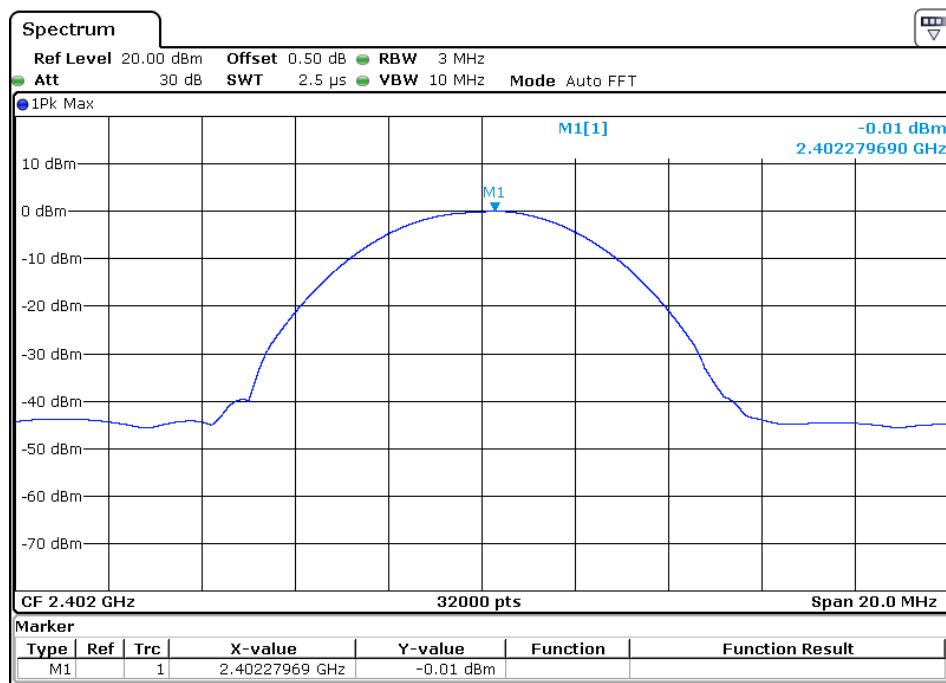
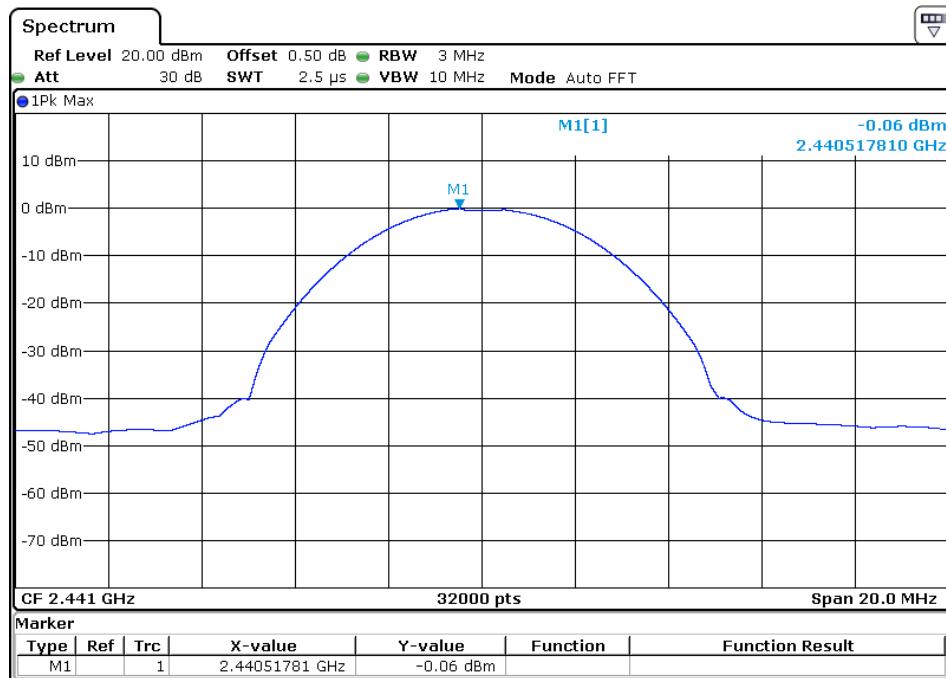
6.8.5 Test results

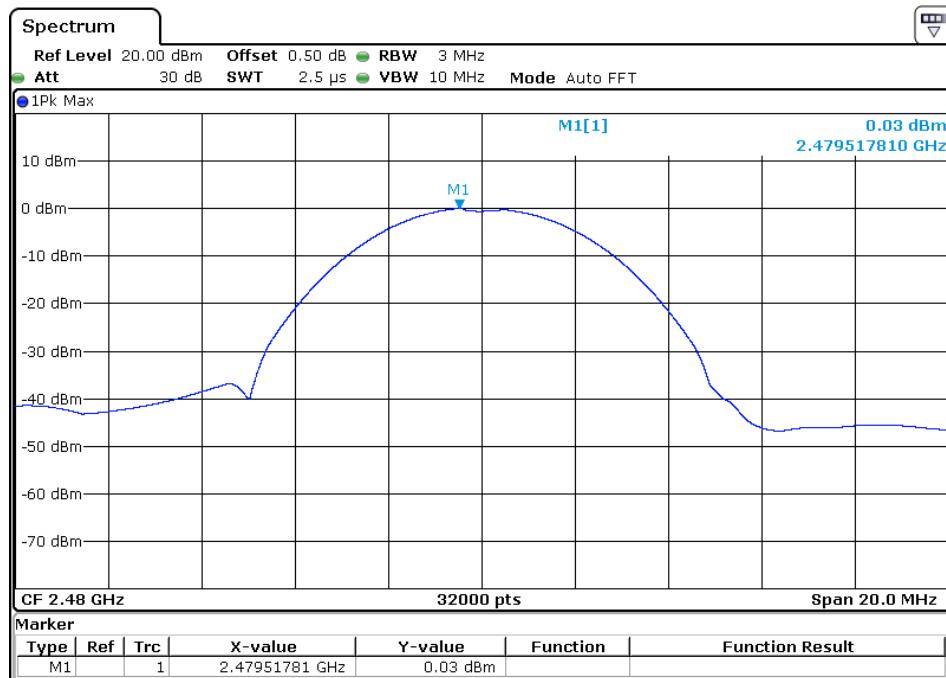
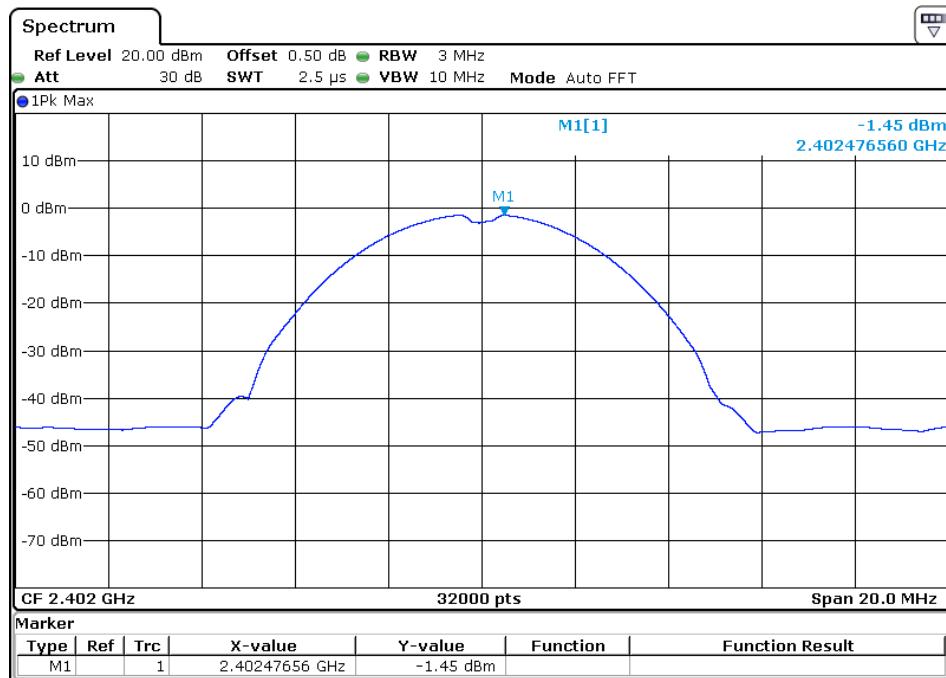
Test By: Sean she

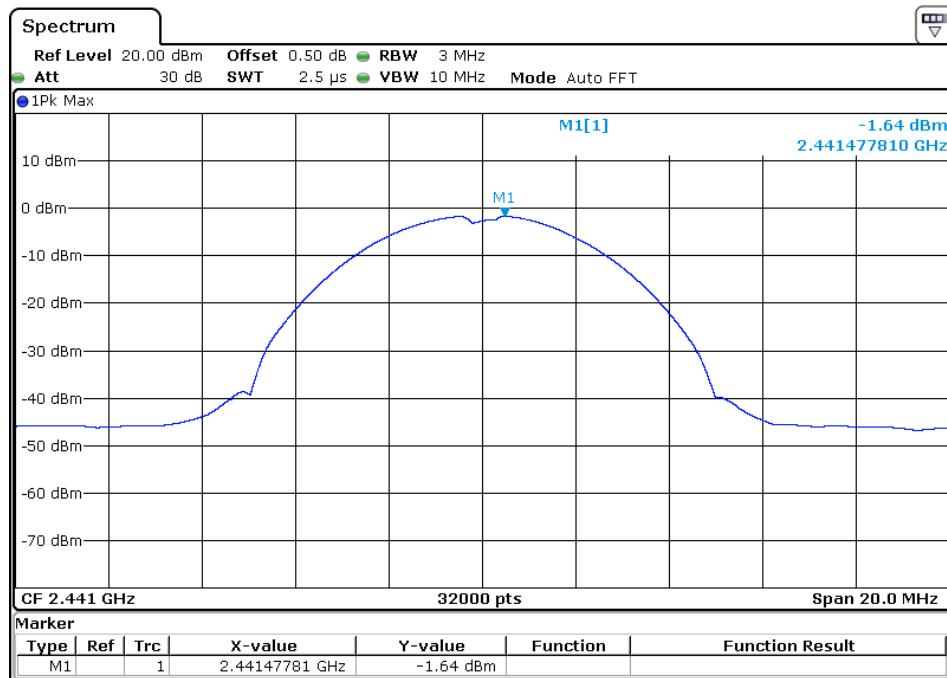
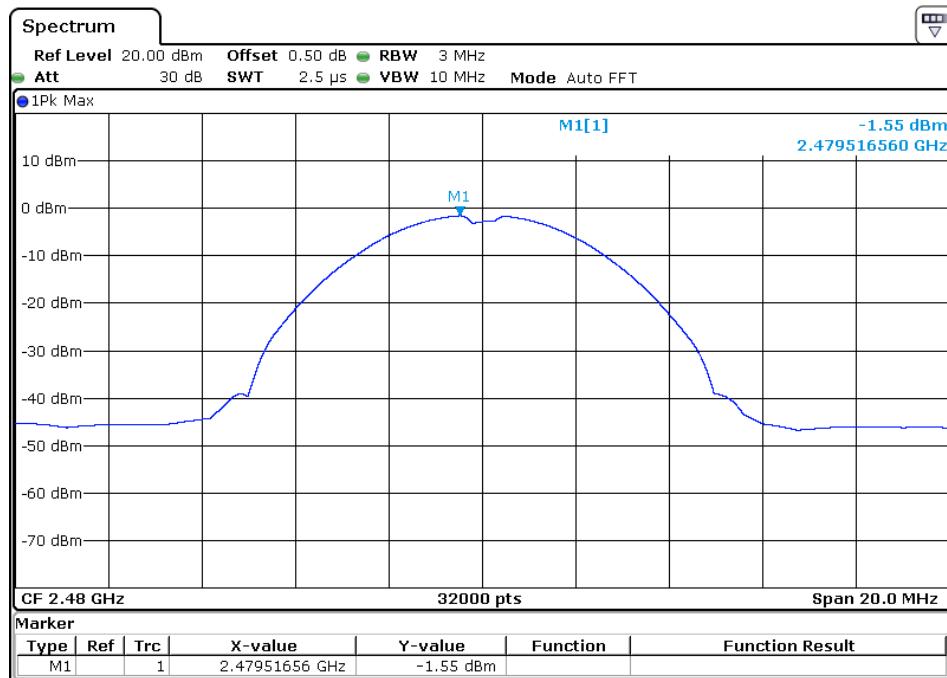
EUT:	Rechargeable party speaker	Model Name :	TQ-FW883
Temperature:	26 °C	Relative Humidity:	60%
Pressure:	1010 hPa	Test Voltage :	DC 7.4V from battery
Test Mode :	TX		

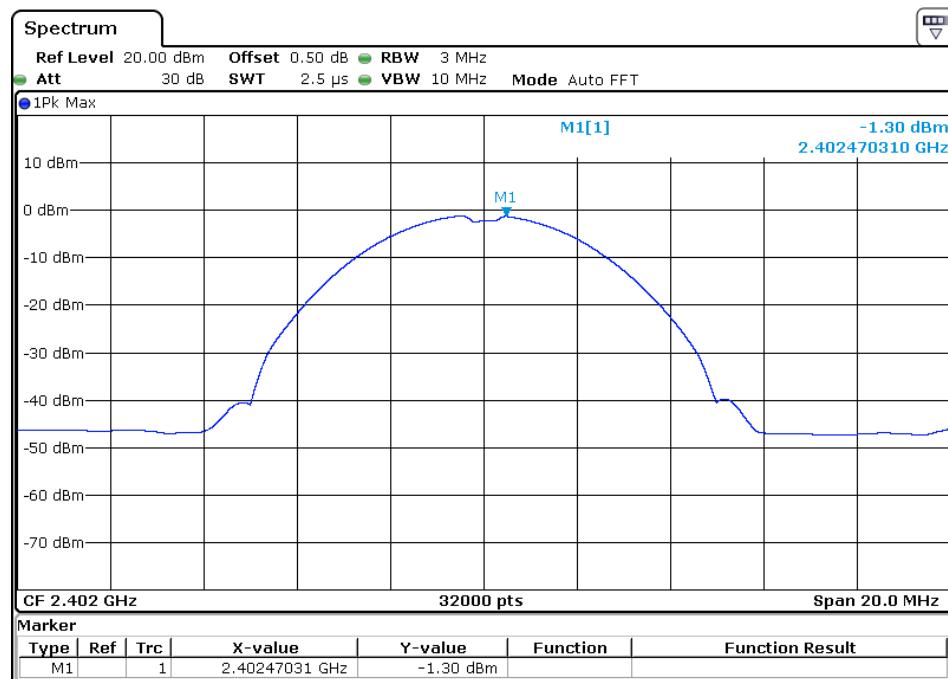
Note: All the data rates have been tested and the worst-case as the table below.

Test Mode	Frequency	Peak Output Power (dBm)	Limit (dBm)	Result
GFSK Data rate 1Mbps	2402 MHz	-0.01	30	Pass
	2441 MHz	-0.06	30	Pass
	2480 MHz	0.03	30	Pass
π/4QPSK Data rate 2Mbps	2402 MHz	-1.45	20.96	Pass
	2441 MHz	-1.64	20.96	Pass
	2480 MHz	-1.55	20.96	Pass
8DPSK Data rate 3Mbps	2402 MHz	-1.30	20.96	Pass
	2441 MHz	-1.40	20.96	Pass
	2480 MHz	-1.77	20.96	Pass

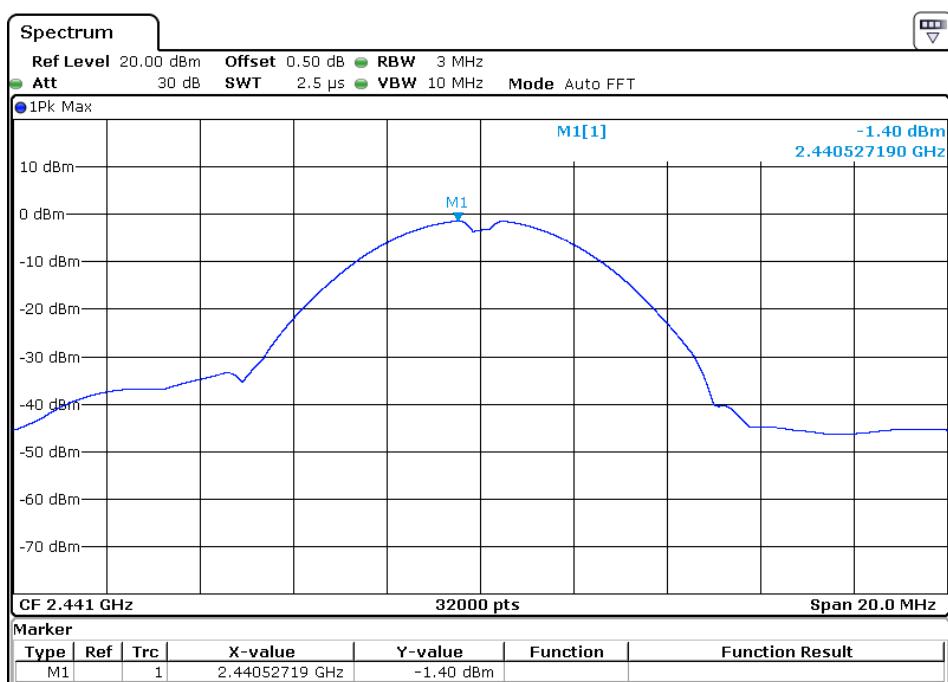
**CH 00-1Mbps****CH 39-1Mbps**

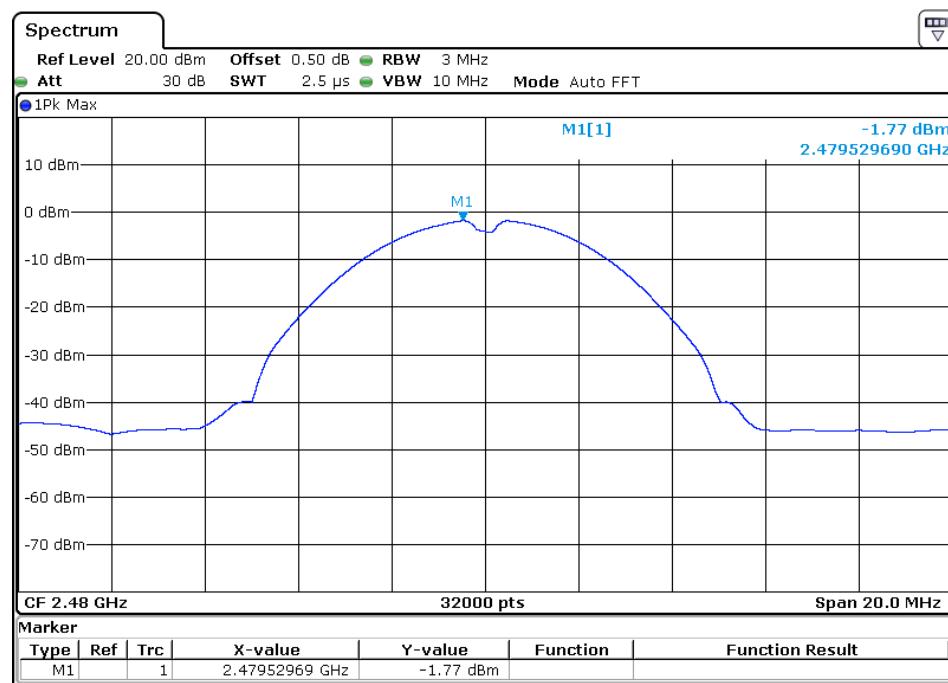
**CH 78-1Mbps****CH 00-2Mbps**

**CH 39-2Mbps****CH 78-2Mbps**



CH 39-3Mbps



**CH 78-3Mbps**

6.9 Band edge

6.9.1 Applied procedures / Limit

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, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

6.9.2 Test procedure

- a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below.
- b. Span = wide enough to capture the peak level of the emission operating on the channel closest to the bandedge, as well as any modulation products which fall outside of the authorized band of operation, RBW \geq 1% of the span, VBW \geq RBW, Sweep = auto, Detector function = peak, Trace = max hold

6.9.3 Deviation from standard

No deviation.

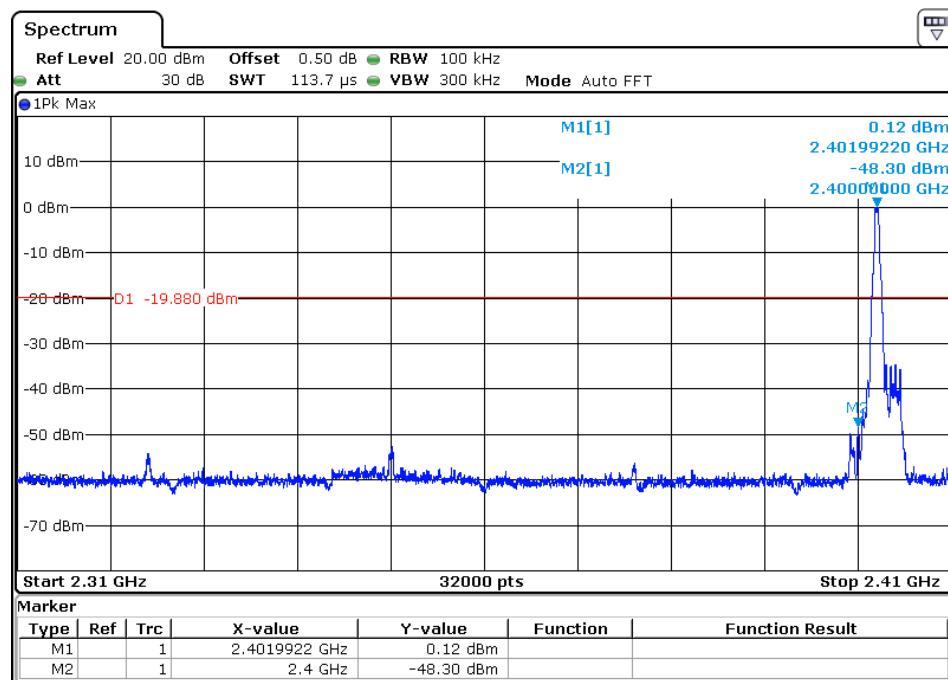
6.9.4 Test setup



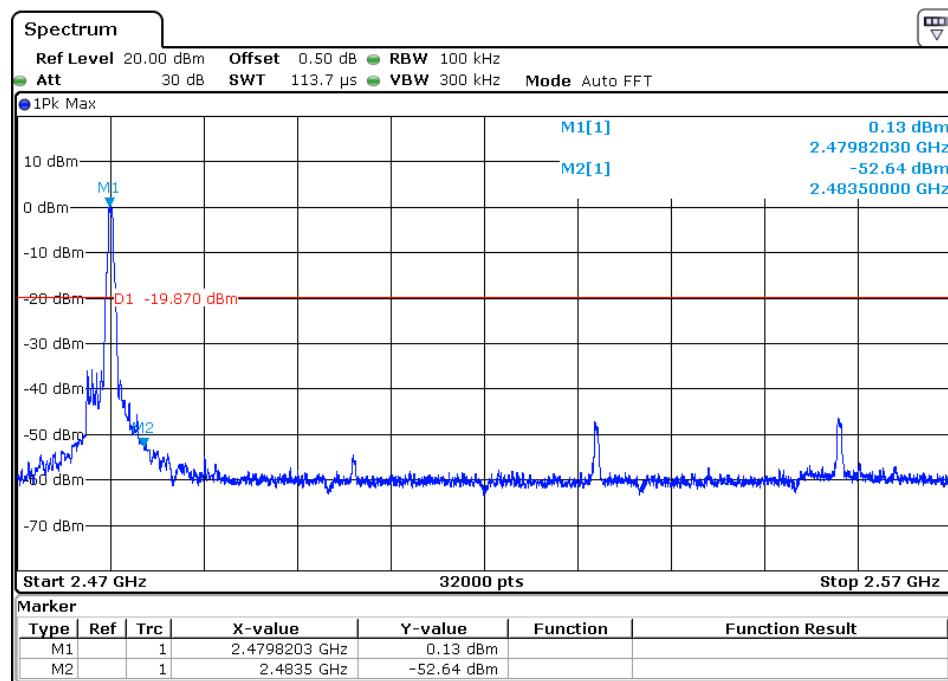
6.9.5 Test results

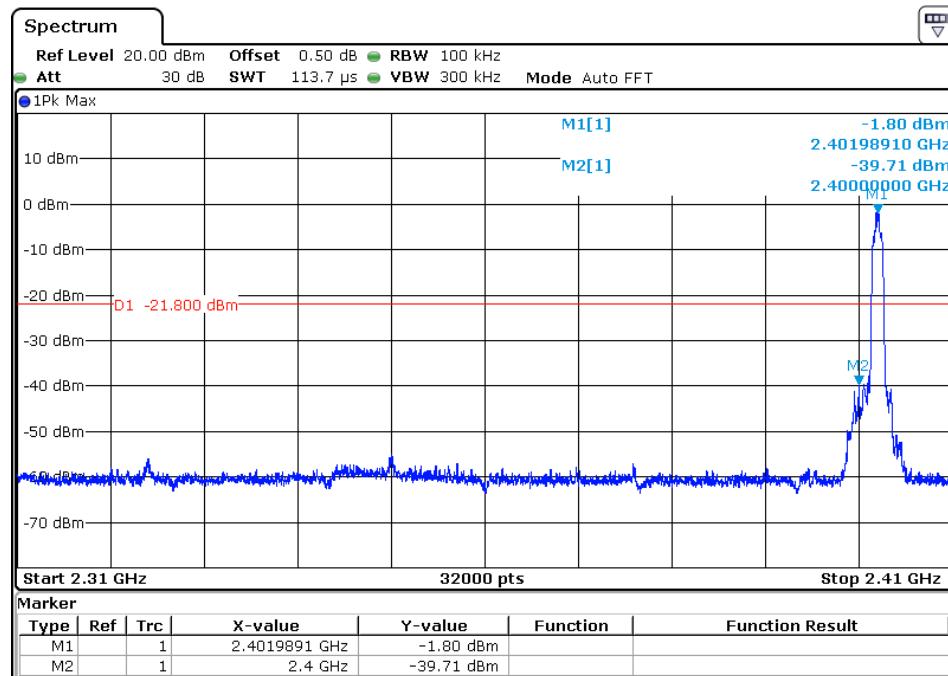
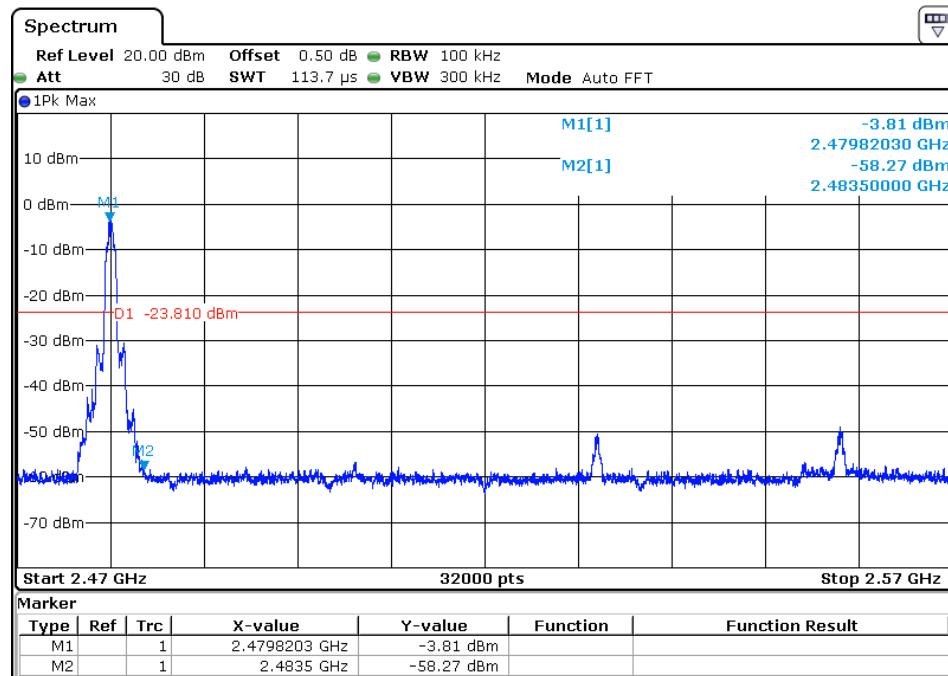
Test By: Sean she

CH00 (Lower) Data rate 1Mbps



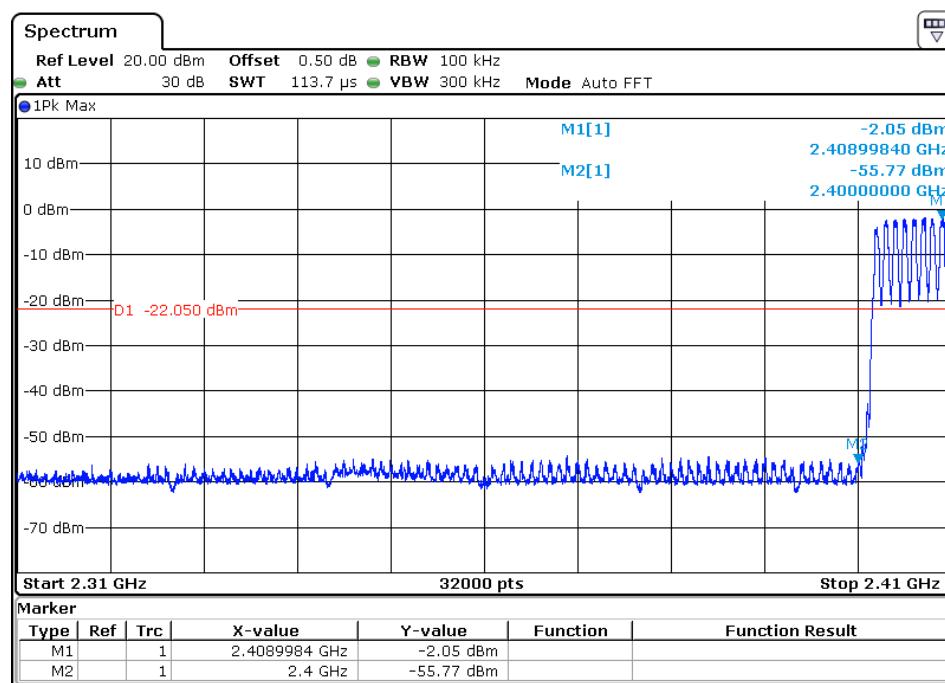
CH 78 (Upper) Data rate 1Mbps



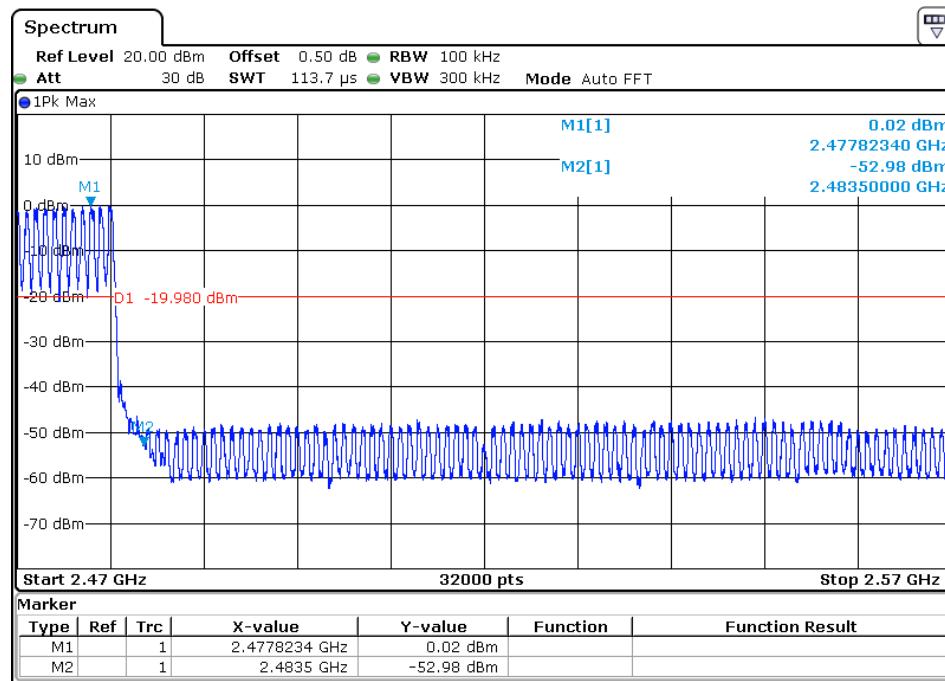
**CH00 (Lower) Data rate 3Mbps****CH 78 (Upper) Data rate 3Mbps**

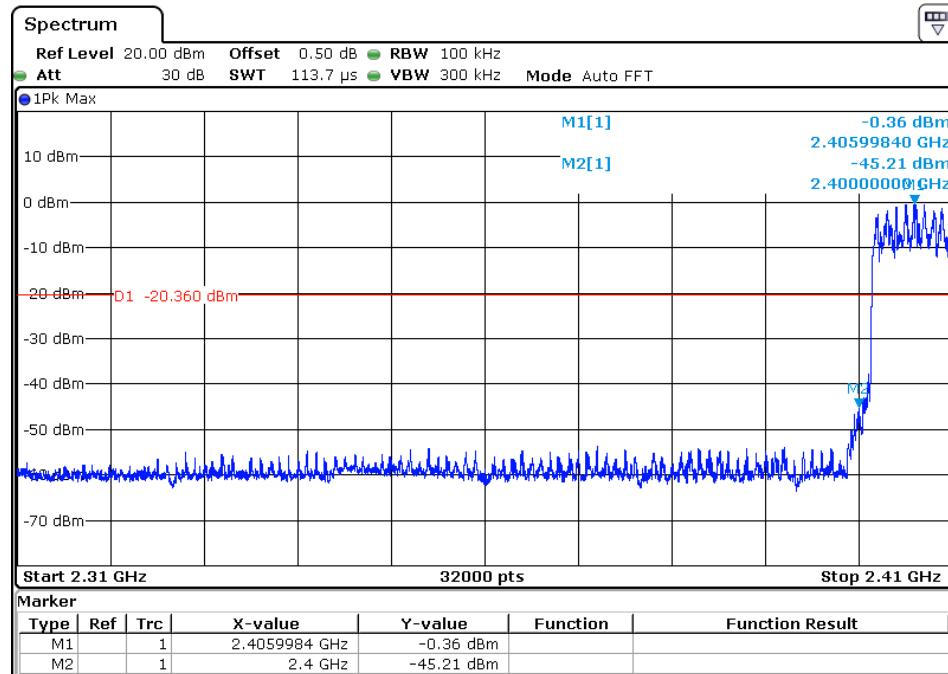
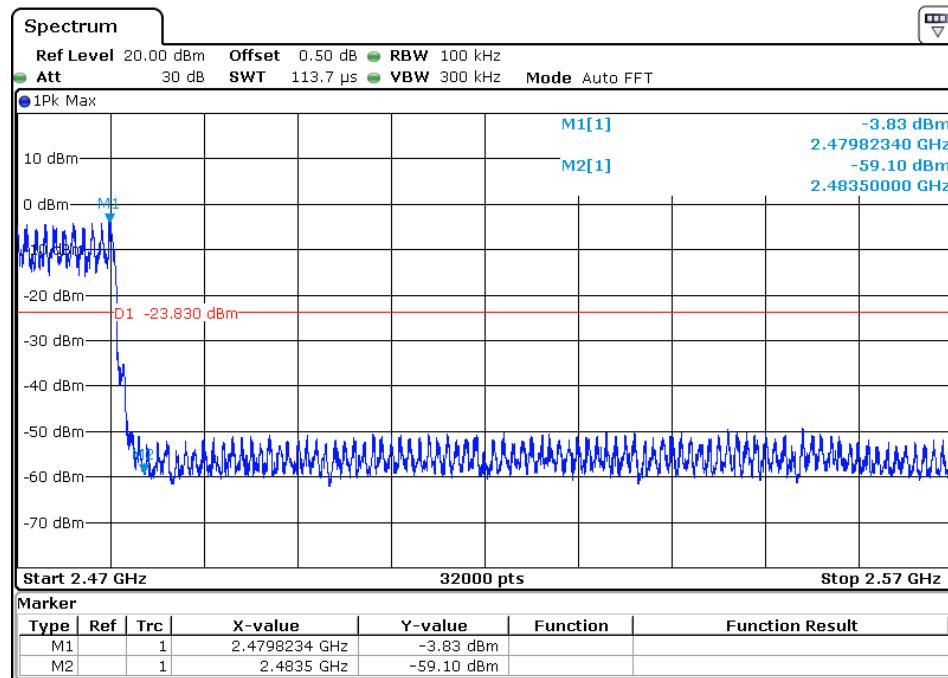


CH00 (Lower) Data rate 1Mbps



CH 78 (Upper) Data rate 1Mbps



**CH00 (Lower) Data rate 3Mbps****CH 78 (Upper) Data rate 3Mbps**

6.10 Conducted Spurious Emissions

6.10.1 Applied procedures / Limit

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, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

6.10.2 Test procedure

- a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below.
- b. Span = wide enough to capture the peak level of the in-band emission and all spurious emissions (e.g., harmonics) from the lowest frequency generated in the EUT up through the 10th harmonic. Typically, several plots are required to cover this entire span. RBW = 100 kHz
VBW ≥ RBW, Sweep = auto, Detector function = peak, Trace = max hold
sweep points ≥ investigated frequency range/RBW.

6.10.3 Deviation from standard

No deviation.

6.10.4 Test setup

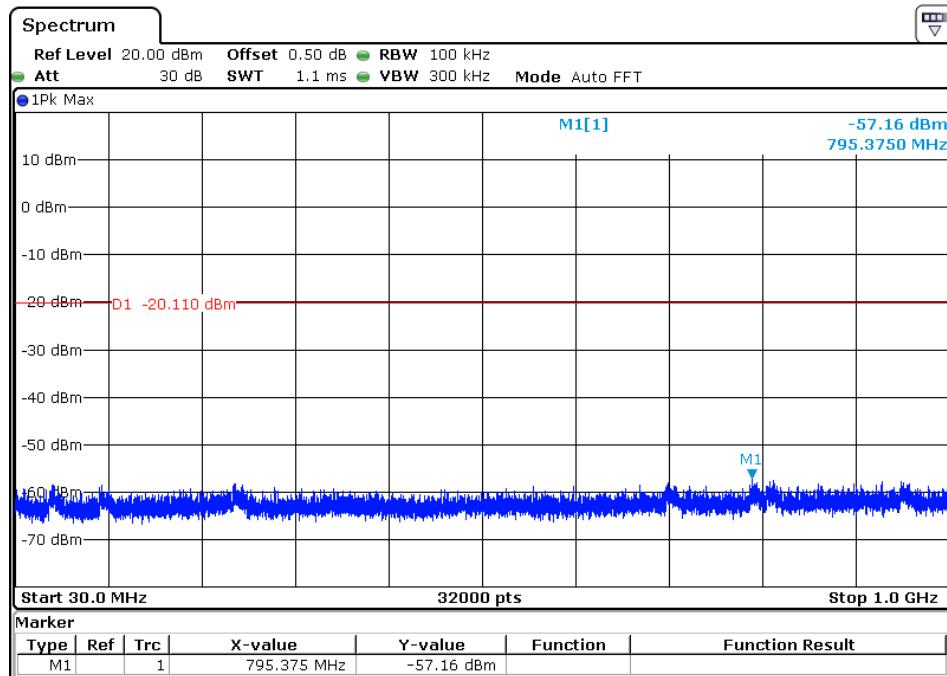




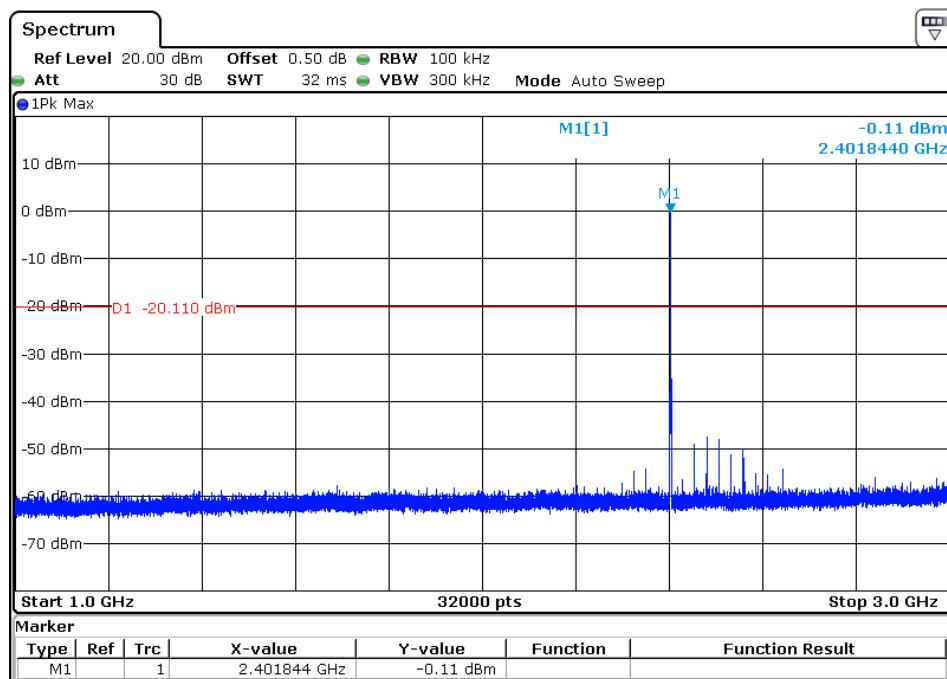
6.10.5 Test results

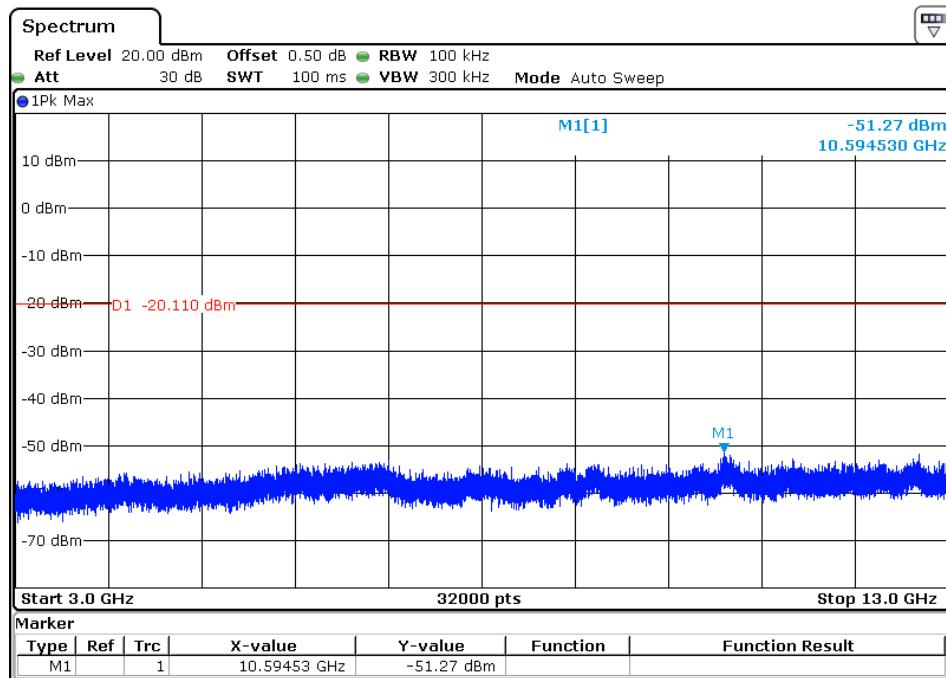
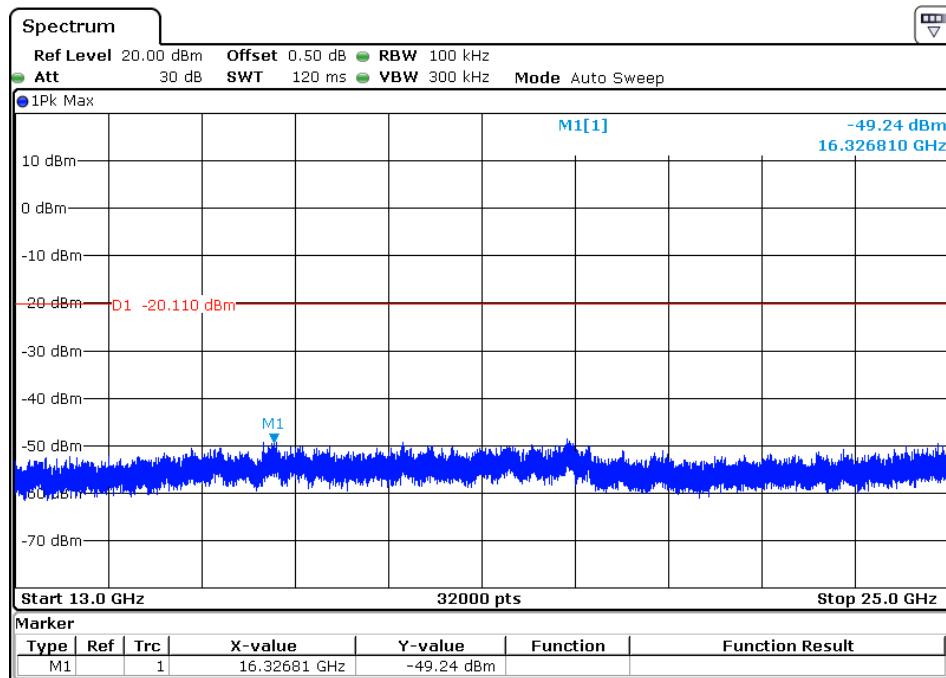
Test By: Sean she

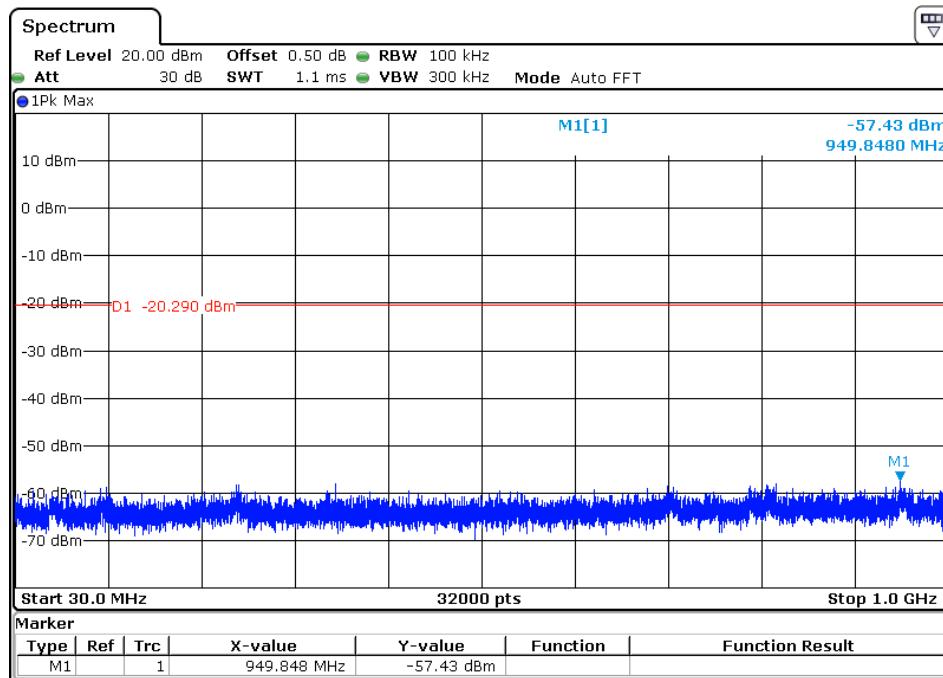
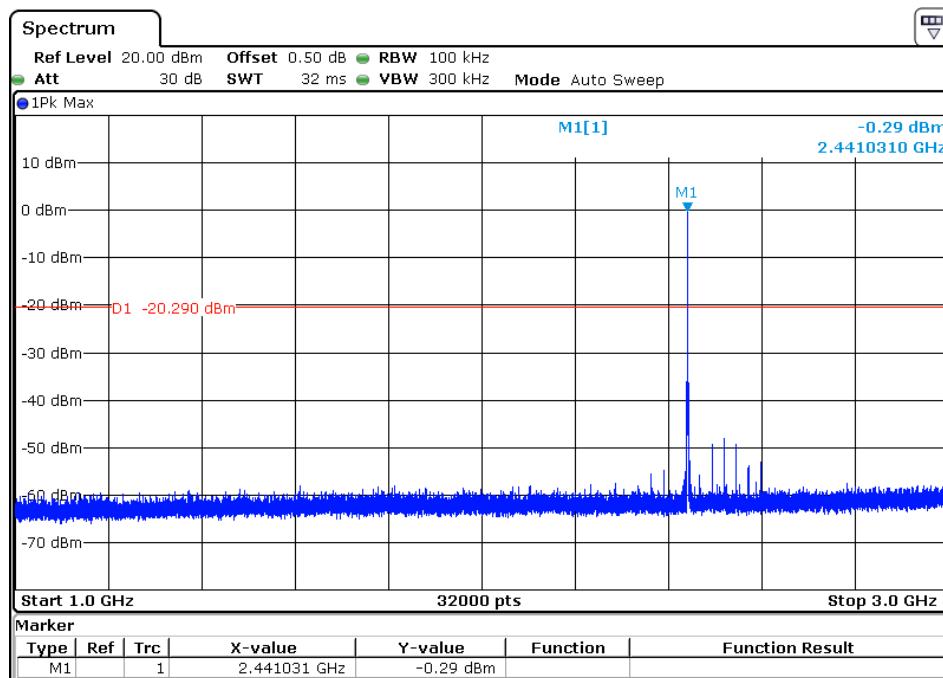
CH00 Data rate 1Mbps

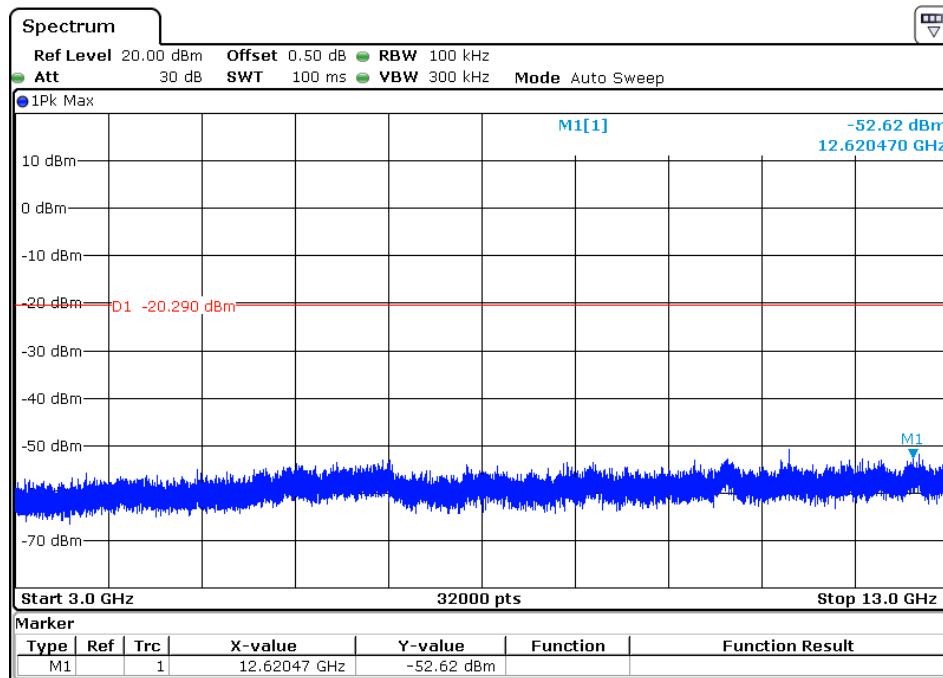
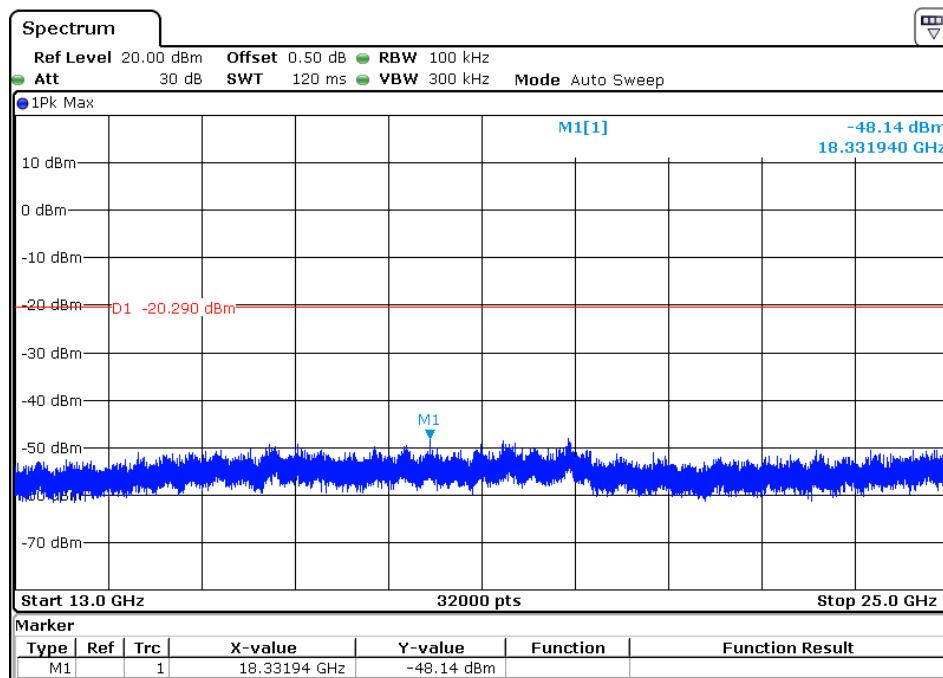


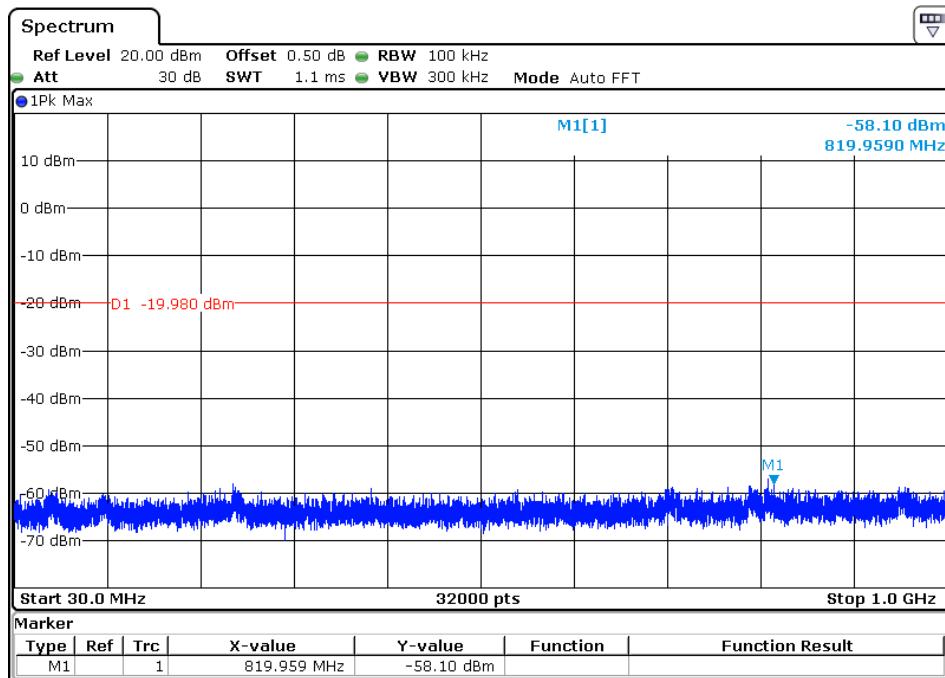
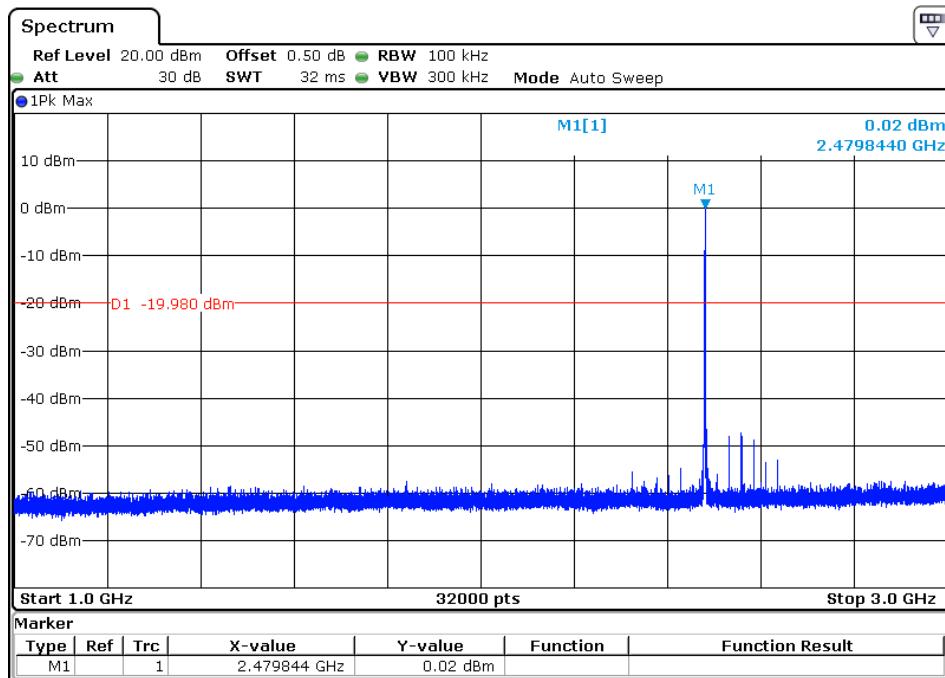
CH00 Data rate 1Mbps

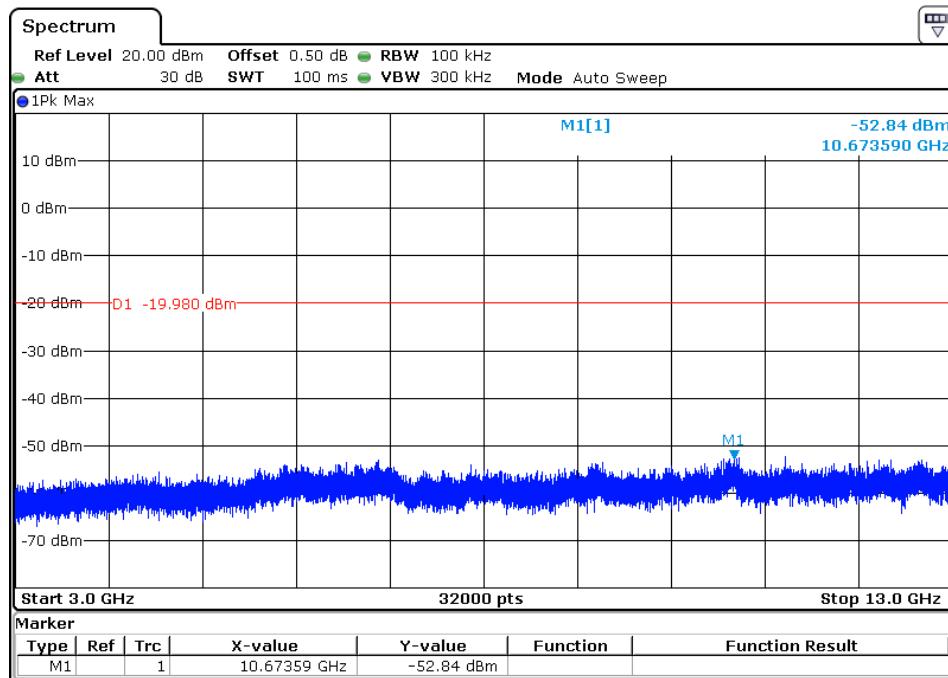
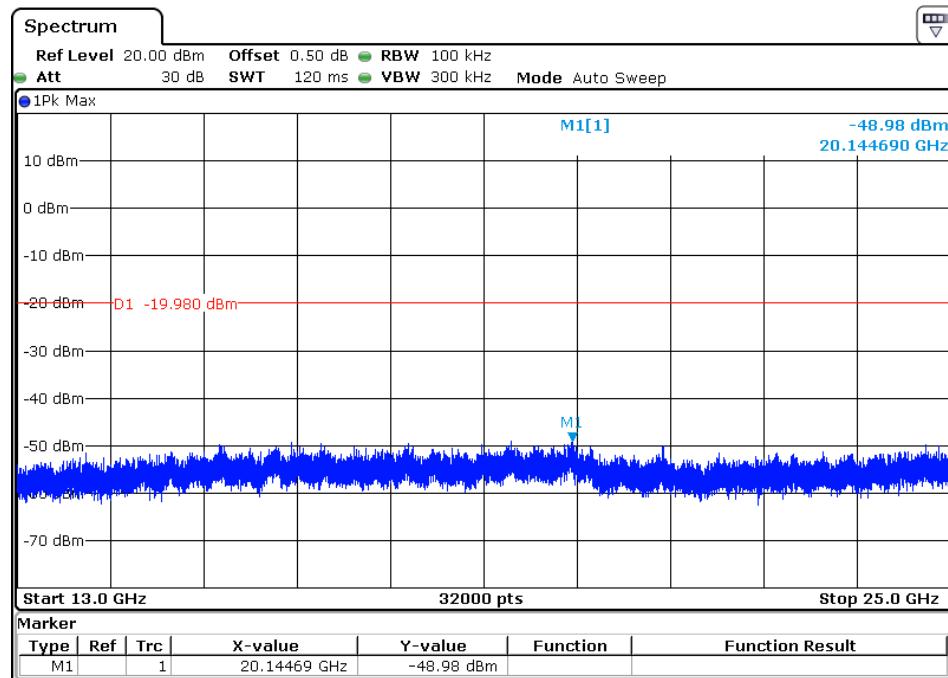


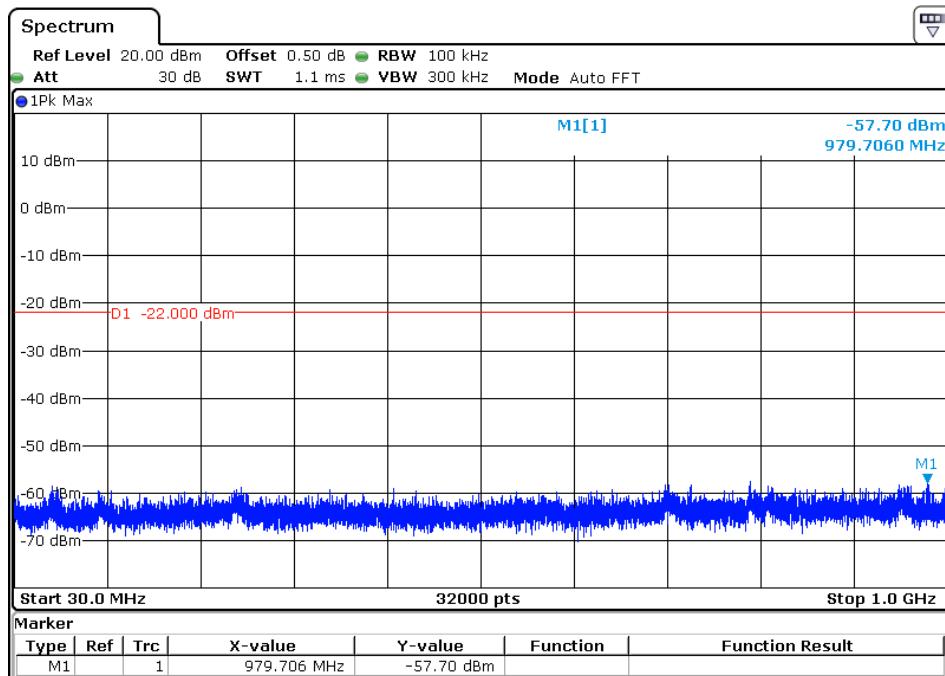
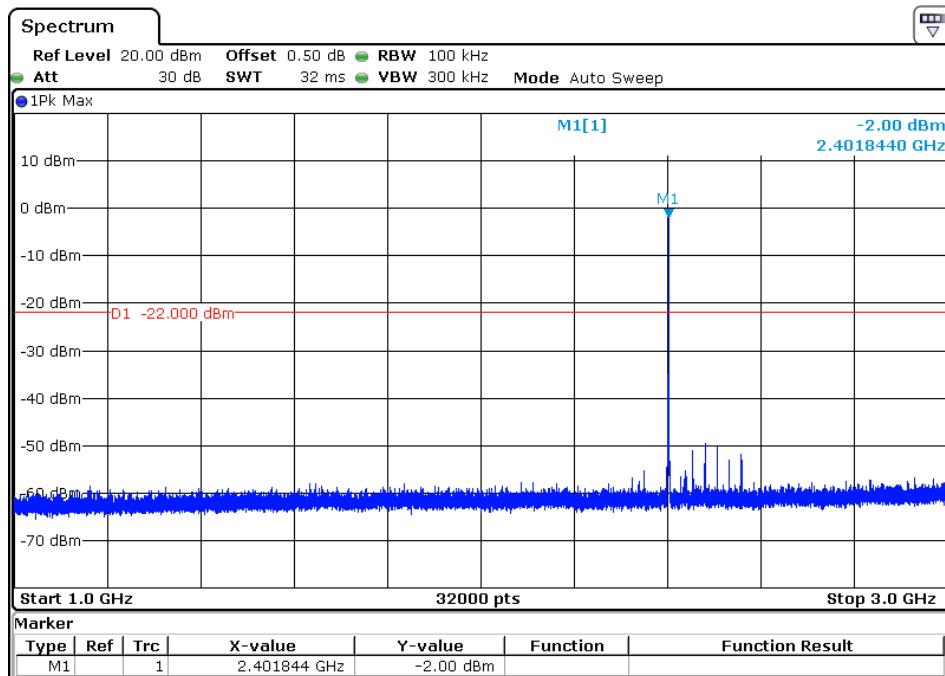
**CH00 Data rate 1Mbps****CH00 Data rate 1Mbps**

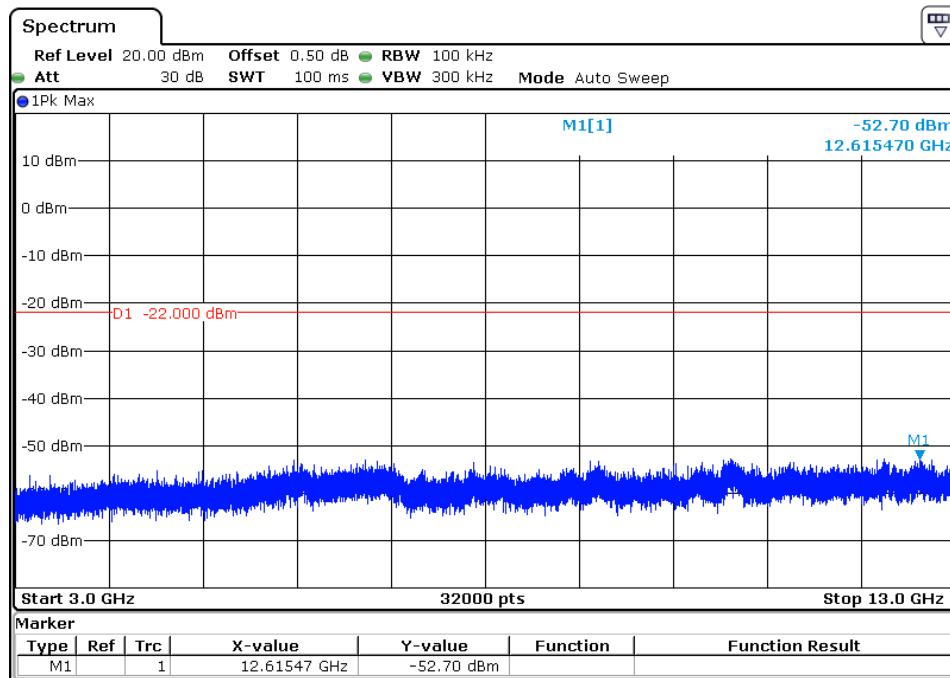
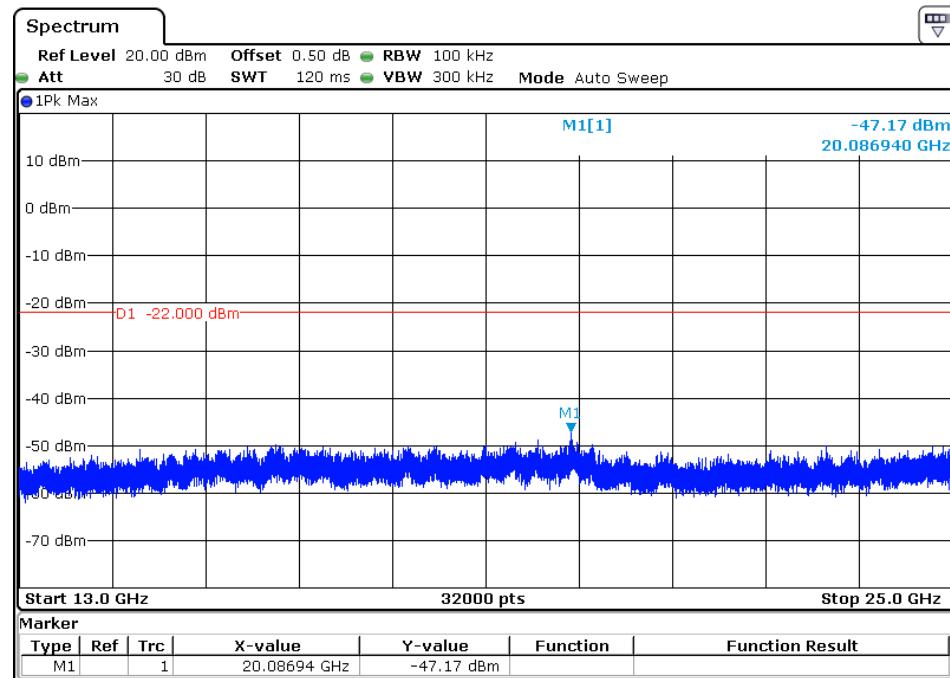
**CH39 Data rate 1Mbps****CH39 Data rate 1Mbps**

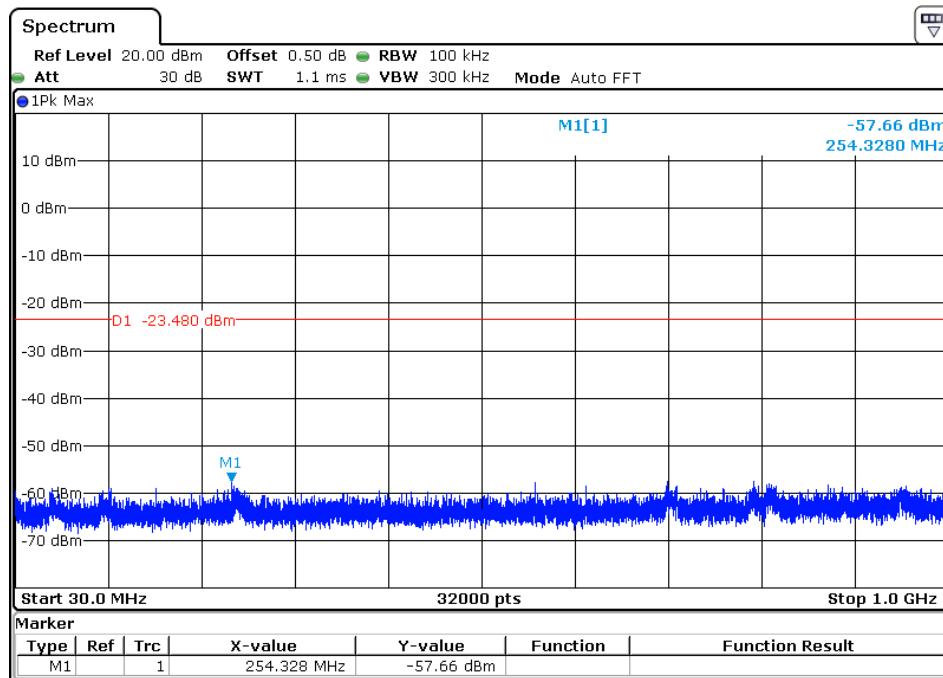
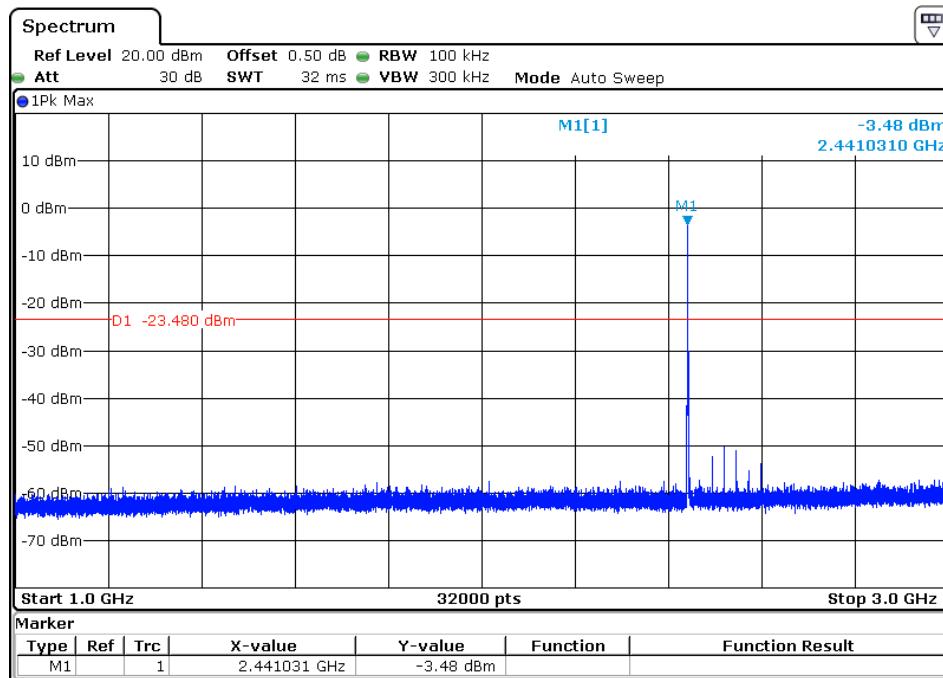
**CH39 Data rate 1Mbps****CH39 Data rate 1Mbps**

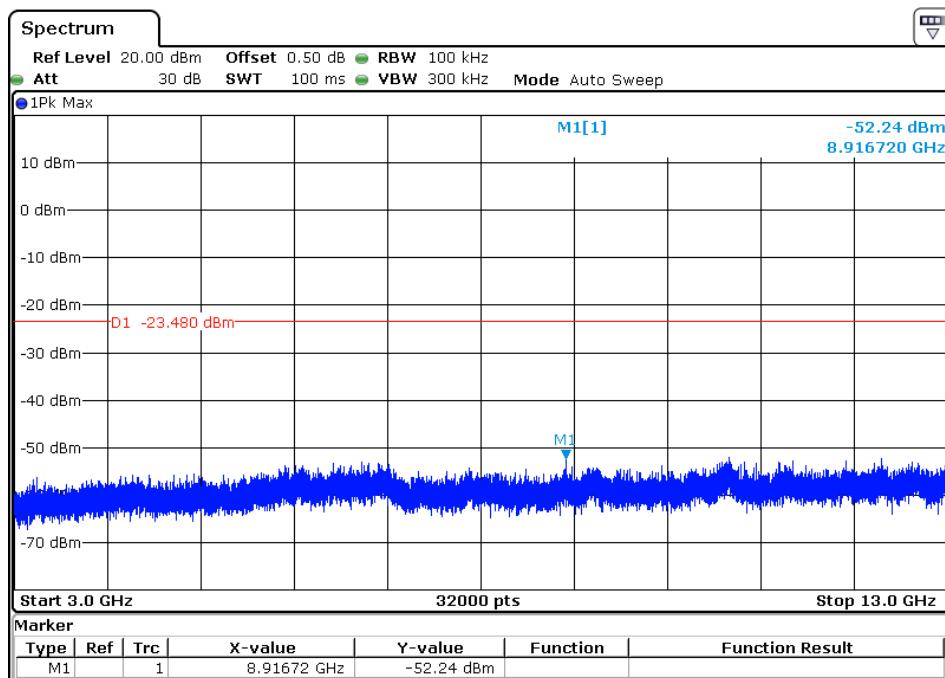
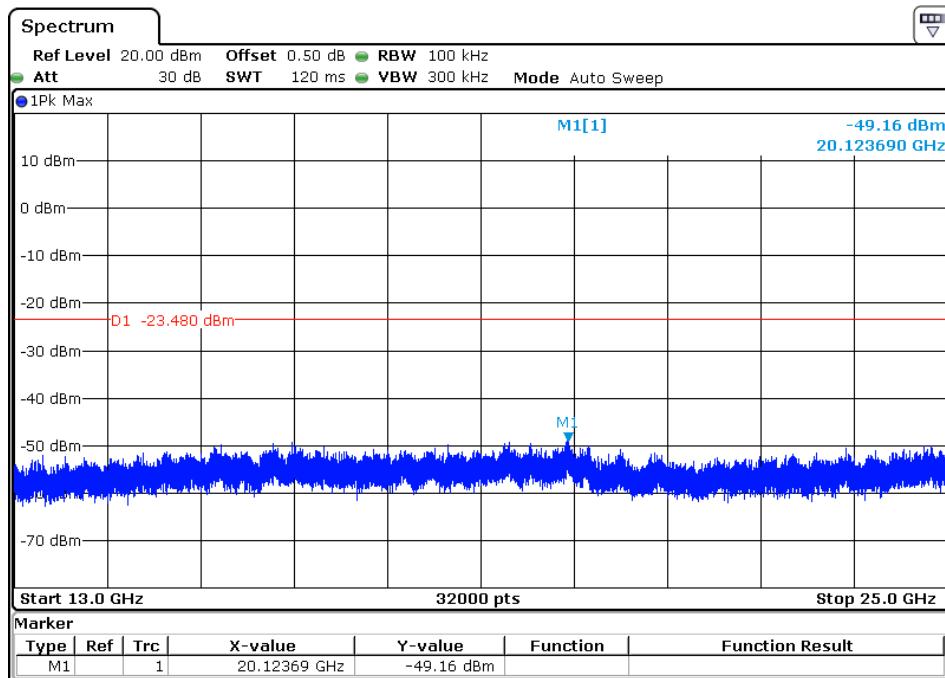
**CH78 Data rate 1Mbps****CH78 Data rate 1Mbps**

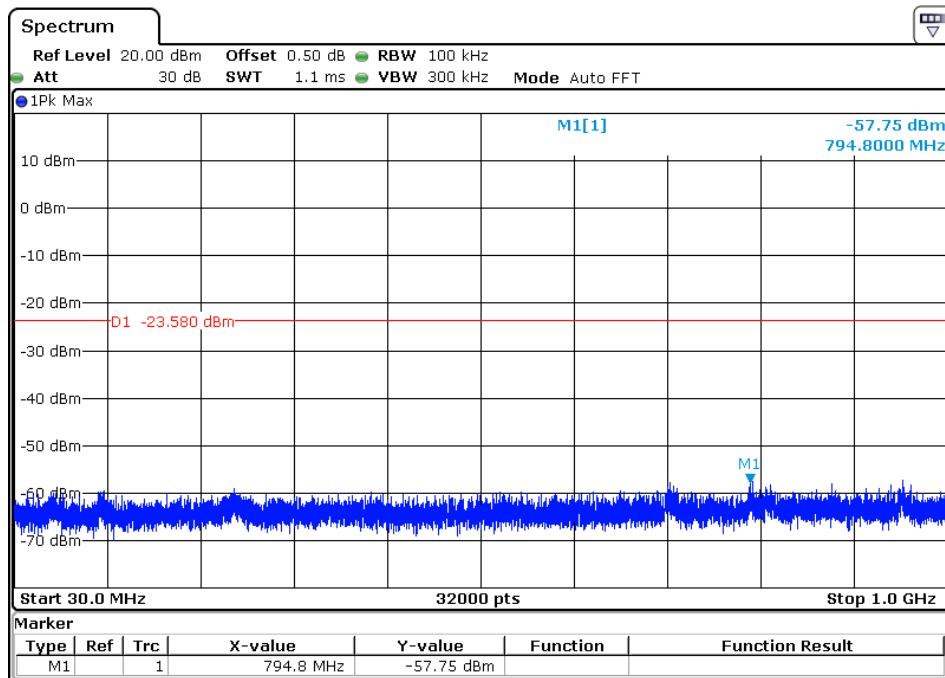
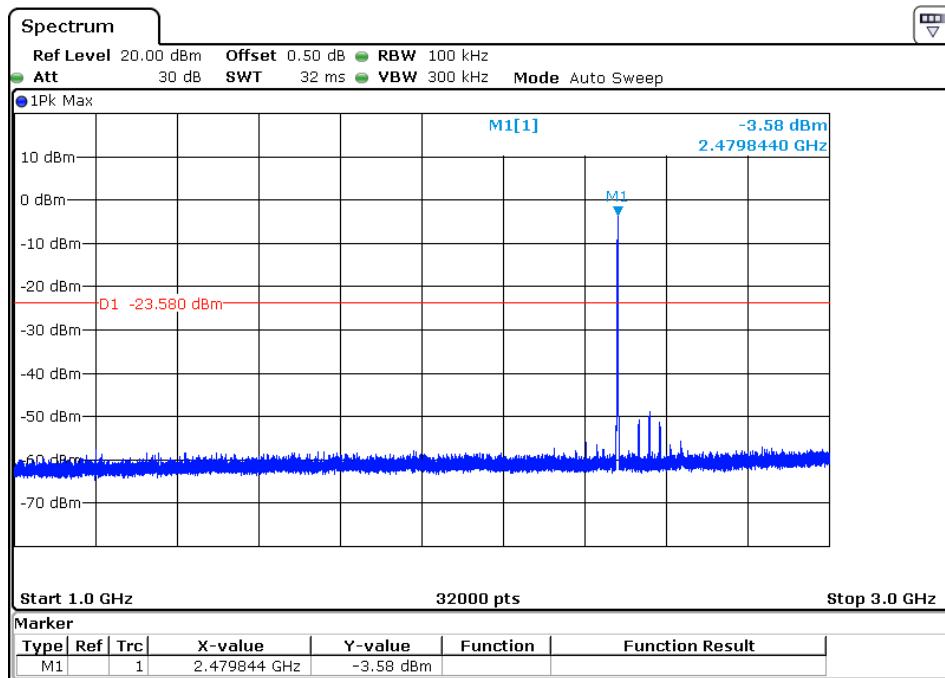
**CH78 Data rate 1Mbps****CH78 Data rate 1Mbps**

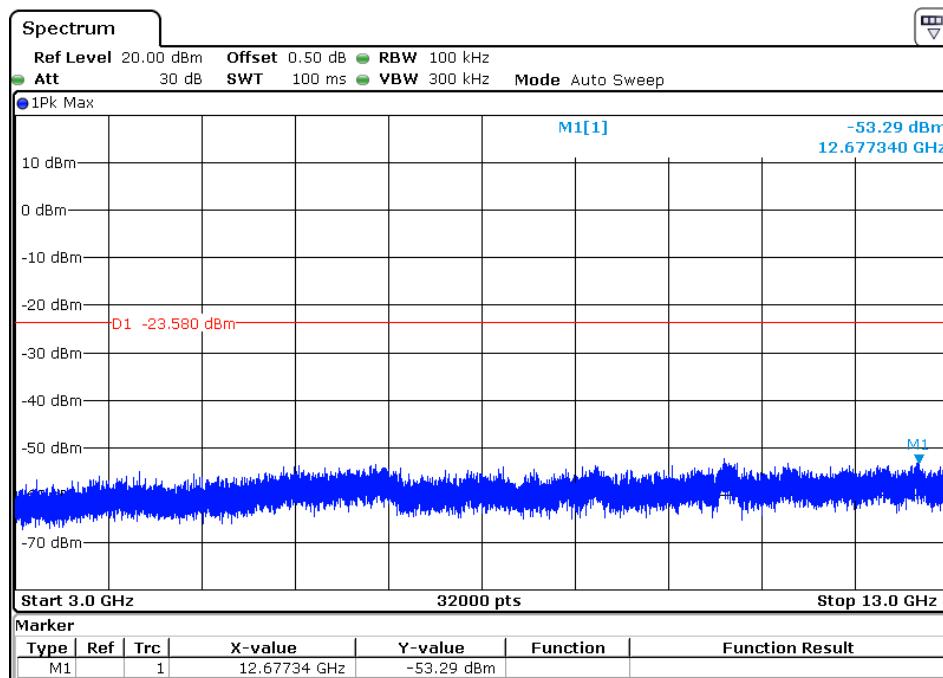
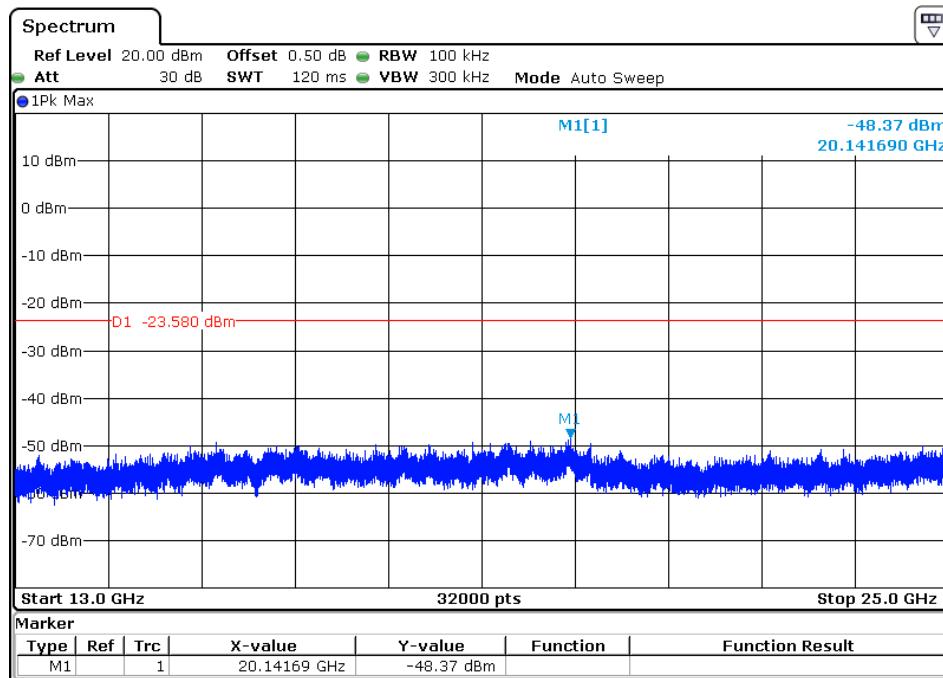
**CH00 Data rate 3Mbps****CH00 Data rate 3Mbps**

**CH00 Data rate 3Mbps****CH00 Data rate 3Mbps**

**CH39 Data rate 3Mbps****CH39 Data rate 3Mbps**

**CH39 Data rate 3Mbps****CH39 Data rate 3Mbps**

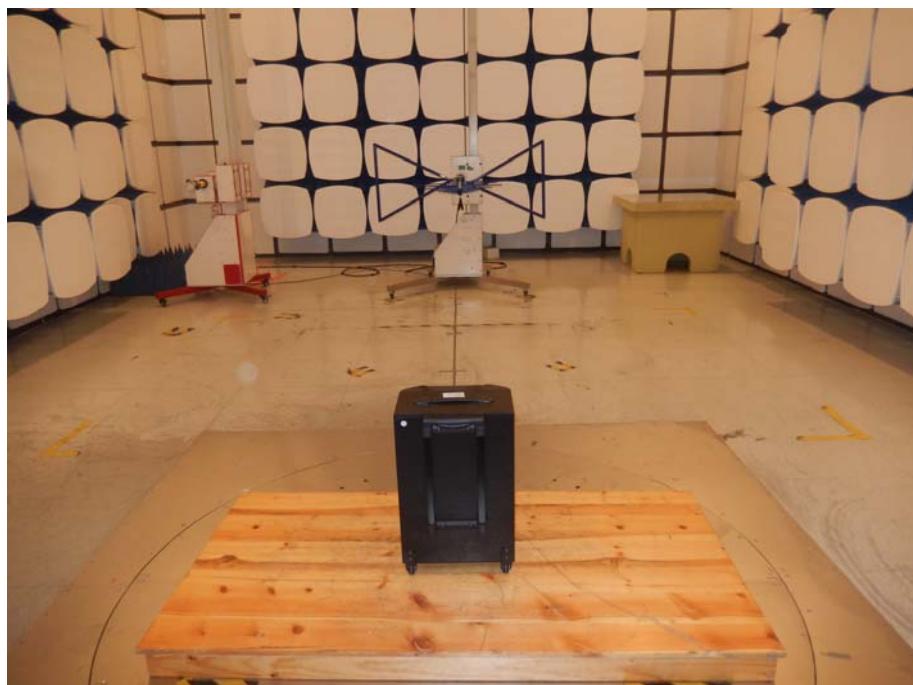
**CH78 Data rate 3Mbps****CH78 Data rate 3Mbps**

**CH78 Data rate 3Mbps****CH78 Data rate 3Mbps**

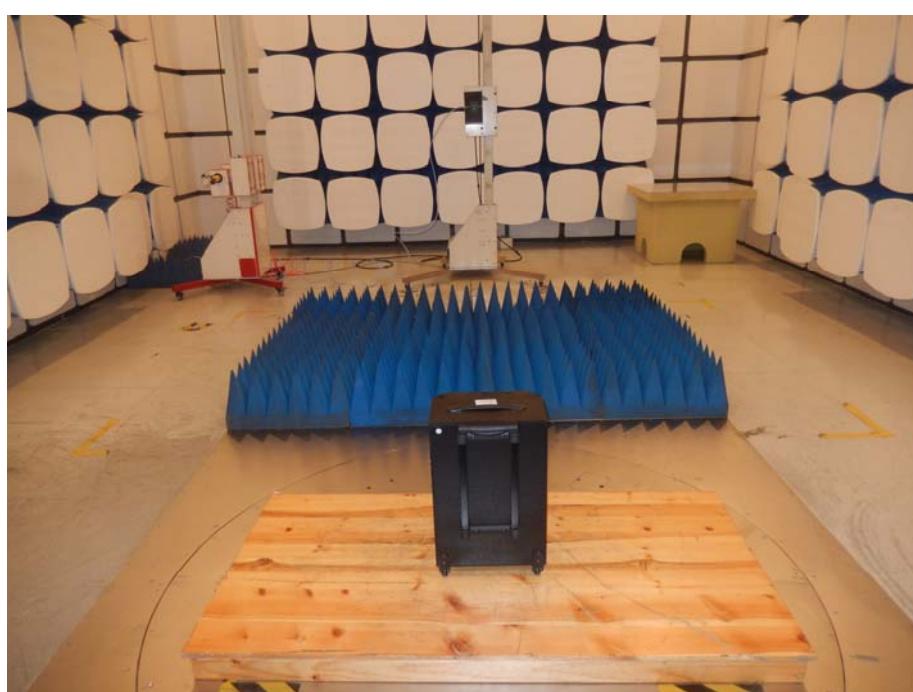
7 Photographs

7.1 Radiated Emission Test Setup

Below 1G



Above 1G



7.2 Conducted Emissions Test Setup



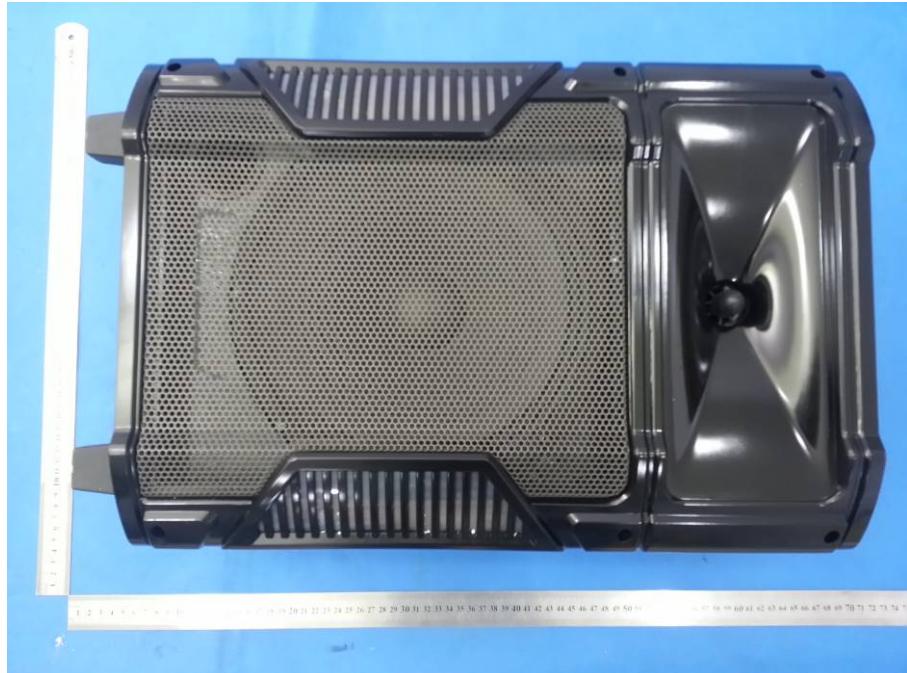
7.3 EUT Constructional Details





Report No. 4787649311-1

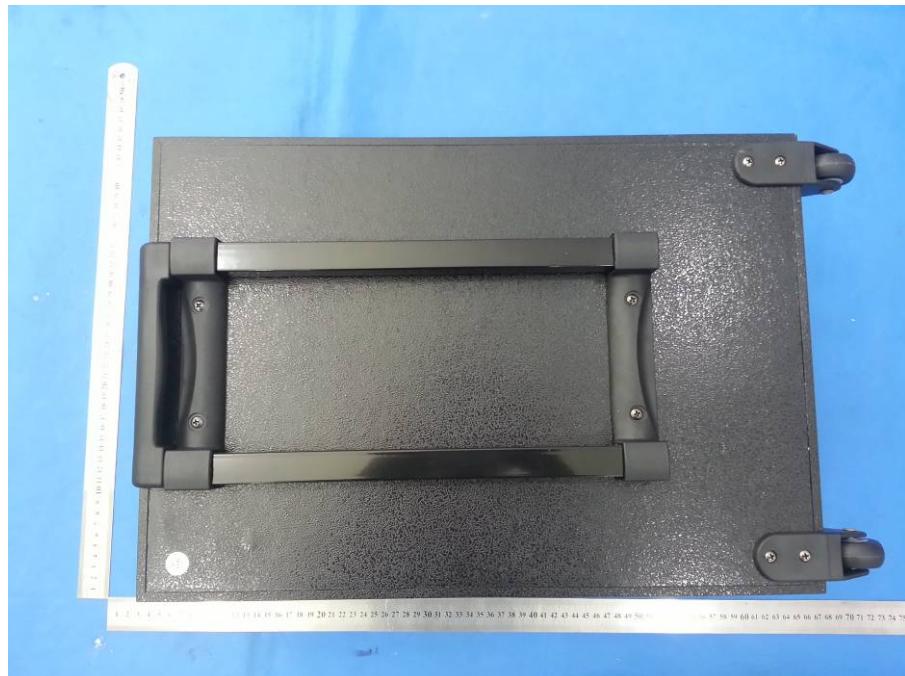
Issued Date: 2017-10-23





Report No. 4787649311-1

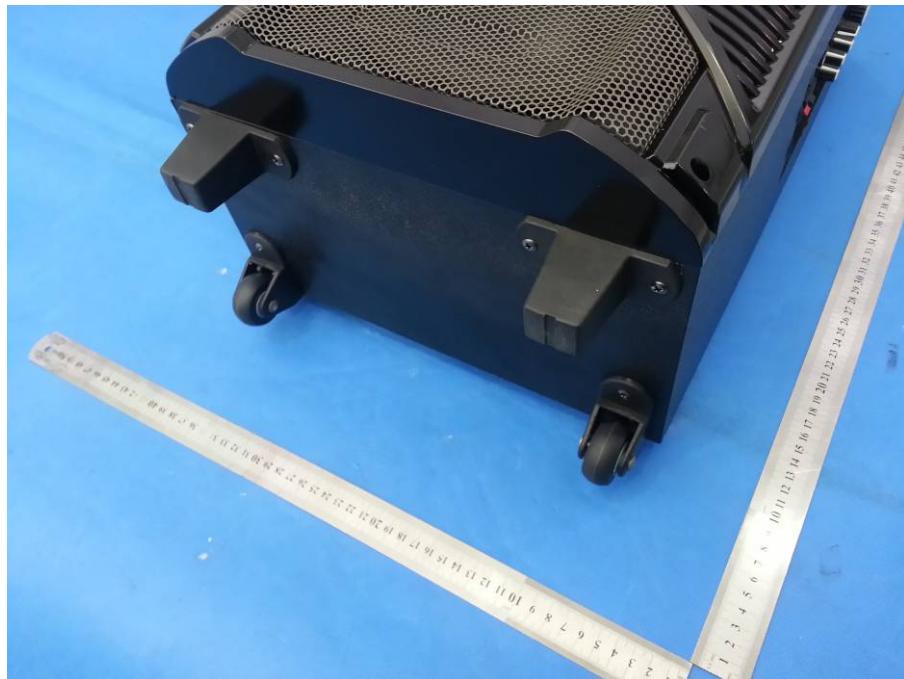
Issued Date: 2017-10-23





Report No. 4787649311-1

Issued Date: 2017-10-23





Report No. 4787649311-1

Issued Date: 2017-10-23





Report No. 4787649311-1

Issued Date: 2017-10-23





Report No. 4787649311-1

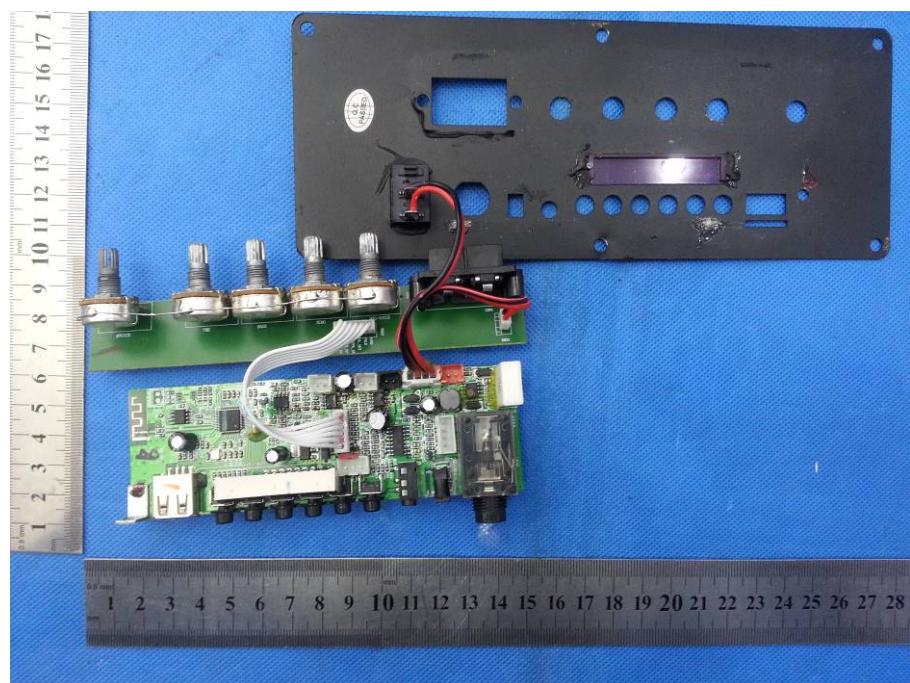
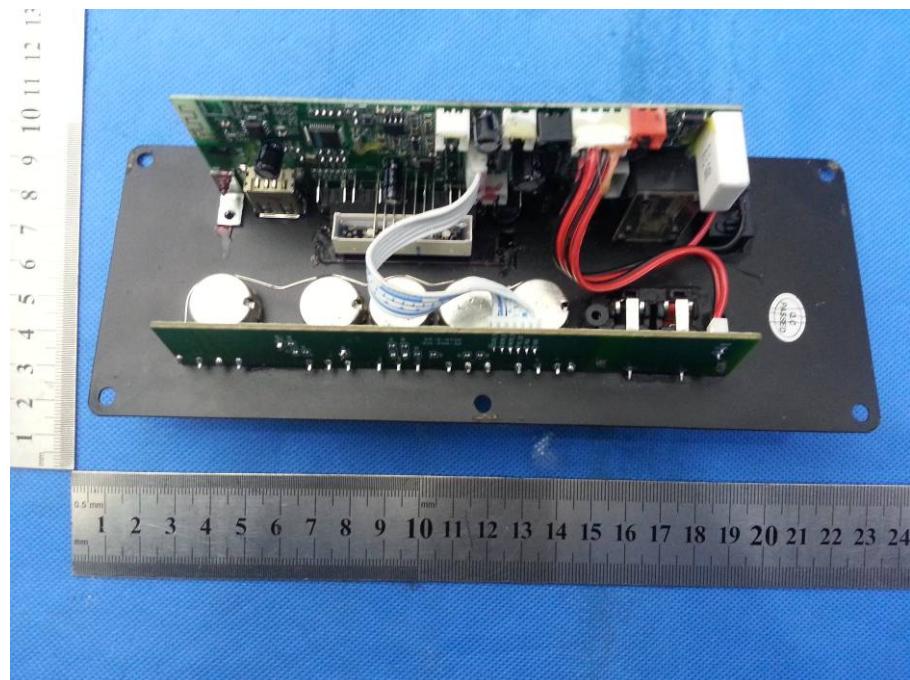
Issued Date: 2017-10-23





Report No. 4787649311-1

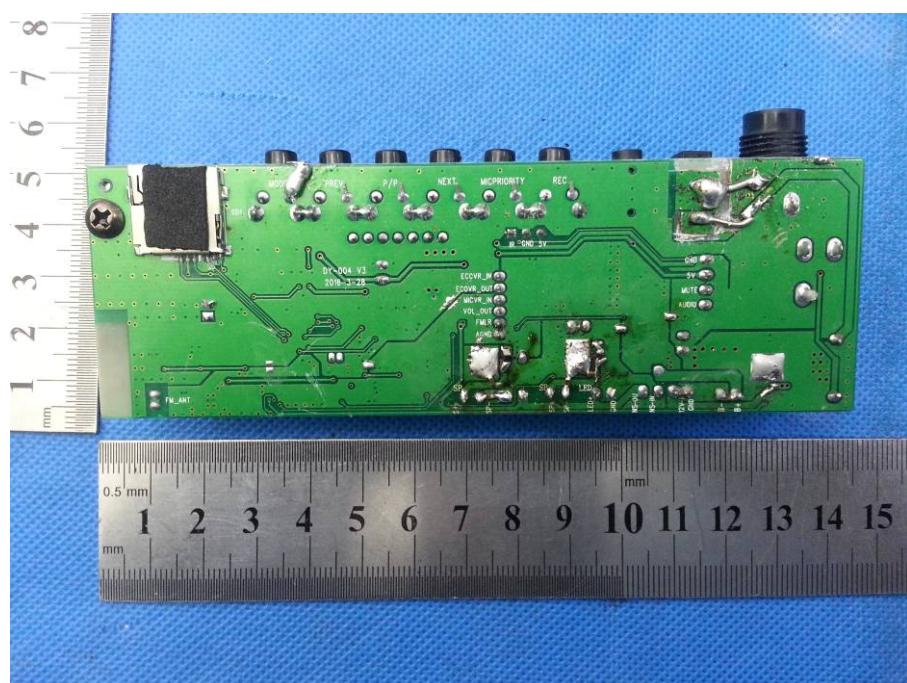
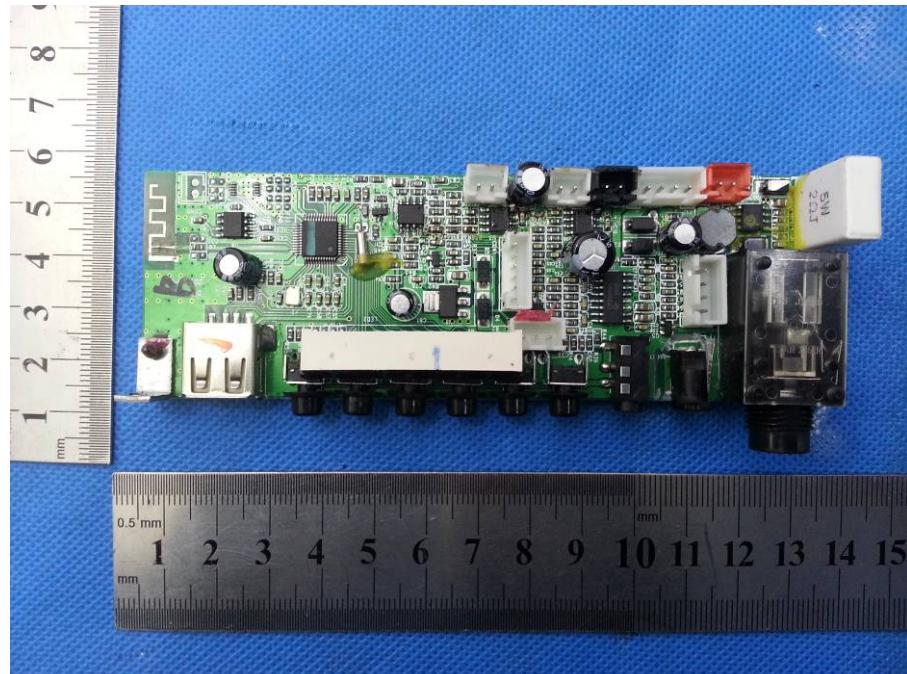
Issued Date: 2017-10-23





Report No. 4787649311-1

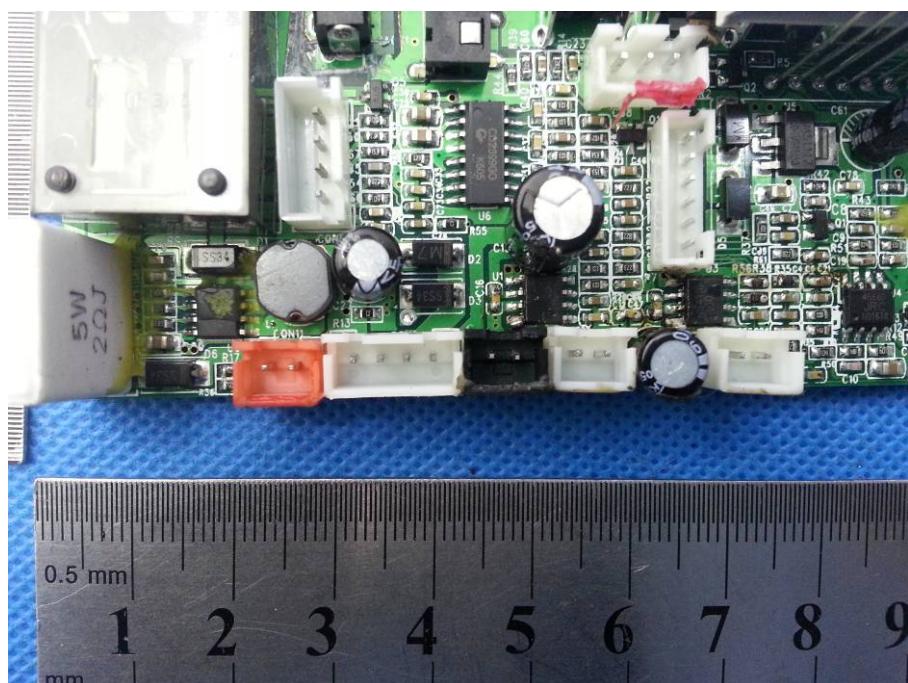
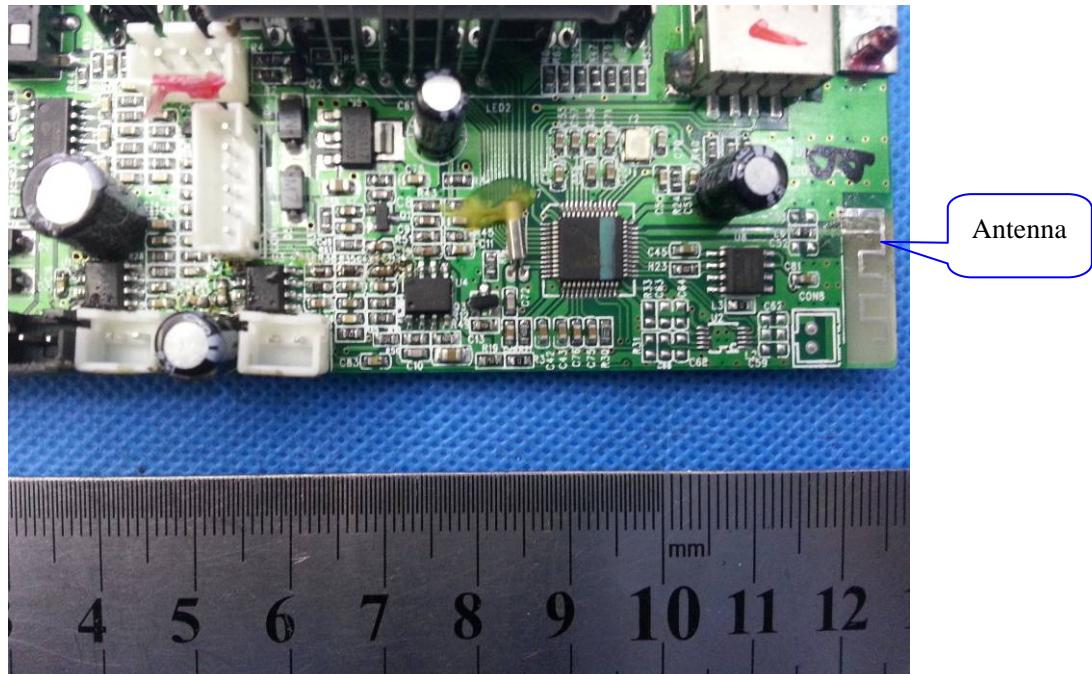
Issued Date: 2017-10-23





Report No. 4787649311-1

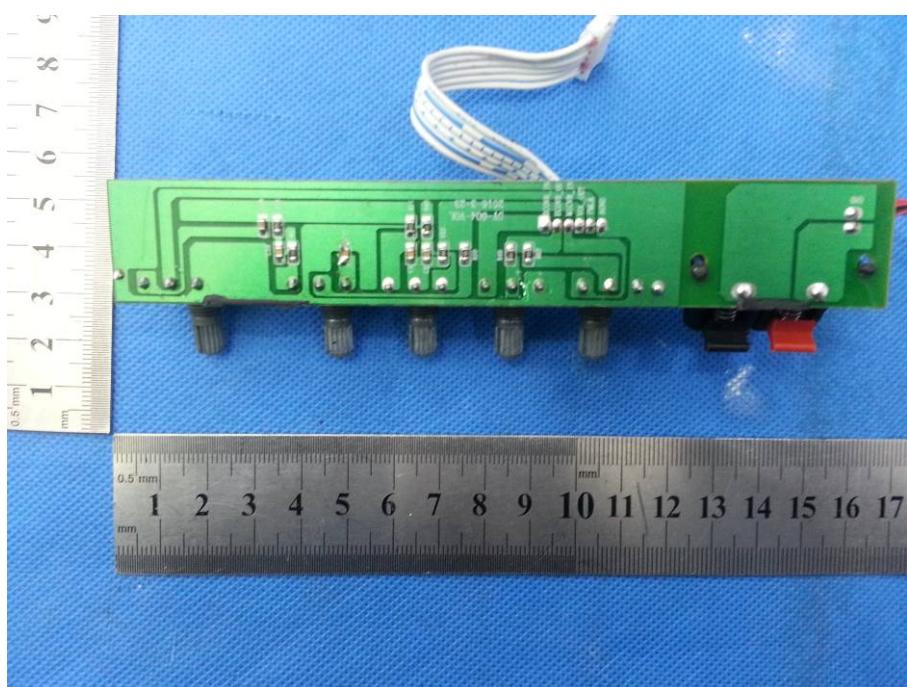
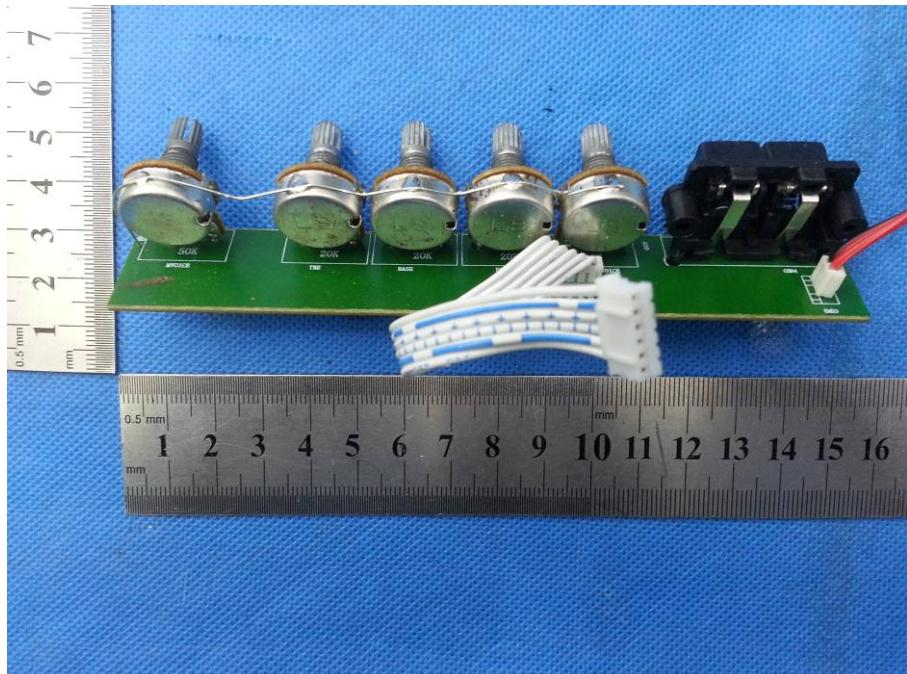
Issued Date: 2017-10-23





Report No. 4787649311-1

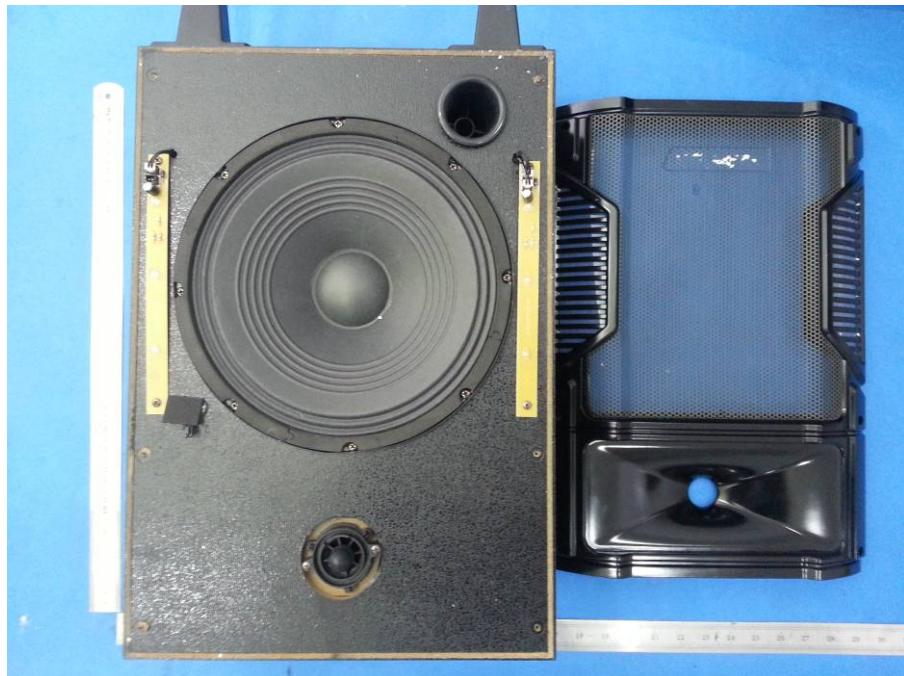
Issued Date: 2017-10-23





Report No. 4787649311-1

Issued Date: 2017-10-23





Report No. 4787649311-1

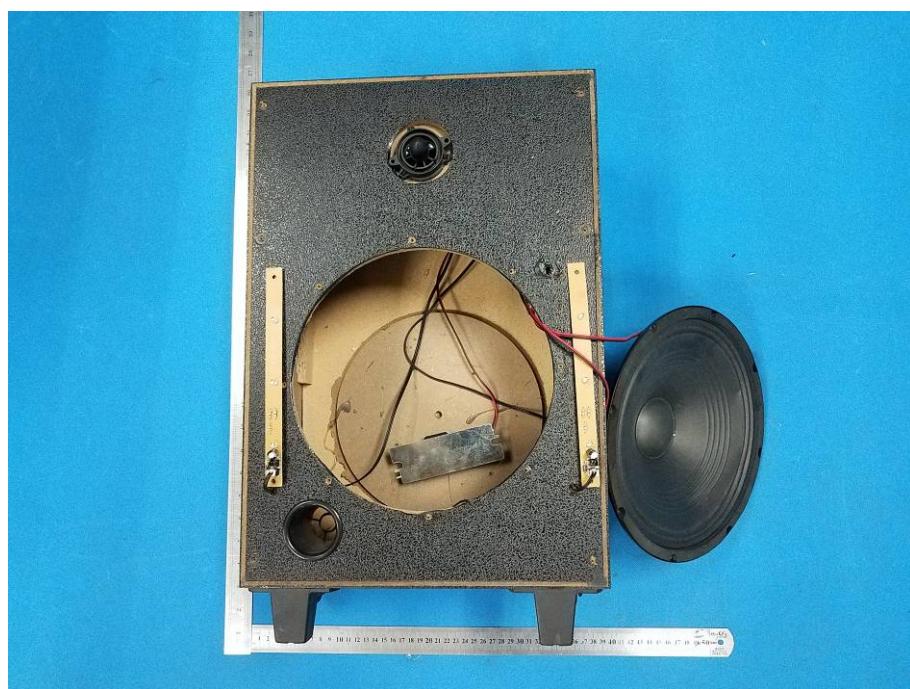
Issued Date: 2017-10-23





Report No. 4787649311-1

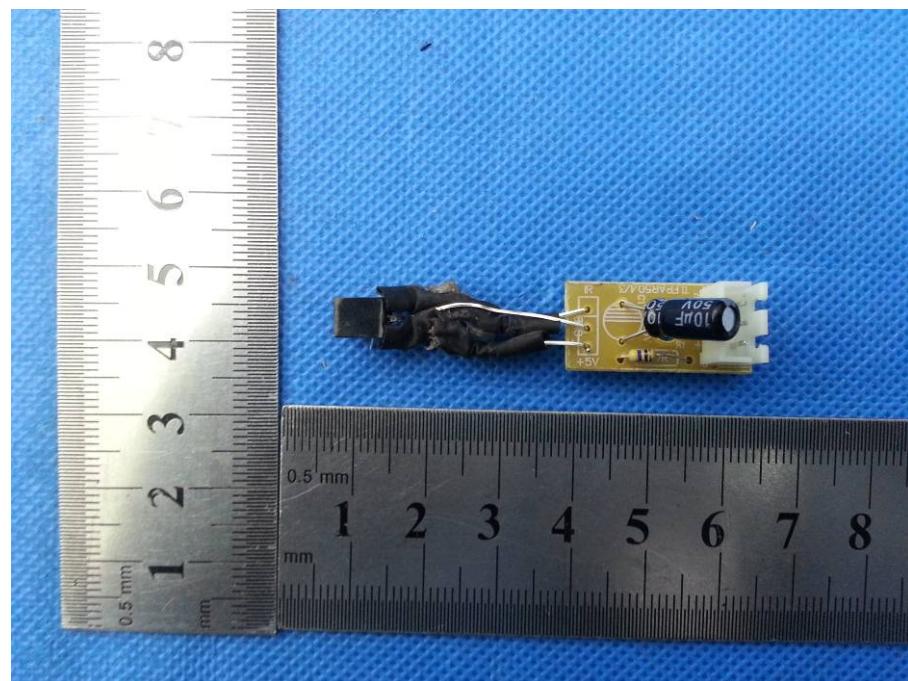
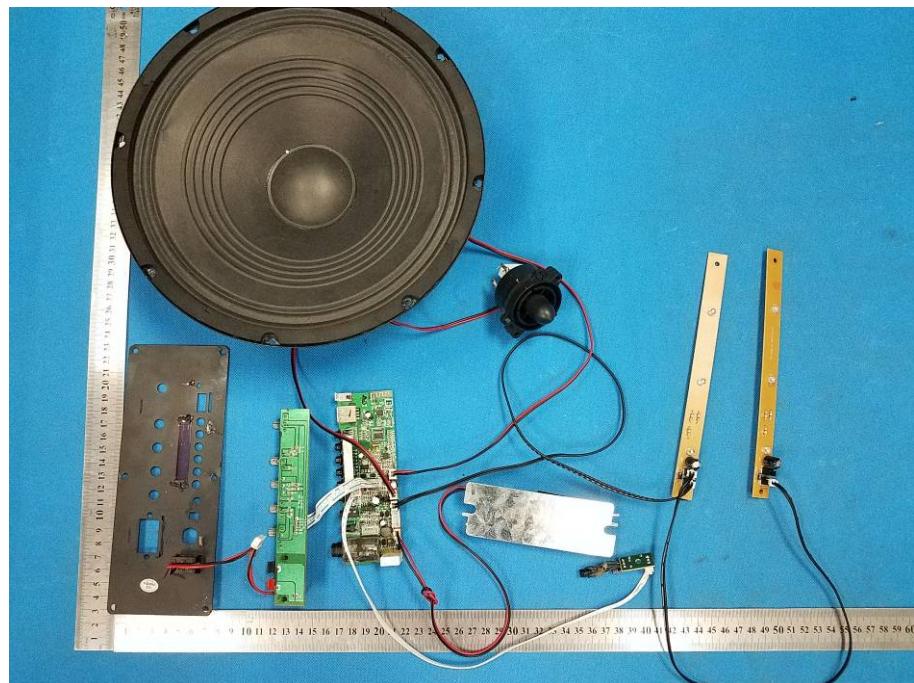
Issued Date: 2017-10-23





Report No. 4787649311-1

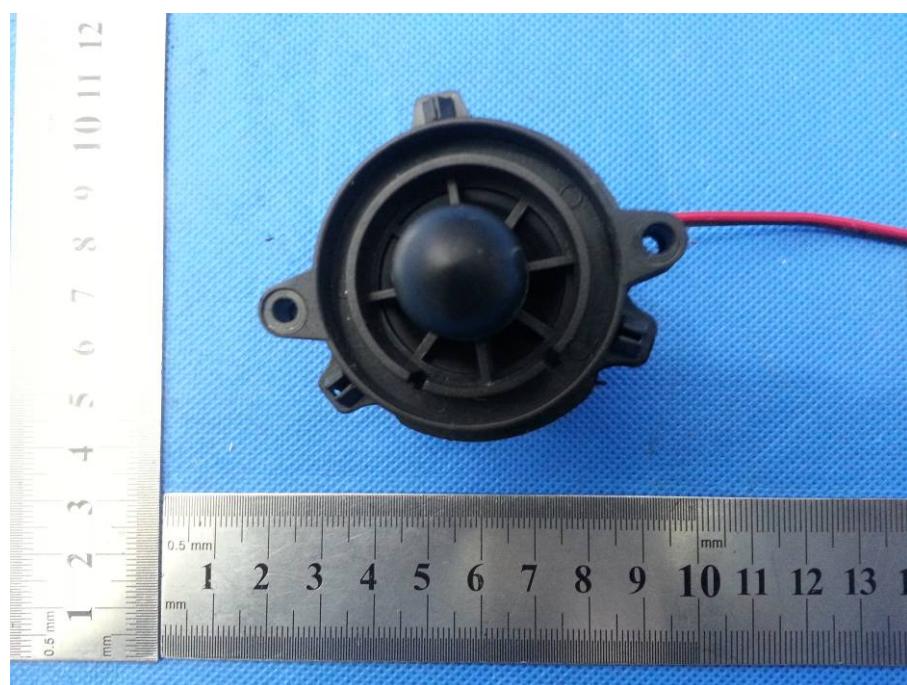
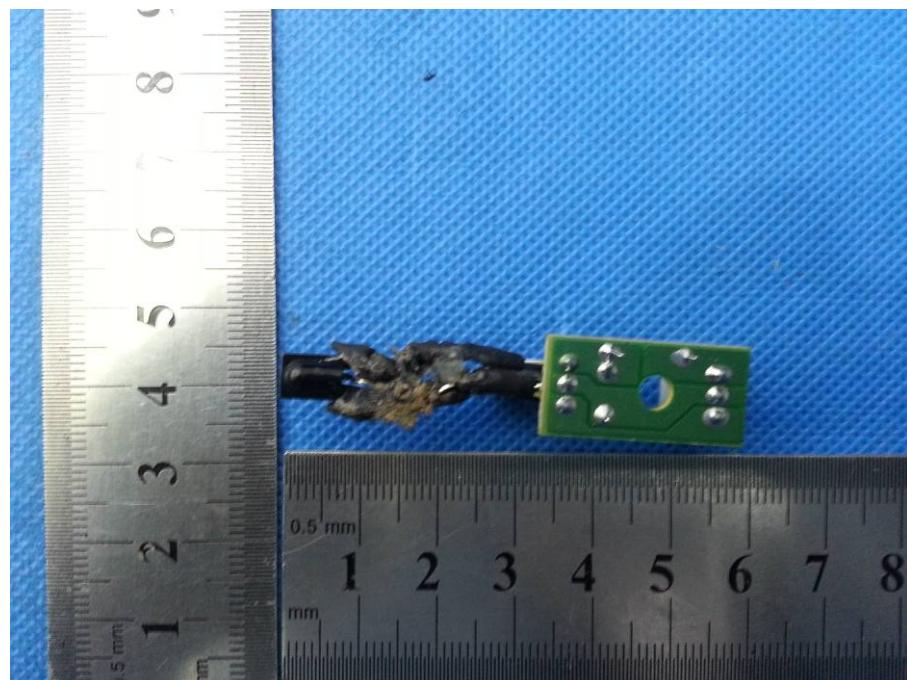
Issued Date: 2017-10-23





Report No. 4787649311-1

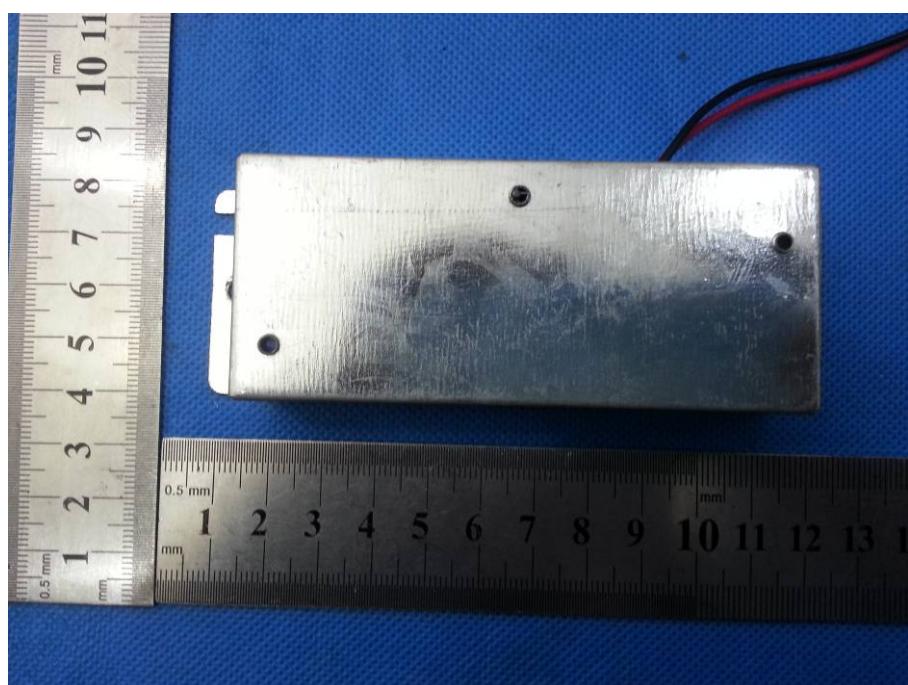
Issued Date: 2017-10-23





Report No. 4787649311-1

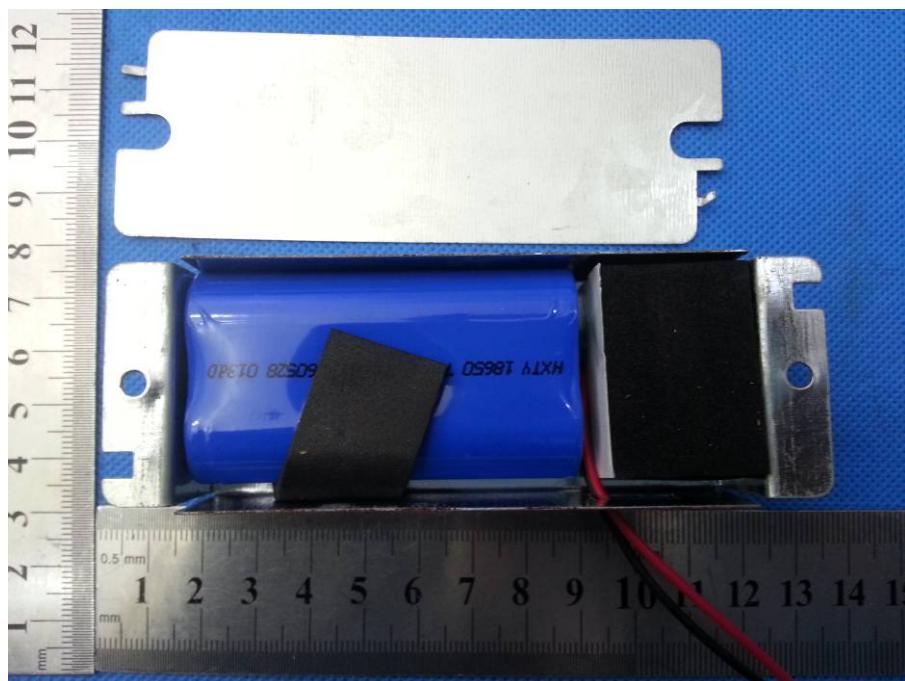
Issued Date: 2017-10-23





Report No. 4787649311-1

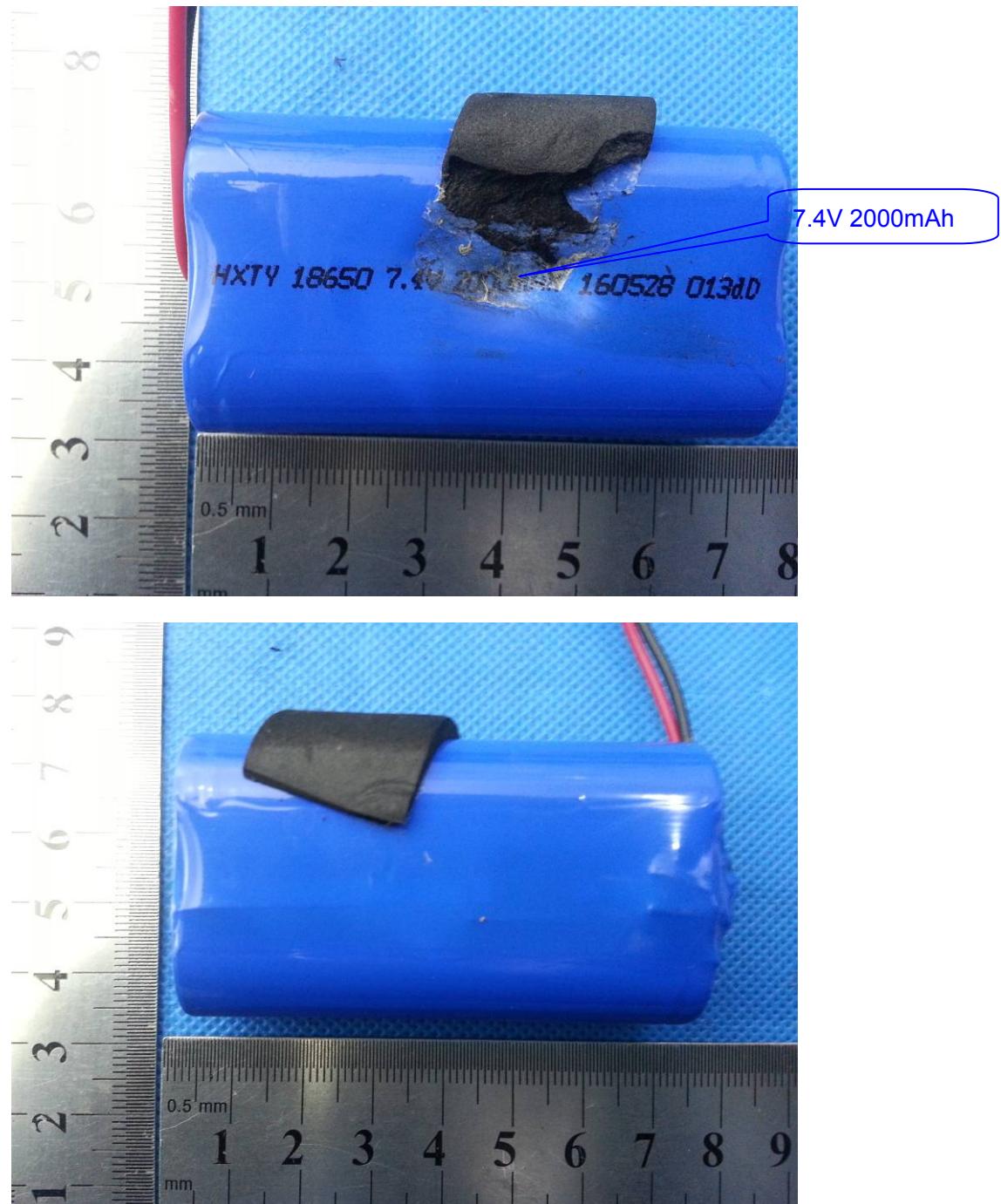
Issued Date: 2017-10-23





Report No. 4787649311-1

Issued Date: 2017-10-23





Report No. 4787649311-1

Issued Date: 2017-10-23

