

APPLICATION CERTIFICATION FCC Part 15C

On Behalf of
Triamp Technology., Ltd.

Wet Diaper Monitor (PiPi)
Model No.: WD-1, AT-1

FCC ID: Q9OWD-1

Prepared for : Triamp Technology., Ltd.
Address : 3F, No. 2, Alley 16, Lane 235, Bao-Chiao Road, Hsin Tien, Taipei,
Taiwan

Prepared by : Shenzhen Accurate Technology Co., Ltd.
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Report No. : ATE20181785
Date of Test : October 18-October 19, 2018
Date of Report : October 20, 2018

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Test Report Certification

Applicant : Triamp Technology., Ltd.

Manufacturer : Triamp Technology., Ltd.

EUT Description : Wet Diaper Monitor (PiPi)

Model No. : WD-1, AT-1

Trade Name : ViseeO

Measurement Procedure Used:

FCC Rules and Regulations Part 15 Subpart C Section 15.247
ANSI C63.10: 2013

The EUT was tested according to DTS test procedure of August 24, 2018 KDB558074 D01 DTS Meas Guidance v05 for compliance to FCC 47CFR 15.247 requirements

The device described above is tested by Shenzhen Accurate Technology Co., Ltd. to determine the maximum emission levels emanating from the device. The maximum emission levels are compared to the FCC Part 15 Subpart C Section 15.247 limits. The measurement results are contained in this test report and Shenzhen Accurate Technology Co., Ltd. is assumed full responsibility for the accuracy and completeness of these measurements. Also, this report shows that the Equipment Under Test (EUT) is to be technically compliant with the FCC requirements.

This report applies to above tested sample only. This report shall not be reproduced in part without written approval of Shenzhen Accurate Technology Co., Ltd.

Date of Test : October 18-October 19, 2018

Date of Report : October 20, 2018

Test Engineer :



(Frank, Engineer)

Prepared by :



(Steven Yang, Engineer)

Approved & Authorized Signer :



(Sean Liu, Manager)

1. GENERAL INFORMATION

1.1. Description of Device (EUT)

EUT	:	Wet Diaper Monitor (PiPi)
Model Number	:	WD-1, AT-1 (Note: Above models are identical in schematic, structure and critical components except for model name, So we prepare WD-1 for test.)
Bluetooth version	:	V4.0 BLE
Frequency Range	:	2402MHz-2480MHz
Number of Channels	:	40
Antenna Gain	:	0dBi
Antenna type	:	Ceramic antenna
Power Supply	:	DC 3V
Modulation mode	:	GFSK
Hardware version	:	V3
Software version	:	V1.4
Applicant	:	Triamp Technology., Ltd.
Address	:	3F, No. 2, Alley 16, Lane 235, Bao-Chiao Road, Hsin Tien, Taipei, Taiwan
Manufacturer	:	Triamp Technology., Ltd.
Address	:	3F, No. 2, Alley 16, Lane 235, Bao-Chiao Road, Hsin Tien, Taipei, Taiwan

1.2. Carrier Frequency of Channels

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
0	2402	10	2422	20	2442	30	2462
1	2404	11	2424	21	2444	31	2464
2	2406	12	2426	22	2446	32	2466
3	2408	13	2428	23	2448	33	2468
4	2410	14	2430	24	2450	34	2470
5	2412	15	2432	25	2452	35	2472
6	2414	16	2434	26	2454	36	2474
7	2416	17	2436	27	2456	37	2476
8	2418	18	2438	28	2458	38	2478
9	2420	19	2440	29	2460	39	2480

1.3.Special Accessory and Auxiliary Equipment

N/A

1.4.Description of Test Facility

EMC Lab	:	Recognition of accreditation by Federal Communications Commission (FCC) The Designation Number is CN1189 The Registration Number is 708358
		Listed by Innovation, Science and Economic Development Canada (ISED) The Registration Number is 5077A-2
		Accredited by China National Accreditation Service for Conformity Assessment (CNAS) The Registration Number is CNAS L3193
		Accredited by American Association for Laboratory Accreditation (A2LA) The Certificate Number is 4297.01
Name of Firm	:	Shenzhen Accurate Technology Co., Ltd.
Site Location	:	1/F., Building A, Changyuan New Material Port, Science & Industry Park, Nanshan District, Shenzhen, Guangdong, P.R. China

1.5.Measurement Uncertainty

Conducted Emission Expanded Uncertainty	=	2.23dB, k=2
Radiated emission expanded uncertainty (9kHz-30MHz)	=	3.08dB, k=2
Radiated emission expanded uncertainty (30MHz-1000MHz)	=	4.42dB, k=2
Radiated emission expanded uncertainty (Above 1GHz)	=	4.06dB, k=2

2. MEASURING DEVICE AND TEST EQUIPMENT

Table 1: List of Test and Measurement Equipment

Kind of equipment	Manufacturer	Type	S/N	Calibrated dates	Calibrated until
EMI Test Receiver	Rohde&Schwarz	ESCS30	100307	Jan. 06, 2018	1 Year
EMI Test Receiver	Rohde&Schwarz	ESR	101817	Jan. 06, 2018	1 Year
Spectrum Analyzer	Rohde&Schwarz	FSV-40	101495	Jan. 06, 2018	1 Year
Pre-Amplifier	Rohde&Schwarz	CBLU1183540-01	3791	Jan. 06, 2018	1 Year
Loop Antenna	Schwarzbeck	FMZB1516	1516131	Jan. 06, 2018	1 Year
Bilog Antenna	Schwarzbeck	VULB9163	9163-323	Jan. 06, 2018	1 Year
Horn Antenna	Schwarzbeck	BBHA9120D	9120D-655	Jan. 06, 2018	1 Year
Horn Antenna	Schwarzbeck	BBHA9170	9170-359	Jan. 06, 2018	1 Year
Highpass Filter	Wainwright Instruments	WHKX3.6/18G-10S S	N/A	Jan. 06, 2018	1 Year
Band Reject Filter	Wainwright Instruments	WRCG2400/2485-23 75/2510-60/11SS	N/A	Jan. 06, 2018	1 Year
RF COAXIAL CABLE	SUHNER	N-5m(Frequency range:9KHz-26.5GHz)	NO.3	Jan. 06, 2018	1 Year
RF COAXIAL CABLE	SUHNER	N-5m(Frequency range:9KHz-26.5GHz)	NO.4	Jan. 06, 2018	1 Year
RF COAXIAL CABLE	SUHNER	N-1m(Frequency range:9KHz-26.5GHz)	NO.5	Jan. 06, 2018	1 Year
RF COAXIAL CABLE	SUHNER	N-1m(Frequency range:9KHz-26.5GHz)	NO.6	Jan. 06, 2018	1 Year
Temporary antenna connector	NTGS	14AE	N/A	Oct. 18, 2018	N/A
Radiated Emission Measurement Software: EZ_EMV V1.1.4.2					

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.

3. OPERATION OF EUT DURING TESTING

3.1.Operating Mode

The mode is used: **BLE Transmitting mode**

Low Channel: 2402MHz

Middle Channel: 2440MHz

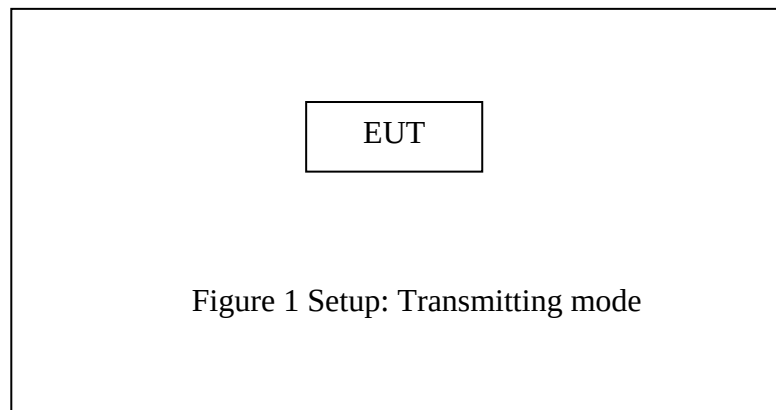
High Channel: 2480MHz

Note: The equipment under test (EUT) was tested under new battery.

The Bluetooth has been tested under continuous transmission mode.

Its duty cycle setting is greater than 98%.

3.2.Configuration and peripherals



4. TEST PROCEDURES AND RESULTS

FCC Rules	Description of Test	Result
Section 15.247(a)(2)	6dB Bandwidth Test	Compliant
Section 15.247(e)	Power Spectral Density Test	Compliant
Section 15.247(b)(3)	Maximum Peak Output Power Test	Compliant
Section 15.247(d)	Band Edge Compliance Test	Compliant
Section 15.247(d) Section 15.209	Radiated Spurious Emission Test	Compliant
Section 15.207	AC Power Line Conducted Emission Test	N/A
Section 15.203	Antenna Requirement	Compliant

Note: EUT is powered by DC 3V batteries, so conducted emission test are not applicable and are skipped

5. 6DB BANDWIDTH MEASUREMENT

5.1. Block Diagram of Test Setup



5.2. The Requirement For Section 15.247(a)(2)

Section 15.247(a)(2): Systems using digital modulation techniques may operate in the 902-928MHz, 2400-2483.5MHz, and 5725-5850MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.

5.3. EUT Configuration on Measurement

The equipment is installed on the emission measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

5.4. Operating Condition of EUT

5.4.1. Setup the EUT and simulator as shown as Section 5.1.

5.4.2. Turn on the power of all equipment.

5.4.3. Let the EUT work in TX modes measure it. The transmit frequency are 2402-2480MHz. We select 2402MHz, 2440MHz, and 2480MHz TX frequency to transmit.

5.5. Test Procedure

5.5.1. The transmitter output was connected to the spectrum analyzer through a low loss cable.

5.5.2. Set RBW of spectrum analyzer to 100 kHz and VBW to 300 kHz.

5.5.3. The 6dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 6dB.

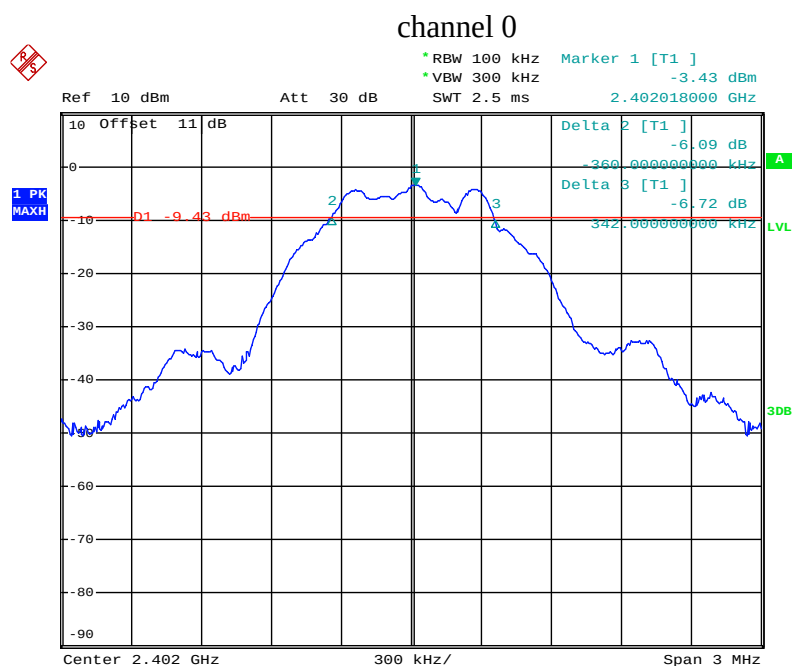
5.6. Test Result

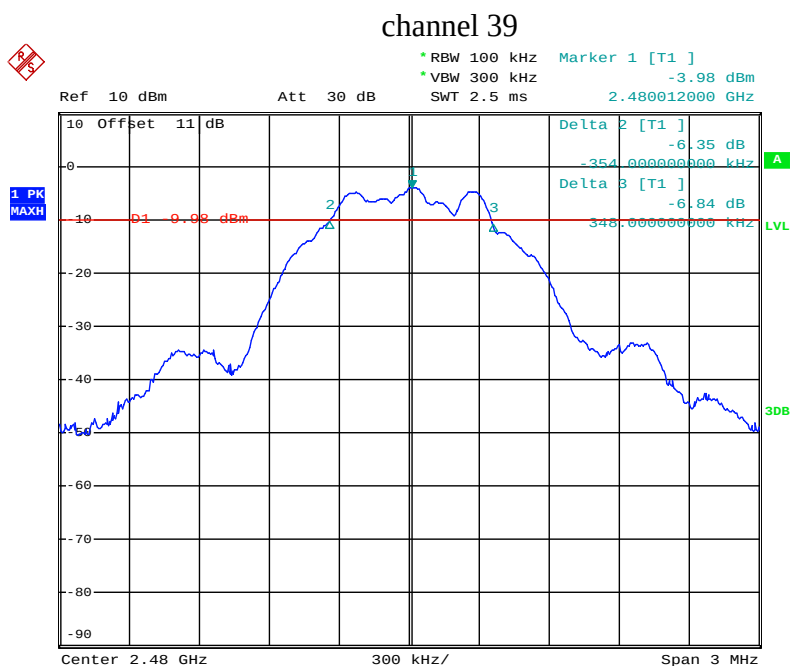
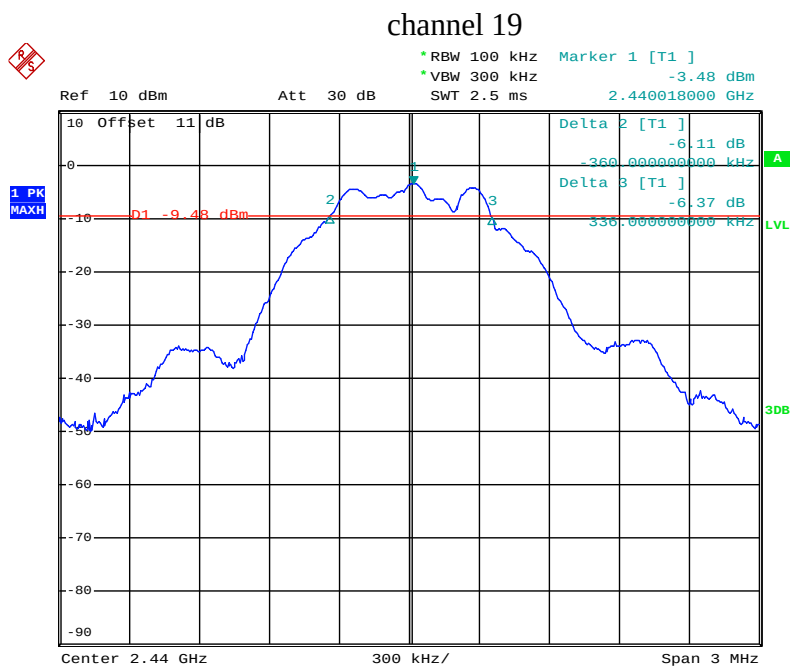
Test Lab: Shielding room

Test Engineer: Frank

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit(MHz)	Result
0	2402	0.702	0.5	Pass
19	2440	0.696	0.5	Pass
39	2480	0.702	0.5	Pass

The spectrum analyzer plots are attached as below.





6. MAXIMUM PEAK OUTPUT POWER

6.1. Block Diagram of Test Setup



6.2. The Requirement For Section 15.247(b)(3)

Section 15.247(b)(3): For systems using digital modulation in the 902-928MHz, 2400-2483.5MHz, and 5725-5850MHz bands: 1 Watt.

6.3. EUT Configuration on Measurement

The equipment are installed on the emission Measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

6.4. Operating Condition of EUT

6.4.1. Setup the EUT and simulator as shown as Section 6.1.

6.4.2. Turn on the power of all equipment.

6.4.3. Let the EUT work in TX modes measure it. The transmit frequency are 2402-2480MHz. We select 2402MHz, 2440MHz, and 2480MHz TX frequency to transmit.

6.5. Test Procedure

6.5.1. The transmitter output was connected to the spectrum analyzer through a low loss cable.

6.5.2. Set RBW of spectrum analyzer to 1 MHz and VBW to 3MHz.

6.5.3. Measurement the maximum peak output power.

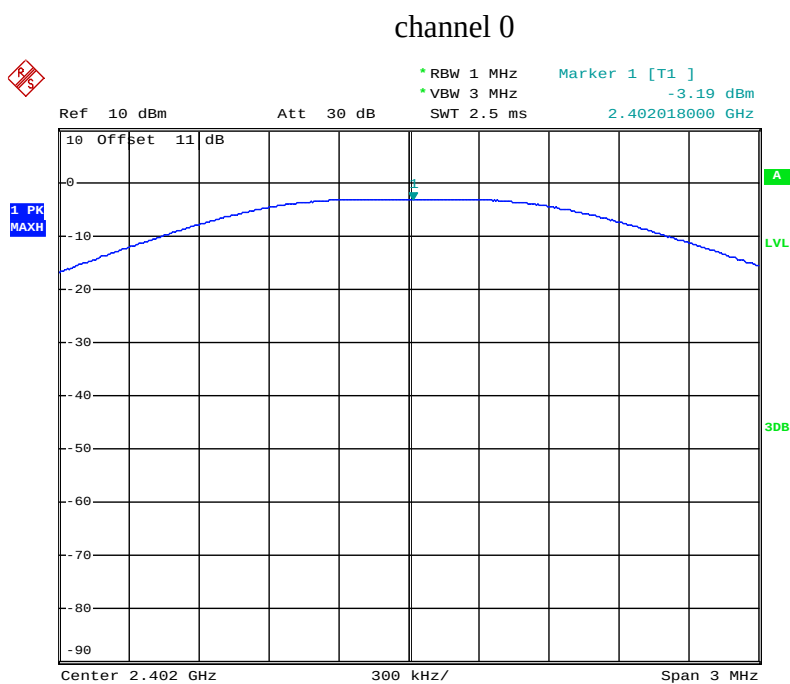
6.6. Test Result

Test Lab: Shielding room

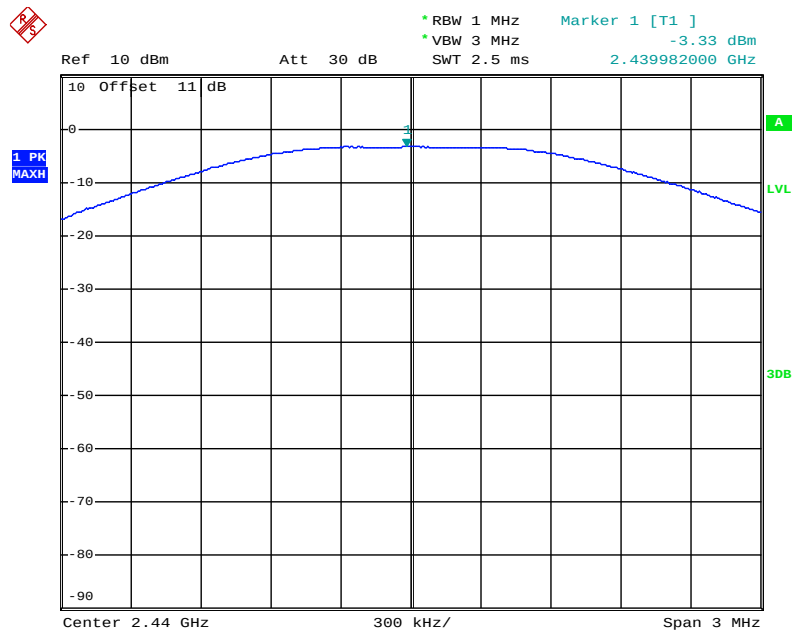
Test Engineer: Frank

Channel	Frequency (MHz)	Peak Power Output (dBm)	Peak Power Limit (dBm)	Result
0	2402	-3.19	30	Pass
19	2440	-3.33	30	Pass
39	2480	-3.87	30	Pass

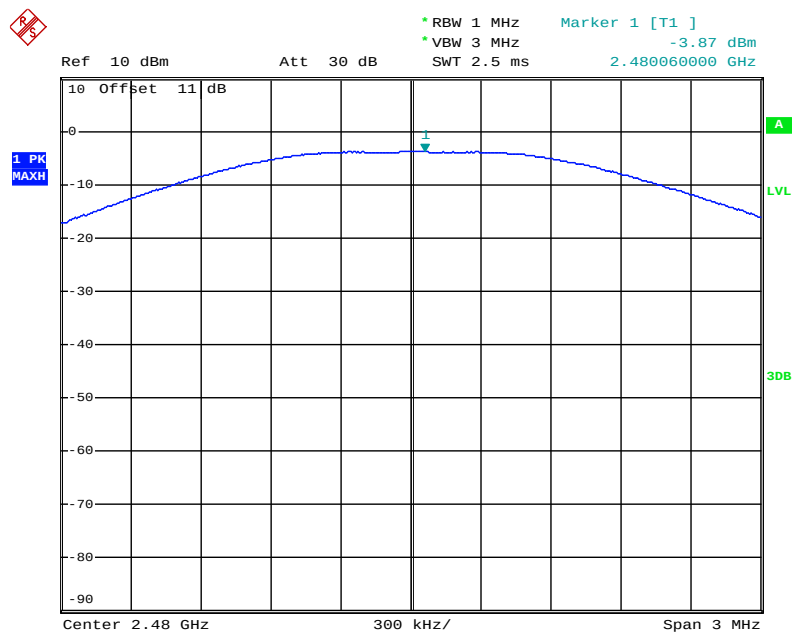
The spectrum analyzer plots are attached as below.



channel 19



channel 39



7. POWER SPECTRAL DENSITY MEASUREMENT

7.1. Block Diagram of Test Setup



7.2. The Requirement For Section 15.247(e)

Section 15.247(e): For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

7.3. EUT Configuration on Measurement

The equipment are installed on the emission Measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

7.4. Operating Condition of EUT

7.4.1. Setup the EUT and simulator as shown as Section 7.1.

7.4.2. Turn on the power of all equipment.

7.4.3. Let the EUT work in TX modes measure it. The transmit frequency are 2402-2480MHz. We select 2402MHz, 2440MHz, and 2480MHz TX frequency to transmit.

7.5. Test Procedure

7.5.1. The transmitter output was connected to the spectrum analyzer through a low loss cable.

7.5.2. Measurement Procedure PKPSD:

7.5.3. This procedure must be used if maximum peak conducted output power was used to demonstrate compliance to the fundamental output power limit, and is optional if the maximum (average) conducted output power was used to demonstrate compliance.

1. Set analyzer center frequency to DTS channel center frequency.
2. Set the span to 1.5 times the DTS channel bandwidth.
3. Set the RBW to: $3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$.
4. Set the VBW $\geq 3 \times \text{RBW}$.
5. Detector = peak.
6. Sweep time = auto couple.
7. Trace mode = max hold.
8. Allow trace to fully stabilize.
9. Use the peak marker function to determine the maximum amplitude level.
10. If measured value exceeds limit, reduce RBW (no less than 3kHz) and repeat.

7.5.4. Measurement the maximum power spectral density.

7.6. Test Result

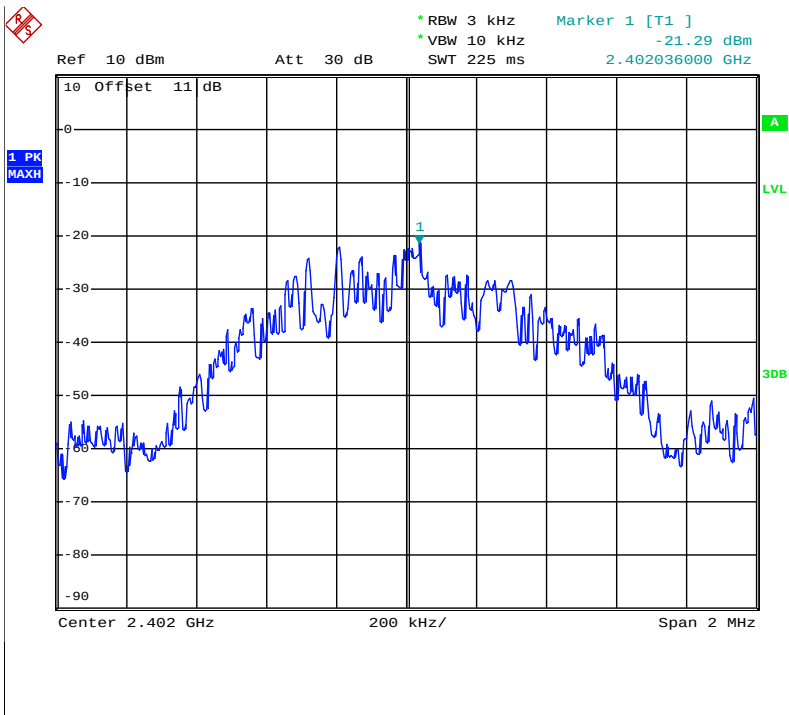
Test Lab: Shielding room

Test Engineer: Frank

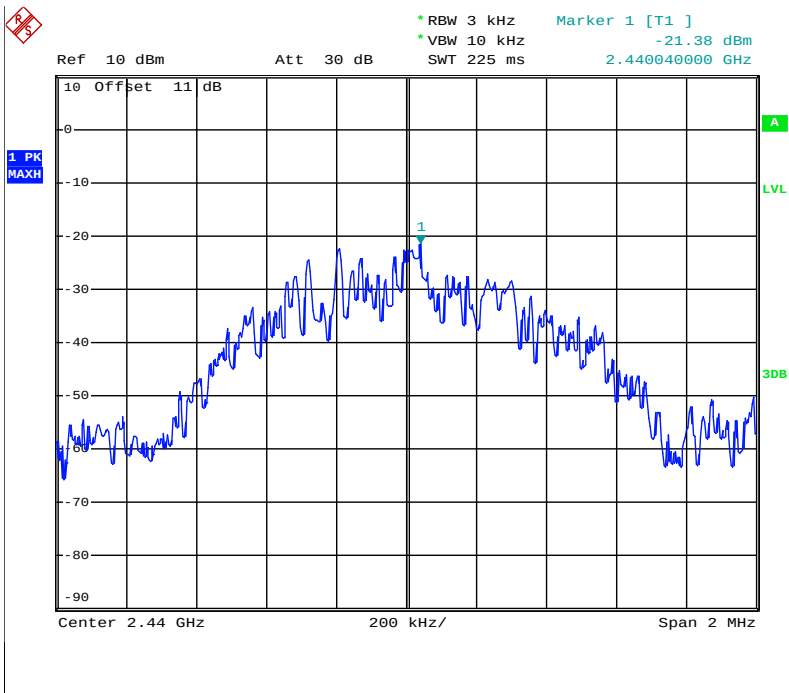
Channel	Frequency (MHz)	PSD (dBm/3KHz)	Limit (dBm/3KHz)	Result
0	2402	-21.29	8	Pass
19	2440	-21.38	8	Pass
39	2480	-22.03	8	Pass

The spectrum analyzer plots are attached as below.

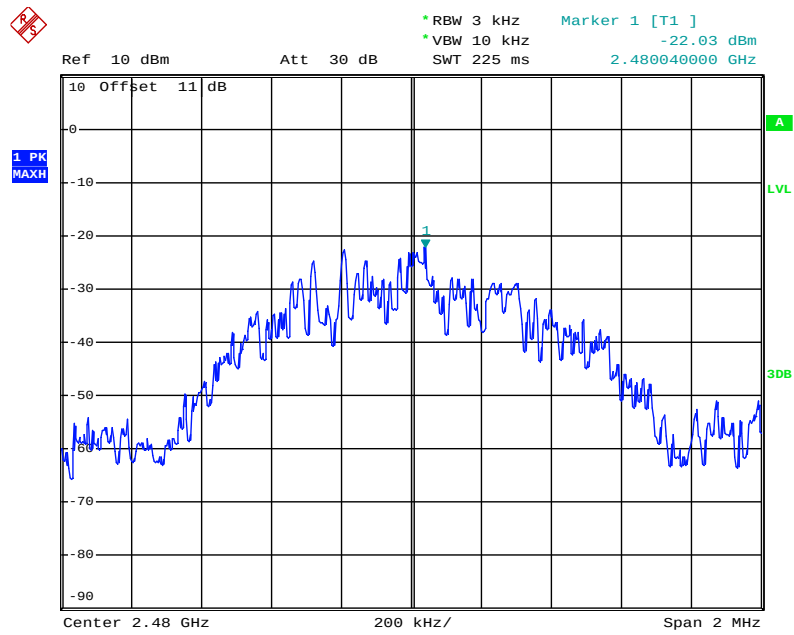
channel 0



channel 19



channel 39



8. BAND EDGE COMPLIANCE TEST

8.1. Block Diagram of Test Setup



8.2. The Requirement For Section 15.247(d)

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, 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).

8.3. EUT Configuration on Measurement

The equipment are installed on the emission Measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

8.4. Operating Condition of EUT

8.4.1. Setup the EUT and simulator as shown as Section 8.1.

8.4.2. Turn on the power of all equipment.

8.4.3. Let the EUT work in TX modes measure it. The transmit frequency are 2402-2480MHz. We select 2402MHz, 2480MHz TX frequency to transmit.

8.5. Test Procedure

Conducted Band Edge:

8.5.1. The transmitter output was connected to the spectrum analyzer via a low loss cable.

8.5.2. Set RBW of spectrum analyzer to 100 kHz and VBW to 300 kHz.

8.5.3. Radiate Band Edge:

8.5.4. The EUT is placed on a turntable, which is 1.5m above the ground plane and worked at highest radiated power.

8.5.5. The turntable was rotated for 360 degrees to determine the position of maximum emission level.

8.5.6. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emission.

8.5.7. Set the spectrum analyzer in the following setting in order to capture the lower and upper band-edges of the emission:

8.5.8. RBW=1MHz, VBW=1MHz

8.5.9. The band edges was measured and recorded.

8.6. Test Result

Pass.

Test Lab: Shielding room

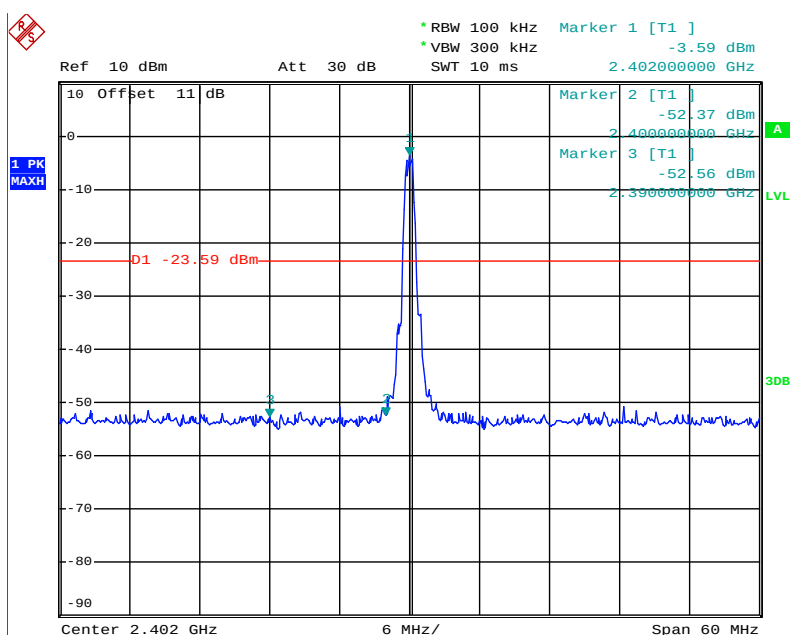
Test Engineer: Frank

Conducted Band Edge Result

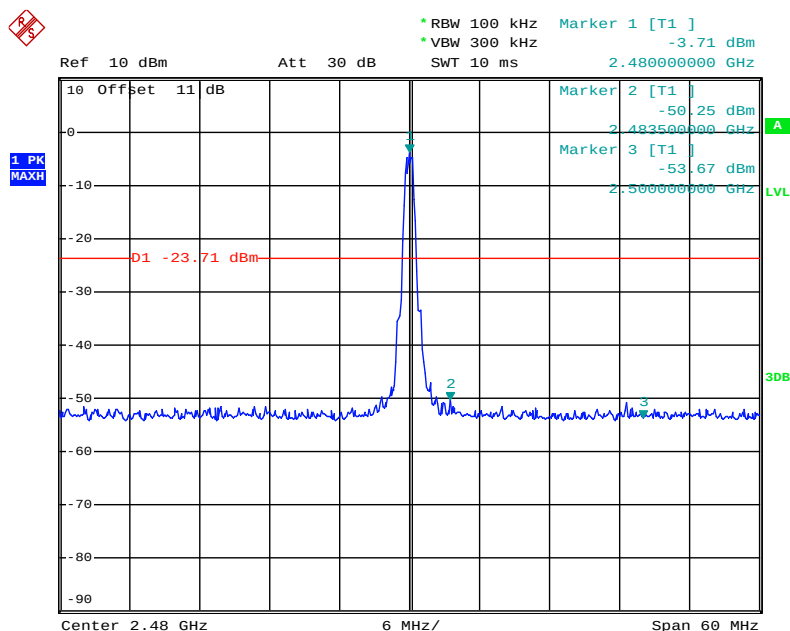
Channel	Frequency	Delta peak to band emission	Limit(dBc)
0	2.402GHz	48.78	> 20
39	2.480GHz	46.54	> 20

The spectrum analyzer plots are attached as below.

channel 0



channel 39



Radiated Band Edge Result

ACCURATE TECHNOLOGY CO., LTD.

F1,Bldg,A,Changyuan New Material Port Keyuan Rd,
Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 1# Chamber

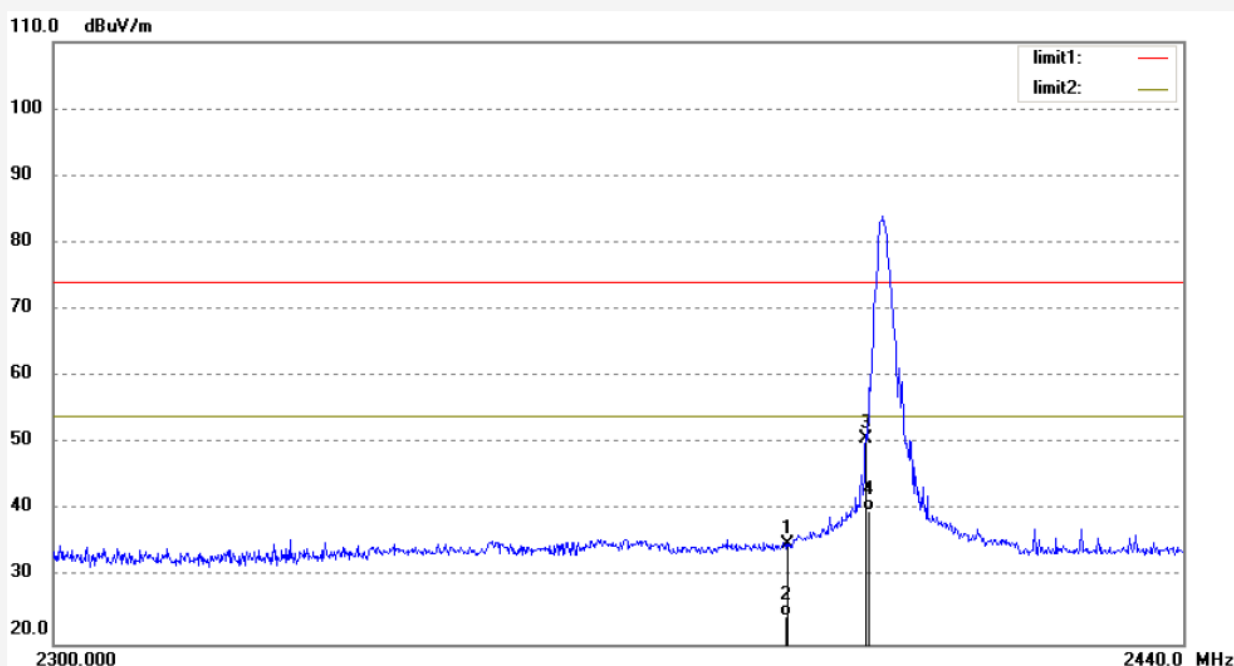
Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: frank2018 #1852
Standard: FCC Part 15C 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: Wet Diaper Monitor (PiPi)
Mode: TX2402MHz
Model: WD-1
Manufacturer: Triamp Technology.,Ltd.

Polarization: Horizontal
Power Source: DC 3V
Date: 2018/10/19
Time: 11:33:15
Engineer Signature:
Distance:

Note: Report NO.:ATE20181785

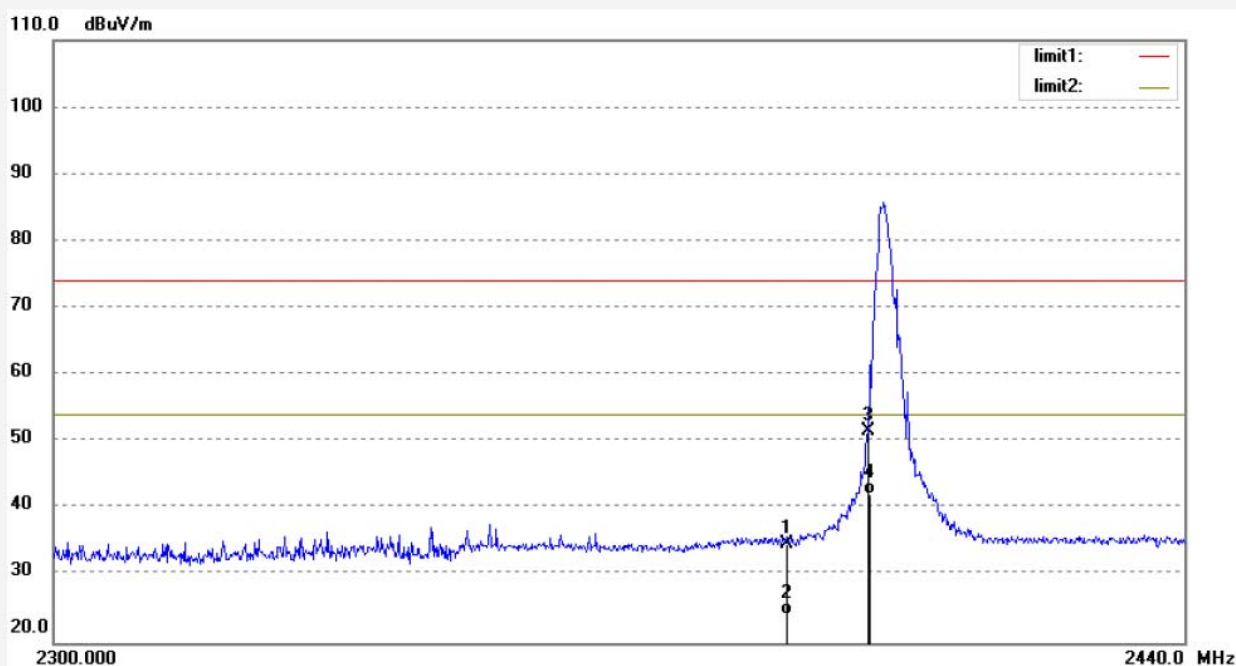


No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2390.000	42.95	-8.00	34.95	74.00	-39.05	peak	250	195	
2	2390.000	32.12	-8.00	24.12	54.00	-29.88	AVG	250	320	
3	2400.000	58.78	-7.97	50.81	74.00	-23.19	peak	250	269	
4	2400.000	47.98	-7.97	40.01	54.00	-13.99	AVG	250	92	

Job No.: frank2018 #1851
Standard: FCC Part 15C 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: Wet Diaper Monitor (PiPi)
Mode: TX2402MHz
Model: WD-1
Manufacturer: Triamp Technology.,Ltd.

Polarization: Vertical
Power Source: DC 3V
Date: 2018/10/19
Time: 11:32:13
Engineer Signature:
Distance:

Note: Report NO.:ATE20181785



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2390.000	42.73	-8.00	34.73	74.00	-39.27	peak	150	103	
2	2390.000	32.15	-8.00	24.15	54.00	-29.85	AVG	150	218	
3	2400.000	59.48	-7.97	51.51	74.00	-22.49	peak	150	220	
4	2400.000	50.12	-7.97	42.15	54.00	-11.85	AVG	150	92	

Job No.: frank2018 #1849

Standard: FCC Part 15C 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 25 C / 55 %

EUT: Wet Diaper Monitor (PiPi)

Mode: TX2480MHz

Model: WD-1

Manufacturer: Triamp Technology.,Ltd.

Polarization: Horizontal

Power Source: DC 3V

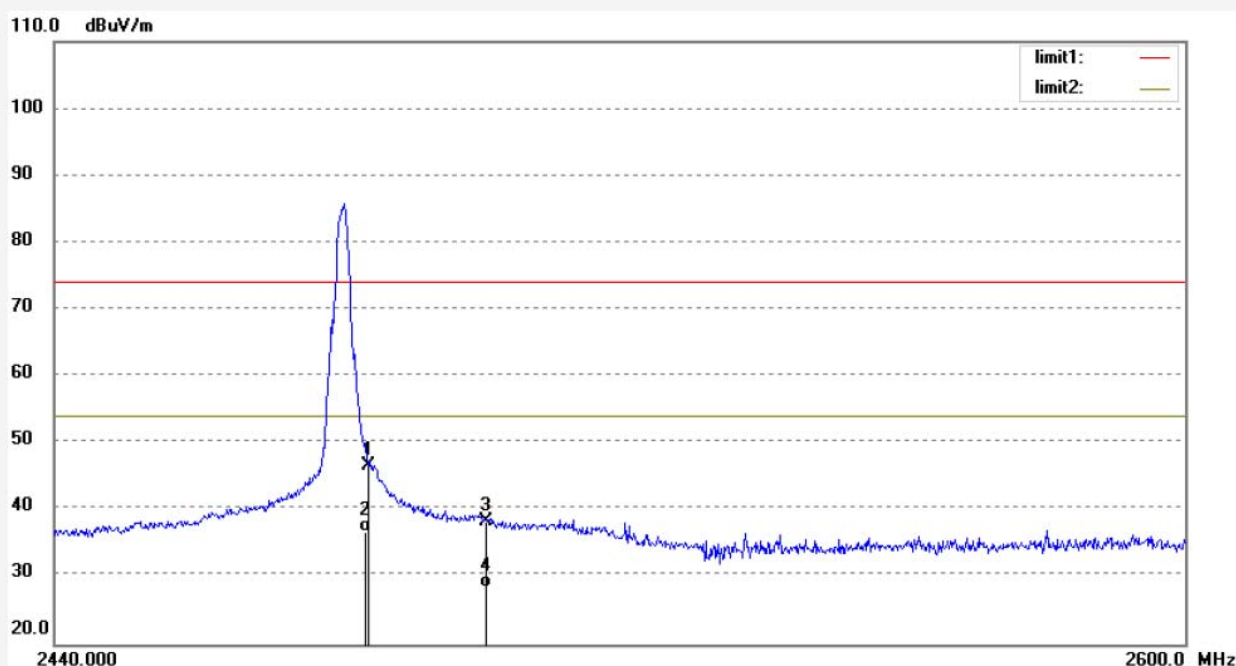
Date: 2018/10/19

Time: 11:21:57

Engineer Signature:

Distance:

Note: Report NO.:ATE20181785



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2483.500	54.46	-7.76	46.70	74.00	-27.30	peak	250	301	
2	2483.500	44.45	-7.76	36.69	54.00	-17.31	AVG	250	58	
3	2500.000	46.01	-7.71	38.30	74.00	-35.70	peak	250	146	
4	2500.000	36.15	-7.71	28.44	54.00	-25.56	AVG	250	102	

Job No.: frank2018 #1850

Standard: FCC Part 15C 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 25 C / 55 %

EUT: Wet Diaper Monitor (PiPi)

Mode: TX2480MHz

Model: WD-1

Manufacturer: Triamp Technology.,Ltd.

Polarization: Vertical

Power Source: DC 3V

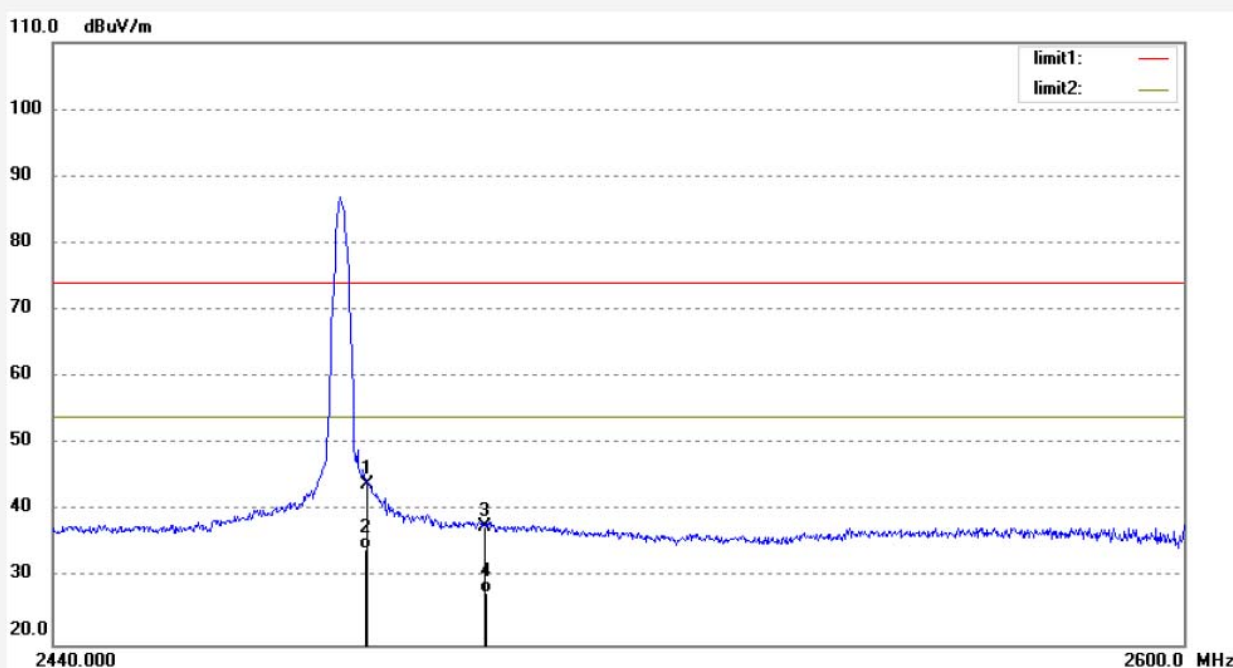
Date: 2018/10/19

Time: 11:25:21

Engineer Signature:

Distance:

Note: Report NO.:ATE20181785



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2483.500	51.65	-7.76	43.89	74.00	-30.11	peak	150	231	
2	2483.500	42.12	-7.76	34.36	54.00	-19.64	AVG	150	210	
3	2500.000	45.40	-7.71	37.69	74.00	-36.31	peak	150	185	
4	2500.000	35.46	-7.71	27.75	54.00	-26.25	AVG	150	106	

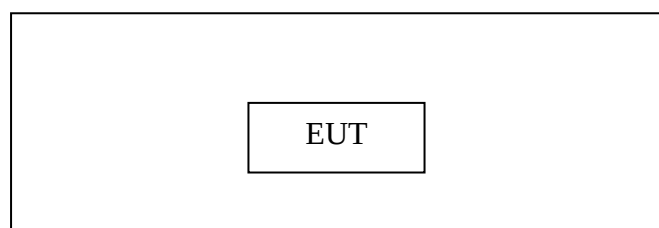
Note:

1. Emissions attenuated more than 20 dB below the permissible value are not reported.
2. The field strength is calculated by adding the antenna factor, high pass filter loss(if used) and cable loss, and subtracting the amplifier gain(if any)from the measured reading. The basic equation calculation is as follows:
Result = Reading + Corrected Factor

9. RADIATED SPURIOUS EMISSION TEST

9.1. Block Diagram of Test Setup

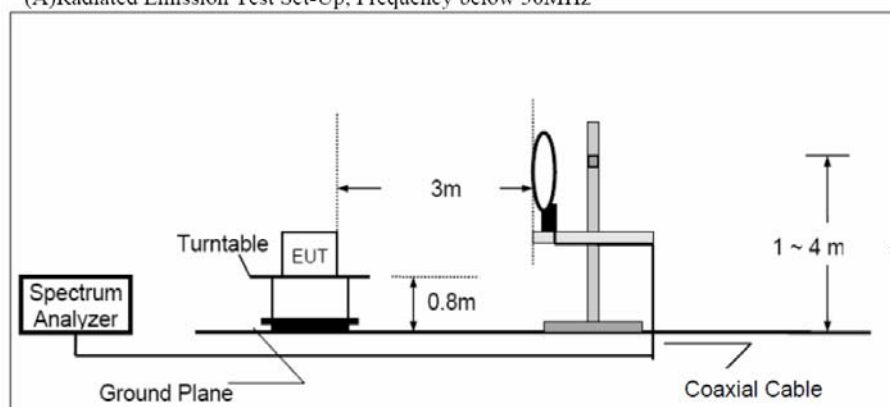
9.1.1. Block diagram of connection between the EUT and peripherals



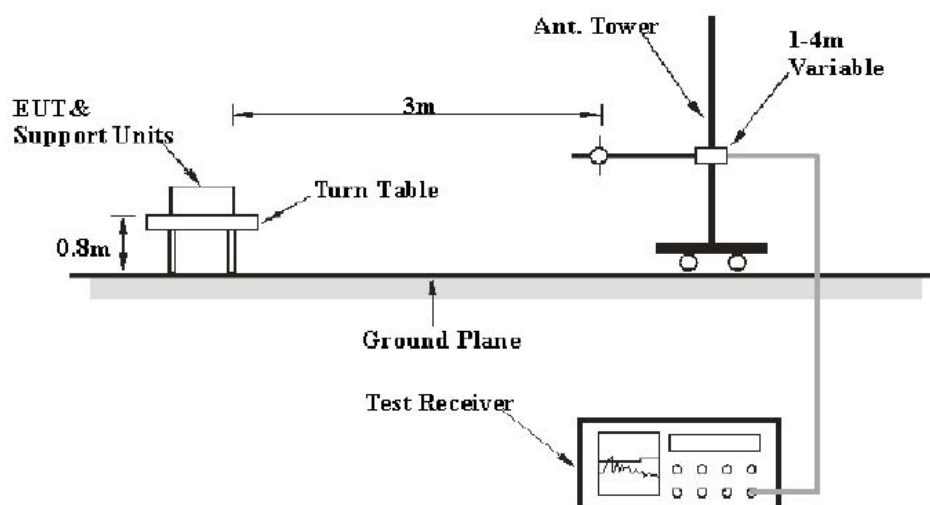
Setup: Transmitting mode

9.1.2. Semi-Anechoic Chamber Test Setup Diagram

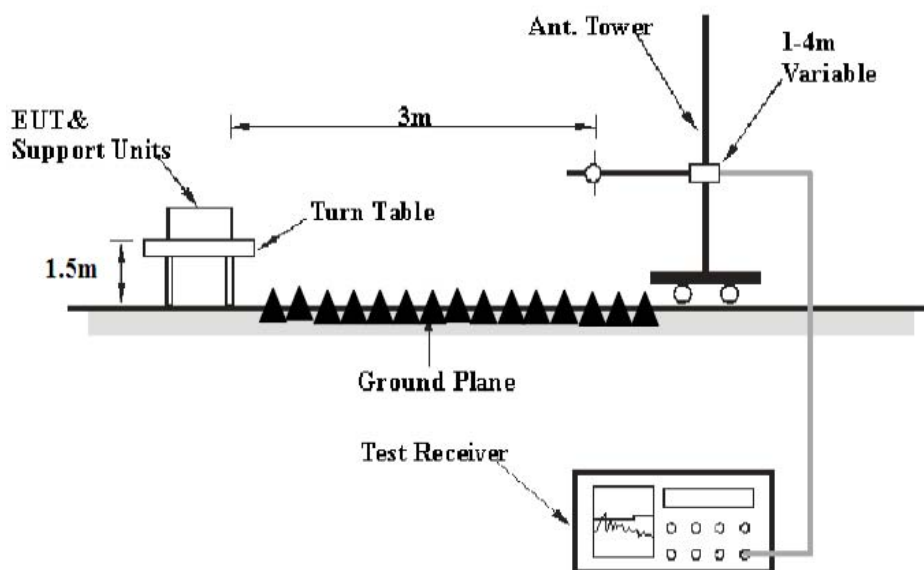
(A) Radiated Emission Test Set-Up, Frequency below 30MHz



(B) Radiated Emission Test Set-Up, Frequency 30MHz-1GHz



(C) Radiated Emission Test Set-Up, Frequency above 1GHz



9.2.The Limit For Section 15.247(d)

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, 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).

9.3. Restricted bands of operation

9.3.1.FCC Part 15.205 Restricted bands of operation

(a) Except as shown in paragraph (d) of this section, Only spurious emissions are permitted in any of the frequency bands listed below:

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)
13.36-13.41			

¹Until February 1, 1999, this restricted band shall be 0.490-0.510

²Above 38.6

(b) Except as provided in paragraphs (d) and (e), the field strength of emission appearing within these frequency bands shall not exceed the limits shown in Section 15.209. At frequencies equal to or less than 1000MHz, Compliance with the limits in Section 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000MHz, compliance with the emission limits in Section 15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in Section 15.35 apply to these measurements.

9.4.Configuration of EUT on Measurement

The equipment are installed on Radiated Emission Measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

9.5. Operating Condition of EUT

9.5.1. Setup the EUT and simulator as shown as Section 9.1.

9.5.2. Turn on the power of all equipment.

9.5.3. Let the EUT work in TX modes measure it. The transmit frequency are 2402-2480MHz. We select 2402MHz, 2440MHz, and 2480MHz TX frequency to transmit.

9.6. Test Procedure

The EUT and its simulators are placed on a turntable, which is 0.8 meter high above ground (Below 1GHz). The EUT and its simulators are placed on a turntable, which is 1.5 meter high above ground (Above 1GHz). The turntable can rotate 360 degrees to determine the position of the maximum emission level. EUT is set 3.0 meters away from the receiving antenna, which is mounted on an antenna tower. The antenna can be moved up and down between 1.0 meter and 4 meters to find out the maximum emission level. Broadband antenna (calibrated bi-log antenna) is used as receiving antenna. Both horizontal and vertical polarizations of the antenna are set on measurement. In order to find the maximum emission levels, all of the EUT location must be manipulated according to ANSI C63.10:2013 on radiated emission measurement. This EUT was tested in 3 orthogonal positions and the worst case position data was reported.

The bandwidth of test receiver is set at 9 kHz in below 30MHz. and set at 120 kHz in 30-1000MHz, and 1MHz in above 1000MHz.

The frequency range from 9 kHz to 26.5GHz is checked.

The final measurement in band 9-90 kHz, 110-490 kHz and above 1000MHz is performed with Average detector. Except those frequency bands mention above, the final measurement for frequencies below 1000MHz is performed with Quasi Peak detector.

The field strength is calculated by adding the antenna factor, and cable loss, and subtracting the amplifier gain from the measured reading.

9.7.Data Sample

Frequency (MHz)	Reading (dB μ v)	Factor (dB/m)	Result (dB μ v/m)	Limit (dB μ v/m)	Margin (dB)	Remark
X.XX	43.85	-22.22	21.63	43.5	-21.87	QP

Frequency(MHz) = Emission frequency in MHz

Reading(dB μ v) = Uncorrected Analyzer/Receiver reading

Factor (dB/m) = Antenna factor + Cable Loss – Amplifier gain

Result(dB μ v/m) = Reading(dB μ v) + Factor(dB/m)

Limit (dB μ v/m) = Limit stated in standard

Margin (dB) = Result(dB μ v/m) - Limit (dB μ v/m)

QP = Quasi-peak Reading

Calculation Formula:

Margin(dB) = Result (dB μ V/m)–Limit(dB μ V/m)

Result(dB μ V/m)= Reading(dB μ V)+ Factor(dB/m)

The “Margin” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -7dB means the emission is 7dB below the limit.

9.8.The Field Strength of Radiation Emission Measurement Results

Pass.

Test Lab: 3m Anechoic chamber

Test Engineer: Frank

The frequency range from 9kHz to 26.5GHz is checked.

Note: 1. Emissions attenuated more than 20 dB below the permissible value are not reported.

2. *: Denotes restricted band of operation.

3. The radiation emissions from 9kHz-30MHz and 18-26.5GHz are not reported, because the test values lower than the limits of 20dB.

The spectrum analyzer plots are attached as below.

Below 1GHz



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Fax:+86-0755-26503396

Job No.: frank2018 #1855

Standard: FCC Part 15C 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 25 C / 55 %

EUT: Wet Diaper Monitor (PiPi)

Mode: TX2402MHz

Model: WD-1

Manufacturer: Triamp Technology.,Ltd.

Polarization: Horizontal

Power Source: DC 3V

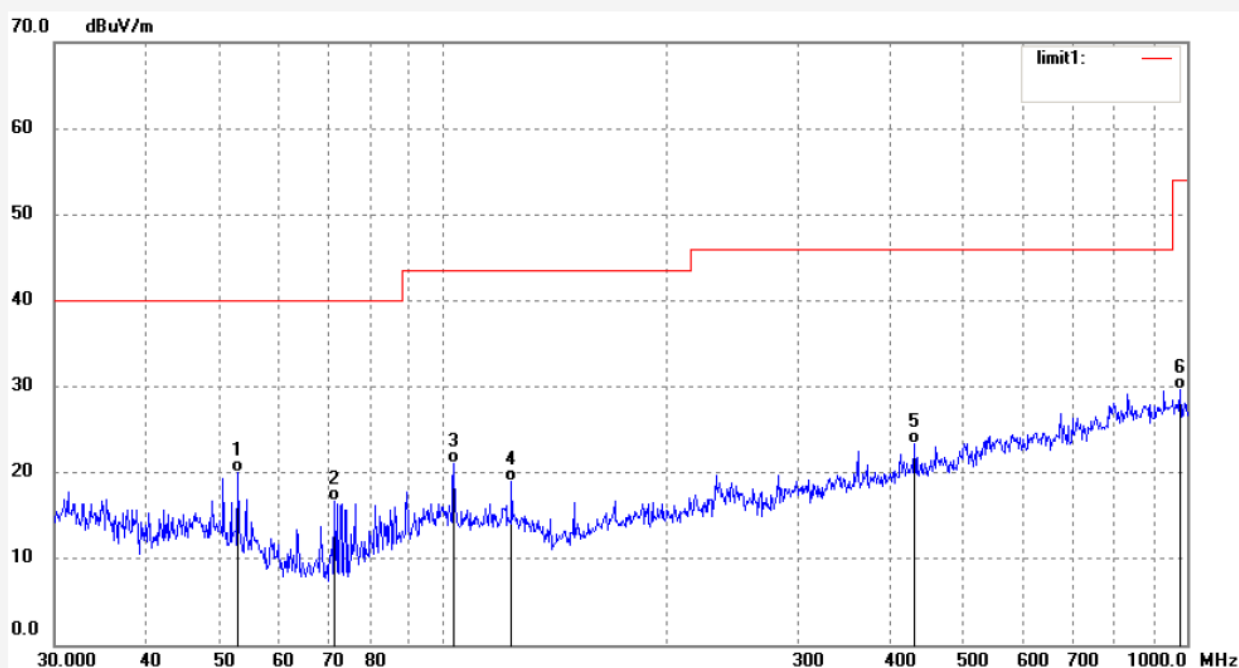
Date: 2018/10/19

Time: 16:26:04

Engineer Signature:

Distance:

Note: Report NO.:ATE20181785



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	53.0056	39.92	-19.93	19.99	40.00	-20.01	QP	200	103	
2	71.4539	41.36	-24.69	16.67	40.00	-23.33	QP	200	218	
3	103.3353	40.17	-19.13	21.04	43.50	-22.46	QP	200	92	
4	123.6149	38.93	-19.93	19.00	43.50	-24.50	QP	200	112	
5	430.3052	36.80	-13.41	23.39	46.00	-22.61	QP	200	91	
6	979.1391	34.50	-4.91	29.59	54.00	-24.41	QP	200	296	

Job No.: frank2018 #1856

Standard: FCC Part 15C 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 25 C / 55 %

EUT: Wet Diaper Monitor (PiPi)

Mode: TX2402MHz

Model: WD-1

Manufacturer: Triamp Technology.,Ltd.

Polarization: Vertical

Power Source: DC 3V

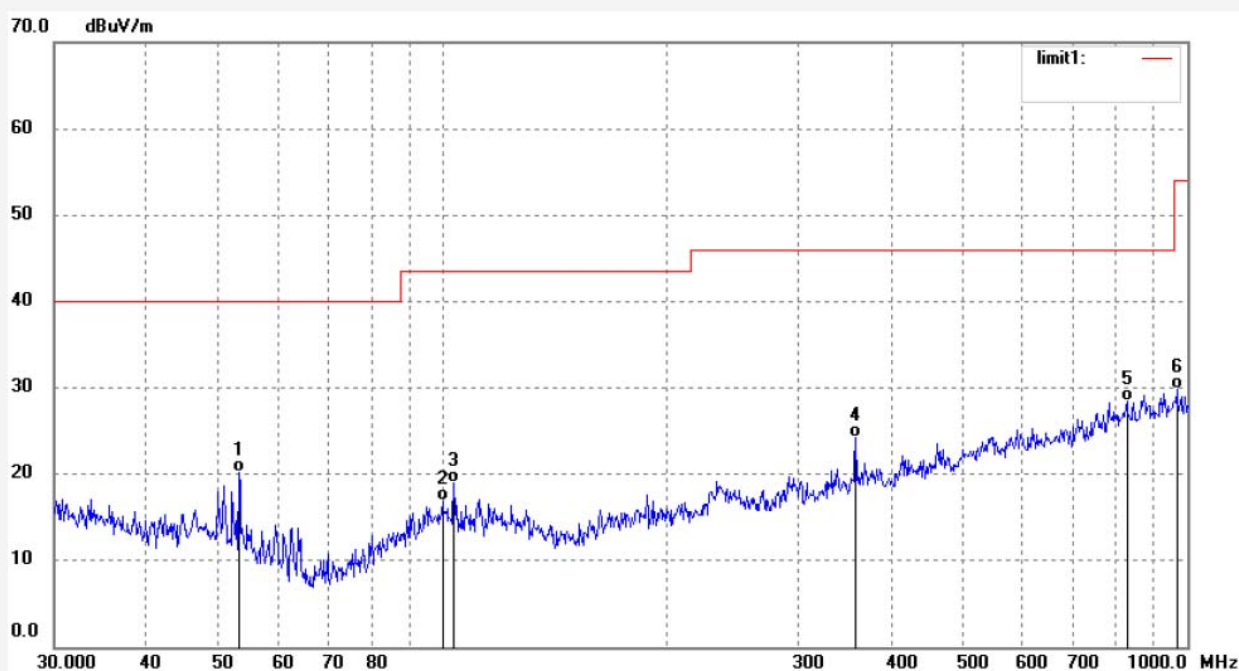
Date: 2018/10/19

Time: 16:26:52

Engineer Signature:

Distance:

Note: Report NO.:ATE20181785

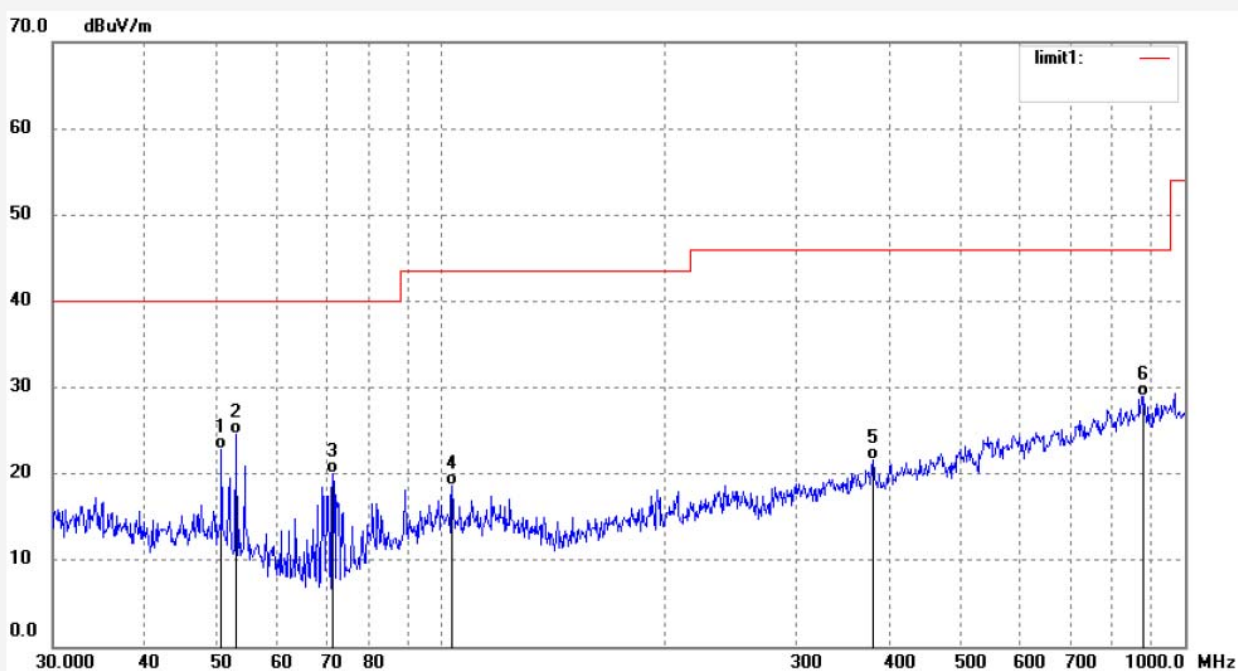


No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	53.1921	40.18	-19.95	20.23	40.00	-19.77	QP	100	95	
2	99.7676	35.60	-18.63	16.97	43.50	-26.53	QP	100	221	
3	103.3353	38.09	-19.13	18.96	43.50	-24.54	QP	100	154	
4	358.4497	39.16	-14.87	24.29	46.00	-21.71	QP	100	89	
5	830.0909	34.83	-6.47	28.36	46.00	-17.64	QP	100	156	
6	968.8724	34.92	-5.04	29.88	54.00	-24.12	QP	100	302	

Job No.: frank2018 #1858
Standard: FCC Part 15C 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: Wet Diaper Monitor (PiPi)
Mode: TX2440MHz
Model: WD-1
Manufacturer: Triamp Technology.,Ltd.

Polarization: Horizontal
Power Source: DC 3V
Date: 2018/10/19
Time: 16:27:42
Engineer Signature:
Distance:

Note: Report NO.:ATE20181785

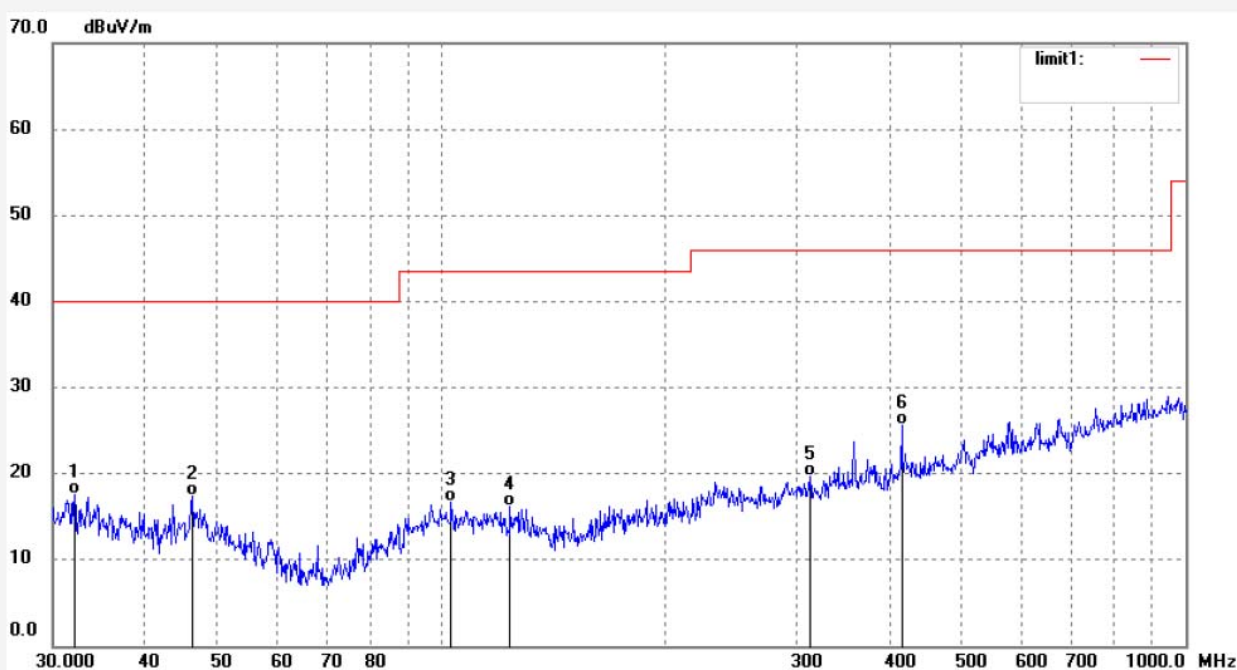


No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	50.6389	42.64	-19.75	22.89	40.00	-17.11	QP	200	102	
2	53.0056	44.47	-19.93	24.54	40.00	-15.46	QP	200	301	
3	71.4539	44.77	-24.69	20.08	40.00	-19.92	QP	200	69	
4	103.3353	37.74	-19.13	18.61	43.50	-24.89	QP	200	149	
5	380.5126	36.31	-14.67	21.64	46.00	-24.36	QP	200	64	
6	881.1838	34.96	-5.92	29.04	46.00	-16.96	QP	200	101	

Job No.: frank2018 #1857
Standard: FCC Part 15C 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: Wet Diaper Monitor (PiPi)
Mode: TX2440MHz
Model: WD-1
Manufacturer: Triamp Technology.,Ltd.

Polarization: Vertical
Power Source: DC 3V
Date: 2018/10/19
Time: 16:27:17
Engineer Signature:
Distance:

Note: Report NO.:ATE20181785



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	32.0711	35.56	-18.01	17.55	40.00	-22.45	QP	100	103	
2	46.2180	37.10	-19.64	17.46	40.00	-22.54	QP	100	44	
3	102.9728	35.71	-19.08	16.63	43.50	-26.87	QP	100	114	
4	123.6149	36.13	-19.93	16.20	43.50	-27.30	QP	100	249	
5	312.5482	35.91	-16.23	19.68	46.00	-26.32	QP	100	320	
6	415.4485	39.45	-13.76	25.69	46.00	-20.31	QP	100	100	

Job No.: frank2018 #1859

Standard: FCC Part 15C 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 25 C / 55 %

EUT: Wet Diaper Monitor (PiPi)

Mode: TX2480MHz

Model: WD-1

Manufacturer: Triamp Technology.,Ltd.

Polarization: Horizontal

Power Source: DC 3V

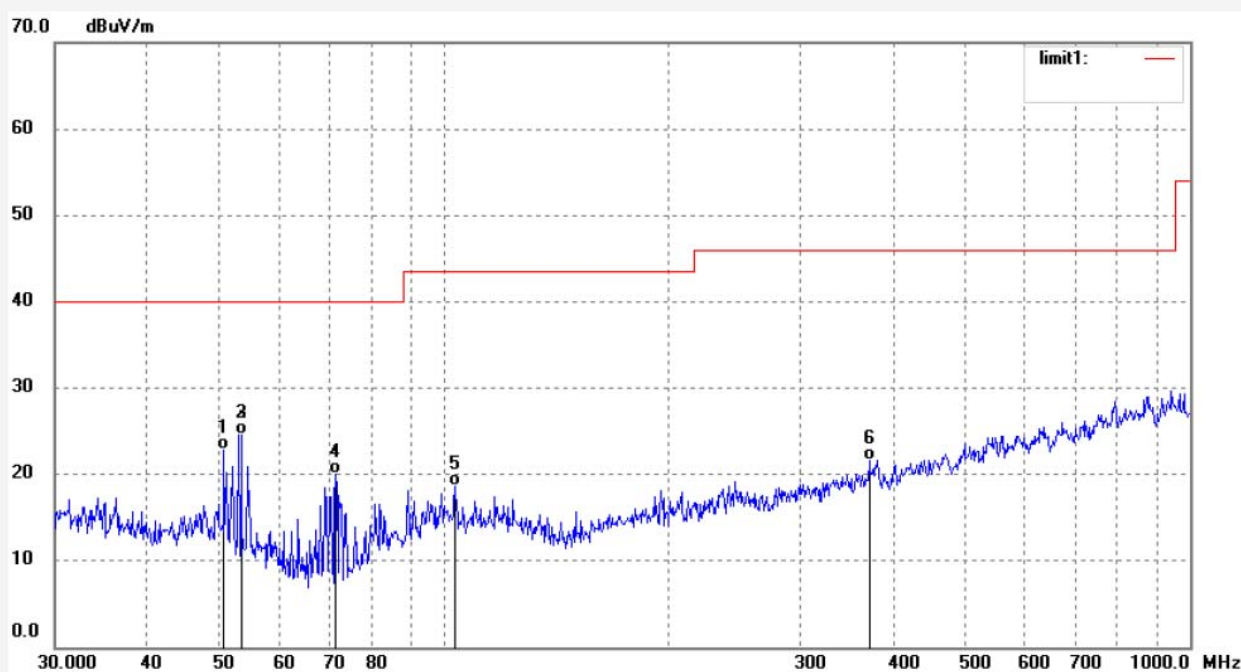
Date: 2018/10/19

Time: 16:27:52

Engineer Signature:

Distance:

Note: Report NO.:ATE20181785



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	50.6389	42.64	-19.75	22.89	40.00	-17.11	QP	200	106	
2	53.0056	44.47	-19.93	24.54	40.00	-15.46	QP	200	198	
3	53.3793	44.50	-19.96	24.54	40.00	-15.46	QP	200	21	
4	71.4539	44.77	-24.69	20.08	40.00	-19.92	QP	200	320	
5	103.3353	37.74	-19.13	18.61	43.50	-24.89	QP	200	112	
6	371.2679	36.32	-14.78	21.54	46.00	-24.46	QP	200	92	

Job No.: frank2018 #1860

Standard: FCC Part 15C 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 25 C / 55 %

EUT: Wet Diaper Monitor (PiPi)

Mode: TX2480MHz

Model: WD-1

Manufacturer: Triamp Technology.,Ltd.

Polarization: Vertical

Power Source: DC 3V

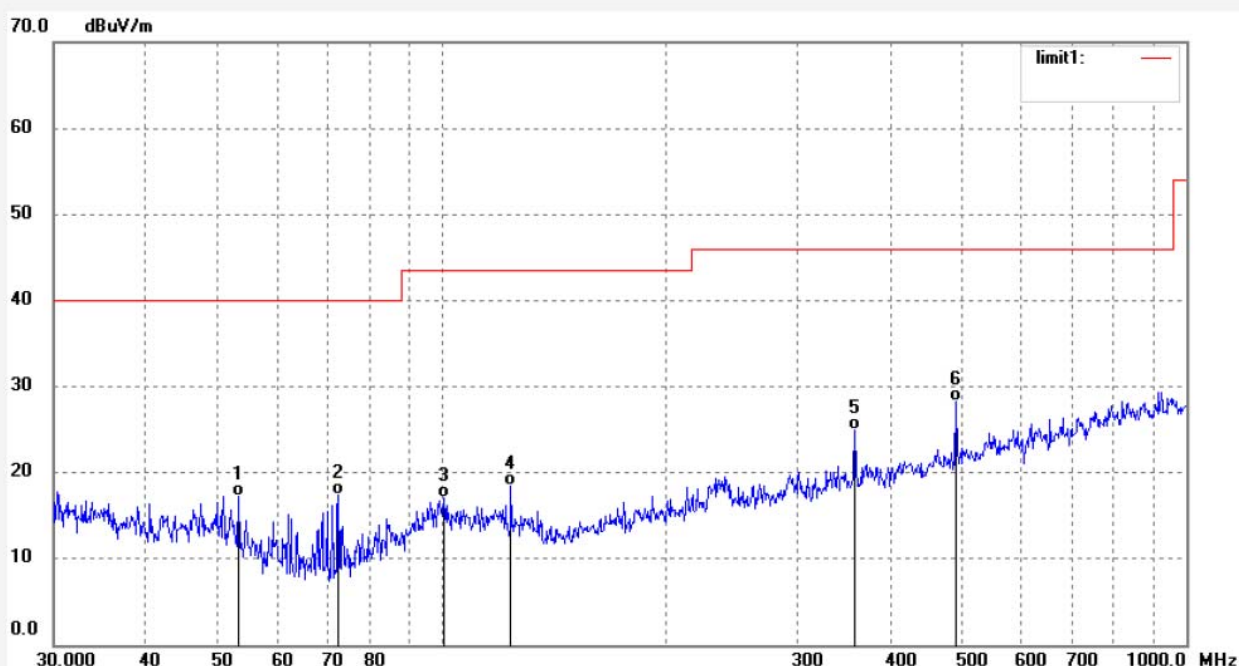
Date: 2018/10/19

Time: 16:28:33

Engineer Signature:

Distance:

Note: Report NO.:ATE20181785



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	53.1921	37.22	-19.95	17.27	40.00	-22.73	QP	100	192	
2	72.4652	43.06	-25.63	17.43	40.00	-22.57	QP	100	321	
3	100.4711	35.69	-18.67	17.02	43.50	-26.48	QP	100	220	
4	123.6149	38.39	-19.93	18.46	43.50	-25.04	QP	100	194	
5	358.4497	39.78	-14.87	24.91	46.00	-21.09	QP	100	249	
6	490.0450	40.74	-12.49	28.25	46.00	-17.75	QP	100	65	

Above 1GHz



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Site: 1# Chamber

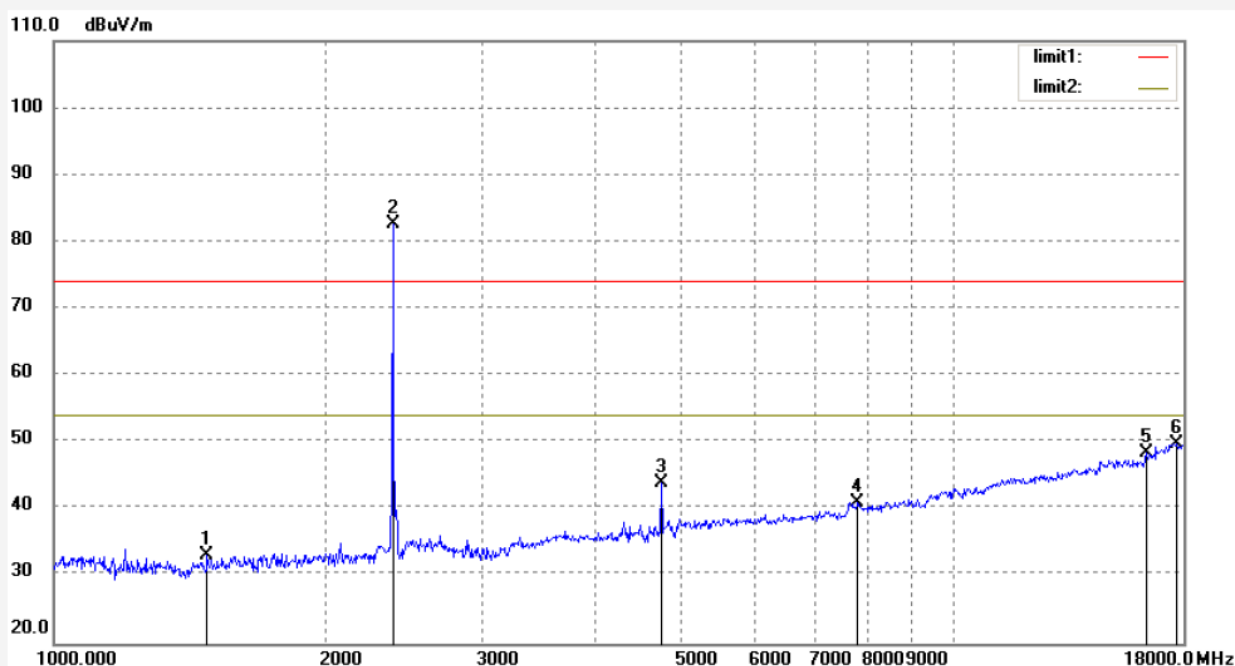
Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: frank2018 #1844
Standard: FCC Part 15C 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: Wet Diaper Monitor (PiPi)
Mode: TX2402MHz
Model: WD-1
Manufacturer: Triamp Technology.,Ltd.

Polarization: Horizontal
Power Source: DC 3V
Date: 2018/10/19
Time: 11:04:26
Engineer Signature:
Distance:

Note: Report NO.:ATE20181785



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	1481.346	44.49	-11.35	33.14	74.00	-40.86	peak	250	265	
2	2402.019	90.69	-8.03	82.66			peak	250	95	
3	4804.057	46.38	-2.53	43.85	74.00	-30.15	peak	250	26	
4	7829.496	37.98	3.07	41.05	74.00	-32.95	peak	250	110	
5	16351.459	35.22	13.16	48.38	74.00	-25.62	peak	250	216	
6	17688.369	34.53	15.29	49.82	74.00	-24.18	peak	250	169	

Job No.: frank2018 #1843

Standard: FCC Part 15C 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 25 C / 55 %

EUT: Wet Diaper Monitor (PiPi)

Mode: TX2402MHz

Model: WD-1

Manufacturer: Triamp Technology.,Ltd.

Polarization: Vertical

Power Source: DC 3V

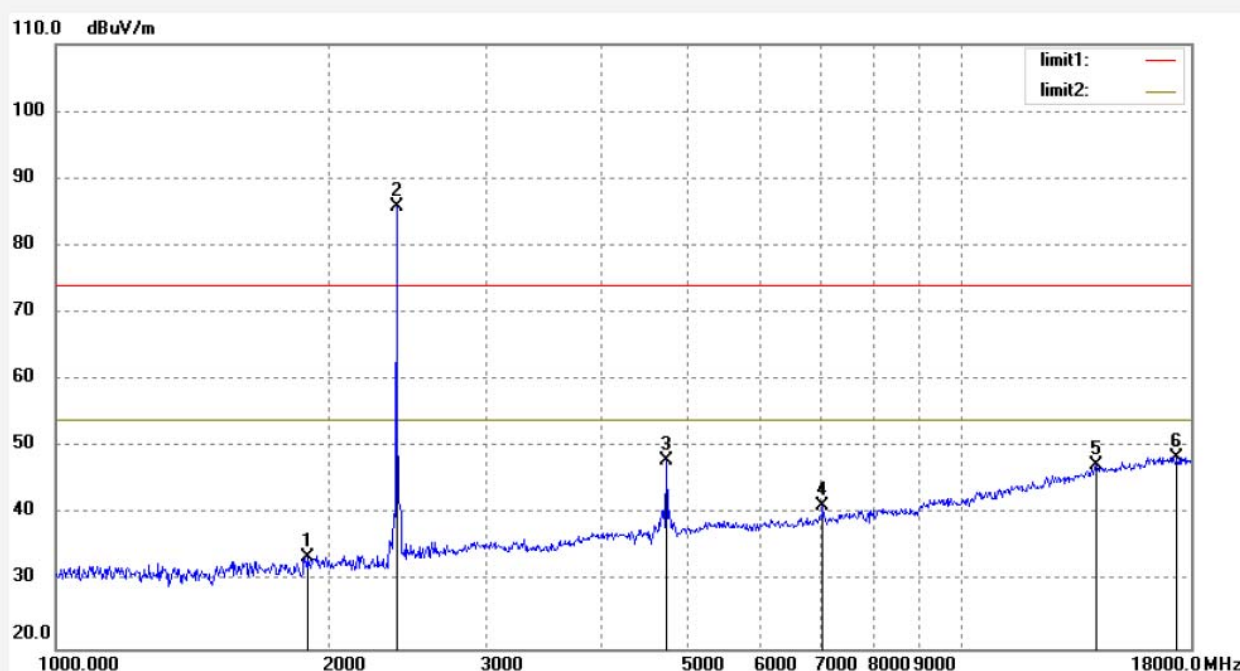
Date: 2018/10/19

Time: 11:01:51

Engineer Signature:

Distance:

Note: Report NO.:ATE20181785



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	1897.172	43.19	-9.48	33.71	74.00	-40.29	peak	150	94	
2	2402.019	93.75	-8.03	85.72			peak	150	61	
3	4804.057	50.49	-2.53	47.96	74.00	-26.04	peak	150	141	
4	7050.590	39.37	1.86	41.23	74.00	-32.77	peak	150	49	
5	14136.778	34.84	12.41	47.25	74.00	-26.75	peak	150	218	
6	17382.132	33.32	15.11	48.43	74.00	-25.57	peak	150	103	

Job No.: frank2018 #1845

Standard: FCC Part 15C 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 25 C / 55 %

EUT: Wet Diaper Monitor (PiPi)

Mode: TX2440MHz

Model: WD-1

Manufacturer: Triamp Technology.,Ltd.

Polarization: Horizontal

Power Source: DC 3V

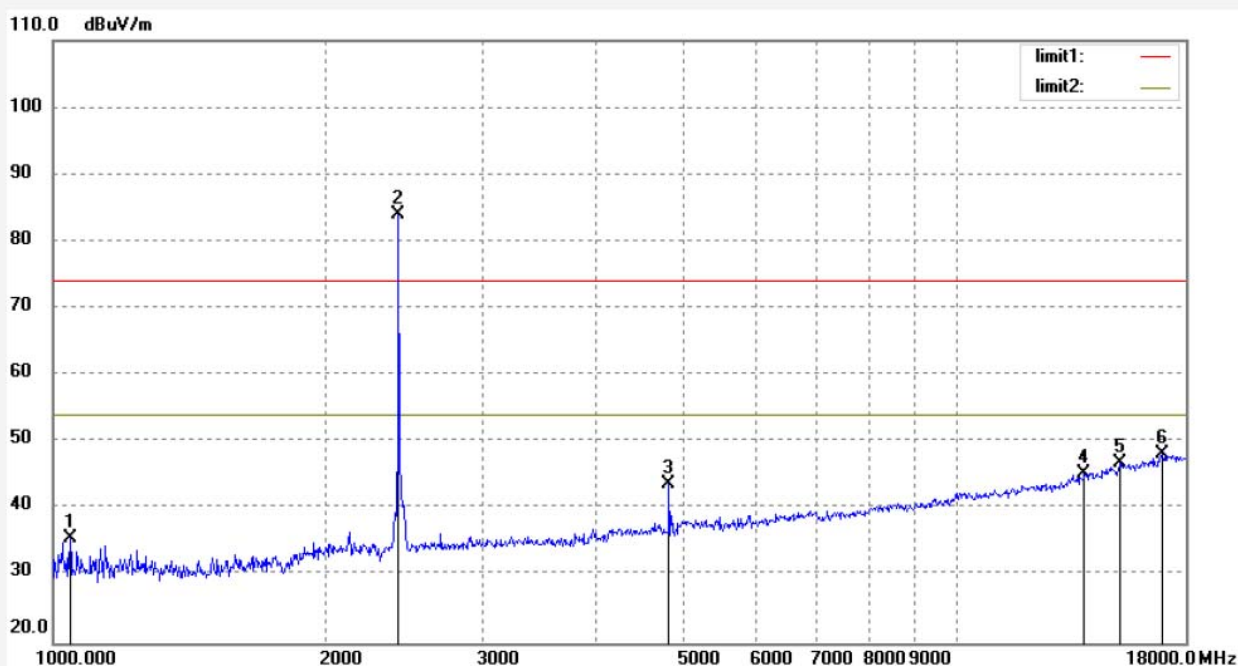
Date: 2018/10/19

Time: 11:10:39

Engineer Signature:

Distance:

Note: Report NO.:ATE20181785

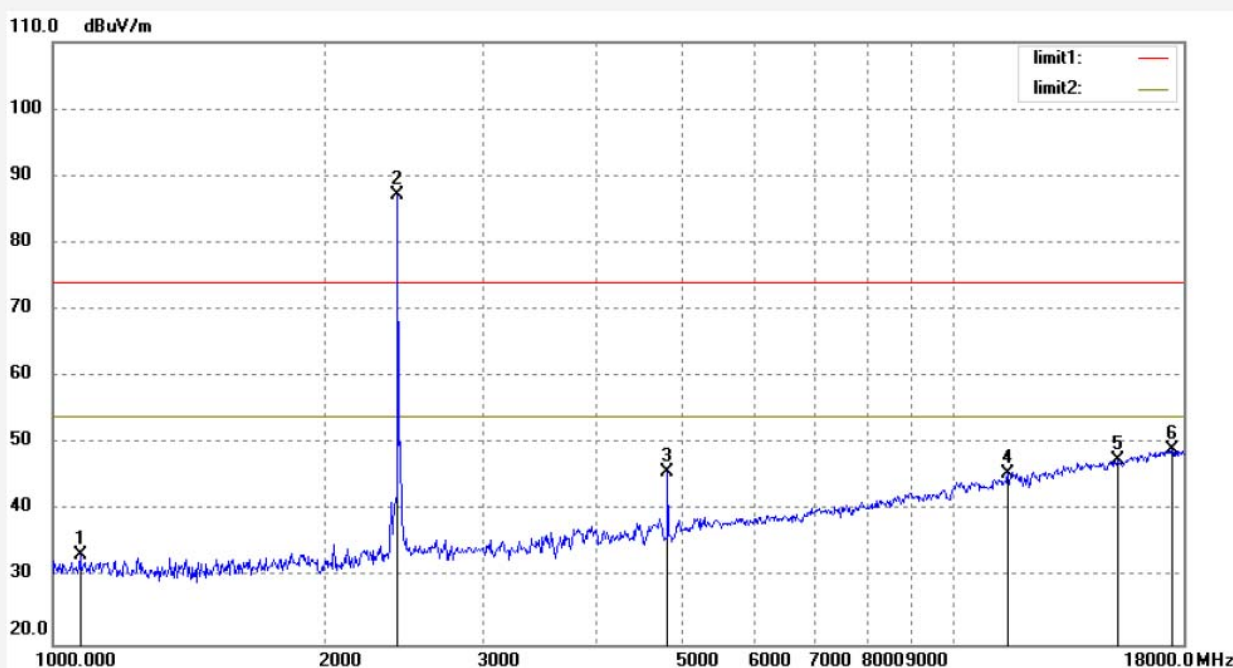


No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	1044.628	48.20	-12.64	35.56	74.00	-38.44	peak	250	302	
2	2440.021	91.95	-7.93	84.02	74.00			250	126	
3	4880.024	46.08	-2.25	43.83	74.00	-30.17	peak	250	219	
4	13892.030	34.00	11.41	45.41	74.00	-28.59	peak	250	154	
5	15248.165	33.85	12.94	46.79	74.00	-27.21	peak	250	46	
6	16932.690	33.43	14.72	48.15	74.00	-25.85	peak	250	198	

Job No.: frank2018 #1846
Standard: FCC Part 15C 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: Wet Diaper Monitor (PiPi)
Mode: TX2440MHz
Model: WD-1
Manufacturer: Triamp Technology.,Ltd.

Polarization: Vertical
Power Source: DC 3V
Date: 2018/10/19
Time: 11:13:49
Engineer Signature:
Distance:

Note: Report NO.:ATE20181785



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	1072.356	46.05	-12.56	33.49	74.00	-40.51	peak	150	305	
2	2440.021	95.19	-7.93	87.26			peak	150	164	
3	4880.024	47.98	-2.25	45.73	74.00	-28.27	peak	150	97	
4	11497.352	38.95	6.55	45.50	74.00	-28.50	peak	150	65	
5	15248.165	34.68	12.94	47.62	74.00	-26.38	peak	150	251	
6	17483.617	33.91	15.15	49.06	74.00	-24.94	peak	150	136	

Job No.: frank2018 #1848

Standard: FCC Part 15C 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 25 C / 55 %

EUT: Wet Diaper Monitor (PiPi)

Mode: TX2480MHz

Model: WD-1

Manufacturer: Triamp Technology.,Ltd.

Polarization: Horizontal

Power Source: DC 3V

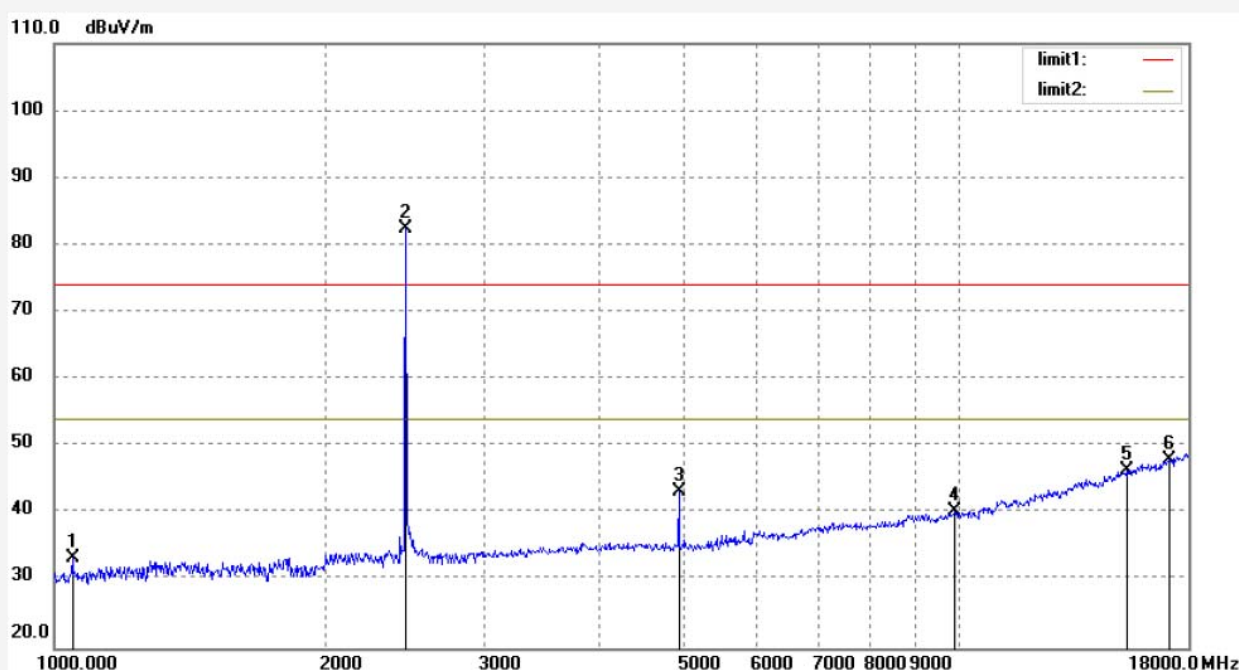
Date: 2018/10/19

Time: 11:19:40

Engineer Signature:

Distance:

Note: Report NO.:ATE20181785

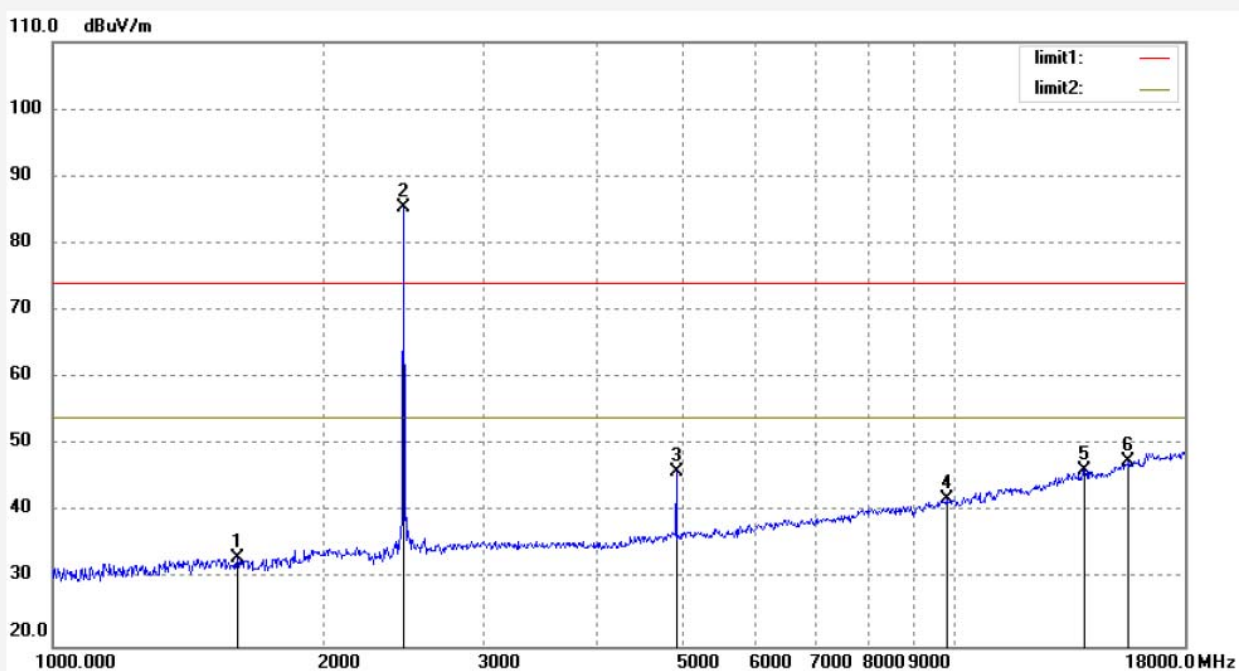


No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	1047.674	46.10	-12.62	33.48	74.00	-40.52	peak	250	69	
2	2480.034	90.29	-7.84	82.45			peak	250	201	
3	4960.044	45.19	-1.92	43.27	74.00	-30.73	peak	250	321	
4	9940.123	34.83	5.45	40.28	74.00	-33.72	peak	250	50	
5	15426.737	33.75	12.70	46.45	74.00	-27.55	peak	250	315	
6	17180.926	33.03	15.02	48.05	74.00	-25.95	peak	250	196	

Job No.: frank2018 #1847
Standard: FCC Part 15C 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: Wet Diaper Monitor (PiPi)
Mode: TX2480MHz
Model: WD-1
Manufacturer: Triamp Technology.,Ltd.

Polarization: Vertical
Power Source: DC 3V
Date: 2018/10/19
Time: 11:17:25
Engineer Signature:
Distance:

Note: Report NO.:ATE20181785



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	1602.462	43.93	-10.83	33.10	74.00	-40.90	peak	150	109	
2	2480.034	93.11	-7.84	85.27			peak	150	66	
3	4960.044	47.81	-1.92	45.89	74.00	-28.11	peak	150	265	
4	9796.504	36.42	5.46	41.88	74.00	-32.12	peak	150	49	
5	13932.525	34.66	11.51	46.17	74.00	-27.83	peak	150	269	
6	15607.400	34.93	12.64	47.57	74.00	-26.43	peak	150	103	

10.ANTENNA REQUIREMENT

10.1.The Requirement

According to 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.

10.2.Antenna Construction

Device is equipped with permanent attached antenna, which isn't displaced by other antenna. The Antenna gain of EUT is 0dBi. Therefore, the equipment complies with the antenna requirement of Section 15.203.



Antenna

***** End of Test Report *****