FCC Test Report

Report No.: AGC05323160901FE03

FCC ID	:	RS5TAURUSTX
APPLICATION PURPOSE	:	Original Equipment
PRODUCT DESIGNATION	:	BABY MONITOR
BRAND NAME	:	Timeflys, Bundle Tumble
MODEL NAME	:	Taurus TX
CLIENT	:	MC DEVICES CO., LTD.
DATE OF ISSUE	:	Oct. 12, 2016
STANDARD(S)	:	FCC Part 15 Rules
REPORT VERSION	:	V1.0

Attestation of ***G***lobal ***C***ompliance (Shenzhen) Co., Ltd

Report Revise Record

Report Version	Revise Time	Issued Date	Valid Version	Notes
V1.0	/	Oct. 12, 2016	Valid	Original Report

TABLE OF CONTENTS

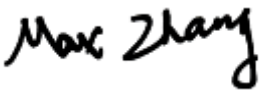
1. VERIFICATION OF CONFORMITY 5
2. GENERAL INFORMATION 6
2.1. PRODUCT DESCRIPTION 6
2.2. TABLE OF CARRIER FREQUENCYS 6
2.3. RECEIVER INPUT BANDWIDTH 7
2.4. EXAMPLE OF A HOPPING SEQUENCY IN DATA MODE 7
2.5. EQUALLY AVERAGE USE OF FREQUENCIES AND BEHAVIOUR 7
2.6. RELATED SUBMITTAL(S) / GRANT (S) 7
2.7. TEST METHODOLOGY 7
2.8. SPECIAL ACCESSORIES 7
2.9. EQUIPMENT MODIFICATIONS 7
3. MEASUREMENT UNCERTAINTY 8
4. DESCRIPTION OF TEST MODES 8
5. SYSTEM TEST CONFIGURATION 9
5.1. CONFIGURATION OF EUT SYSTEM 9
5.2. EQUIPMENT USED IN EUT SYSTEM 9
5.3. SUMMARY OF TEST RESULTS 9
6. TEST FACILITY 10
7. PEAK OUTPUT POWER 11
7.1. MEASUREMENT PROCEDURE 11
7.2. TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION) 11
7.3. LIMITS AND MEASUREMENT RESULT 12
8. 20DB BANDWIDTH 14
8.1. MEASUREMENT PROCEDURE 14
8.2. TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION) 14
8.3. LIMITS AND MEASUREMENT RESULTS 14
9. CONDUCTED SPURIOUS EMISSION 16
9.1. MEASUREMENT PROCEDURE 16
9.2. TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION) 16
9.3. MEASUREMENT EQUIPMENT USED 16
9.4. LIMITS AND MEASUREMENT RESULT 16
10. RADIATED EMISSION 22
10.1. MEASUREMENT PROCEDURE 22
10.2. TEST SETUP 24
10.3. LIMITS AND MEASUREMENT RESULT 25

10.4. TEST RESULT 25
11. NUMBER OF HOPPING FREQUENCY 35
11.1. MEASUREMENT PROCEDURE 35
11.2. TEST SETUP (BLOCK DIAGRAM OF CONFIGURATION) 35
11.3. MEASUREMENT EQUIPMENT USED 35
11.4. LIMITS AND MEASUREMENT RESULT 35
12. TIME OF OCCUPANCY (DWELL TIME) 36
12.1. MEASUREMENT PROCEDURE 36
12.2. TEST SETUP (BLOCK DIAGRAM OF CONFIGURATION) 36
12.3. MEASUREMENT EQUIPMENT USED 36
12.4. LIMITS AND MEASUREMENT RESULT 36
13. FREQUENCY SEPARATION 40
13.1. MEASUREMENT PROCEDURE 40
13.2. TEST SETUP (BLOCK DIAGRAM OF CONFIGURATION) 40
13.3. MEASUREMENT EQUIPMENT USED 40
13.4. LIMITS AND MEASUREMENT RESULT 40
14. FCC LINE CONDUCTED EMISSION TEST 41
14.1. LIMITS OF LINE CONDUCTED EMISSION TEST 41
14.2. BLOCK DIAGRAM OF LINE CONDUCTED EMISSION TEST 41
14.3. PRELIMINARY PROCEDURE OF LINE CONDUCTED EMISSION TEST 42
14.4. FINAL PROCEDURE OF LINE CONDUCTED EMISSION TEST 42
14.5. TEST RESULT OF LINE CONDUCTED EMISSION TEST 43
APPENDIX A: PHOTOGRAPHS OF TEST SETUP 45
APPENDIX B: PHOTOGRAPHS OF EUT 47

1. VERIFICATION OF CONFORMITY

Applicant	MC DEVICES CO., LTD.
Address	SUITE 516 BLD 4 , NATIONAL SOFTWARE BASE, KEJIZHONG 2 RD, SHENZHEN HI-TECH PARK, SHENZHEN, CHINA
Manufacturer	MC DEVICES CO., LTD.
Address	SUITE 516 BLD 4 , NATIONAL SOFTWARE BASE, KEJIZHONG 2 RD, SHENZHEN HI-TECH PARK, SHENZHEN, CHINA
Product Designation	BABY MONITOR
Brand Name	Timeflys, Bundle Tumble
Test Model	Taurus TX
Date of test	Sep. 24, 2016 to Oct.12, 2016
Deviation	None
Condition of Test Sample	Normal
Test Result	Pass
Report Template	AGCRT-US-BR/RF (2013-03-01)

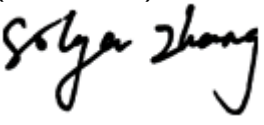
We hereby certify that:
The above equipment was tested by Dongguan Precise Testing Service Co., Ltd. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.10 (2013) and the energy emitted by the sample EUT tested as described in this report is in compliance with radiated emission limits of FCC Rules Part 15.247.

Tested by 

Max Zhang(Zhang Yi) Oct.12, 2016

Reviewed by 

Bart Xie(Xie Xiaobin) Oct.12, 2016

Approved by 

Solger Zhang(Zhang Hongyi) Oct.12, 2016
Authorized Officer

2. GENERAL INFORMATION

2.1. PRODUCT DESCRIPTION

The EUT is “Baby monitor” designed as a “Communication Device”. It is designed by way of utilizing the FHSS technology to achieve the system operation.

A major technical description of EUT is described as following

Operation Frequency	2.405377 GHz to 2.477569GHz
RF Output Power	17.256dBm(Max)
Modulation	FHSS
Number of channels	36
Hardware Version	Taurus TX
Software Version	N/A
Antenna Designation	Integrated Antenna
Antenna Gain	0dBi
Power Supply	DC 5V by adapter

Note: The USB port is only for providing power.

2.2. TABLE OF CARRIER FREQUENCYS

Channel Number	Frequency (MHz)	Channel Number	Frequency (MHz)	Channel Number	Frequency (MHz)
1	2405.377	13	2430.465	25	2455.041
2	2407.425	14	2432.513	26	2457.089
3	2409.473	15	2434.561	27	2459.137
4	2411.521	16	2436.609	28	2461.185
5	2413.569	17	2438.657	29	2463.233
6	2415.617	18	2440.705	30	2465.281
7	2417.655	19	2442.753	31	2467.329
8	2419.713	20	2444.801	32	2469.377
9	2421.761	21	2446.849	33	2471.425
10	2423.809	22	2448.897	34	2473.473
11	2425.857	23	2450.945	35	2475.521
12	2427.905	24	2452.993	36	2477.569

2.3. RECEIVER INPUT BANDWIDTH

The input bandwidth of the receiver is 1MHz.

2.4. EXAMPLE OF A HOPPING SEQUENCY IN DATA MODE

Example of a 36 hopping sequence in data mode:
21,23,33,25,27,31,07,09,13,11,15,02,06,01,03,05,04,08,
10,12,14,16,17,18,19,20,24,26,27,28,29,30,32,34,35,36

2.5. EQUALLY AVERAGE USE OF FREQUENCIES AND BEHAVIOUR

The system shall hop to channel frequencies that are selected at the system hopping rate from a pseudo randomly ordered list of hopping frequencies. Each frequency must be used equally on the average by each transmitter.

2.6. RELATED SUBMITTAL(S) / GRANT (S)

This submittal(s) (test report) is intended for **FCC ID: RS5TAURUSTX** filing to comply with Section 15.247 of the FCC Part 15, Subpart C Rules.

2.7. TEST METHODOLOGY

Both conducted and radiated testing was performed according to the procedures in ANSI C63.10 (2013). Radiated testing was performed at an antenna to EUT distance 3 meters.

2.8. SPECIAL ACCESSORIES

Refer to section 5.2.

2.9. EQUIPMENT MODIFICATIONS

Not available for this EUT intended for grant.

3. MEASUREMENT UNCERTAINTY

Conducted measurement: +/- 3.18dB

Radiated measurement: +/- 3.91dB

4. DESCRIPTION OF TEST MODES

NO.	TEST MODE DESCRIPTION
1	Low channel TX
2	Middle channel TX
3	High channel TX
4	Normal Operating

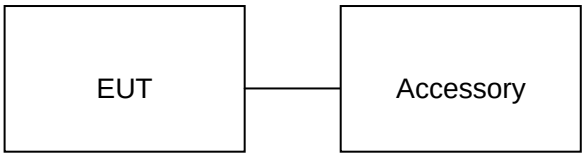
Note:

1. Only the result of the worst case was recorded in the report, if no other cases.
2. For Radiated Emission, 3axis were chosen for testing for each applicable mode.

5. SYSTEM TEST CONFIGURATION

5.1. CONFIGURATION OF EUT SYSTEM

Configure 1:



Hold the power button with power on, the EUT will be work into the engineering mode 5 seconds later. Than loosen the button and press it to choose the transmitting channel.

5.2. EQUIPMENT USED IN EUT SYSTEM

Item	Equipment	Mfr/Brand	Model/Type No.	Remark
1	BABY MONITOR	Timeflys, Bundle	TAURUS TX	EUT
2	Adapter	HJ	HJ-0501000E1-US	Marketed

5.3. SUMMARY OF TEST RESULTS

FCC RULES	DESCRIPTION OF TEST	RESULT
§15.247	Peak Output Power	Compliant
§15.247	20 dB Bandwidth	Compliant
§15.247	Spurious Emission	Compliant
§15.209	Radiated Emission	Compliant
§15.207	Conduction Emission	Compliant
§15.247	Number of Hopping Frequency	Compliant
§15.247	Time of Occupancy	Compliant
§15.247	Frequency Separation	Compliant

Note: N/A means not applicable

6. TEST FACILITY

Site	Dongguan Precise Testing Service Co., Ltd.
Location	Building D, Baoding Technology Park,Guangming Road2, Dongcheng District, Dongguan, Guangdong, China.
FCC Registration No.	371540
Description	The test site is constructed and calibrated to meet the FCC requirements in documents ANSI C63.4:2014.

ALL TEST EQUIPMENT LIST

Radiated Emission Test Site					
Name of Equipment	Manufacturer	Model Number	Serial Number	Last Calibration	Due Calibration
EMI Test Receiver	Rohde & Schwarz	ESCI	101417	July 3, 2016	July 2, 2017
Trilog Broadband Antenna (25M-1GHz)	SCHWARZBECK	VULB9160	9160-3355	July 3, 2016	July 2, 2017
Signal Amplifier	SCHWARZBECK	BBV 9475	9745-0013	July 3, 2016	July 2, 2017
RF Cable	SCHWARZBECK	AK9515E	96221	July 3, 2016	July 2, 2017
3m Anechoic Chamber	CHENGYU	966	PTS-001	June 3, 2016	June 2, 2017
MULTI-DEVICE Positioning Controller	Max-Full	MF-7802	MF780208339	N/A	N/A
Active loop antenna (9K-30MHz)	Schwarzbeck	FMZB1519	1519-038	June 3, 2016	June 2, 2017
Spectrum analyzer	Agilent	E4407B	MY46185649	June 3, 2016	June 2, 2017
Power Sensor	Agilent	U2021XA	MY55050474	June 3, 2016	June 2, 2017
Horn Antenna (1G-18GHz)	SCHWARZBECK	BBHA9120D	9120D-1246	June 3, 2016	June 2, 2017
Horn Ant (18G-40GHz)	Schwarzbeck	BBHA 9170	9170-181	June 3, 2016	June 2, 2017

Conducted Emission Test Site					
Name of Equipment	Manufacturer	Model Number	Serial Number	Last Calibration	Due Calibration
EMI Test Receiver	Rohde & Schwarz	ESCI	101417	July 3, 2016	July 2, 2017
Artificial Mains Network	Narda	L2-16B	000WX31025	July 3, 2016	July 2, 2017
Artificial Mains Network (AUX)	Narda	L2-16B	000WX31026	July 3, 2016	July 2, 2017
RF Cable	SCHWARZBECK	AK9515E	96222	July 3, 2016	July 2, 2017
Shielded Room	CHENGYU	843	PTS-002	June 3, 2016	June 2, 2017

7. PEAK OUTPUT POWER

7.1. MEASUREMENT PROCEDURE

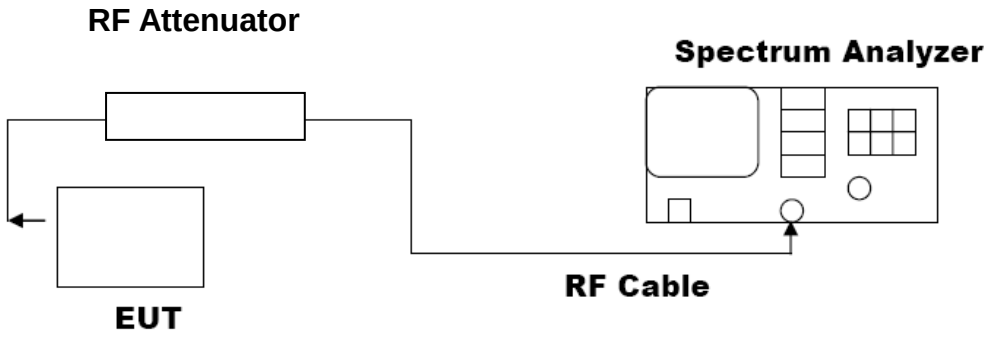
For peak power test:

1. Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
2. Span: Approximately five times the 20 dB bandwidth, centered on a hopping channel.
3. RBW > 20 dB bandwidth of the emission being measured.
4. VBW ≥RBW.
5. Sweep: Auto.
6. Detector function: Peak.
7. Trace: Max hold.

Allow 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, after any corrections for external attenuators and cables.

7.2. TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)

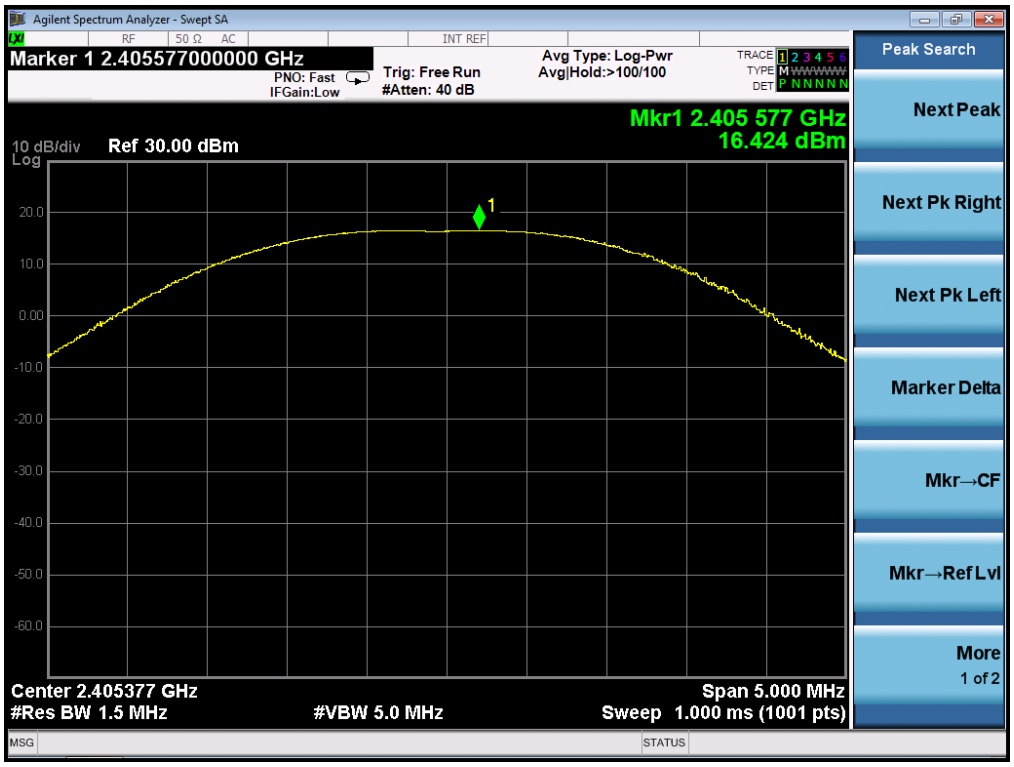
PEAK POWER TEST SETUP



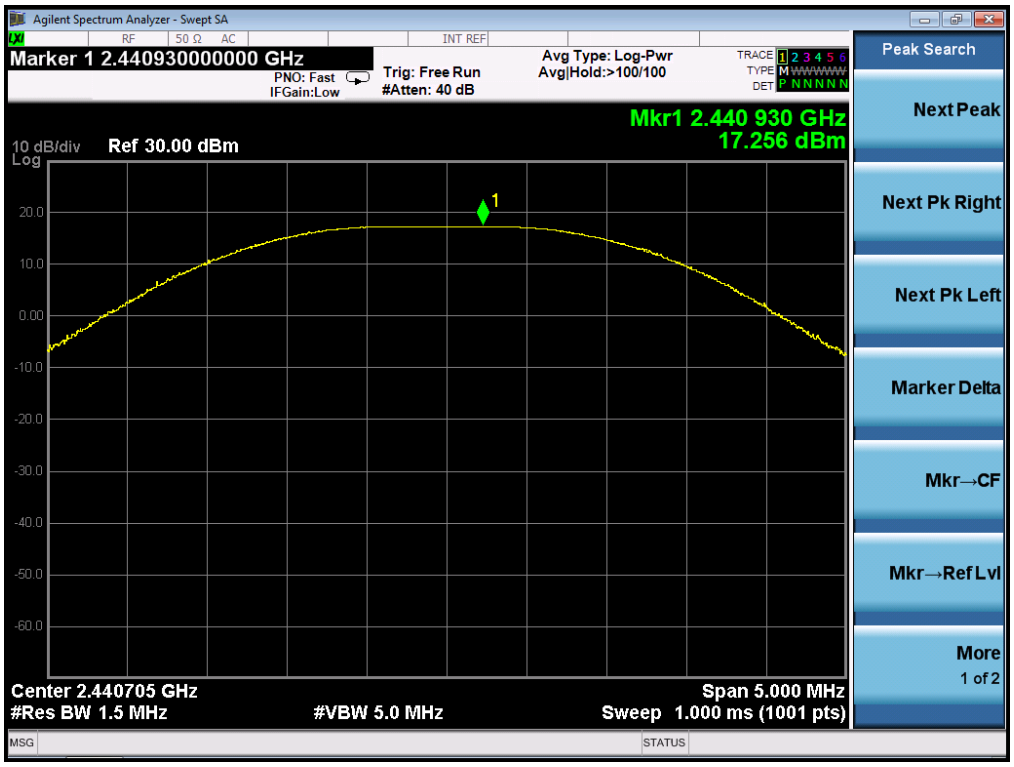
7.3. LIMITS AND MEASUREMENT RESULT

PEAK OUTPUT POWER MEASUREMENT RESULT FOR FHSS MOUDULATION			
Frequency (GHz)	**Peak Power (dBm)**	**Applicable Limits (dBm)**	**Pass or Fail**
2.405377	16.424	21	Pass
2.440705	17.256	21	Pass
2.477569	17.234	21	Pass

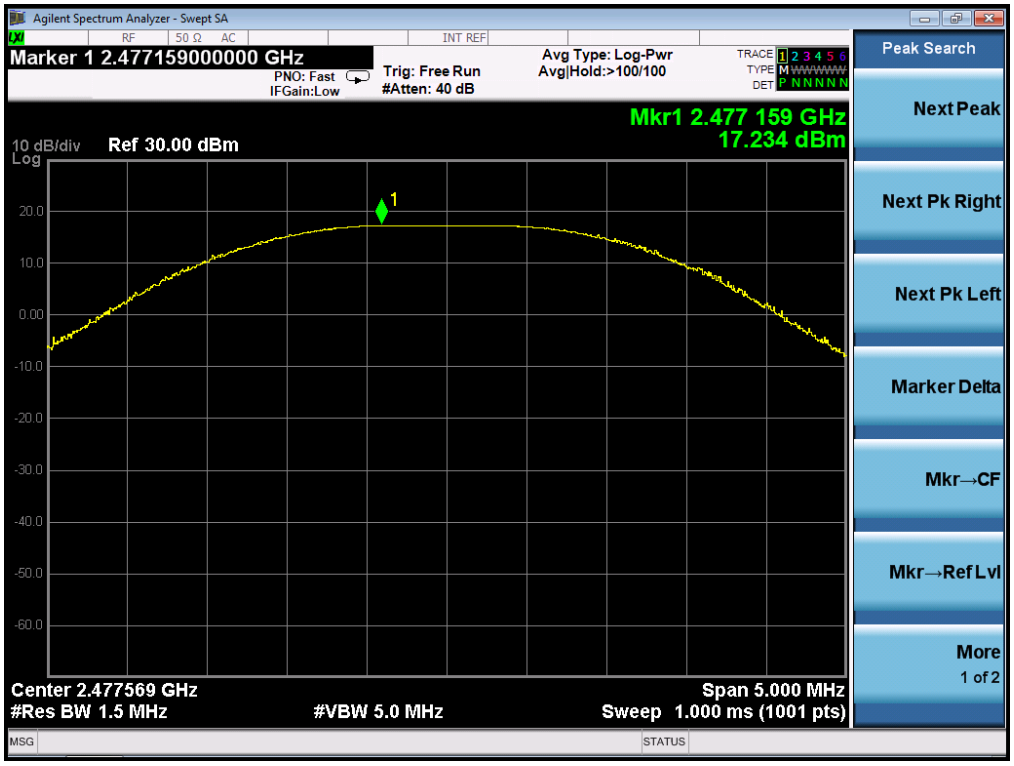
CH01



CH18


Agilent Spectrum Analyzer - Swept SA
Marker 1 2.440930000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 40 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
Mkr1 2.440 930 GHz
17.256 dBm
10 dB/div
Log
Ref 30.00 dBm
Center 2.440705 GHz
#Res BW 1.5 MHz
#VBW 5.0 MHz
Span 5.000 MHz
Sweep 1.000 ms (1001 pts)
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2

CH36


Agilent Spectrum Analyzer - Swept SA
Marker 1 2.477159000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 40 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
Mkr1 2.477 159 GHz
17.234 dBm
10 dB/div
Log
Ref 30.00 dBm
Center 2.477569 GHz
#Res BW 1.5 MHz
#VBW 5.0 MHz
Span 5.000 MHz
Sweep 1.000 ms (1001 pts)
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2

8. 20DB BANDWIDTH

8.1. MEASUREMENT PROCEDURE

1. Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
2, Set the EUT Work on the top, the middle and the bottom operation frequency individually.
3. Set Span = approximately 2 to 5 times the 20 dB bandwidth, centered on a hoping channel
   The nominal IF filter bandwidth (3 dB RBW) shall be in the range of 1% to 5% of the OBW and video bandwidth (VBW) shall be approximately three times RBW; Sweep = auto; Detector function = peak
4. Set SPA Trace 1 Max hold, then View.

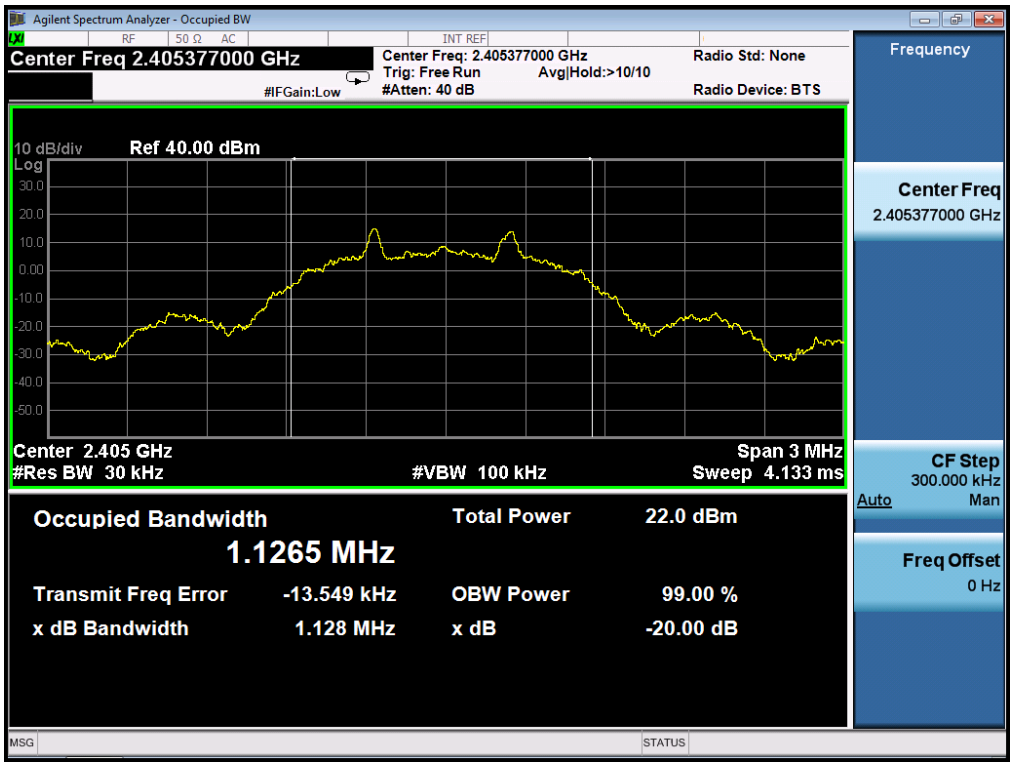
8.2. TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)

The same as described in section 7.2.

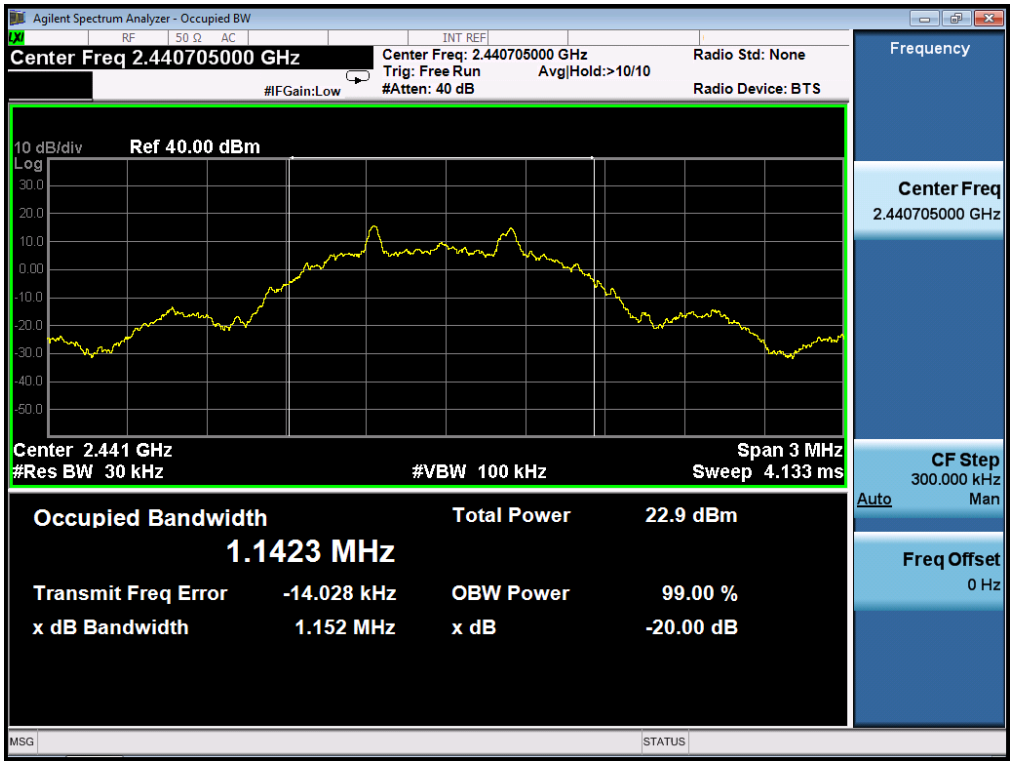
8.3. LIMITS AND MEASUREMENT RESULTS

MEASUREMENT RESULT FOR FHSS MOUDULATION			
Applicable Limits	**Measurement Result**		
	Test Data (MHz)		**Criteria**
N/A	Low Channel	1.128	PASS
	Middle Channel	1.152	PASS
	High Channel	1.162	PASS

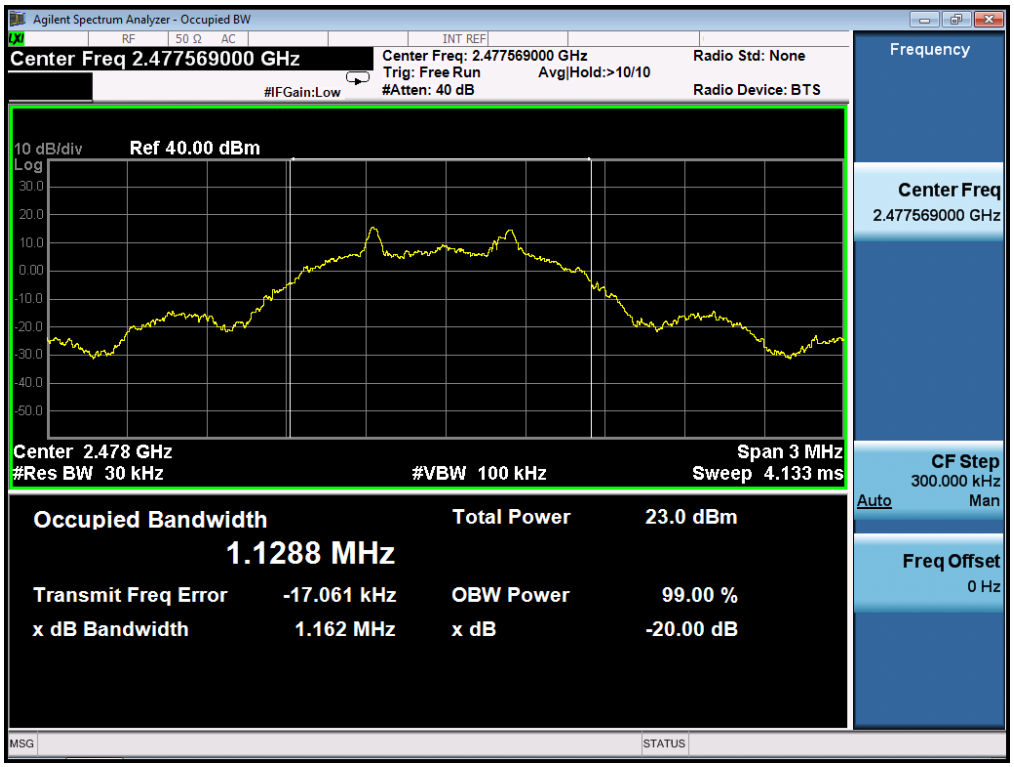
TEST PLOT OF BANDWIDTH FOR LOW CHANNEL



TEST PLOT OF BANDWIDTH FOR MIDDLE CHANNEL



TEST PLOT OF BANDWIDTH FOR HIGH CHANNEL



9. CONDUCTED SPURIOUS EMISSION

9.1. MEASUREMENT PROCEDURE

1. Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
2. Set the EUT Work on the top, the Middle and the bottom operation frequency individually.
3. Set the Span = wide enough to capture the peak level of the in-band emission and all spurious emissions from the lowest frequency generated in the EUT up through the 10th harmonic.
   RBW = 100 kHz; VBW= 300 kHz; Sweep = auto; Detector function = peak.
4. Set SPA Trace 1 Max hold, then View.

9.2. TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)

The same as described in section 8.2

9.3. MEASUREMENT EQUIPMENT USED

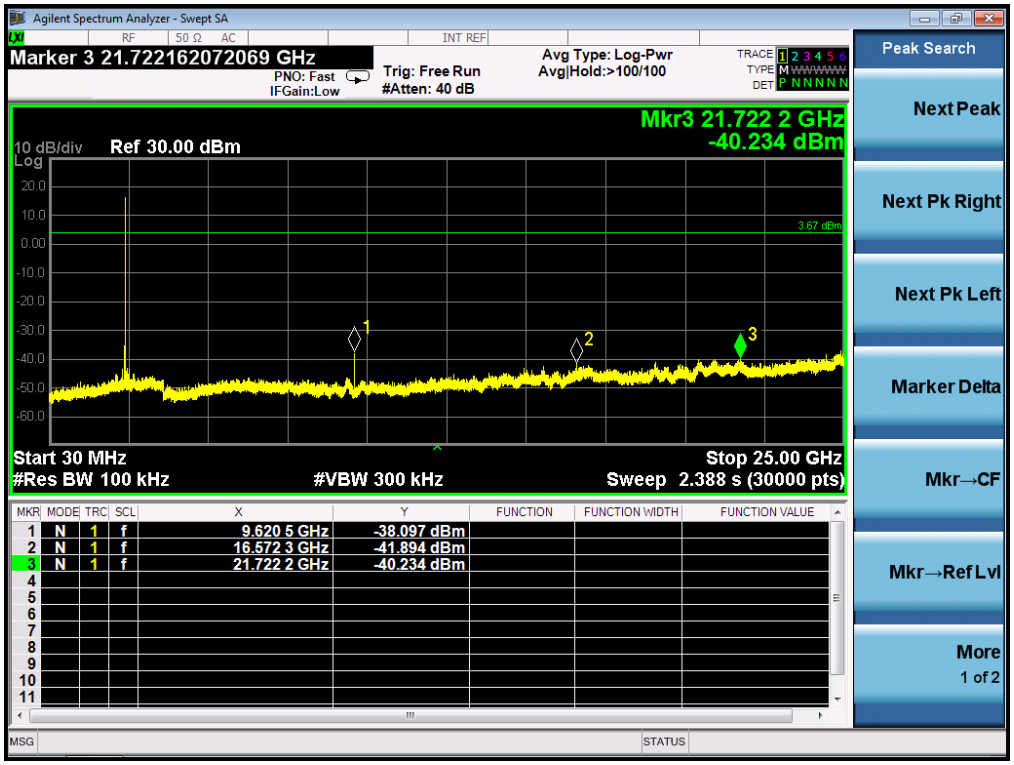
The same as described in section 6

9.4. LIMITS AND MEASUREMENT RESULT

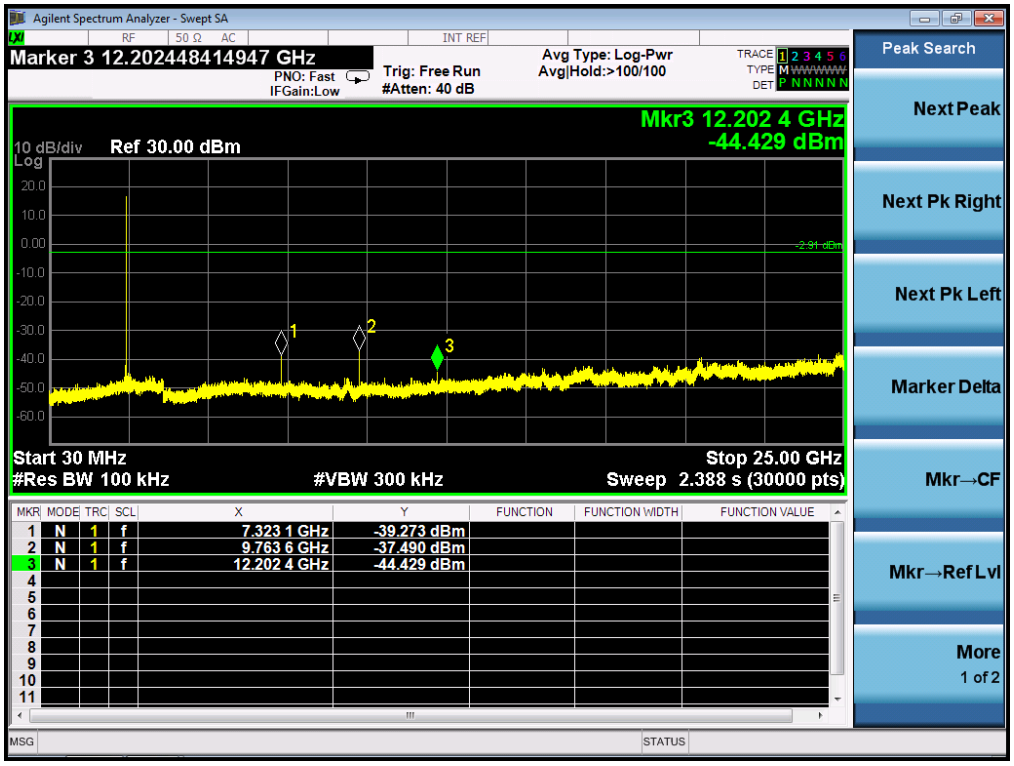
LIMITS AND MEASUREMENT RESULT		
Applicable Limits	**Measurement Result**	
	Test Data	**Criteria**
In any 100 KHz Bandwidth Outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produce by the intentional radiator shall be at least 20 dB below that in 100KHz bandwidth within the band that contains the highest level of the desired power. In addition, radiation emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in§15.209(a))	At least -20dBc than the limit Specified on the BOTTOM Channel	PASS
	At least -20dBc than the limit Specified on the TOP Channel	PASS

TEST RESULT FOR ENTIRE FREQUENCY RANGE

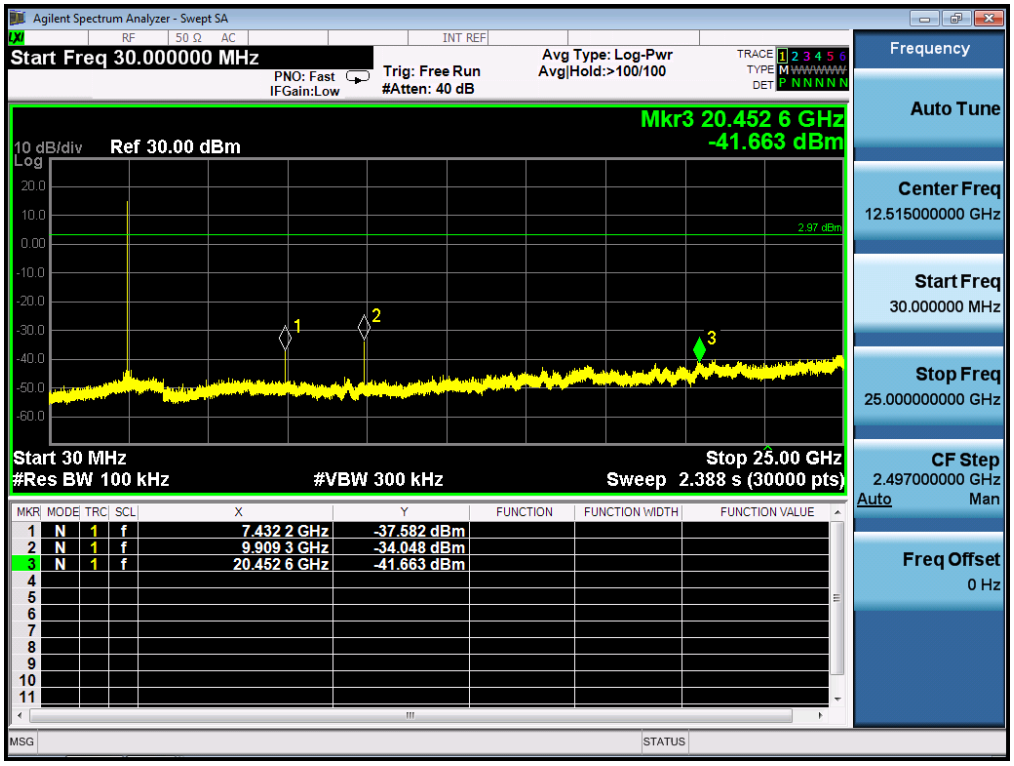
TEST PLOT OF OUT OF BAND EMISSIONS WITH THE WORST CASE OF FHSS MODULATION IN LOW CHANNEL



TEST PLOT OF OUT OF BAND EMISSIONS
OF FHSS MODULATION IN MIDDLE CHANNEL



TEST PLOT OF OUT OF BAND EMISSIONS
OF FHSS MODULATION IN HIGH CHANNEL

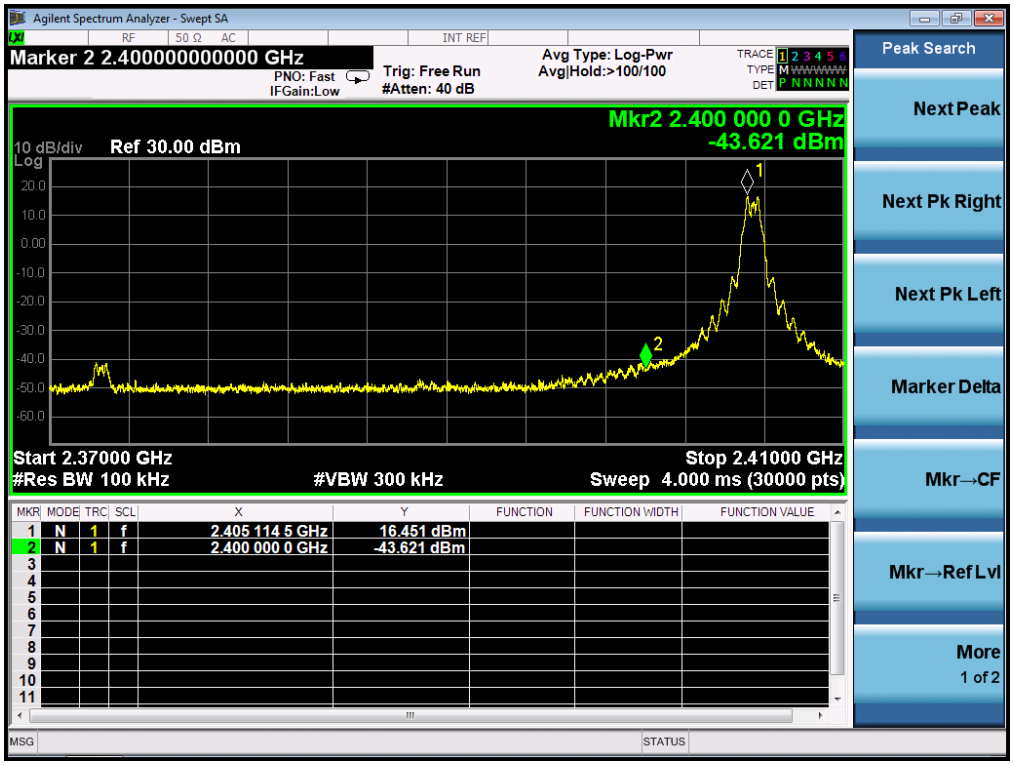


Note: The peak emissions without marker on the above plots are fundamental wave and need not to compare with the limit. The FHSS modulation is the worst case and only those data recorded in the report.

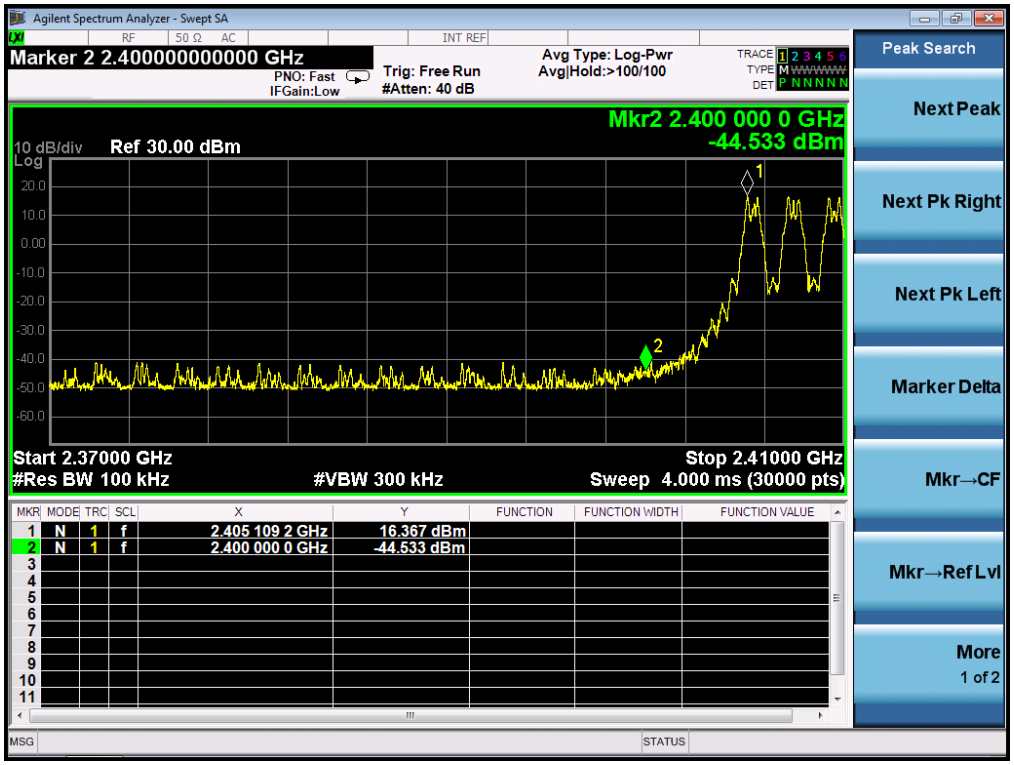
TEST RESULT FOR BAND EDGE

FHSS MODULATION IN LOW CHANNEL

Hopping off

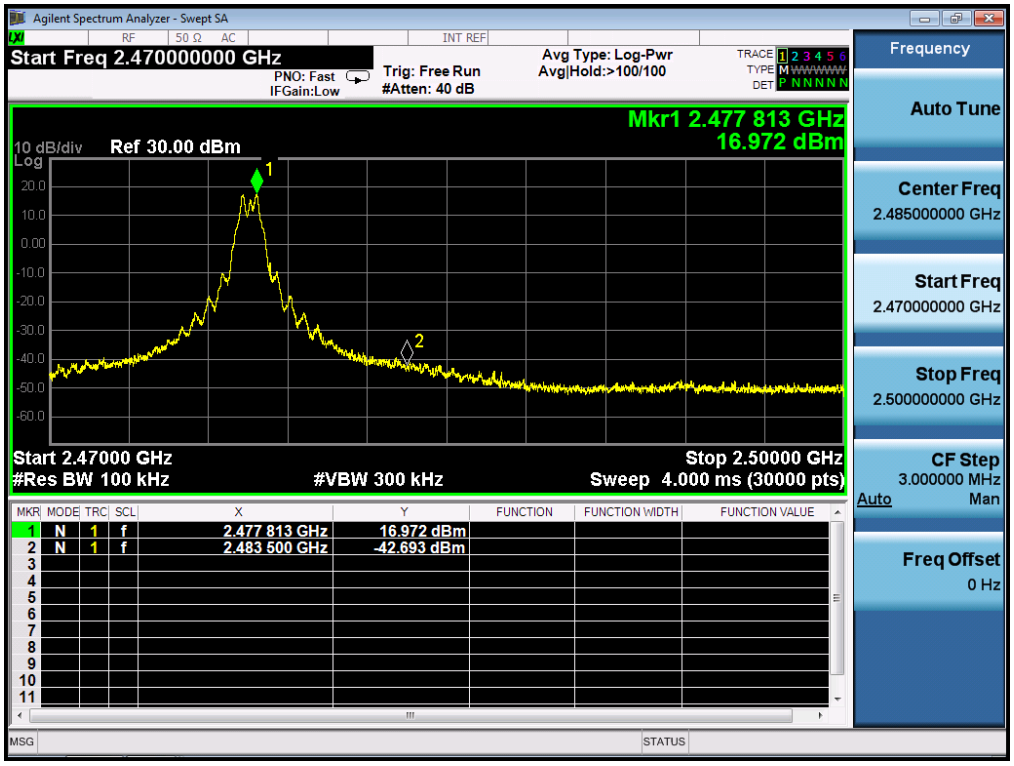


Hopping on

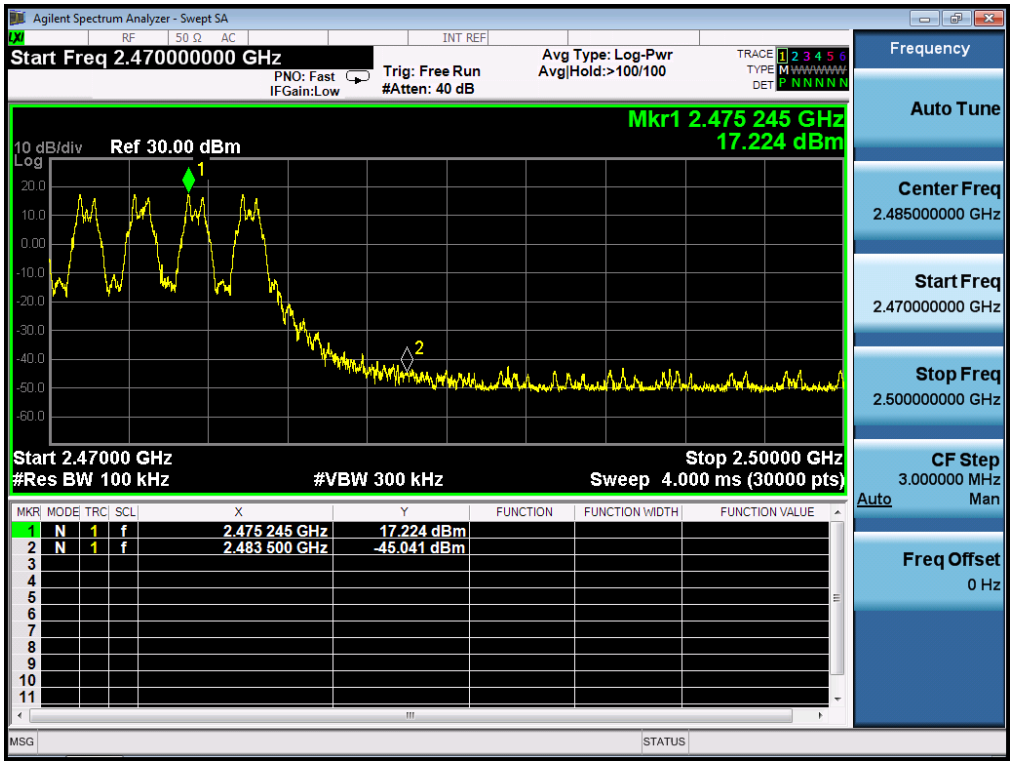


FHSS MODULATION IN HIGH CHANNEL

Hopping off



Hopping on



10. RADIATED EMISSION

10.1. MEASUREMENT PROCEDURE

1. The EUT was placed on the top of the turntable 0.8 or 1.5 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
2. Power on the EUT and all the supporting units. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
3. The height of the broadband receiving antenna was varied between one meter and four meters above ground to find the maximum emissions field strength of both horizontal and vertical polarization.
4. For each suspected emissions, the antenna tower was scan (from 1 M to 4 M) and then the turntable was rotated (from 0 degree to 360 degrees) to find the maximum reading.
5. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function with specified bandwidth under Maximum Hold Mode.
6. For emissions above 1GHz, use 1MHz VBW and RBW for peak reading. Then 1MHz RBW and 10Hz VBW for average reading in spectrum analyzer. 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.
7. When the radiated emissions limits are expressed in terms of the average value of the emissions, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds. As an alternative (provided the transmitter operates for longer than 0.1 seconds) or in cases where the pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum values.
8. If the emissions level of the EUT in peak mode was 3 dB lower than the average limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 3 dB margin will be repeated one by one using the quasi-peak method for below 1GHz.
9. For testing above 1GHz, the emissions level of the EUT in peak mode was lower than average limit (that means the emissions level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.
10. In case the emission is lower than 30MHz, loop antenna has to be used for measurement and the recorded data should be QP measured by receiver. High - Low scan is not required in this case.

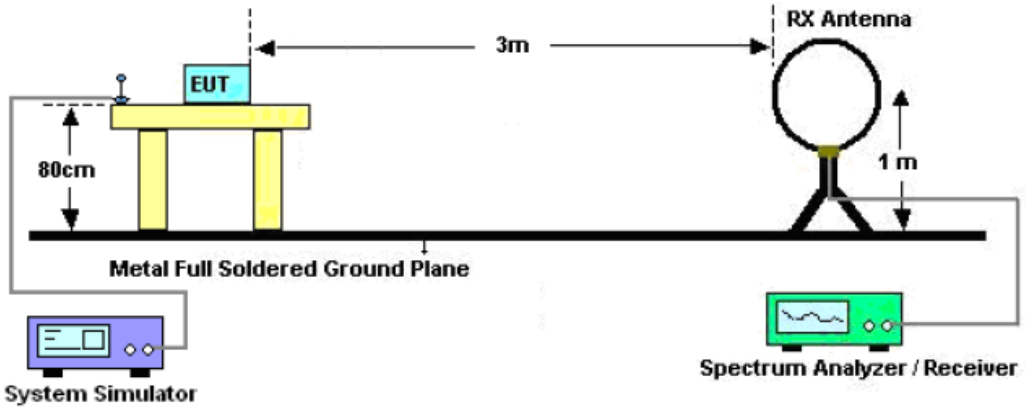
The following table is the setting of spectrum analyzer and receiver.

Spectrum Parameter	Setting
Start ~Stop Frequency	9KHz~150KHz/RB 200Hz for QP
Start ~Stop Frequency	150KHz~30MHz/RB 9KHz for QP
Start ~Stop Frequency	30MHz~1000MHz/RB 120KHz for QP
Start ~Stop Frequency	1GHz~26.5GHz 1MHz/3MHz for Peak(Peak detector), 1MHz/3MHz for Average(average detector)

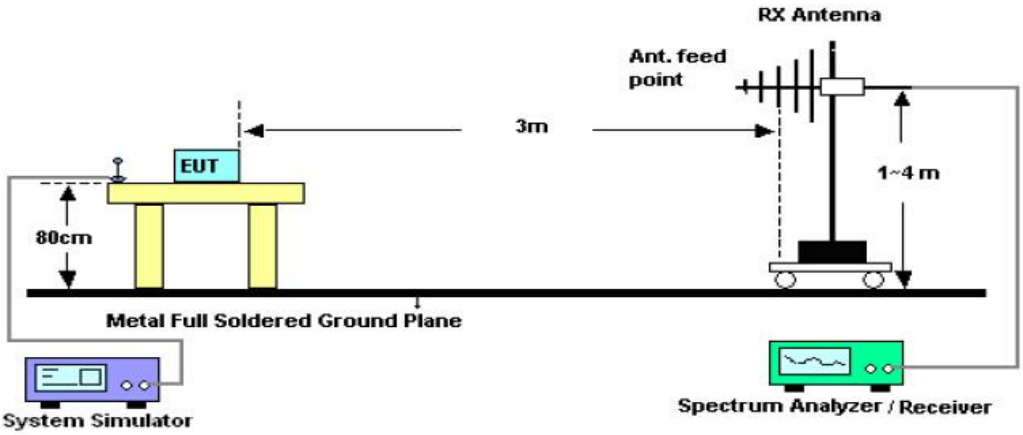
Receiver Parameter	Setting
Start ~Stop Frequency	9KHz~150KHz/RB 200Hz for QP
Start ~Stop Frequency	150KHz~30MHz/RB 9KHz for QP
Start ~Stop Frequency	30MHz~1000MHz/RB 120KHz for QP

10.2. TEST SETUP

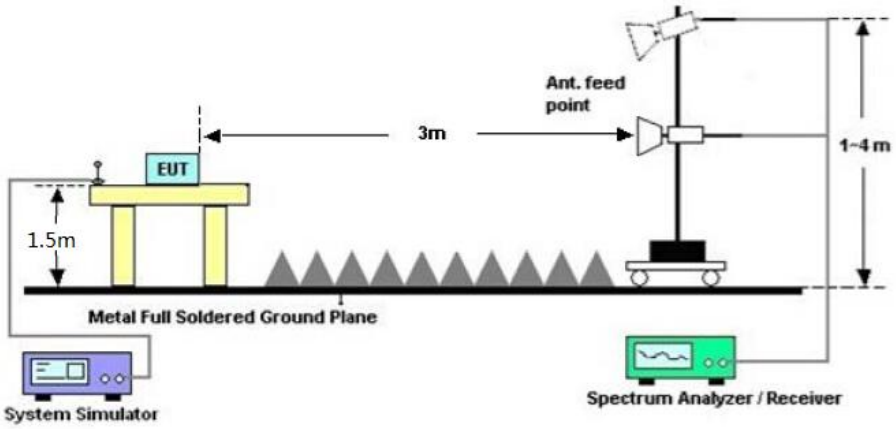
Radiated Emission Test-Setup Frequency Below 30MHz



RADIATED EMISSION TEST SETUP 30MHz-1000MHz



RADIATED EMISSION TEST SETUP ABOVE 1000MHz



10.3. LIMITS AND MEASUREMENT RESULT

15.209(a) Limit in the below table has to be followed

Frequencies (MHz)	Field Strength (micorvolts/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(KHz)	300
0.490~1.705	24000/F(KHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

Note: All modes were tested For restricted band radiated emission,
the test records reported below are the worst result compared to other modes.

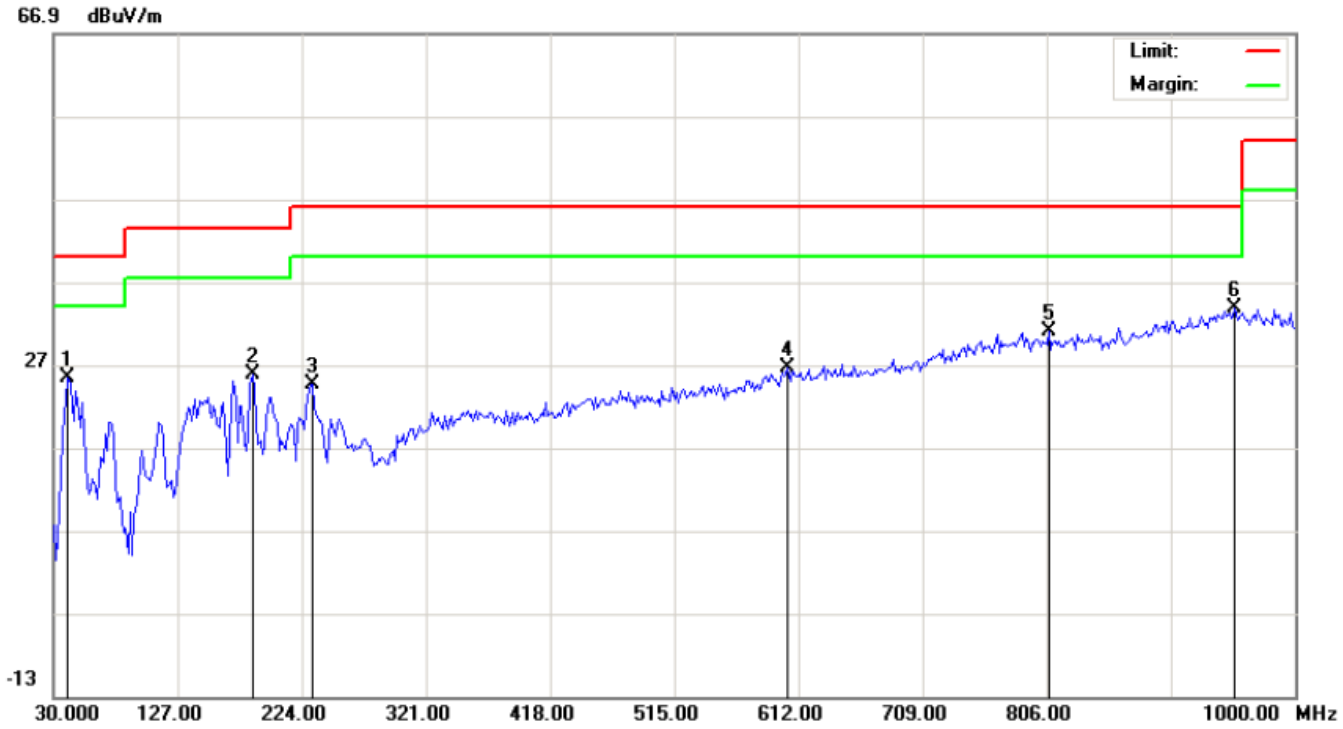
10.4. TEST RESULT

RADIATED EMISSION BELOW 30MHZ

No emission found between lowest internal used/generated frequencies to 30MHz.

RADIATED EMISSION BELOW 1GHZ

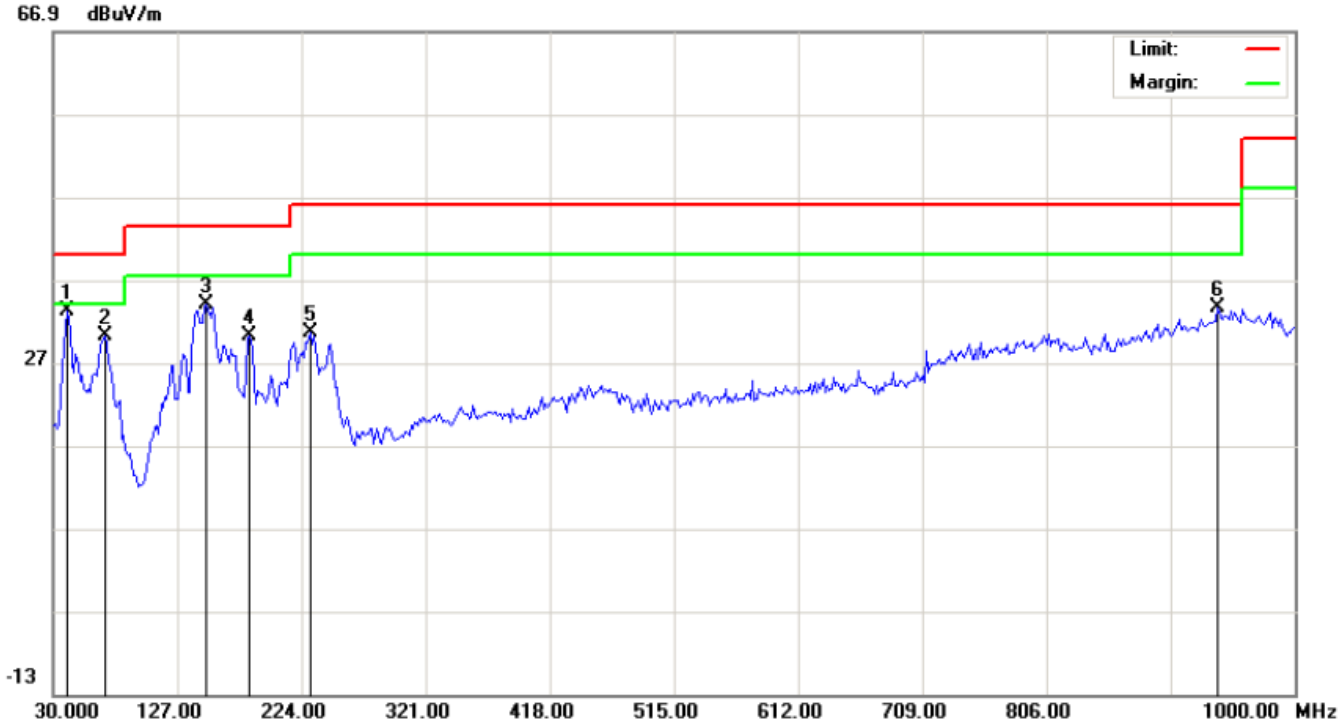
EUT	BABY MONITOR	**Model Name**	TAURUS TX
Temperature	25°C	**Relative Humidity**	55.4%
Pressure	960hPa	**Test Voltage**	Normal Voltage
Test Mode	Mode 4	**Antenna**	Horizontal



No.	Mk.	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1		41.3167	13.50	11.81	25.31	40.00	-14.69	peak			
2		185.2000	14.52	11.31	25.83	43.50	-17.67	peak			
3		232.0833	15.97	8.73	24.70	46.00	-21.30	peak			
4		603.9167	2.78	23.74	26.52	46.00	-19.48	peak			
5		807.6167	3.63	27.32	30.95	46.00	-15.05	peak			
6	*	953.1167	3.81	29.97	33.78	46.00	-12.22	peak			

RESULT: PASS

EUT	BABY MONITOR	Model Name	TAURUS TX
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 4	Antenna	Vertical



No.	Mk.	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1	*	41.3166	24.32	8.81	33.13	40.00	-6.87	peak			
2		70.4167	26.03	4.16	30.19	40.00	-9.81	peak			
3		149.6331	18.66	15.26	33.92	43.50	-9.58	peak			
4		183.5833	17.06	13.16	30.22	43.50	-13.28	peak			
5		230.4667	18.64	11.99	30.63	46.00	-15.37	peak			
6		940.1833	3.95	29.73	33.68	46.00	-12.32	peak			

RESULT: PASS

Note:

1. Factor=Antenna Factor + Cable loss, Margin=Measurement-Limit.

2. The “Factor” value can be calculated automatically by software of measurement system.

3. All test modes had been pre-tested. The mode 4 is the worst case and recorded in the report.

RADIATED EMISSION ABOVE 1GHZ

EUT	BABY MONITOR	**Model Name**	TAURUS TX
Temperature	25°C	**Relative Humidity**	55.4%
Pressure	960hPa	**Test Voltage**	Normal Voltage
Test Mode	Mode 1	**Antenna**	Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
4810.754	50.54	3.74	54.28	74	-19.72	peak
4810.754	44.72	3.74	48.46	54	-5.54	AVG
7216.131	43.15	8.14	51.29	74	-22.71	peak
7216.131	37.02	8.14	45.16	54	-8.84	AVG
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

EUT	BABY MONITOR	**Model Name**	TAURUS TX
Temperature	25°C	**Relative Humidity**	55.4%
Pressure	960hPa	**Test Voltage**	Normal Voltage
Test Mode	Mode 1	**Antenna**	Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
4810.754	51.86	3.74	55.6	74	-18.4	peak
4810.754	45.68	3.74	49.42	54	-4.58	AVG
7216.131	44.52	8.14	52.66	74	-21.34	peak
7216.131	38.15	8.14	46.29	54	-7.71	AVG
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

EUT	BABY MONITOR	Model Name	TAURUS TX
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 2	Antenna	Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
4881.413	51.24	3.76	55	74	-19	peak
4881.413	44.89	3.76	48.65	54	-5.35	AVG
7322.115	42.15	8.17	50.32	74	-23.68	peak
7322.115	36.28	8.17	44.45	54	-9.55	AVG
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

EUT	BABY MONITOR	Model Name	TAURUS TX
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 2	Antenna	Vertical

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
4881.413	52.87	3.76	56.63	74	-17.37	peak
4881.413	46.18	3.76	49.94	54	-4.06	AVG
7322.115	43.65	8.17	51.82	74	-22.18	peak
7322.115	37.59	8.17	45.76	54	-8.24	AVG
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

EUT	BABY MONITOR	Model Name	TAURUS TX
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 3	Antenna	Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
4955.138	51.74	3.83	55.57	74	-18.43	peak
4955.138	45.85	3.83	49.68	54	-4.32	AVG
7432.707	45.11	8.21	53.32	74	-20.68	peak
7432.707	39.24	8.21	47.45	54	-6.55	AVG
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

EUT	BABY MONITOR	Model Name	TAURUS TX
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 3	Antenna	Vertical

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
4955.138	53.12	3.83	56.95	74	-17.05	peak
4955.138	47.08	3.83	50.91	54	-3.09	AVG
7432.707	45.86	8.21	54.07	74	-19.93	peak
7432.707	40.02	8.21	48.23	54	-5.77	AVG
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

RESULT: PASS

Note:

Other emissions from 8G to 25 GHz are considered as ambient noise. No recording in the test report.

Factor = Antenna Factor + Cable loss - Amplifier gain, Over=Measure-Limit.

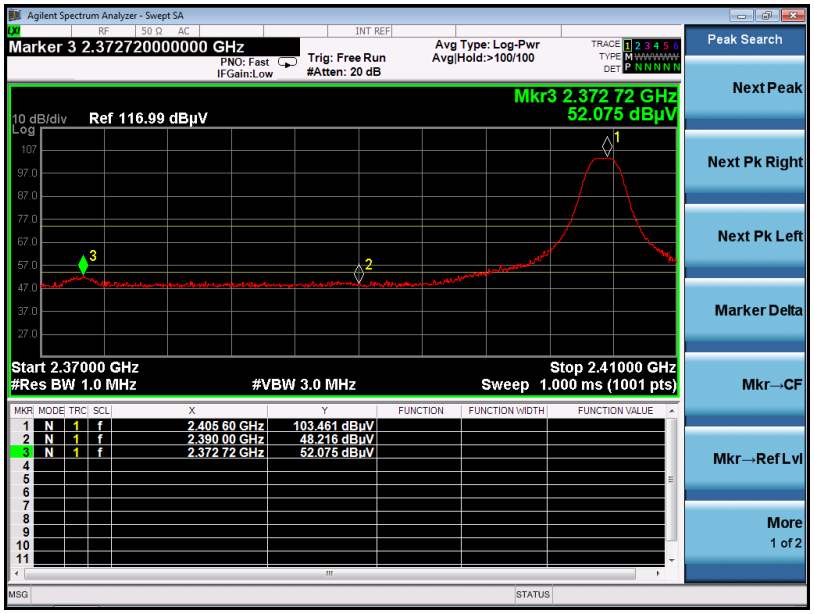
The “Factor” value can be calculated automatically by software of measurement system.

All test modes had been pre-tested. The FHSS modulation is the worst case and recorded in the report.

TEST RESULT FOR RESTRICTED BANDS REQUIREMENTS

EUT	BABY MONITOR	Model Name	TAURUS TX
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 1	Antenna	Horizontal

PK

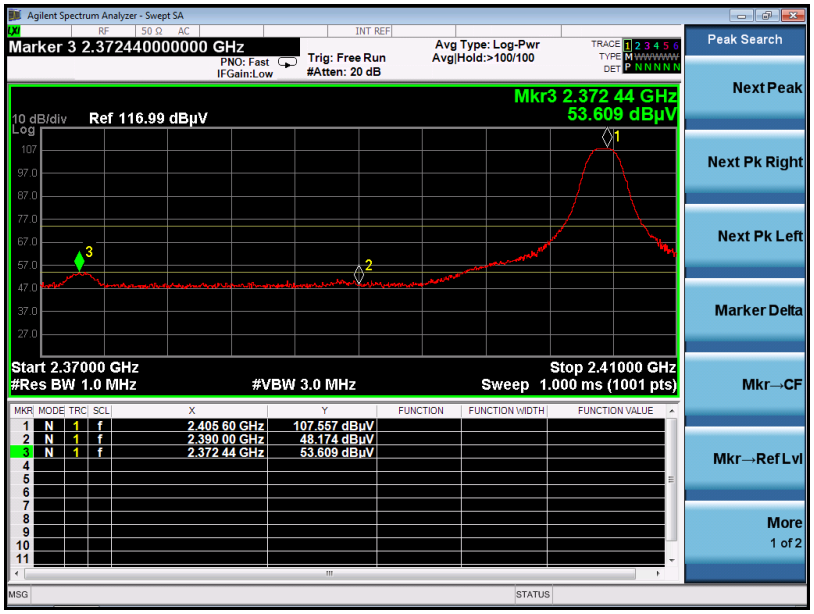


AV

RESULT: PASS

EUT	BABY MONITOR	Model Name	TAURUS TX
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 1	Antenna	Vertical

PK



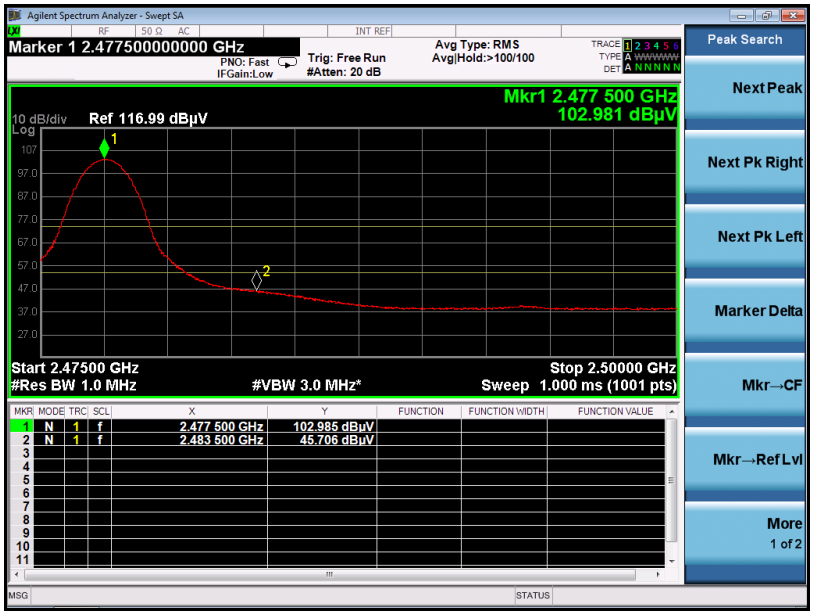
AV

RESULT: PASS

EUT	BABY MONITOR	Model Name	TAURUS TX
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 3	Antenna	Horizontal

PK

AV

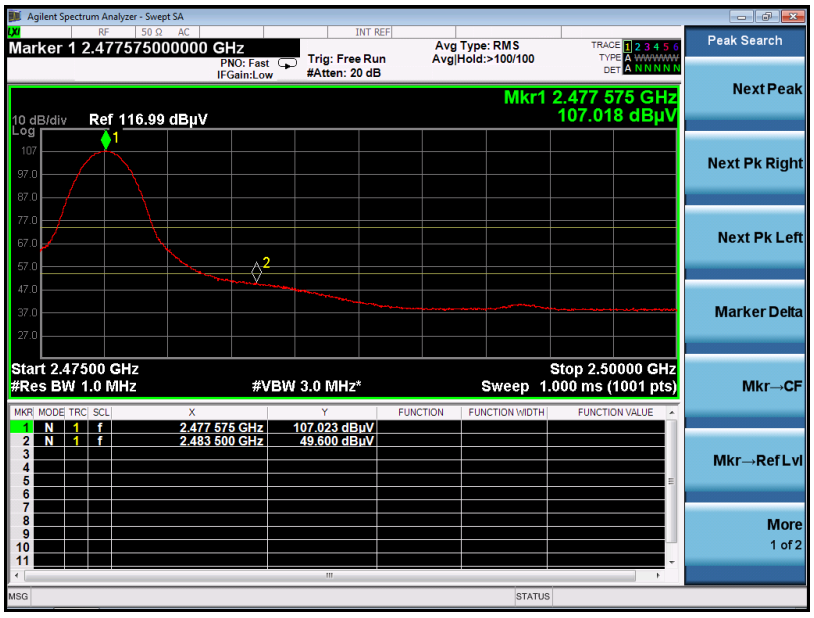


RESULT: PASS

EUT	BABY MONITOR	Model Name	TAURUS TX
Temperature	25˚C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 3	Antenna	Vertical

PK

AV



RESULT: PASS

Note: The factor had been edited in the “Input Correction” of the Spectrum Analyzer. So the Amplitude of test plots is equal to Reading level plus the Factor in dB. Use the A dB(µV) to represent the Amplitude. Use the F dB(µV/m) to represent the Field Strength. So A=F. All test modes had been pre-tested. The FHSS modulation is the worst case and recorded in the report.

11. NUMBER OF HOPPING FREQUENCY

11.1. MEASUREMENT PROCEDURE

The EUT shall have its hopping function enabled. Use the following spectrum analyzer settings:
1. Span: The frequency band of operation. Depending on the number of channels the device supports, it may be necessary to divide the frequency range of operation across multiple spans, to allow the individual channels to be clearly seen.
2. RBW: To identify clearly the individual channels, set the RBW to less than 30% of the channel spacing or the 20 dB bandwidth, whichever is smaller.
3. VBW ≥ RBW. Sweep: Auto. Detector function: Peak. Trace: Max hold.
4. Allow the trace to stabilize.

11.2. TEST SETUP (BLOCK DIAGRAM OF CONFIGURATION)

Same as described in section 8.2

11.3. MEASUREMENT EQUIPMENT USED

The same as described in section 6

11.4. LIMITS AND MEASUREMENT RESULT

TOTAL NO. OF HOPPING CHANNEL	LIMIT (NO. OF CH)	MEASUREMENT (NO. OF CH)	RESULT
	>=15	36	PASS

TEST PLOT FOR NO. OF TOTAL CHANNELS

12. TIME OF OCCUPANCY (DWELL TIME)

12.1. MEASUREMENT PROCEDURE

The EUT shall have its hopping function enabled. Use the following spectrum analyzer settings:
1. Span: Zero span, centered on a hopping channel.
2. RBW shall be≤channel spacing and where possible RBW should be set >> 1 / T, where T is the expected dwell time per channel.
3. Sweep: As necessary to capture the entire dwell time per hopping channel; where possible use a video trigger and trigger delay so that the transmitted signal starts a little to the right of the start of the plot. The trigger level might need slight adjustment to prevent triggering when the system hops on an adjacent channel; a second plot might be needed with a longer sweep time to show two successive hops on a channel.
4. Detector function: Peak. Trace: Max hold.
5. Use the marker-delta function to determine the transmit time per hop.
6. Repeat the measurement using a longer sweep time to determine the number of hops over the period specified in the requirements. The sweep time shall be equal to, or less than, the period specified in the requirements. Determine the number of hops over the sweep time and calculate the total number of hops in the period specified in the requirements, using the following equation:
(Number of hops in the period specified in the requirements) = (number of hops on spectrum analyzer) × (period specified in the requirements / analyzer sweep time)
7. The average time of occupancy is calculated from the transmit time per hop multiplied by the number of hops in the period specified in the requirements.

12.2. TEST SETUP (BLOCK DIAGRAM OF CONFIGURATION)

Same as described in section 8.2

12.3. MEASUREMENT EQUIPMENT USED

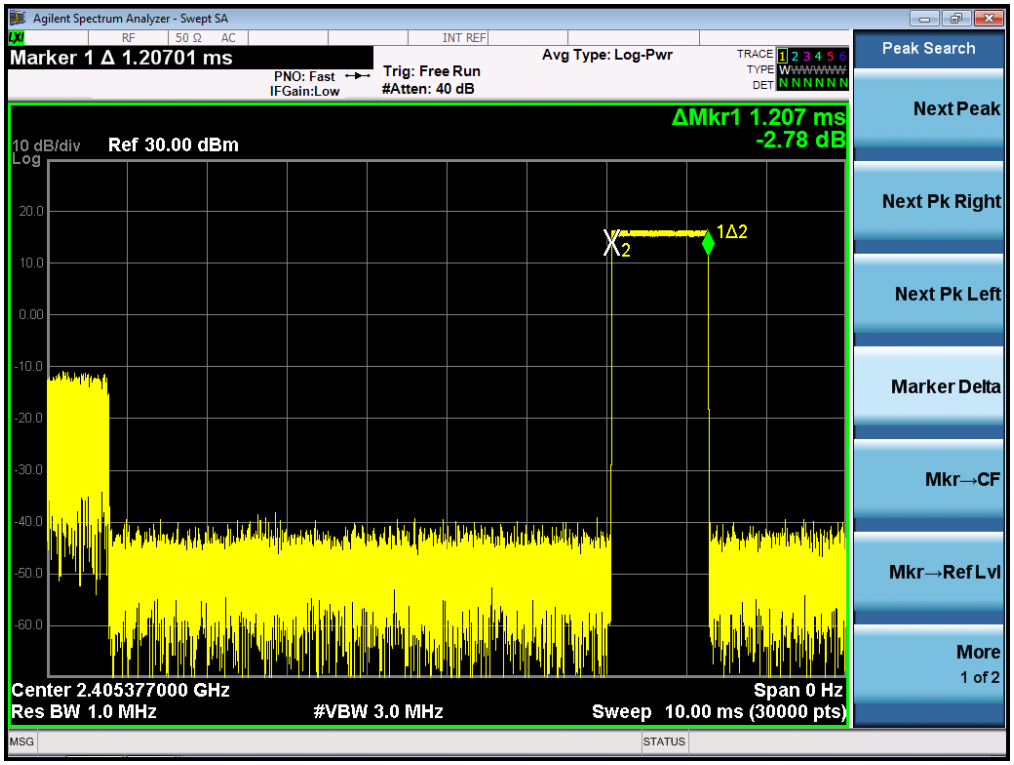
The same as described in section 6

12.4. LIMITS AND MEASUREMENT RESULT

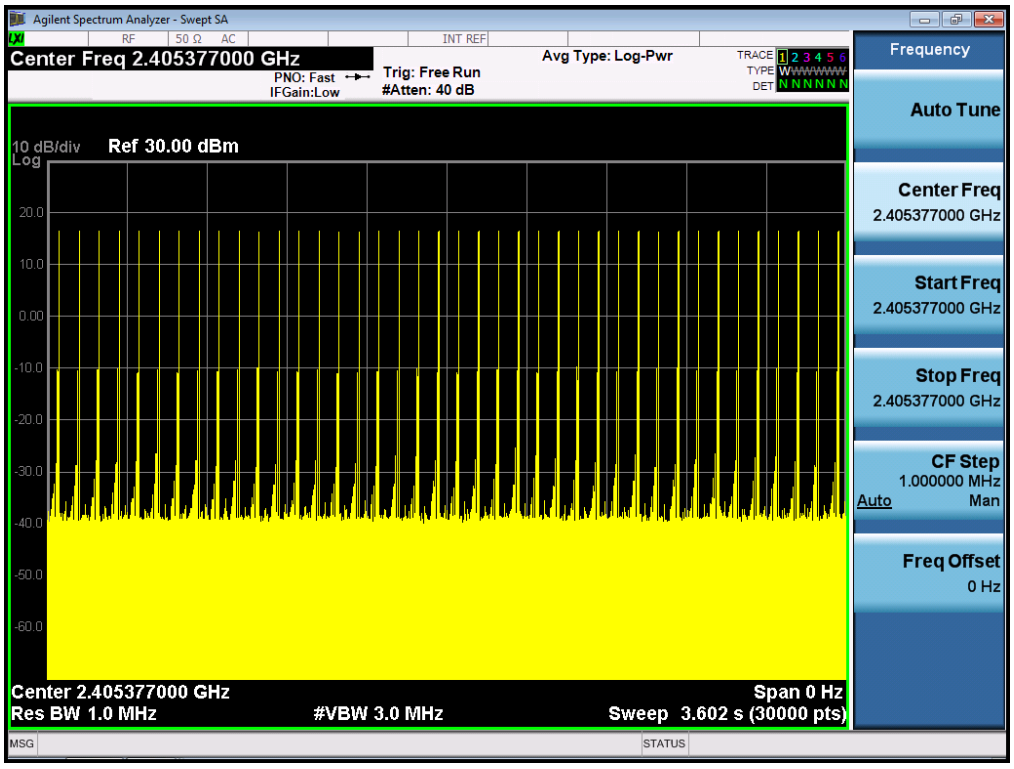
Channel	Time of Pulse (ms)	Number of hops in the period specified in the requirements	Sweep Time (ms)	Limit (ms)
Low	1.207	40*4	193.12	400
Middle	1.208	40*4	193.28	400
High	1.208	40*4	193.28	400

Note: (period specified in the requirements / analyzer sweep time)=(36*0.4)/3.6=4
(Number of hops in the period specified in the requirements)=4* number of hops on spectrum analyzer

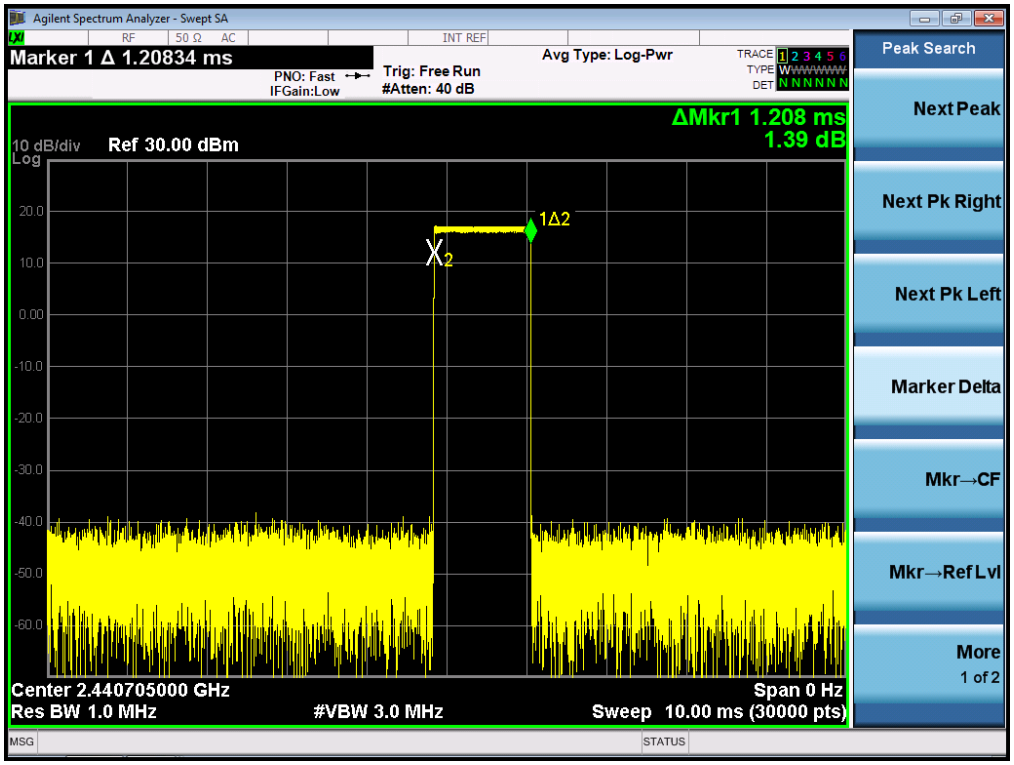
TEST PLOT OF LOW CHANNEL



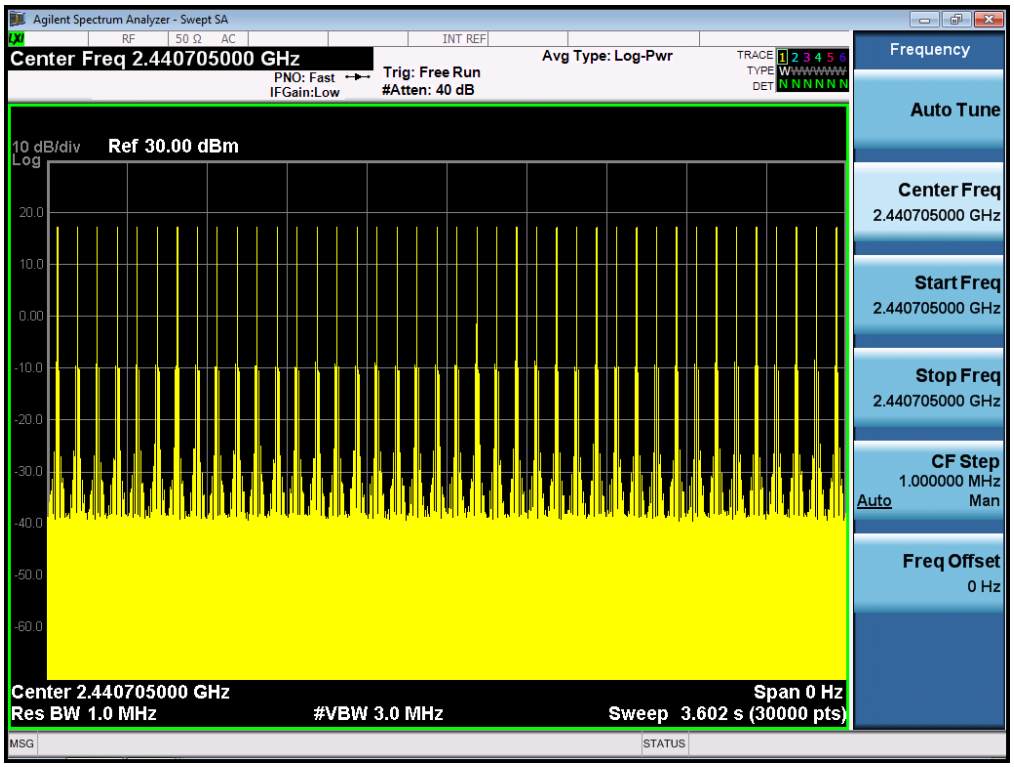
NUMBER OF HOPS ON SPECTRUM ANALYZER



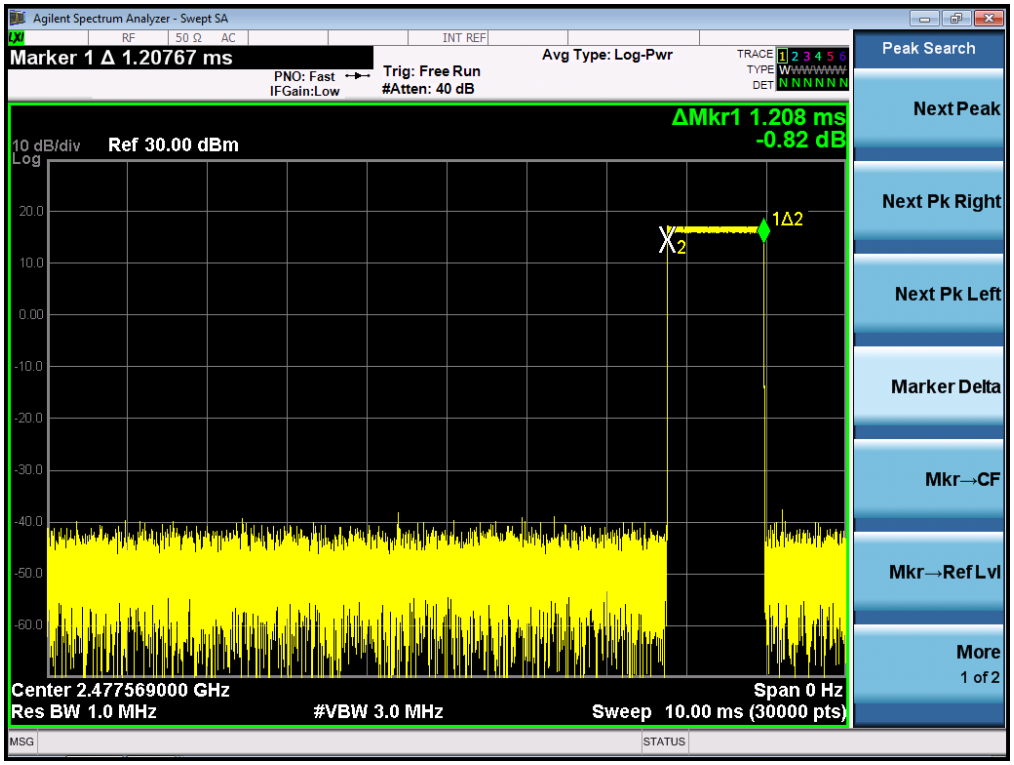
TEST PLOT OF MIDDLE CHANNEL



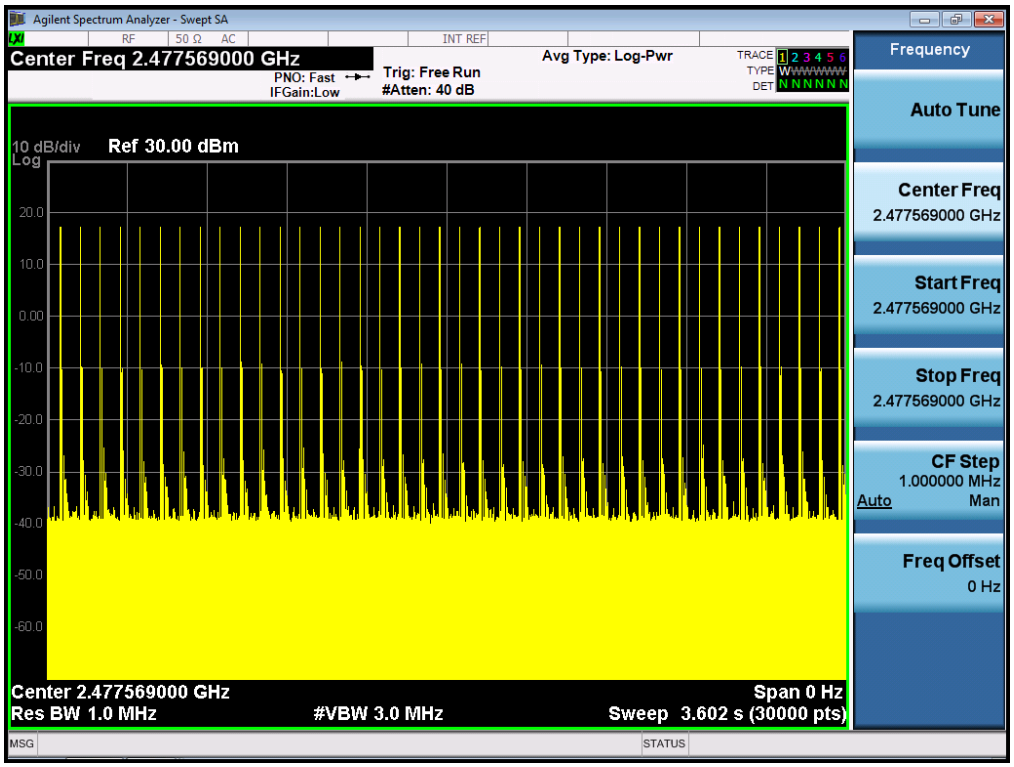
NUMBER OF HOPS ON SPECTRUM ANALYZER



TEST PLOT OF HIGH CHANNEL



NUMBER OF HOPS ON SPECTRUM ANALYZER



13. FREQUENCY SEPARATION

13.1. MEASUREMENT PROCEDURE

The EUT shall have its hopping function enabled. Use the following spectrum analyzer settings:
1. Span: Wide enough to capture the peaks of two adjacent channels.
2. RBW: Start with the RBW set to approximately 30% of the channel spacing; adjust as necessary to best identify the center of each individual channel.
3. Video (or average) bandwidth (VBW) ≥ RBW.
4. Sweep: Auto. e) Detector function: Peak. f) Trace: Max hold. g) Allow the trace to stabilize.
Use the marker-delta function to determine the separation between the peaks of the adjacent channels.

13.2. TEST SETUP (BLOCK DIAGRAM OF CONFIGURATION)

Same as described in section 6.2

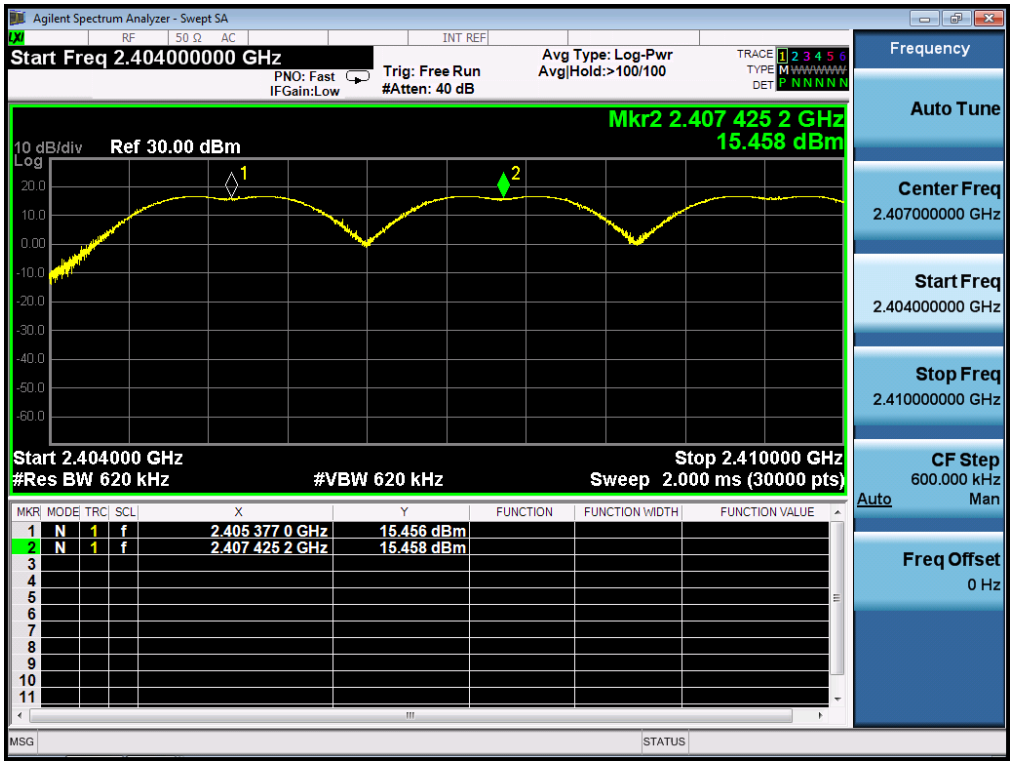
13.3. MEASUREMENT EQUIPMENT USED

The same as described in section 6.3

13.4. LIMITS AND MEASUREMENT RESULT

CHANNEL	CHANNEL SEPARATION	LIMIT	RESULT
	KHz	KHz	Pass
CH01-CH02	2048.2	>=25 KHz or 2/3 20 dB BW	

TEST PLOT FOR FREQUENCY SEPARATION



14. FCC LINE CONDUCTED EMISSION TEST

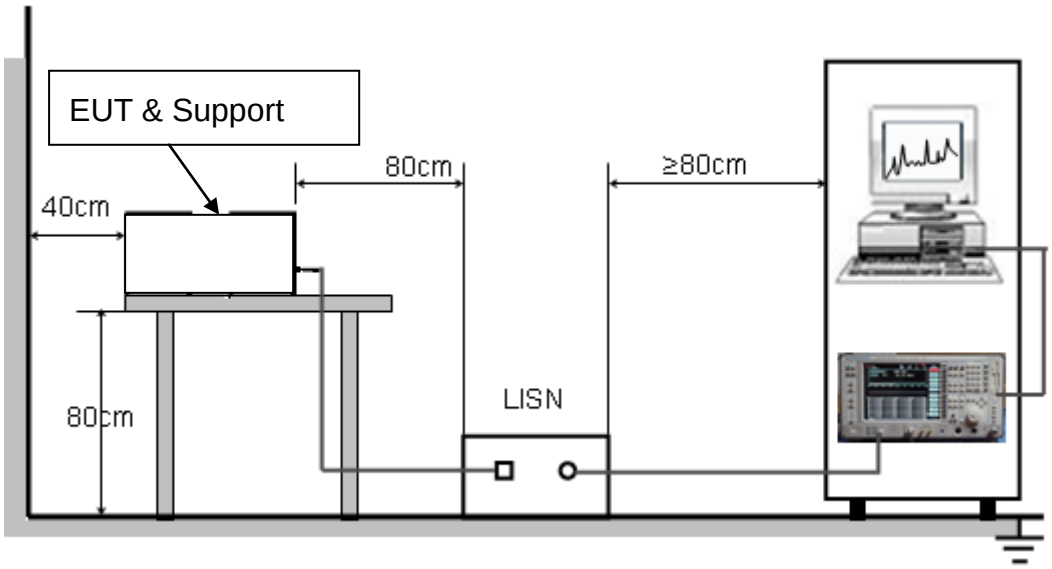
14.1. LIMITS OF LINE CONDUCTED EMISSION TEST

Frequency	Maximum RF Line Voltage	
	Q.P.(dBuV)	Average(dBuV)
150kHz~500kHz	66-56	56-46
500kHz~5MHz	56	46
5MHz~30MHz	60	50

Note:

1. The lower limit shall apply at the transition frequency.
2. The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz.

14.2. BLOCK DIAGRAM OF LINE CONDUCTED EMISSION TEST



14.3. PRELIMINARY PROCEDURE OF LINE CONDUCTED EMISSION TEST

1. The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. When the EUT is a tabletop system, a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.10 (see Test Facility for the dimensions of the ground plane used). When the EUT is a floor-standing equipment, it is placed on the ground plane which has a 3-12 mm non-conductive covering to insulate the EUT from the ground plane.
2. Support equipment, if needed, was placed as per ANSI C63.10.
3. All I/O cables were positioned to simulate typical actual usage as per ANSI C63.10.
4. All support equipments received AC120V/60Hz power from a LISN, if any.
5. The EUT received DC charging voltage by adapter which received 120V/60Hzpower by a LISN..
6. The test program was started. Emissions were measured on each current carrying line of the EUT using a spectrum Analyzer / Receiver connected to the LISN powering the EUT. The LISN has two monitoring points: Line 1 (Hot Side) and Line 2 (Neutral Side). Two scans were taken: one with Line 1 connected to Analyzer / Receiver and Line 2 connected to a 50 ohm load; the second scan had Line 1 connected to a 50 ohm load and Line 2 connected to the Analyzer / Receiver.
7. Analyzer / Receiver scanned from 150 kHz to 30MHz for emissions in each of the test modes.
8. During the above scans, the emissions were maximized by cable manipulation.
9. The test mode(s) were scanned during the preliminary test.

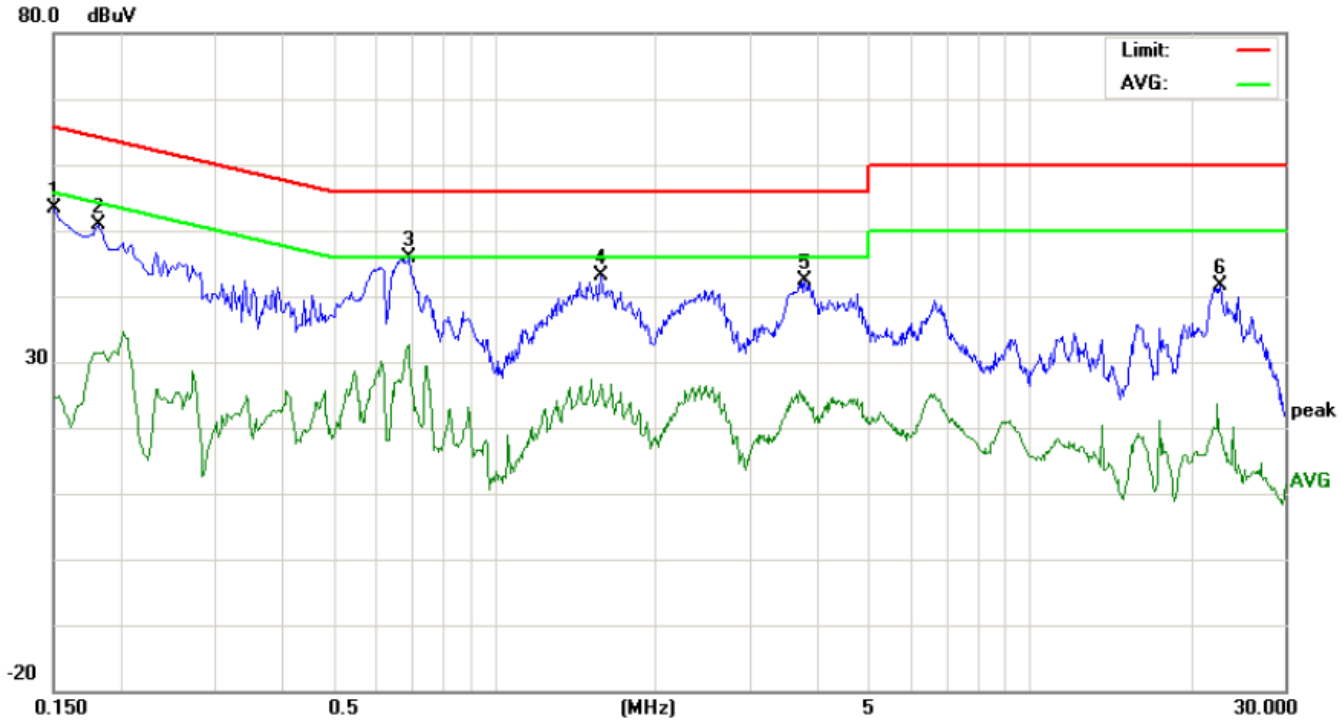
Then, the EUT configuration and cable configuration of the above highest emission level were recorded for reference of final testing.

14.4. FINAL PROCEDURE OF LINE CONDUCTED EMISSION TEST

1. EUT and support equipment was set up on the test bench as per step 2 of the preliminary test.
2. A scan was taken on both power lines, Line 1 and Line 2, recording at least the six highest emissions. Emission frequency and amplitude were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit. If EUT emission level was less –2dB to the A.V. limit in Peak mode, then the emission signal was re-checked using Q.P and Average detector.
3. The test data of the worst case condition(s) was reported on the Summary Data page.

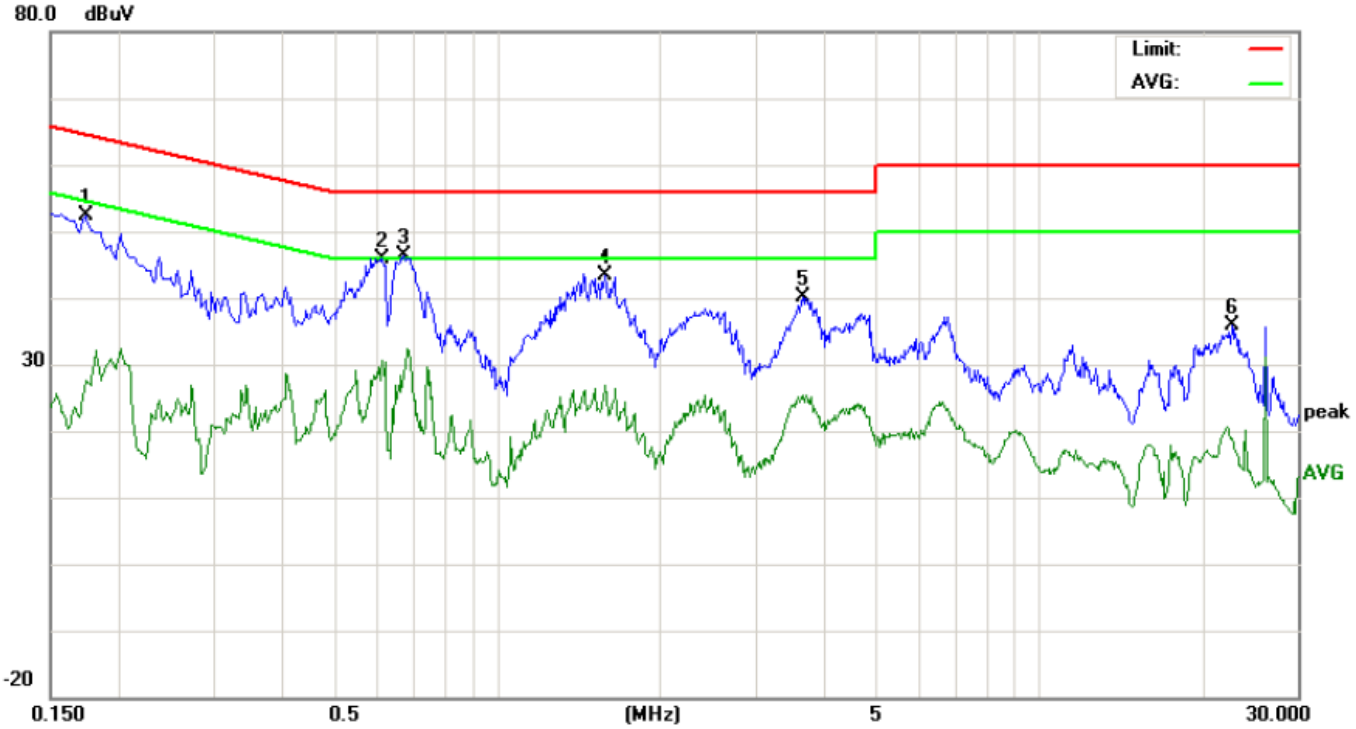
14.5. TEST RESULT OF LINE CONDUCTED EMISSION TEST

Line Conducted Emission Test Line 1-L



No.	Freq. (MHz)	Reading_Level (dBuV)			Correct Factor	Measurement (dBuV)			Limit (dBuV)		Margin (dB)		P/F	Comment
		Peak	QP	AVG	dB	Peak	QP	AVG	QP	AVG	QP	AVG		
1	0.1500	43.17		14.39	10.16	53.33		24.55	65.99	55.99	-12.66	-31.44	P	
2	0.1819	40.71		21.22	10.20	50.91		31.42	64.39	54.39	-13.48	-22.97	P	
3	0.6940	35.48		20.37	10.35	45.83		30.72	56.00	46.00	-10.17	-15.28	P	
4	1.5900	32.72		16.30	10.35	43.07		26.65	56.00	46.00	-12.93	-19.35	P	
5	3.8020	31.96		14.23	10.46	42.42		24.69	56.00	46.00	-13.58	-21.31	P	
6	22.7260	31.63		8.77	10.11	41.74		18.88	60.00	50.00	-18.26	-31.12	P	

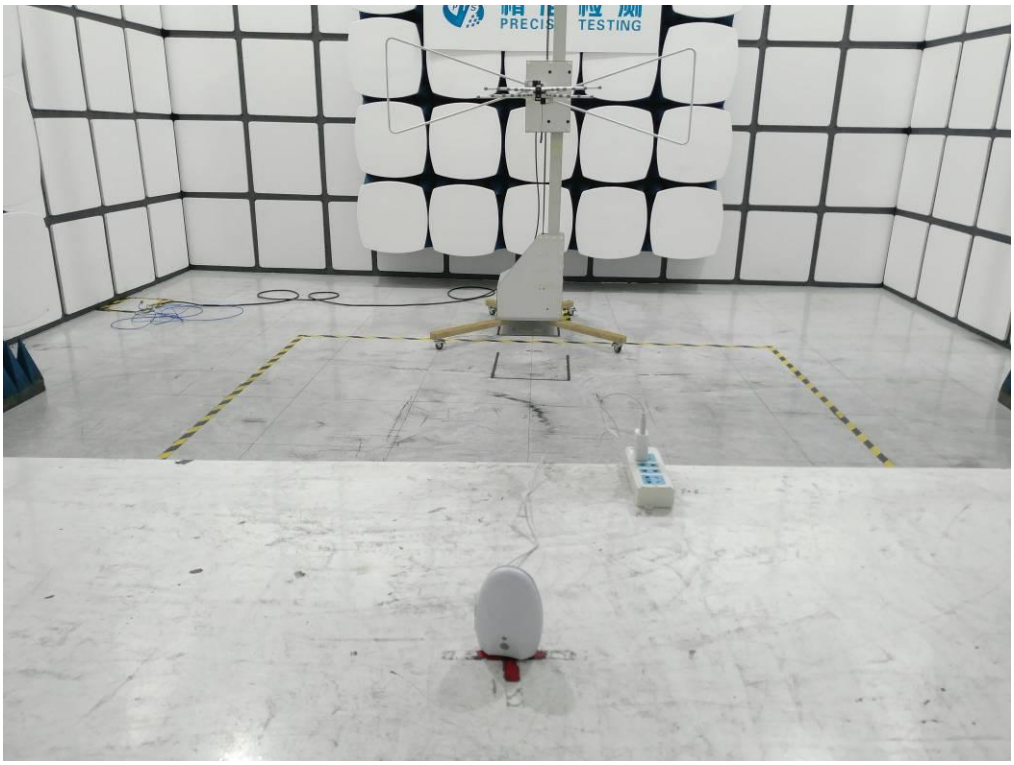
Line Conducted Emission Test Line 2-N

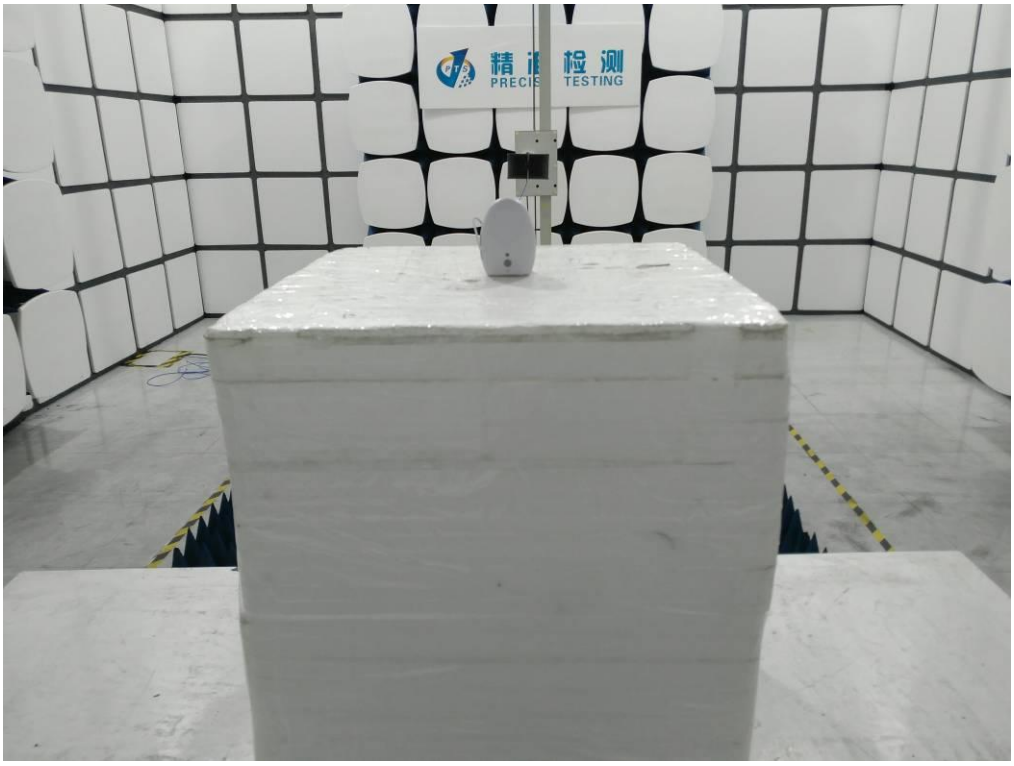


No.	Freq. (MHz)	Reading_Level (dBuV)			Correct Factor	Measurement (dBuV)			Limit (dBuV)		Margin (dB)		P/F	Comment
		Peak	QP	AVG	dB	Peak	QP	AVG	QP	AVG	QP	AVG		
1	0.1740	42.30		17.48	10.19	52.49		27.67	64.76	54.76	-12.27	-27.09	P	
2	0.6140	35.62		20.35	10.32	45.94		30.67	56.00	46.00	-10.06	-15.33	P	
3	0.6740	36.02		18.35	10.34	46.36		28.69	56.00	46.00	-9.64	-17.31	P	
4	1.5820	33.12		15.67	10.35	43.47		26.02	56.00	46.00	-12.53	-19.98	P	
5	3.6660	29.69		14.80	10.48	40.17		25.28	56.00	46.00	-15.83	-20.72	P	
6	22.7020	25.77		8.74	10.11	35.88		18.85	60.00	50.00	-24.12	-31.15	P	

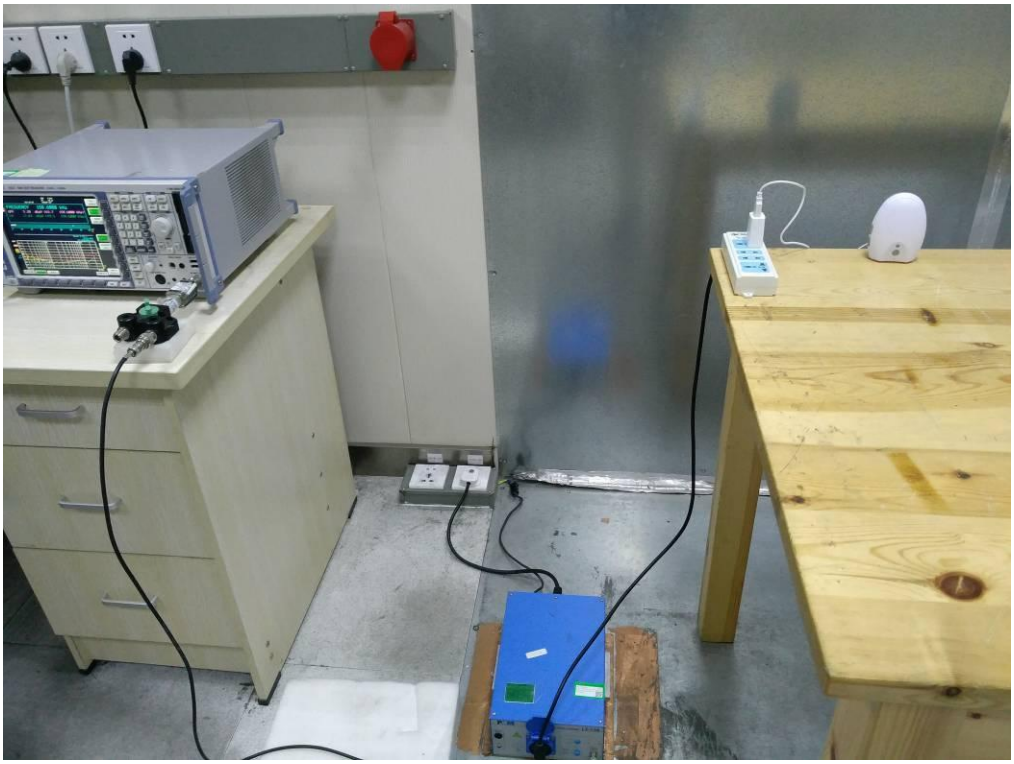
APPENDIX A: PHOTOGRAPHS OF TEST SETUP

FCC RADIATED EMISSION TEST SETUP





FCC LINE CONDUCTED EMISSION TEST SETUP



APPENDIX B: PHOTOGRAPHS OF EUT

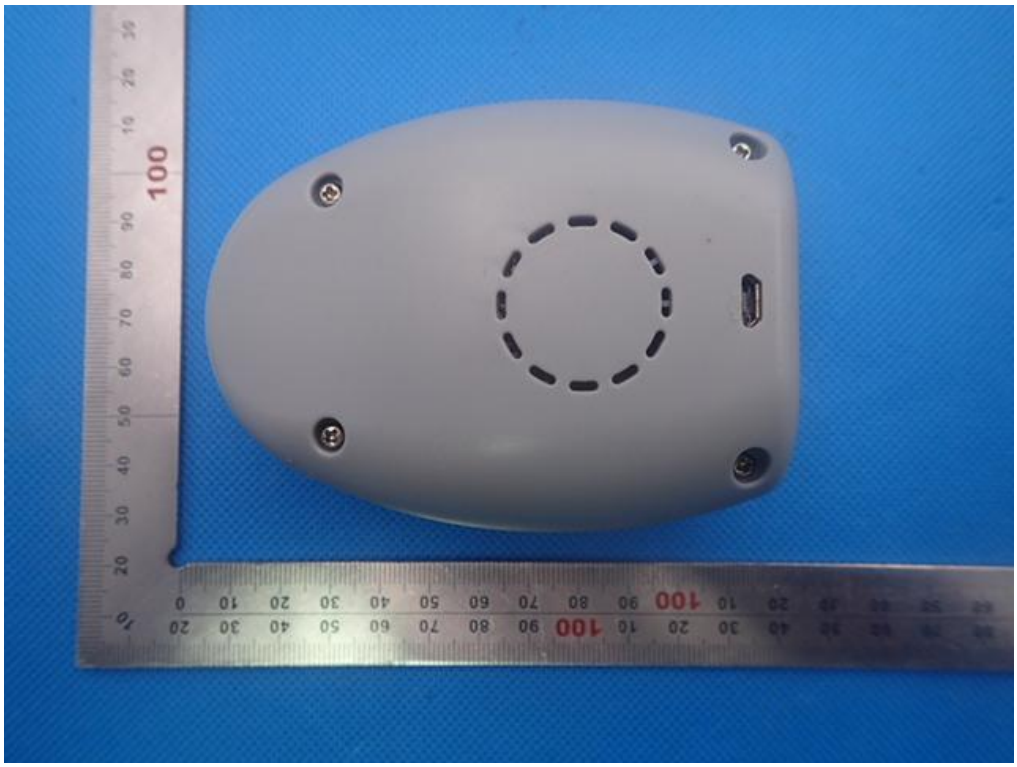
All VIEW OF EUT

TOP VIEW OF EUT

BOTTOM VIEW OF EUT

FRONT VIEW OF EUT

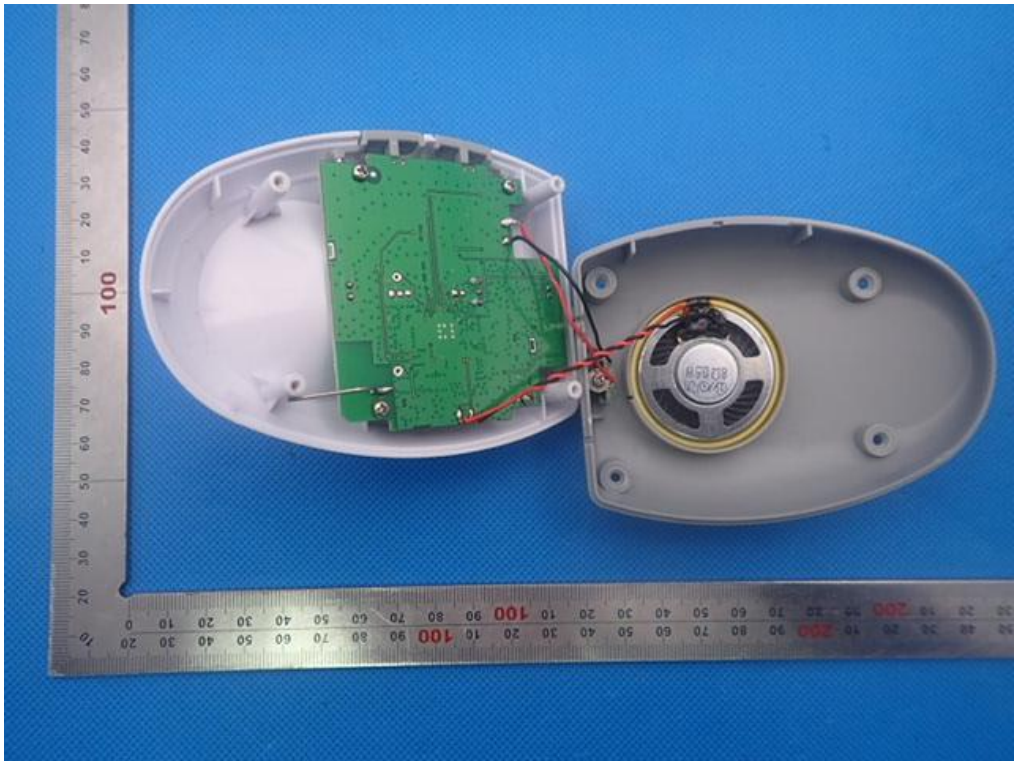
BACK VIEW OF EUT



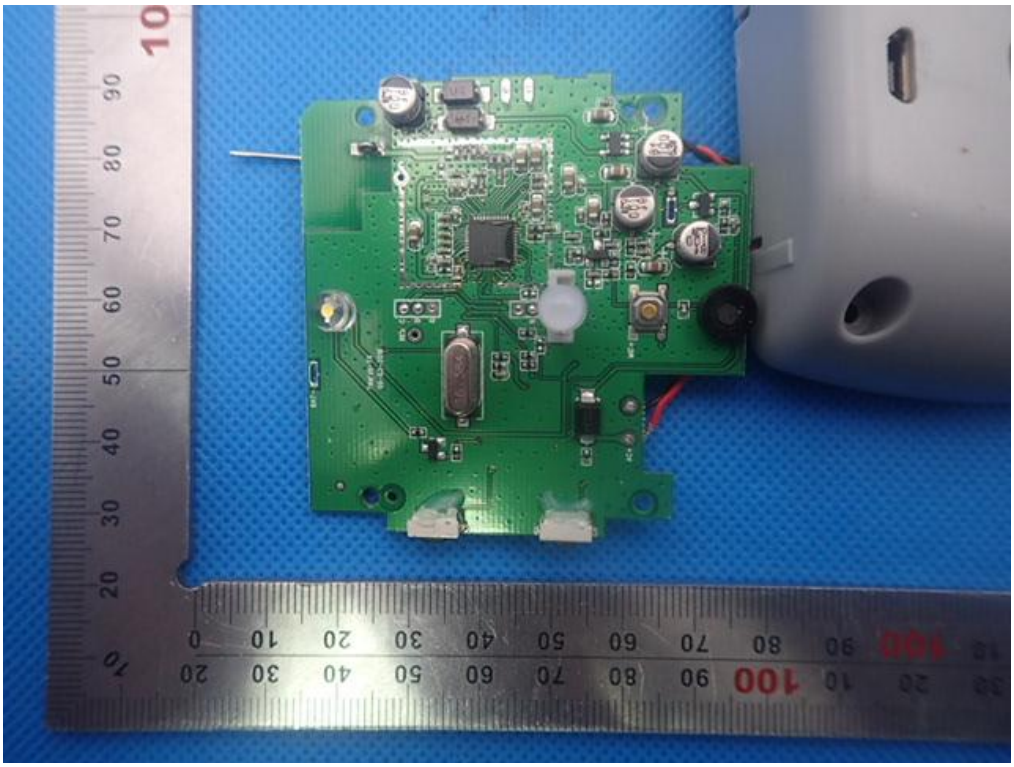
LEFT VIEW OF EUT

RIGHT VIEW OF EUT

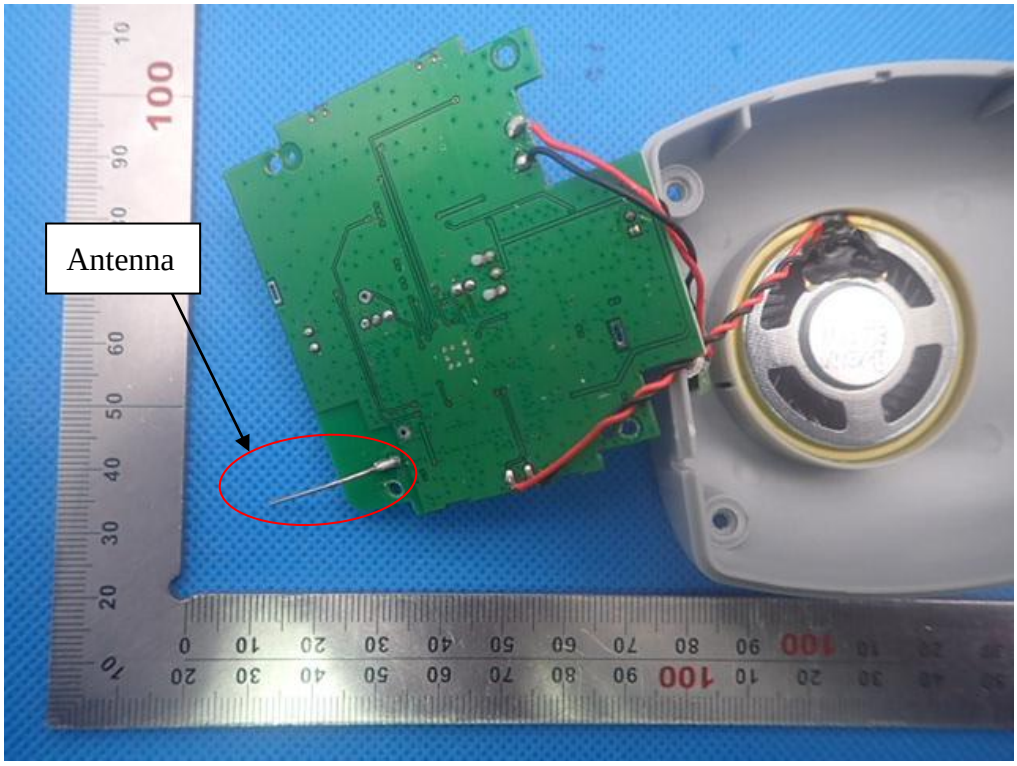
OPEN VIEW OF EUT



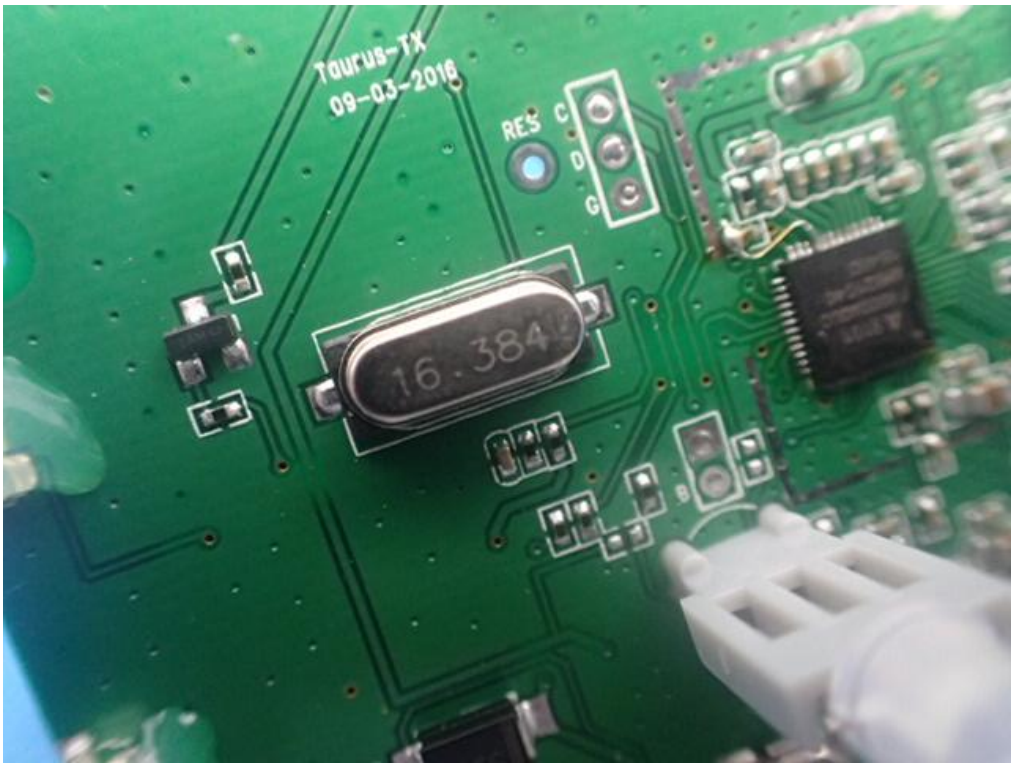
INTERNAL VIEW OF EUT-1



INTERNAL VIEW OF EUT-2



INTERNAL VIEW OF EUT-3



----END OF REPORT----