FCC Test Report

Report No.: AGC02009151213FE01

FCC ID	:	TW5GD8220
PRODUCT DESIGNATION	:	Digital Wireless Baby Monitor With Storage Capacity
BRAND NAME	:	N/A
MODEL NAME	:	GD8220
CLIENT	:	ShenZhen Gospell Smarthome Electronic Co., Ltd.
DATE OF ISSUE	:	Jan.15, 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	/	Jan.15, 2016	Valid	Original Report

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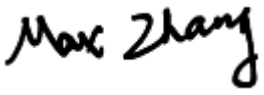
1. VERIFICATION OF COMPLIANCE

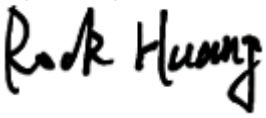
Applicant	ShenZhen Gospell Smarthome Electronic Co., Ltd.
Address	5Floor/Block 2, Vision (SZ) Park, Hi-Tech Industrial Park, Shenzhen, China
Manufacturer	ShenZhen Gospell Smarthome Electronic Co., Ltd.
Address	East of 01st-04st Floor, Block A, No.1 Industrial park, Fenghuanggang, South of No.1 Baotian Road, Xixiang street,Bao'an District, Shenzhen City, Guangdong Province 518126, P.R.China
Product Designation	Digital Wireless Baby Monitor With Storage Capacity
Brand Name	N/A
Test Model	GD8220
Date of test	Jan.11, 2016 to Jan.12, 2016

We hereby certify that:

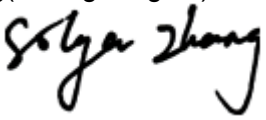
The above equipment was tested by Dongguan Precise Testing Service Co., Ltd. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.4 (2009) and the energy emitted by the sample EUT tested as described in this report is in compliance with radiated emission limits of FCC Rules Part 15.247.

Tested by 

Max Zhang(Zhang Yi) Jan.15, 2016

Reviewed by 

Rock Huang(Huang Dinglue) Jan.15, 2016

Approved by 

Solger Zhang(Zhang Hongyi)
Authorized Officer Jan.15, 2016

2. GENERAL INFORMATION

2.1 PRODUCT DESCRIPTION

The EUT is a **Digital Wireless Baby Monitor With Storage Capacity** 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	2408.625 MHz to 2473.875MHz
Modulation	FHSS
Number of channels	24
Antenna Designation	Fixed Antenna
Antenna Gain	2.0dBi
Hardware Version	GD8220M03
Software Version	V2.1
Power Supply	DC 5V by adapter

2.2 TABLE OF CARRIER FREQUENCYS

Channel	Frequency (MHz)	Channel	Frequency (MHz)
01	2408.625	13	2442.375
02	2412.000	14	2444.625
03	2414.250	15	2448.000
04	2417.625	16	2450.250
05	2422.125	17	2453.625
06	2425.500	18	2457.000
07	2427.750	19	2459.250
08	2430.000	20	2461.500
09	2432.250	21	2464.875
10	2434.500	22	2467.125
11	2436.750	23	2470.500
12	2439.000	24	2473.875

2.3 RECEIVER INPUT BANDWIDTH

The input bandwidth of the receiver is 2.5MHz.

2.4 EXAMPLE OF A HOPPING SEQUENCY IN DATA MODE

Example of a 24 hopping sequence in data mode:

24,20,21,23,01,02,06,07,03,,04,08,05,09,10

22,19,18,16,17,15,12,13,14,11

2.5 EQUALLY AVERAGE USE OF FREQUENCIES AND BEHAVIOUR

The generation of the hopping sequence in connection mode.

2.6 RELATED SUBMITTAL(S) / GRANT (S)

This submittal(s) (test report) is intended for **FCC ID: TW5GD8220,** filing to comply with 15.247 requirements.

2.7 TEST METHODOLOGY

Both conducted and radiated testing were performed according to the procedures in ANSI C63.4:2009. Radiated testing was performed at an antenna to EUT distance 3 meters.

2.8 MEASUREMENT UNCERTAINTY

The uncertainty is calculated using the methods suggested in the “Guide to the Expression of Uncertainty in Measurement” (GUM) published by ISO.

Conducted measurement: ±3.18dB

Radiated measurement: ±3.91dB

2.9 SPECIAL ACCESSORIES

Refer to section 3.2.

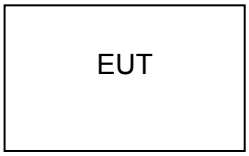
2.10 EQUIPMENT MODIFICATIONS

Not available for this EUT intended for grant.

3. SYSTEM TEST CONFIGURATION

3.1 CONFIGURATION OF TESTED SYSTEM

Configure 1:



3.2 EQUIPMENT USED IN EUT SYSTEM

Item	Equipment	Mfr/Brand	Model/Type No.	Remark
1	Digital Wireless Baby Monitor With Storage Capacity	N/A	GD8220	EUT
2	Adapter	GOSPELL	G0659U-050-100	A.E

3.3. SUMMARY OF TEST RESULTS

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

4. DESCRIPTION OF TEST MODES

The following operating modes were applied for the related test items.

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.
3. All conducted measurements performed with a temporary antenna connector soldered to the RF output.
4. The EUT used fully-charged battery when tested.

5. 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 C63.4:2009.

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 4, 2015	July 3, 2016
Trilog Broadband Antenna (25M-1GHz)	SCHWARZBECK	VULB9160	9160-3355	July 4, 2015	July 3, 2016
Signal Amplifier	SCHWARZBECK	BBV 9475	9745-0013	July 4, 2015	July 3, 2016
RF Cable	SCHWARZBECK	AK9515E	96221	July 4, 2015	July 3, 2016
3m Anechoic Chamber	CHENGYU	966	PTS-001	June 6, 2015	June 5, 2016
MULTI-DEVICE Positioning Controller	Max-Full	MF-7802	MF780208339	N/A	N/A
Active loop antenna (9K-30MHz)	Schwarzbeck	FMZB1519	1519-038	June 6, 2015	June 5, 2016
Spectrum analyzer	Agilent	E4407B	MY46185649	June 6, 2015	June 5, 2016
Horn Antenna (1G-18GHz)	SCHWARZBECK	BBHA9120D	9120D-1246	June 6, 2015	June 5, 2016
Horn Ant (18G-40GHz)	Schwarzbeck	BBHA 9170	9170-181	June 6, 2015	June 5, 2016

Conducted Emission Test Site					
Name of Equipment	**Manufacturer**	**Model Number**	**Serial Number**	**Last Calibration**	**Due Calibration**
EMI Test Receiver	Rohde & Schwarz	ESCI	101417	July 4, 2015	July 3, 2016
Artificial Mains Network	Narda	L2-16B	000WX31025	July 8, 2015	July 7, 2016
Artificial Mains Network (AUX)	Narda	L2-16B	000WX31026	July 8, 2015	July 7, 2016
RF Cable	SCHWARZBECK	AK9515E	96222	July 4, 2015	July 3, 2016
Shielded Room	CHENGYU	843	PTS-002	June 6,2015	June 5,2016

6. PEAK OUTPUT POWER

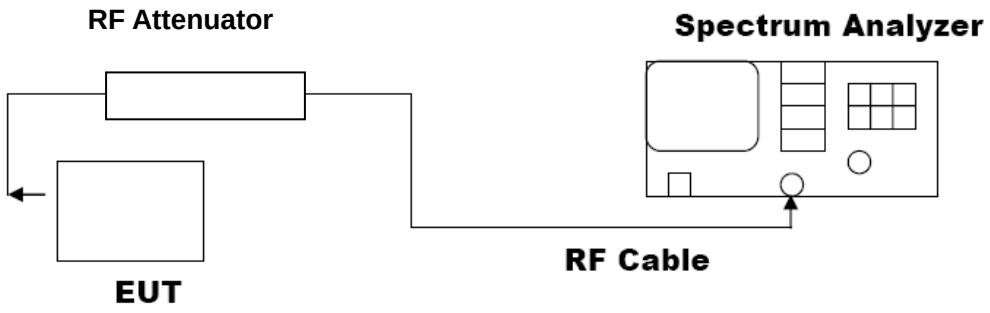
6.1. MEASUREMENT PROCEDURE

For peak power test:

1. Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
2. Set the EUT Work on the top, middle and the bottom operation frequency individually.
3. RBW > the 20 dB bandwidth of the emission being measured, VBW ≥ RBW.
4. Record the maximum power from the Spectrum Analyzer.
5. The maximum peak power shall be less 1W (30dBm).

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

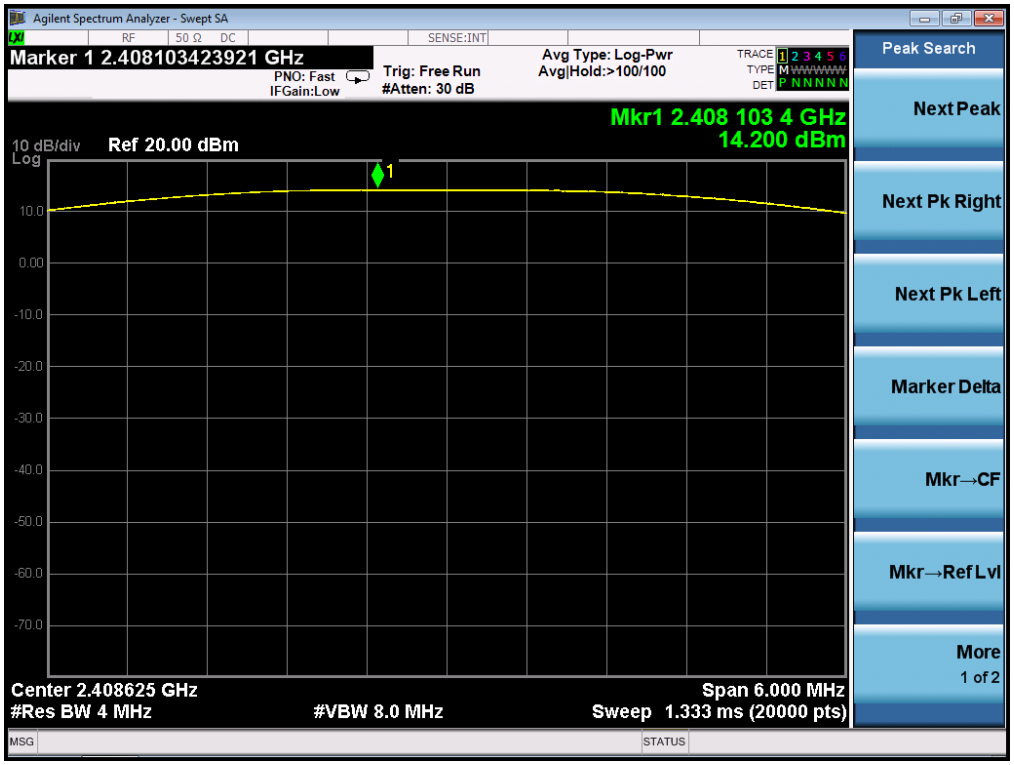
PEAK POWER TEST SETUP



6.3 LIMITS AND MEASUREMENT RESULT

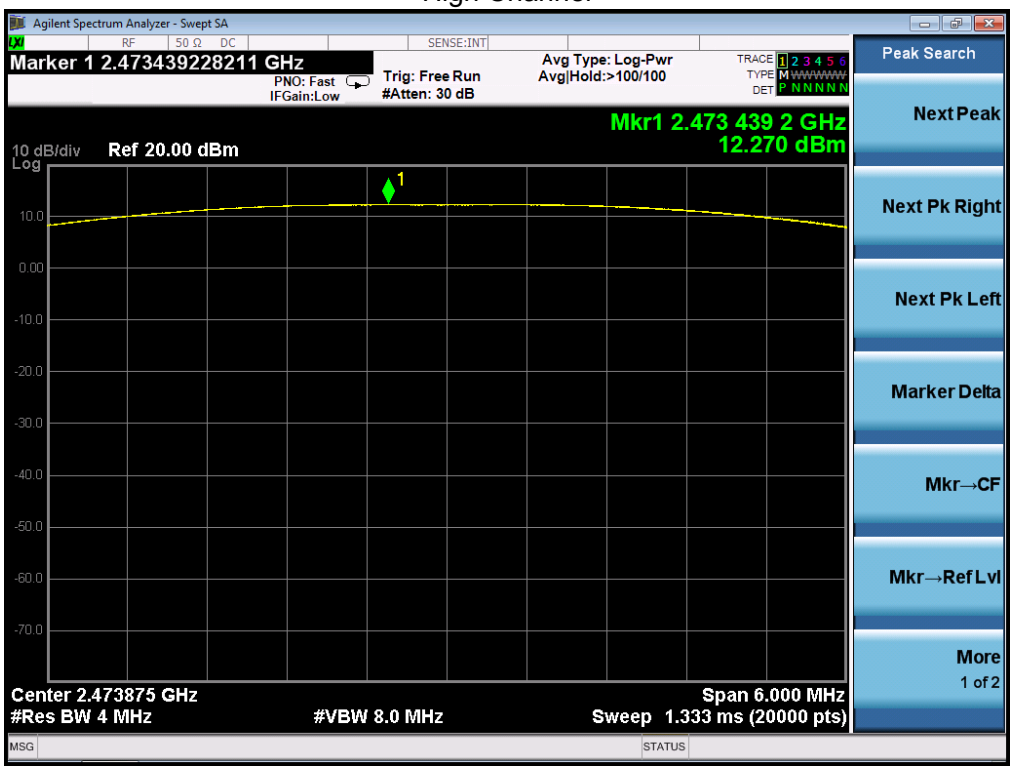
PEAK OUTPUT POWER MEASUREMENT RESULT FOR GFSK MOUDULATION				
Frequency (MHz)	Peak Power (dBm)	Average Power (dBm)	Applicable Limits (dBm)	Pass or Fail
2408.625	14.200	8.421	30	Pass
2442.375	12.425	6.657	30	Pass
2473.875	12.270	6.438	30	Pass

Low Channel



Middle Channel

High Channel



7.20 DB BANDWIDTH

7.1 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 3 times the 20 dB bandwidth, centered on a hoping channel
   RBW ≥ 1% of the 20 dB bandwidth, VBW ≥ RBW; Sweep = auto; Detector function = peak
4. Set SPA Trace 1 Max hold, then View.

7.2 TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)

The same as described in Section 6.2

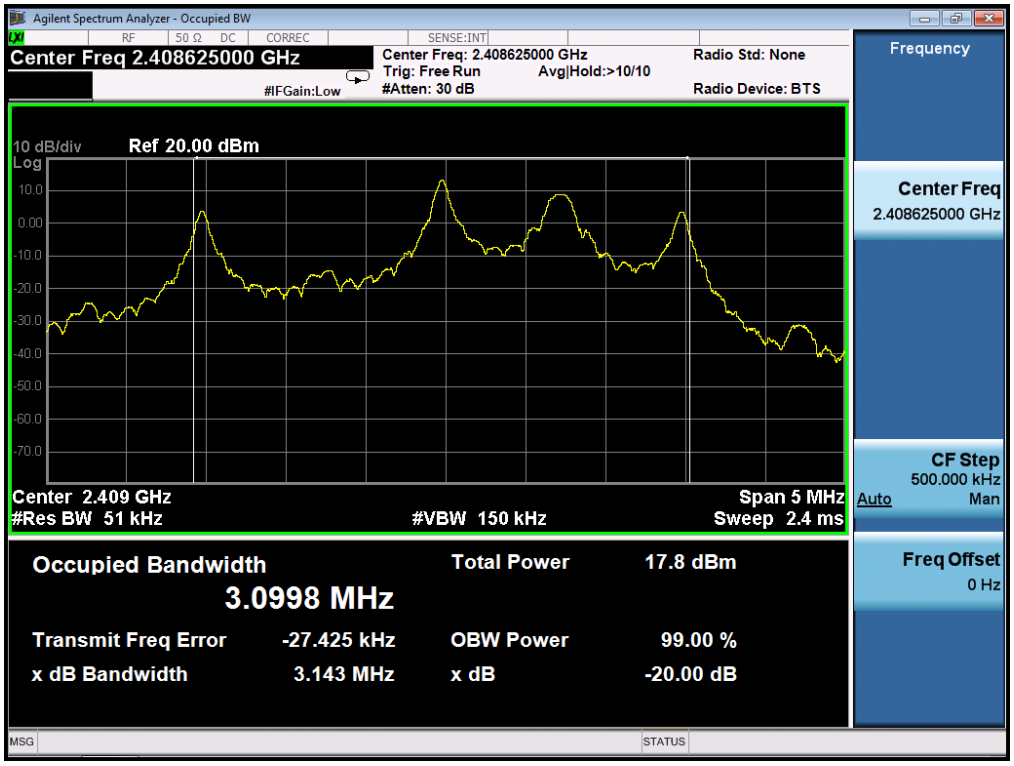
7.3 MEASUREMENT EQUIPMENT USED

The same as described in Section 5

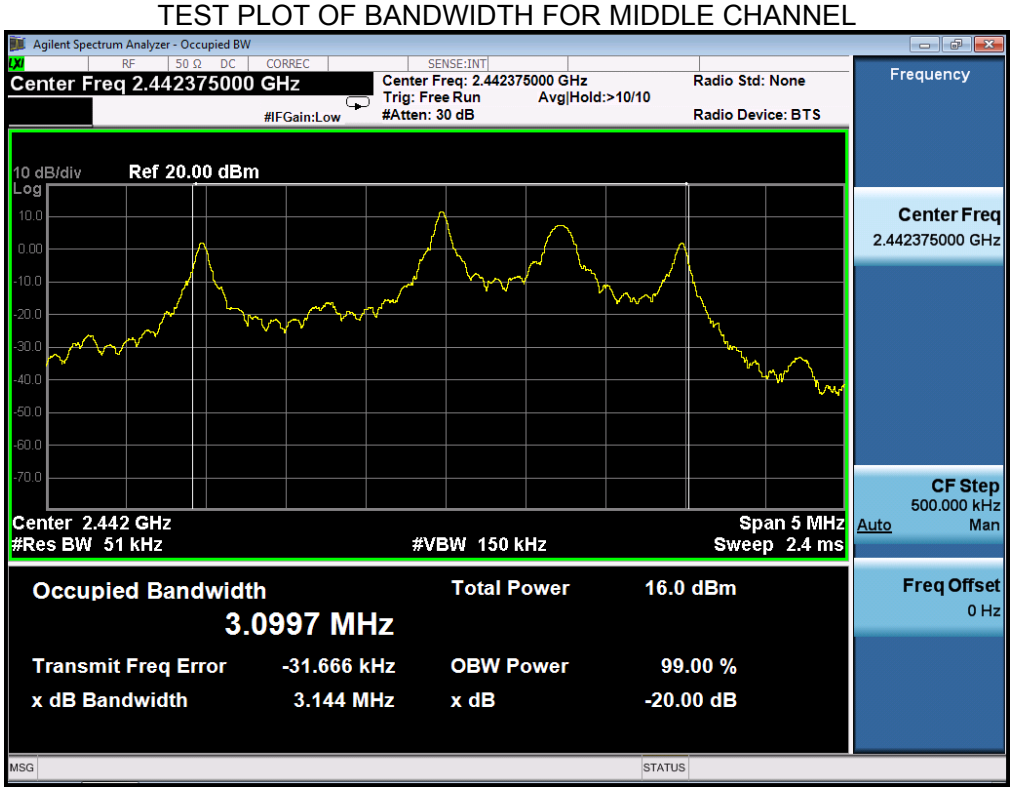
7.4 LIMITS AND MEASUREMENT RESULTS

MEASUREMENT RESULT			
Applicable Limits	Measurement Result		
	Test Data (MHz)		Criteria
--	Low Channel	3.143	PASS
	Middle Channel	3.144	PASS
	High Channel	3.134	PASS

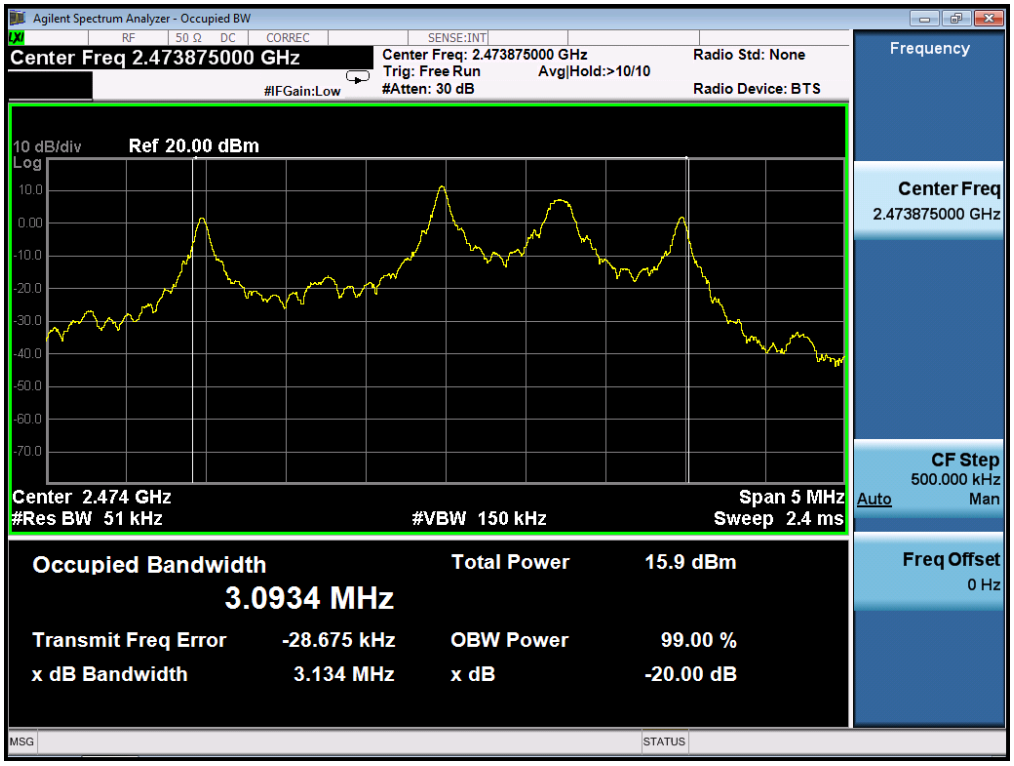
TEST PLOT OF BANDWIDTH FOR LOW CHANNEL



TEST PLOT OF BANDWIDTH FOR MIDDLE CHANNEL



TEST PLOT OF BANDWIDTH FOR HIGH CHANNEL



8. CONDUCTED SPURIOUS EMISSION

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 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 ≥ 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 6.2

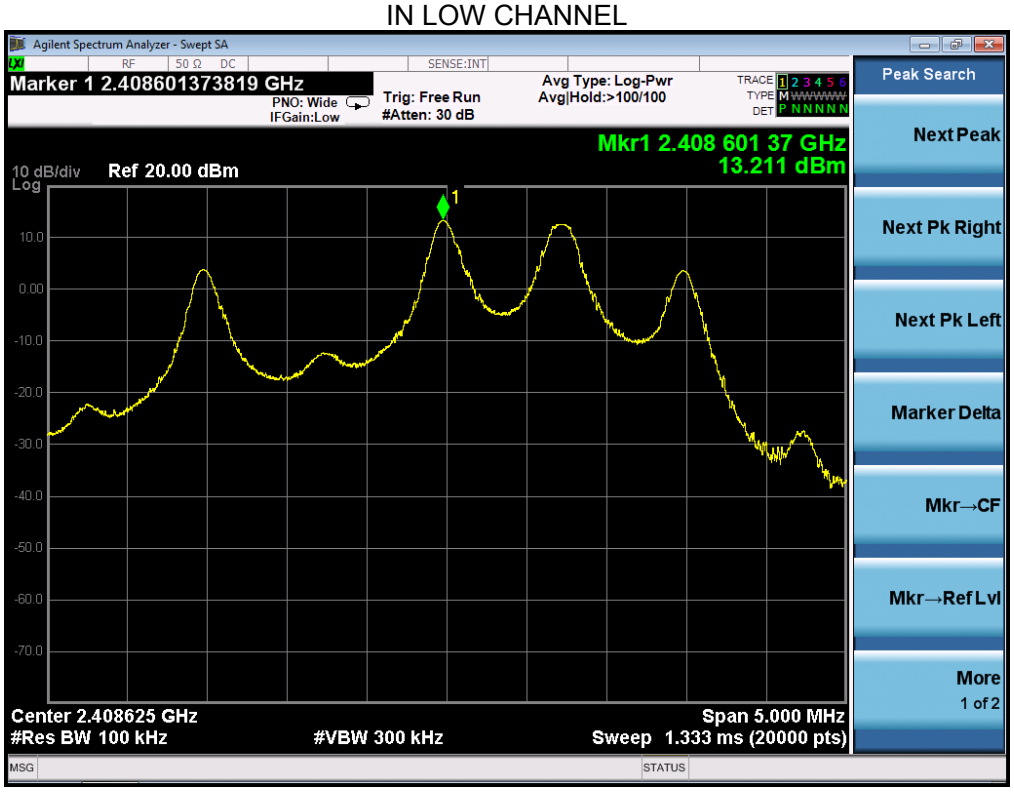
8.3 MEASUREMENT EQUIPMENT USED

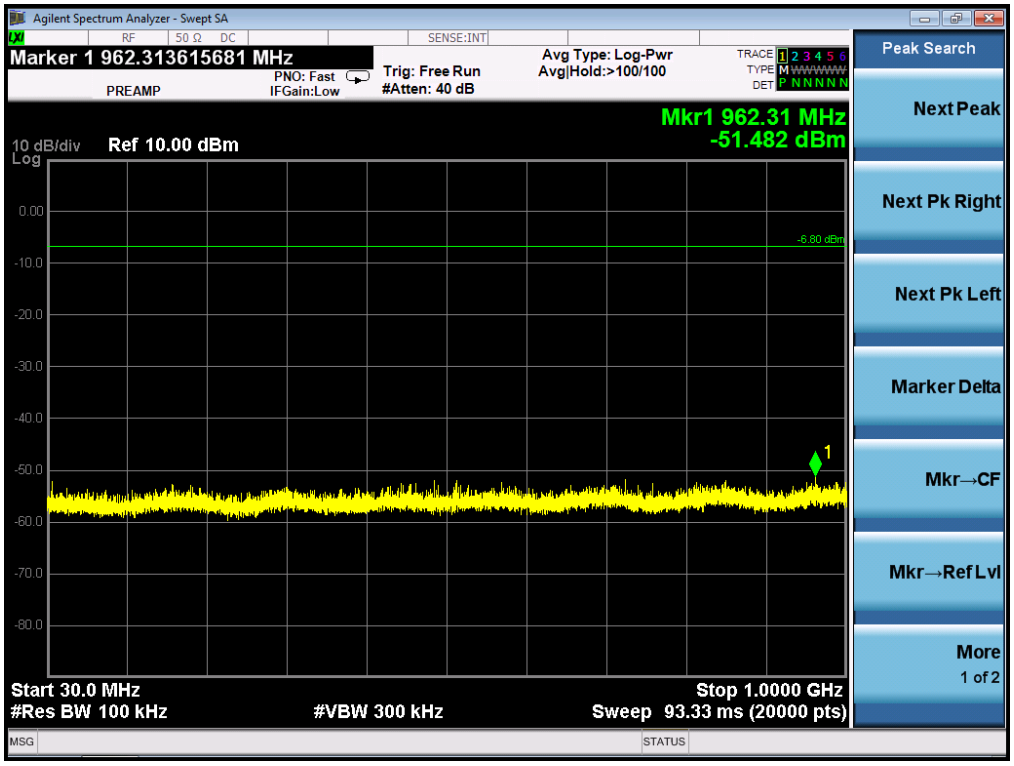
The same as described in section 5

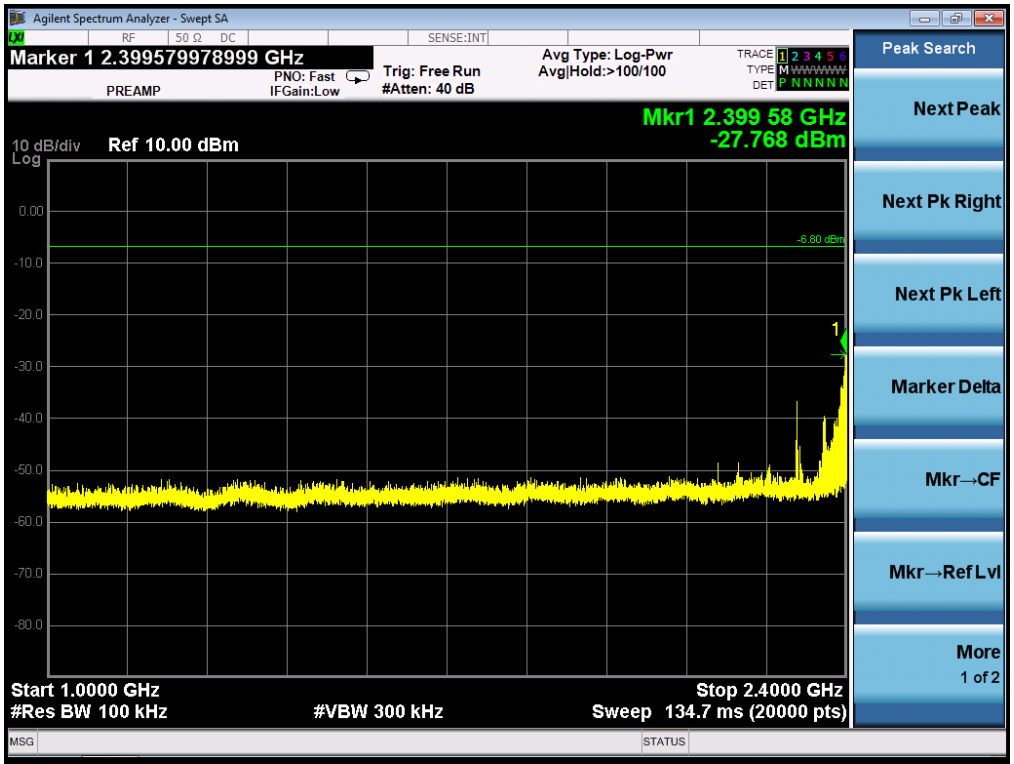
8.4 LIMITS AND MEASUREMENT RESULT

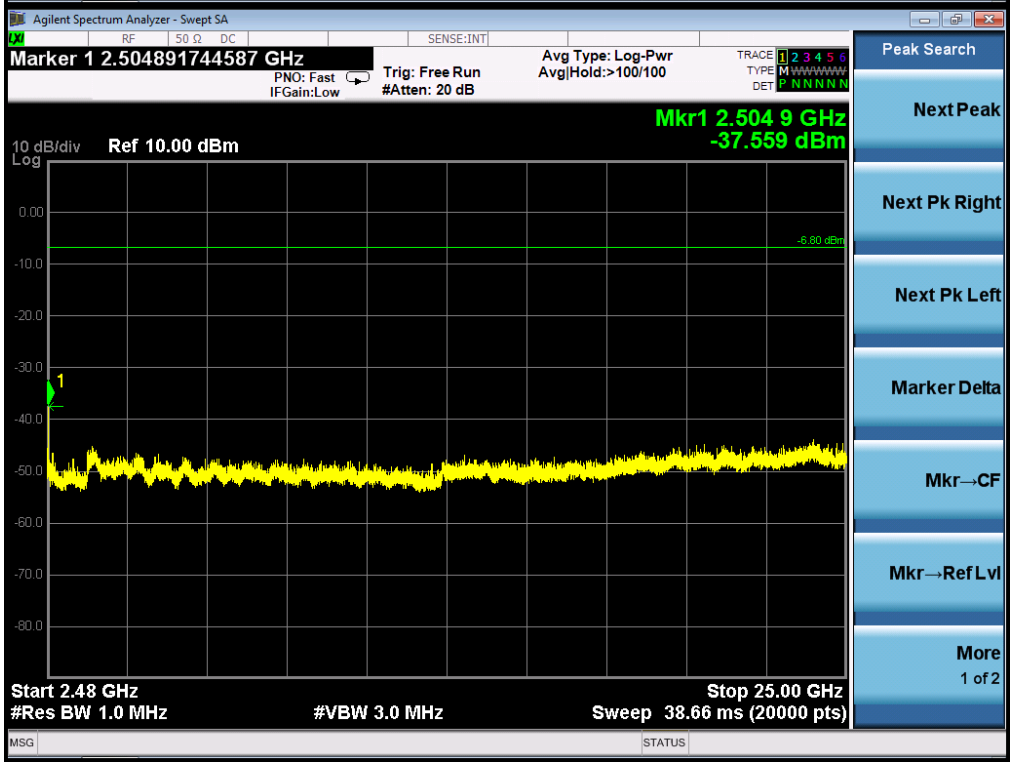
LIMITS AND MEASUREMENT RESULT		
Applicable Limits	Measurement Result	
	Test Data	Criteria
In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated device is operating, the RF power that is produced shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided that the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of root-mean-square averaging over a time interval, as permitted under Section 5.4(4), the attenuation required shall be 30 dB instead of 20 dB. Attenuation below the general field strength limits specified in RSS-Gen is not required.	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 PLOT OF OUT OF BAND EMISSIONS WITH THE WORST CASE
IN LOW CHANNEL

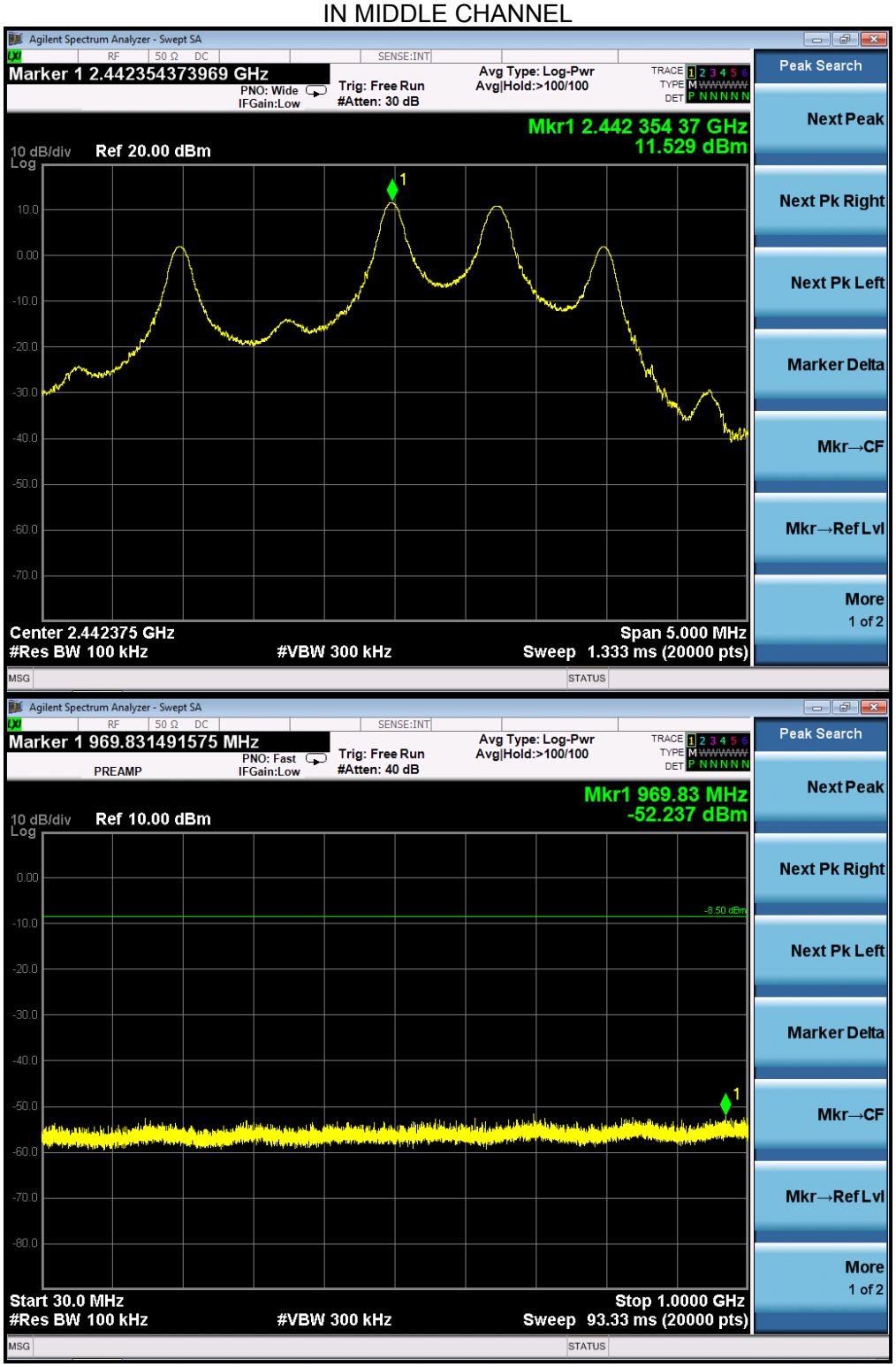


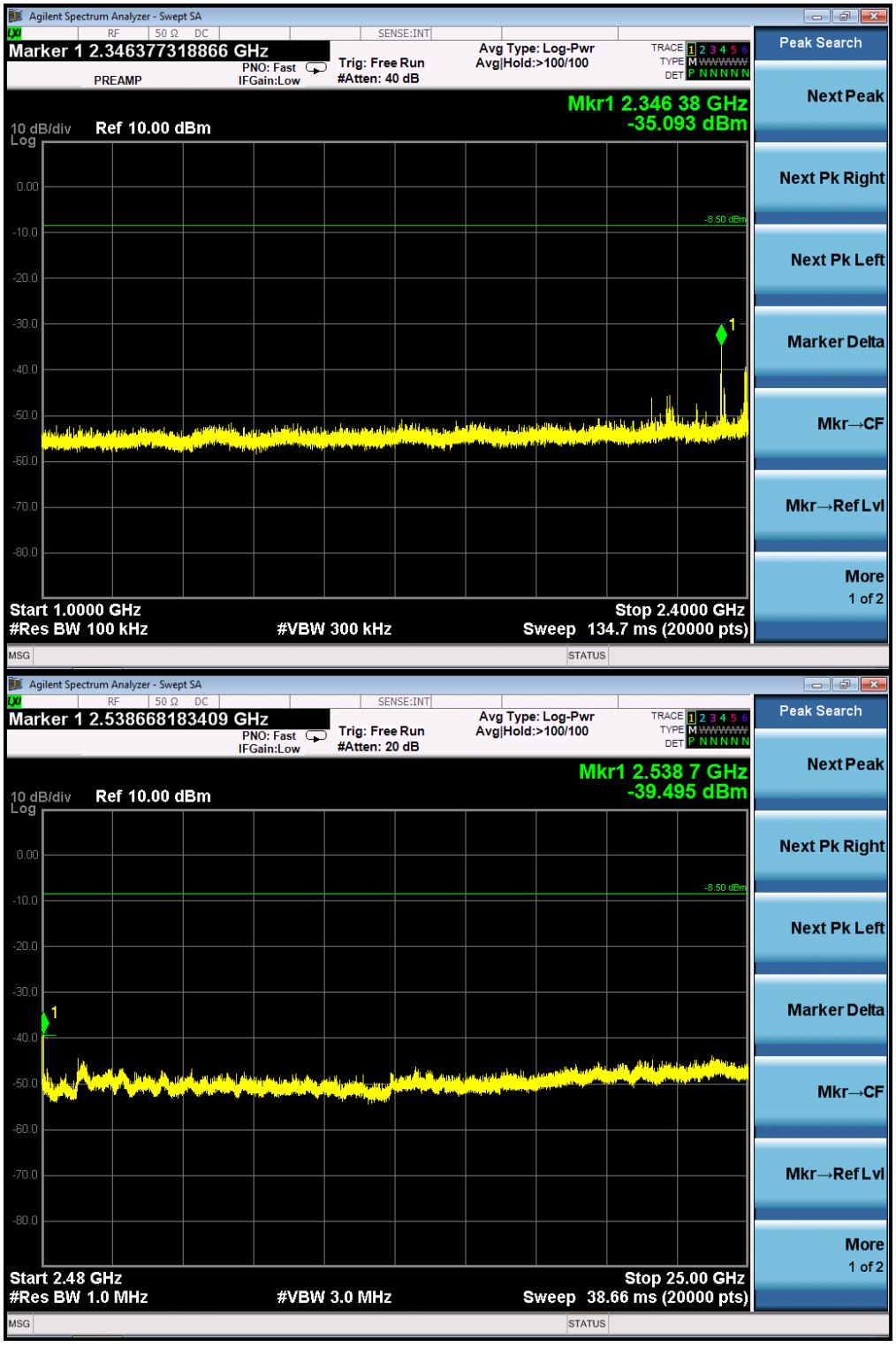



Agilent Spectrum Analyzer - Swept SA
Marker 1 2.399579978999 GHz
PREAMP
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 40 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
Mkr1 2.399 58 GHz
-27.768 dBm
10 dB/div
Log
Ref 10.00 dBm
-6.80 dBm
Start 1.0000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 2.4000 GHz
Sweep 134.7 ms (20000 pts)
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2

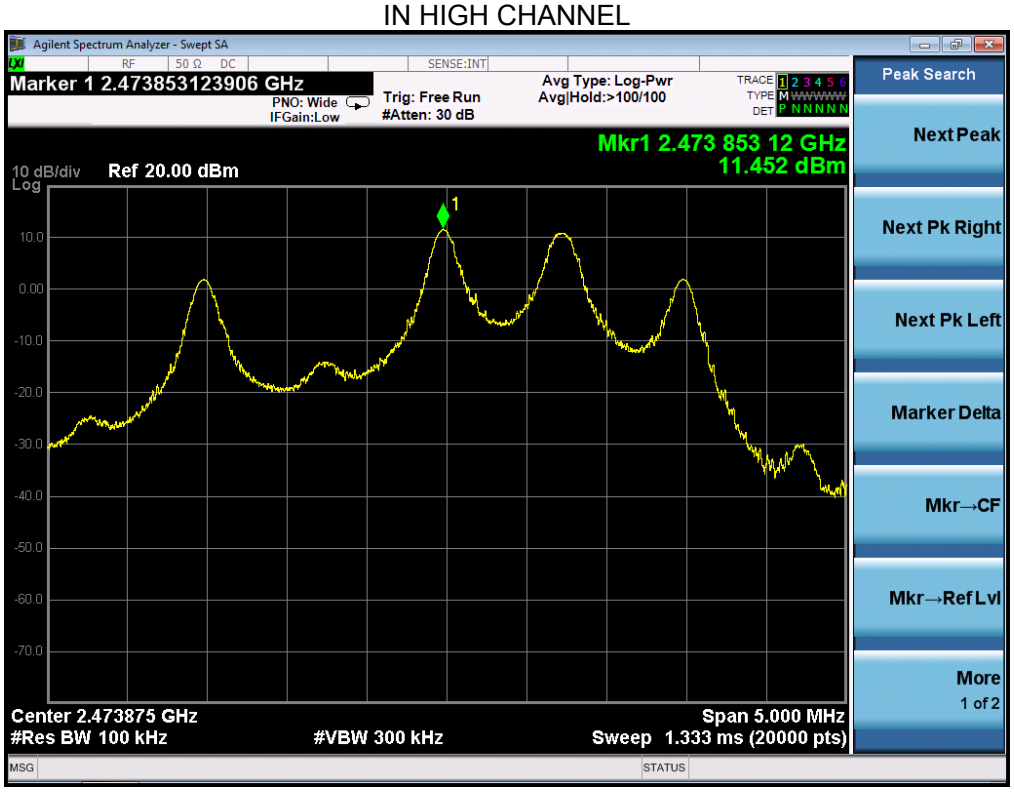

Agilent Spectrum Analyzer - Swept SA
Marker 1 2.504891744587 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
Mkr1 2.504 9 GHz
-37.559 dBm
10 dB/div
Log
Ref 10.00 dBm
-6.80 dBm
Start 2.48 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 25.00 GHz
Sweep 38.66 ms (20000 pts)
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2

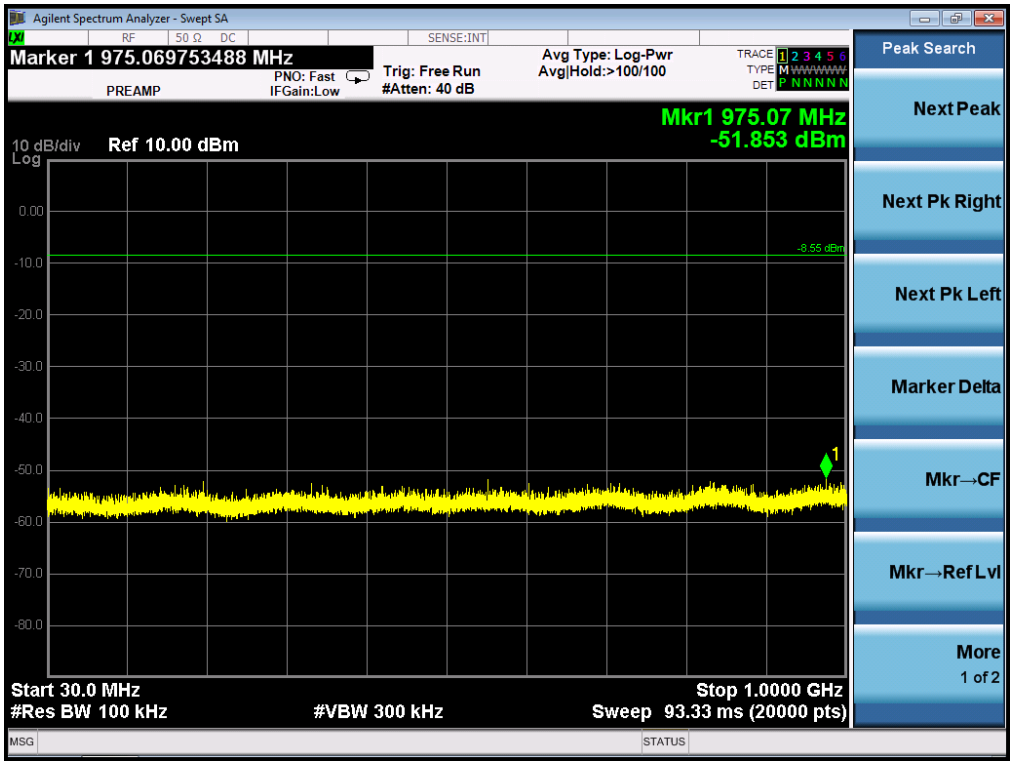
TEST PLOT OF OUT OF BAND EMISSIONS WITH THE WORST CASE
IN MIDDLE CHANNEL

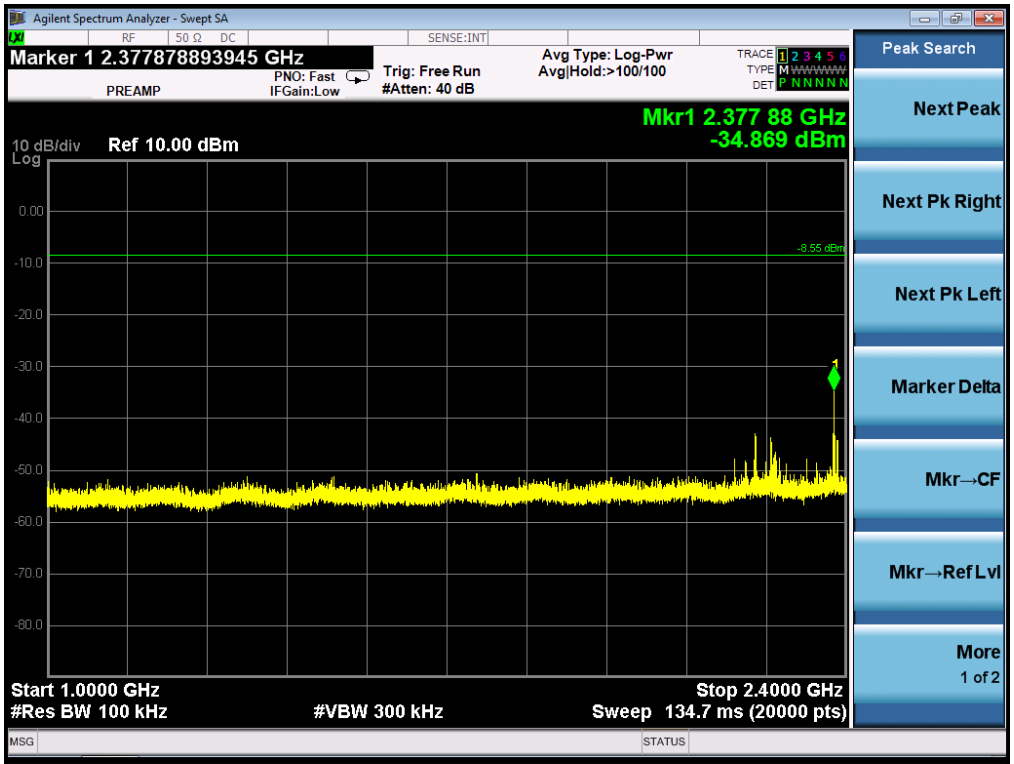


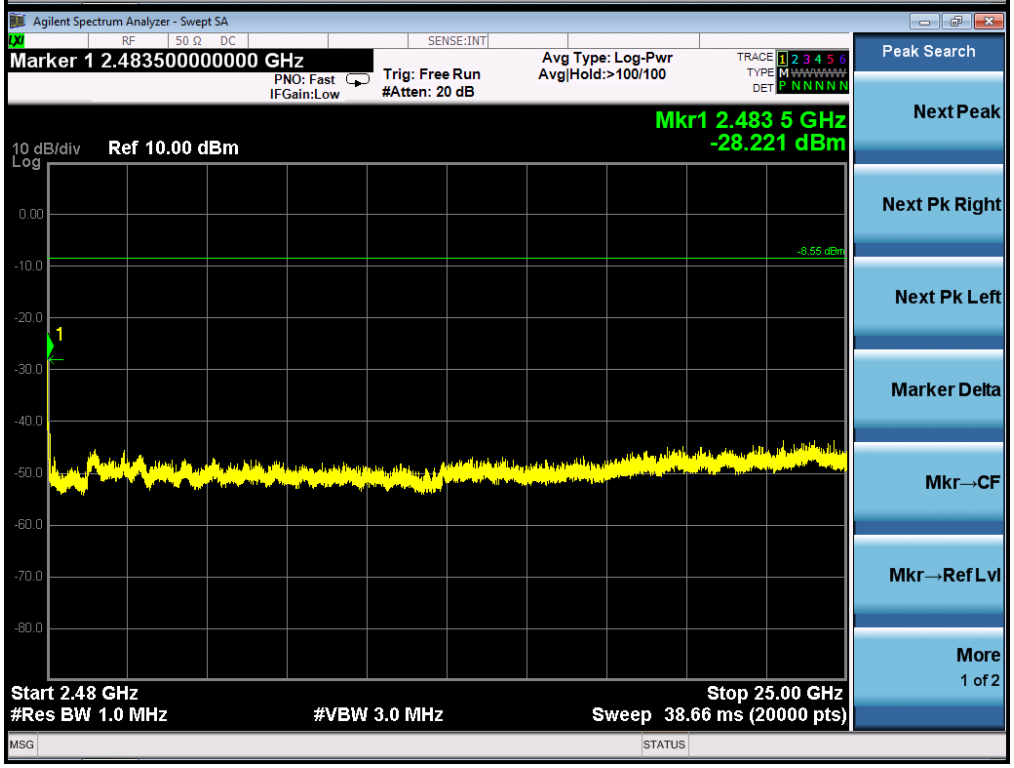

Agilent Spectrum Analyzer - Swept SA
Marker 1 2.346377318866 GHz
PREAMP
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 40 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
Mkr1 2.346 38 GHz
-35.093 dBm
10 dB/div
Log
Ref 10.00 dBm
-8.50 dBm
Start 1.0000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 2.4000 GHz
Sweep 134.7 ms (20000 pts)
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2
Agilent Spectrum Analyzer - Swept SA
Marker 1 2.538668183409 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
Mkr1 2.538 7 GHz
-39.495 dBm
10 dB/div
Log
Ref 10.00 dBm
-8.50 dBm
Start 2.48 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 25.00 GHz
Sweep 38.66 ms (20000 pts)
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2

TEST PLOT OF OUT OF BAND EMISSIONS WITH THE WORST CASE IN HIGH CHANNEL






Agilent Spectrum Analyzer - Swept SA
Marker 1 2.377878893945 GHz
PREAMP
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 40 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
Mkr1 2.377 88 GHz
-34.869 dBm
10 dB/div
Log
Ref 10.00 dBm
-8.55 dBm
Start 1.0000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 2.4000 GHz
Sweep 134.7 ms (20000 pts)
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2


Agilent Spectrum Analyzer - Swept SA
Marker 1 2.483500000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
Mkr1 2.483 5 GHz
-28.221 dBm
10 dB/div
Log
Ref 10.00 dBm
-8.55 dBm
Start 2.48 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 25.00 GHz
Sweep 38.66 ms (20000 pts)
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2

9. RADIATED EMISSION

9.1 MEASUREMENT PROCEDURE

1. Configure the EUT according to ANSI C63.4. The EUT was placed on the top of the turntable 0.8 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.
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.

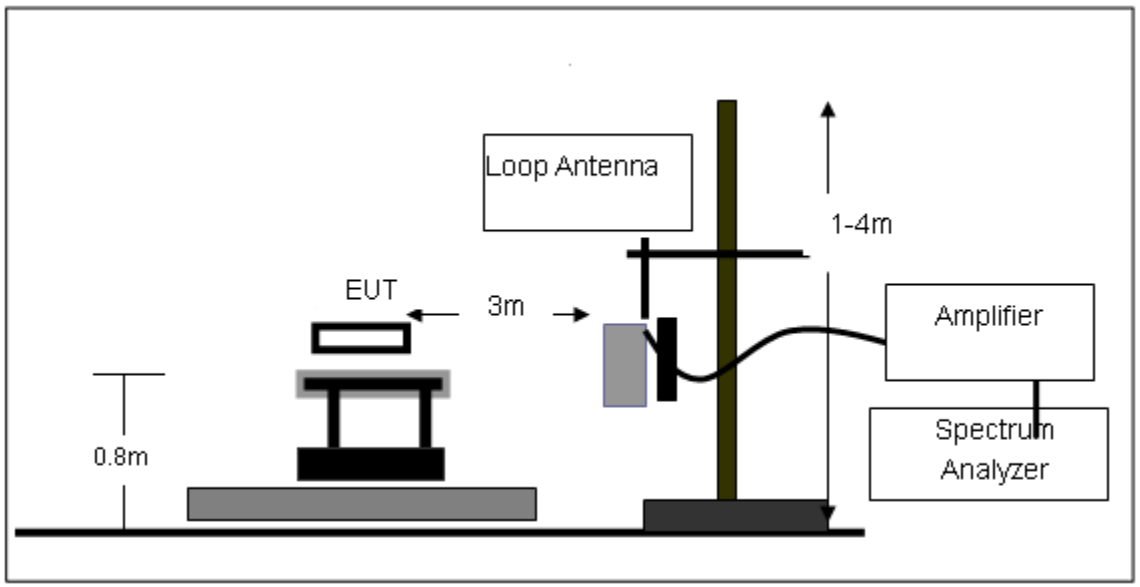
The following table is the setting of spectrum analyzer and receiver.'

Spectrum Parameter	Setting
Start Frequency	1GHz
Stop Frequency	26.5GHz
RB/VB(Emission in restricted band)	100KHz/100KHz for Peak
RB/VB(Emission in non-restricted band)	1MHz/1MHz for Peak

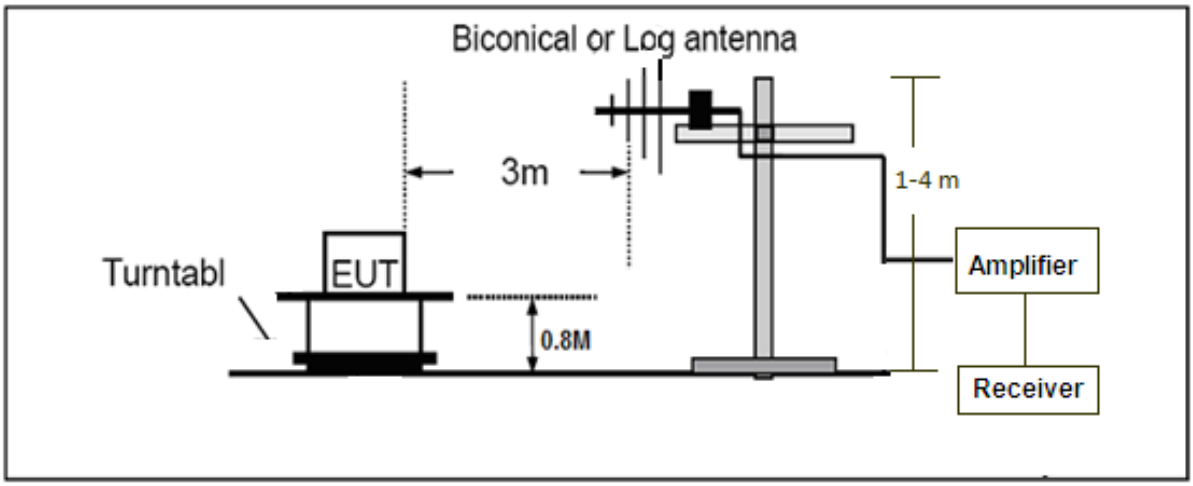
Receiver Parameter	Setting
Start ~Stop Frequency	9KHz~150KHz/RB 200Hz for QP
Start ~Stop Frequency	150KHz~30MHz/RB 9KHz for QP
Start ~Stop Frequency	30MHz~1000MHz/RB 120KHz for QP

9.2 TEST SETUP

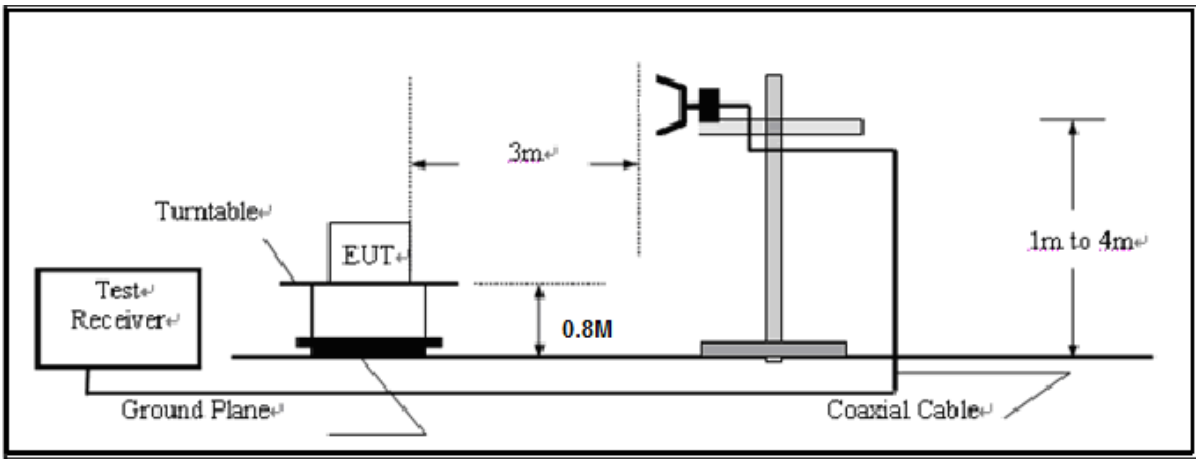
Radiated Emission Test-Setup Frequency Below 30MHz



RADIATED EMISSION TEST SETUP 30MHz-1000MHz



RADIATED EMISSION TEST SETUP ABOVE 1000MHz



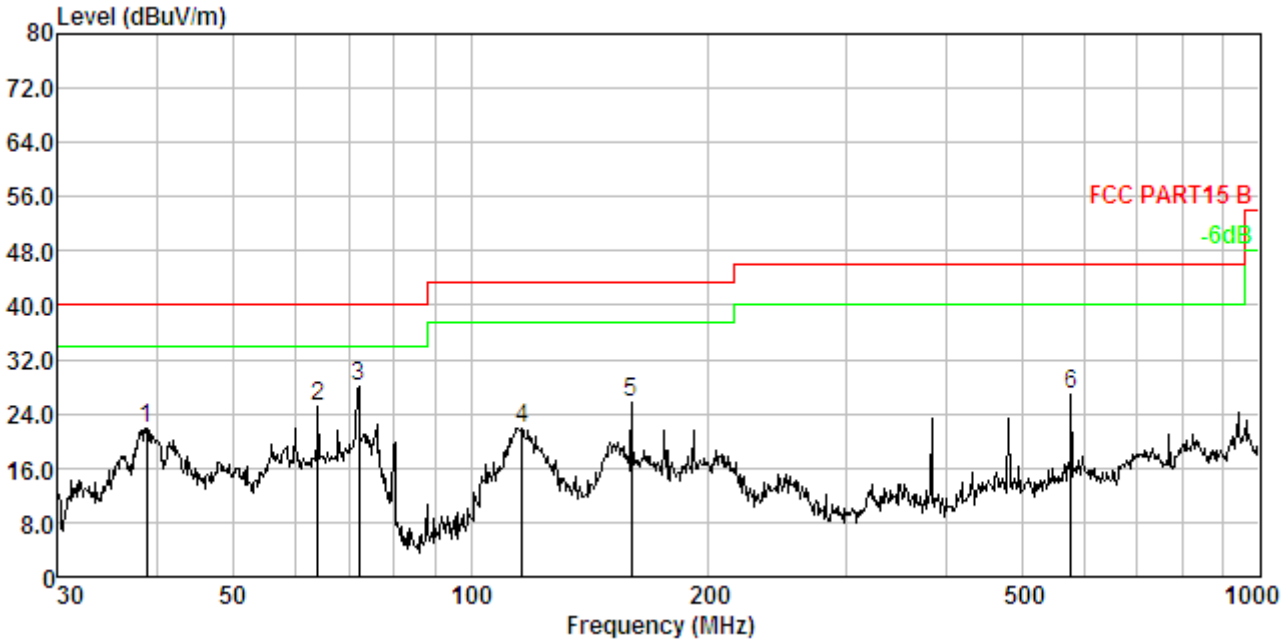
9.3 TEST RESULT

RADIATED EMISSION BELOW 30MHZ

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

RADIATED EMISSION BELOW 1GHZ

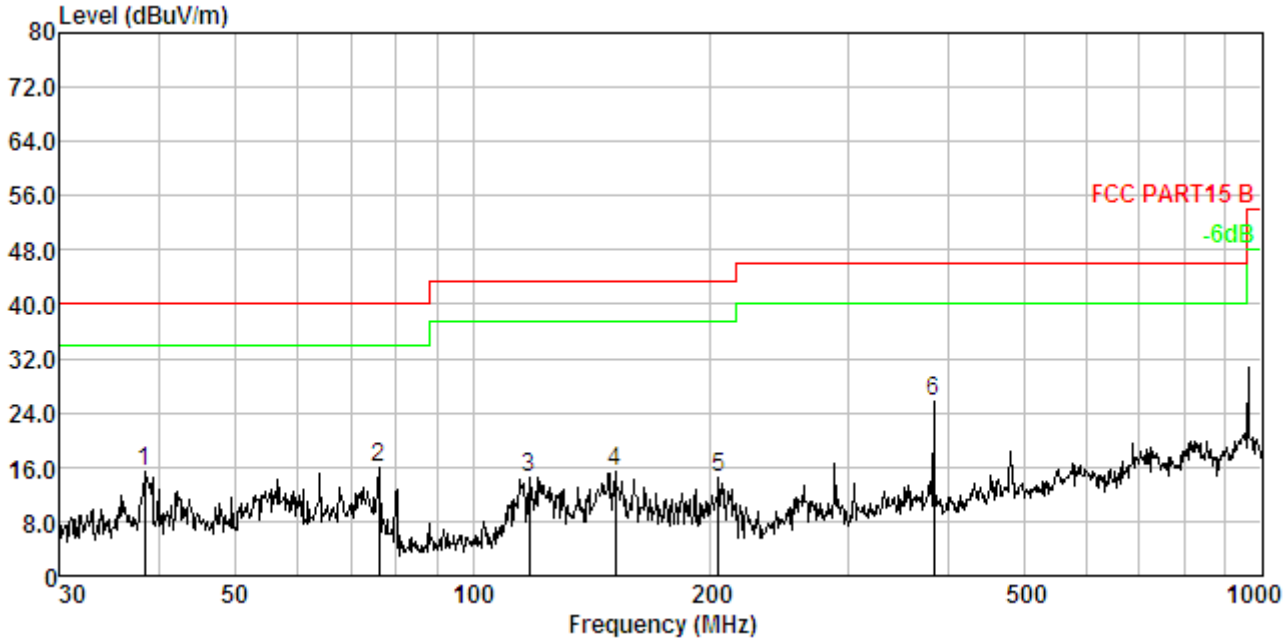
RADIATED EMISSION TEST- (30MHZ-1GHZ)-LOW CHANNEL-HORIZONTAL



No.	Freq MHz	Cable Loss dB	ANT Factor dB/m	Receiver Reading dBuV	Preamp Factor dB	Emission Level dBuV/m	Limit dBuV/m	Over Limit dB	Remark
1.	38.888	1.29	13.62	37.07	30.06	21.92	40.00	-18.08	Peak
2.	63.983	1.74	11.91	41.79	30.23	25.21	40.00	-14.79	Peak
3.	72.084	1.85	9.94	46.47	30.27	27.99	40.00	-12.01	Peak
4.	116.132	2.28	11.67	38.41	30.44	21.92	43.50	-21.58	Peak
5.	159.784	2.57	13.88	39.90	30.55	25.80	43.50	-17.70	Peak
6.	576.644	3.73	18.55	35.72	31.00	27.00	46.00	-19.00	Peak

RESULT: PASS

RADIATED EMISSION TEST- (30MHZ-1GHZ)-LOW CHANNEL -VERTICAL



No.	Freq MHz	Cable Loss dB	ANT Factor dB/m	Receiver Reading dBuV	Preamp Factor dB	Emission Level dBuV/m	Limit dBuV/m	Over Limit dB	Remark
1.	38.346	1.28	13.58	30.51	30.06	15.31	40.00	-24.69	Peak
2.	75.977	1.90	9.65	34.70	30.29	15.96	40.00	-24.04	Peak
3.	117.773	2.29	11.82	30.86	30.45	14.52	43.50	-28.98	Peak
4.	151.597	2.52	13.90	29.41	30.53	15.30	43.50	-28.20	Peak
5.	204.955	2.79	10.48	31.82	30.64	14.45	43.50	-29.05	Peak
6.	383.932	3.36	14.97	38.35	30.86	25.82	46.00	-20.18	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. The mode 1 is the worst case, and only the data of the worst case recorded in this test report.

RADIATED EMISSION ABOVE 1GHZ

EUT：	Digital Wireless Baby Monitor With Storage Capacity	Model Name. ：	GD8220
Temperature：	20 ℃	Relative Humidtity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC5V
Test Mode ：	Mode 1	Polarization :	Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
2408.625	116.82	-9.37	107.45	--	--	peak
2408.625	112.79	-9.37	103.42	--	--	AVG
4817.250	51.29	3.74	55.03	74	-18.97	peak
4817.250	45.62	3.74	49.36	54	-4.64	AVG
7225.875	43.58	8.14	51.72	74	-22.28	peak
7225.875	37.97	8.14	46.11	54	-7.89	AVG
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

EUT：	Digital Wireless Baby Monitor With Storage Capacity	Model Name. ：	GD8220
Temperature：	20 ℃	Relative Humidtity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC5V
Test Mode ：	Mode 1	Polarization :	Vertical

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
2402.013	113.64	-9.37	104.27	--	--	peak
2402.013	109.82	-9.37	100.45	--	--	AVG
4804.026	50.28	3.74	54.02	74	-19.98	peak
4804.026	44.38	3.74	48.12	54	-5.88	AVG
7206.039	42.98	8.14	51.12	74	-22.88	peak
7206.039	37.02	8.14	45.16	54	-8.84	AVG
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

EUT：	Digital Wireless Baby Monitor With Storage Capacity	Model Name. ：	GD8220
Temperature：	20 ℃	Relative Humidtity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC5V
Test Mode ：	Mode 2	Polarization :	Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
2442.375	114.21	-9.63	104.58	--	--	peak
2442.375	110.56	-9.63	100.93	--	--	AVG
4884.750	50.64	3.76	54.4	74	-19.6	peak
4884.750	44.31	3.76	48.07	54	-5.93	AVG
7327.125	43.06	8.17	51.23	74	-22.77	peak
7327.125	38.12	8.17	46.29	54	-7.71	AVG
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

EUT：	Digital Wireless Baby Monitor With Storage Capacity	Model Name. ：	GD8220
Temperature：	20 ℃	Relative Humidtity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC5V
Test Mode ：	Mode 2	Polarization :	Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
2442.375	111.67	-9.63	102.04	--	--	peak
2442.375	107.84	-9.63	98.21	--	--	AVG
4884.750	48.97	3.76	52.73	74	-21.27	peak
4884.750	43.12	3.76	46.88	54	-7.12	AVG
7327.125	41.52	8.17	49.69	74	-24.31	peak
7327.125	36.24	8.17	44.41	54	-9.59	AVG
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

EUT：	Digital Wireless Baby Monitor With Storage Capacity	Model Name. ：	GD8220
Temperature：	20 ℃	Relative Humidtity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC5V
Test Mode ：	Mode 3	Polarization :	Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
2473.875	112.24	-9.61	102.63	--	--	peak
2473.875	108.54	-9.61	98.93	--	--	AVG
4947.750	48.62	3.83	52.45	74	-21.55	peak
4947.750	42.61	3.83	46.44	54	-7.56	AVG
7421.625	40.25	8.21	48.46	74	-25.54	peak
7421.625	33.87	8.21	42.08	54	-11.92	AVG
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

EUT：	Digital Wireless Baby Monitor With Storage Capacity	Model Name. ：	GD8220
Temperature：	20 ℃	Relative Humidtity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC5V
Test Mode ：	Mode 3	Polarization :	Vertical

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
2473.875	110.06	-9.61	100.45	--	--	peak
2473.875	106.74	-9.61	97.13	--	--	AVG
4947.750	47.31	3.83	51.14	74	-22.86	peak
4947.750	41.88	3.83	45.71	54	-8.29	AVG
7421.625	39.16	8.21	47.37	74	-26.63	peak
7421.625	32.84	8.21	41.05	54	-12.95	AVG
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

Note: Other emission from 8G to 25 GHz are considered as ambient noise. No recording in the test report.
Factor=Antenna Factor + Cable loss - Amplifier gain, Margin=Measurement-Limit.
The “Factor” value can be calculated automatically by software of measurement system.

10. BAND EDGES EMISSION

10.1 MEASUREMENT PROCEDURE

1. Set the EUT Work on the top, the bottom operation frequency individually.
2. Set SPA Start or Stop Frequency=Operation Frequency, RBW=1MHz, VBW>=RBW, Center frequency =Operation frequency
3. The band edges was measured and recorded.

10.2 TEST SET-UP

The same as described in section 9.2

10.3 TEST RESULT

EUT：	Digital Wireless Baby Monitor With Storage Capacity	Model Name. ：	GD8220
Temperature：	20 ℃	Relative Humidtity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC5V
Test Mode ：	Mode 1	Polarization :	Horizontal

PK

AV

EUT：	Digital Wireless Baby Monitor With Storage Capacity	Model Name. ：	GD8220
Temperature：	20 ℃	Relative Humidtity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC5V
Test Mode ：	Mode 1	Polarization :	Vertical

PK

AV

EUT：	Digital Wireless Baby Monitor With Storage Capacity	Model Name. ：	GD8220
Temperature：	20 ℃	Relative Humidtity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC5V
Test Mode ：	Mode 3	Polarization :	Horizontal

PK

AV

EUT：	Digital Wireless Baby Monitor With Storage Capacity	Model Name. ：	GD8220
Temperature：	20 ℃	Relative Humidtity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC5V
Test Mode ：	Mode 3	Polarization :	Vertical

PK

AV

RESULT: PASS

Note: The other modes radiation emission have enough 20dB margin.

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

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

Hopping off and Hopping on have been tested and only worst case recorded

11. NUMBER OF HOPPING FREQUENCY

11.1 MEASUREMENT PROCEDURE

1. Place the EUT on the table and set it in transmitting mode.
2. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum analyzer.
3. Set the spectrum analyzer Start = 2.4GHz Stop = 2.4835GHz
4. Set the Spectrum Analyzer as RBW>=1%span, VBW>=RBW.

11.2 TEST SETUP (BLOCK DIAGRAM OF CONFIGURATION)

Same as described in section 6.2
Conducted Method.

11.3 MEASUREMENT EQUIPMENT USED

The Same as described in section 5.3

11.4 LIMITS AND MEASUREMENT RESULT

TOTAL NO. OF HOPPING CHANNEL	LIMIT (NO. OF CH)	MEASUREMENT (NO. OF CH)	RESULT
	>=15	24	PASS

12. TIME OF OCCUPANCY (DWELL TIME)

12.1 MEASUREMENT PROCEDURE

1. Place the EUT on the table and set it in transmitting mode.
2. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum analyzer.
3. Set Span = zero span, centered on a hoping channel.
4. Set the spectrum analyzer as RBW=1MHz, VBW>=RBW, Span = 0 Hz.

12.2 TEST SETUP (BLOCK DIAGRAM OF CONFIGURATION)

Same as described in section 6.2
Conducted Method

12.3 MEASUREMENT EQUIPMENT USED

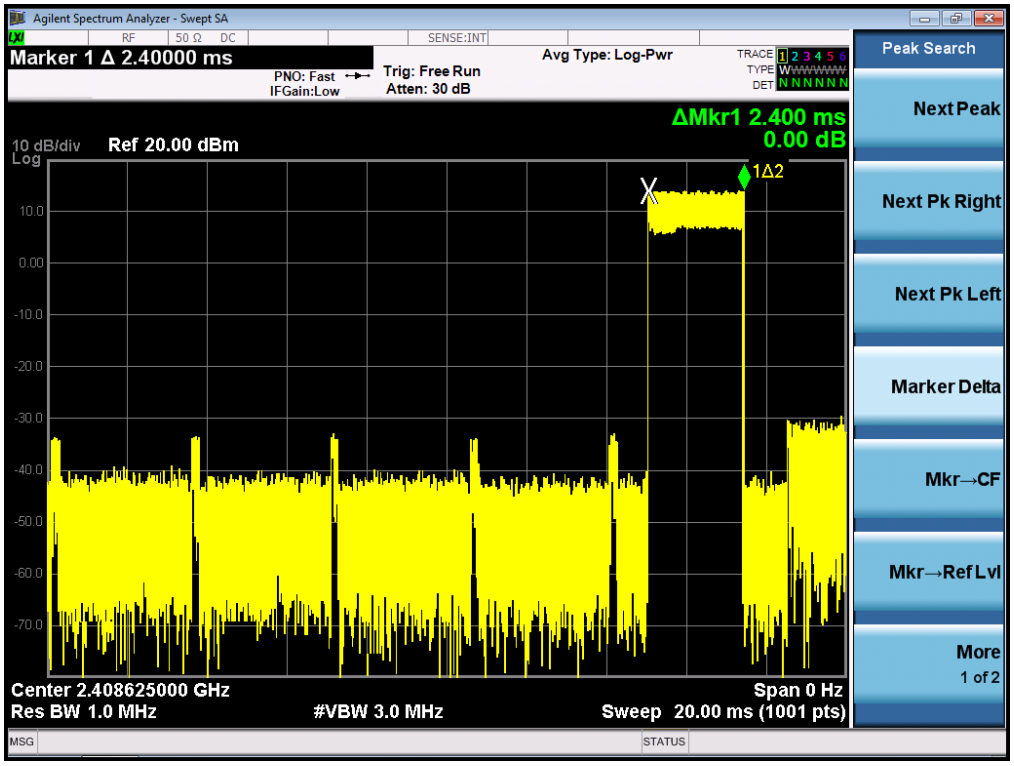
The same as described in section 5

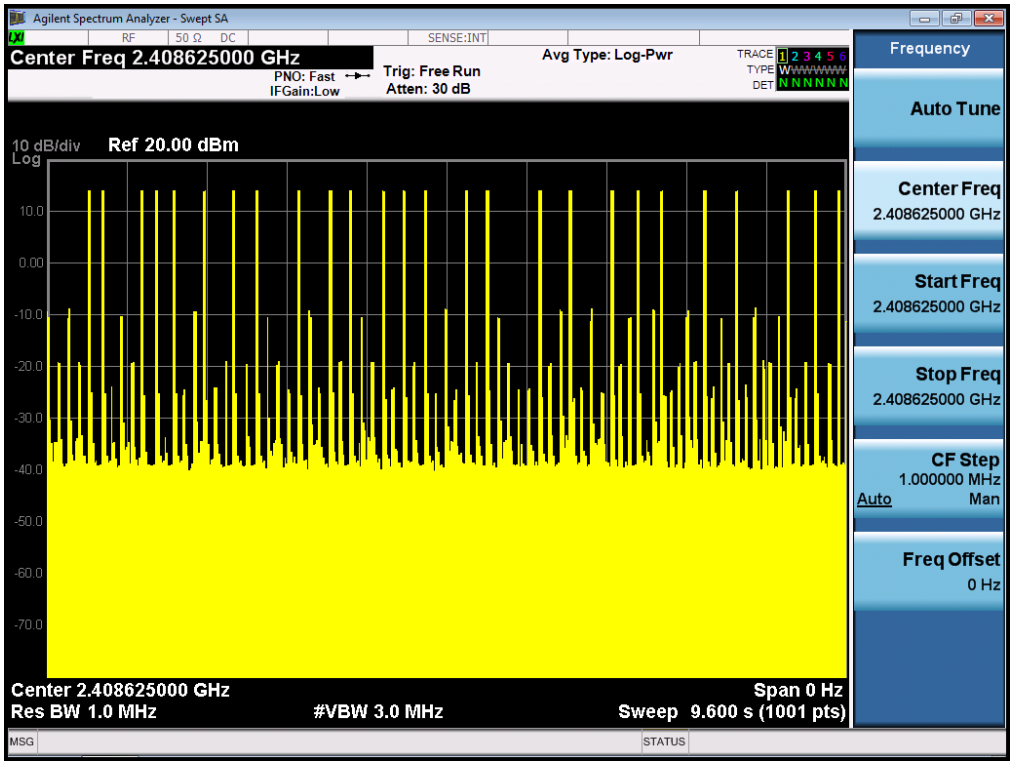
12.4 LIMITS AND MEASUREMENT RESULT

The Worst Case

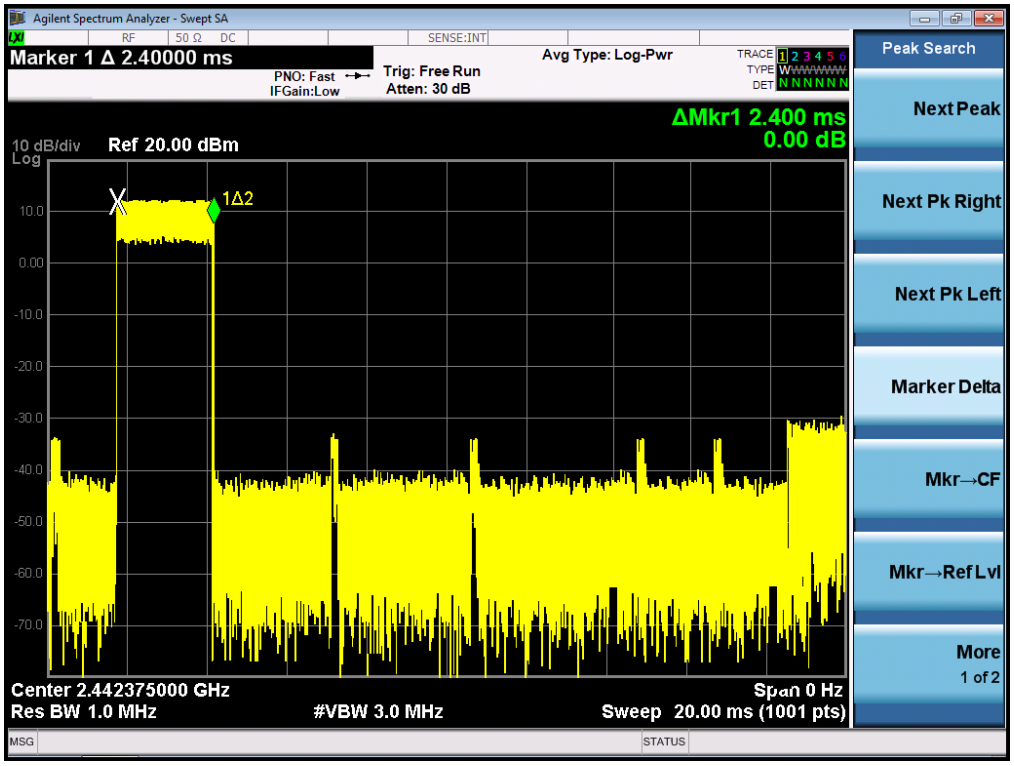
Channel	Time of The Pulse (ms)	Sweep Time (s)	No. of The Pulse	Dwell Time (ms)	Limit (ms)
Low	2.400	9.600	26	62.400	400
Middle	2.400	9.600	23	55.200	400
High	2.400	9.600	24	57.600	400

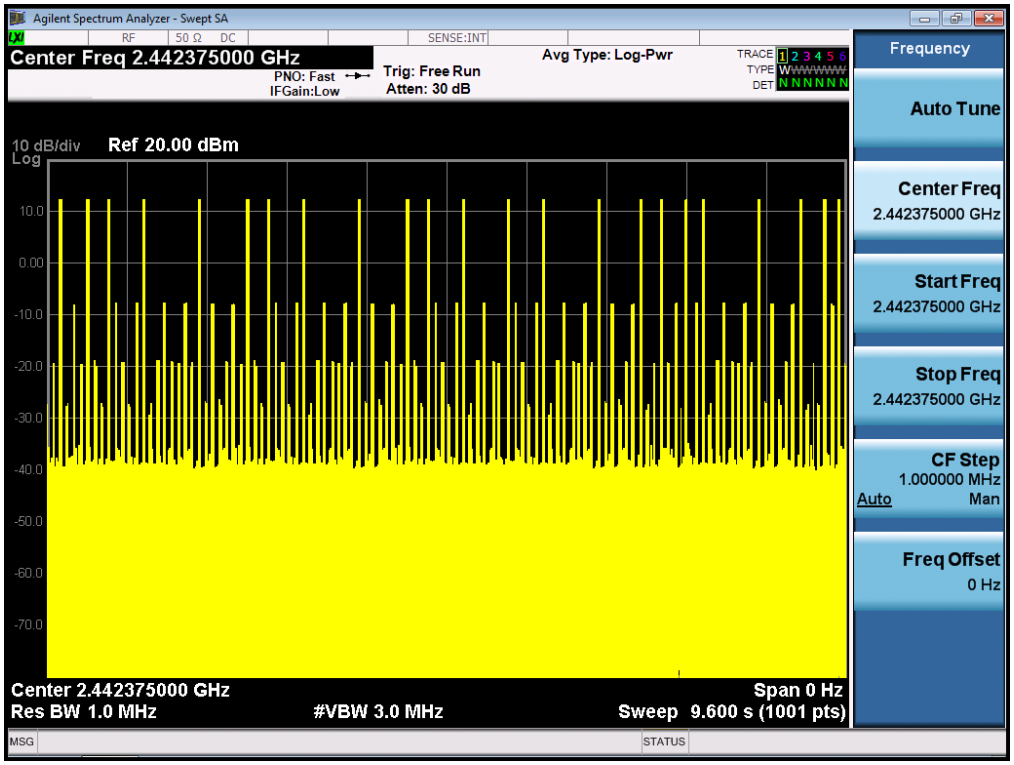
TEST PLOT OF LOW CHANNEL



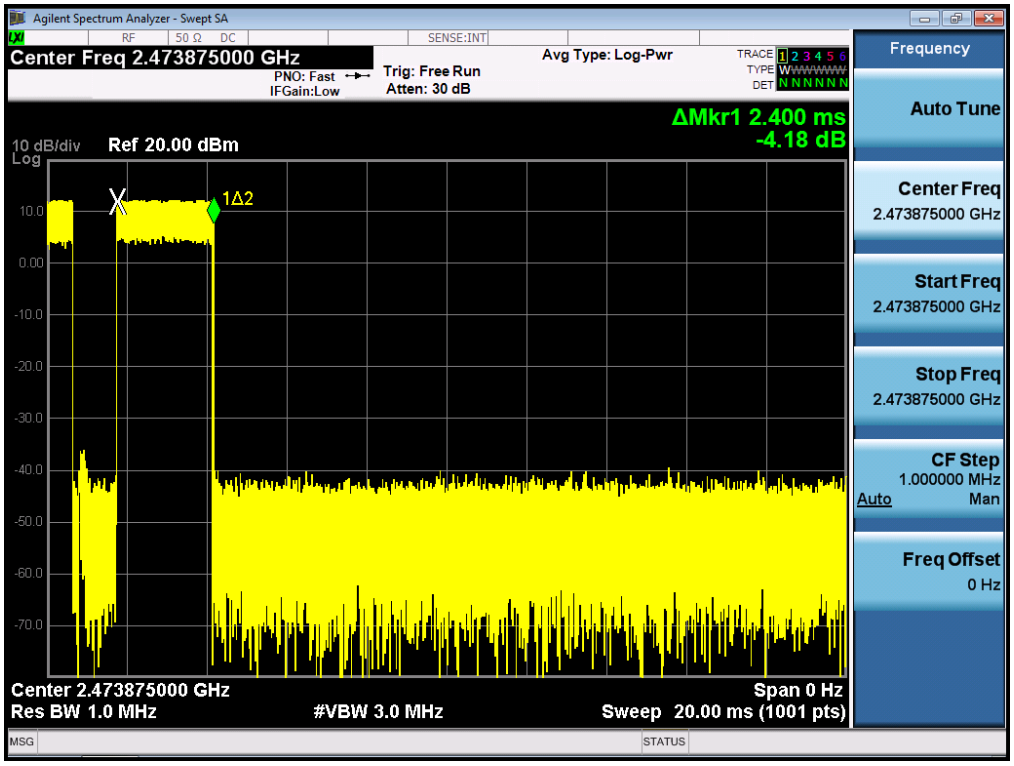


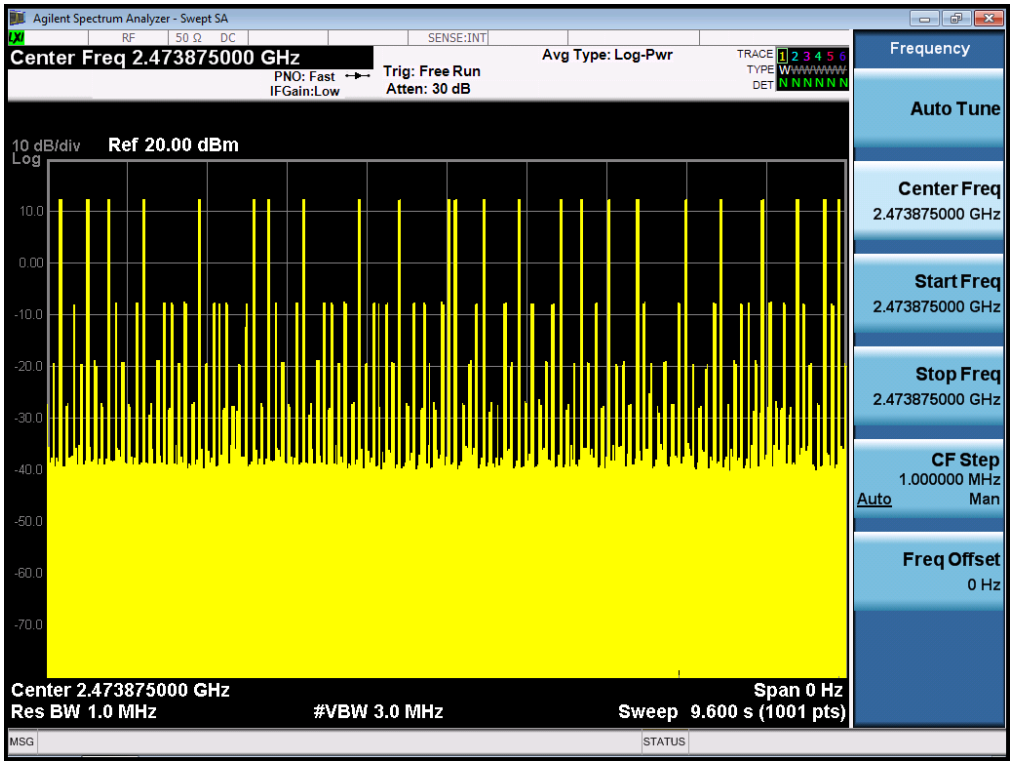
TEST PLOT OF MIDDLE CHANNEL





TEST PLOT OF HIGH CHANNEL





13. FREQUENCY SEPARATION

13.1 MEASUREMENT PROCEDURE

1. Place the EUT on the table and set it in transmitting carrie mode
2. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum analyzer
3. Set Span = wide enough to capture the peaks of two adjacent channels Resolution (or IF) Bandwidth (RBW) ≥ 1% of the span Video (or Average) Bandwidth (VBW) ≥ RBW; Sweep = auto; Detector function = peak; Trace = max hold

13.2 TEST SETUP (BLOCK DIAGRAM OF CONFIGURATION)

Same as described in section 6.2

13.3 MEASUREMENT EQUIPMENT USED

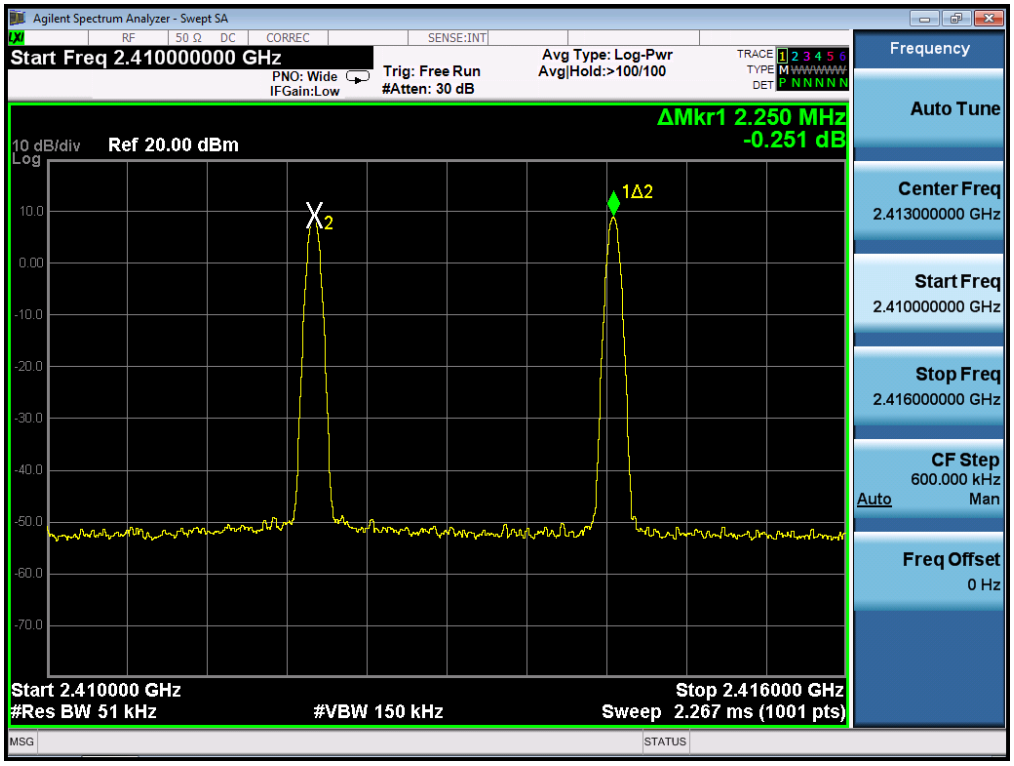
The same as described in section 5

13.4 LIMITS AND MEASUREMENT RESULT

TEST PLOT FOR FREQUENCY SEPARATION

CHANNEL	CHANNEL SEPARATION	LIMIT	RESULT
	KHz	KHz	Pass
CH02-CH03	2250	>=25 KHz or 2/3 20 dB BW	

TEST PLOT FOR FREQUENCY SEPARATION



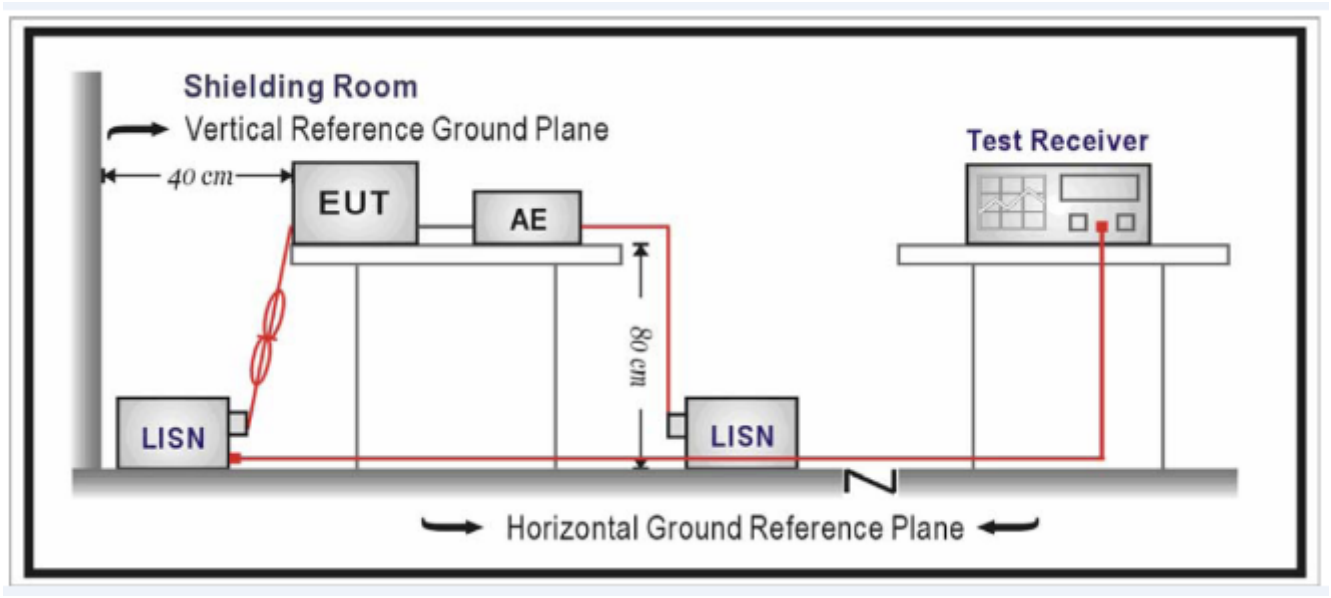
14. CONDUCTED EMISSION

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



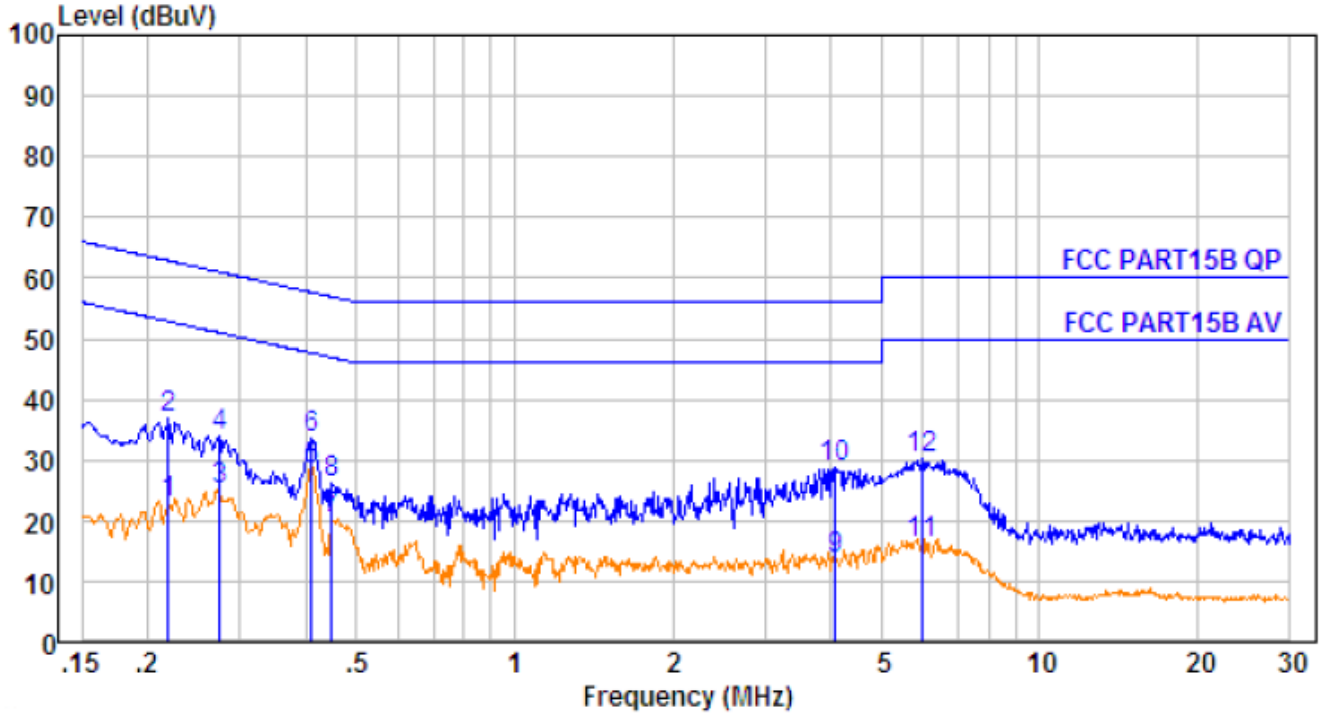
14.3 PROCEDURE OF LINE CONDUCTED EMISSION TEST

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 RS-GEN (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 RS-GEN.
3) All I/O cables were positioned to simulate typical actual usage as per RS-GEN.
4) The EUT received power by PC which received 120V/60Hz power through a LISN.
5) The EUT 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.
6) Analyzer / Receiver scanned from 150 kHz to 30MHz for emissions in each of the test modes.
7) During the above scans, the emissions were maximized by cable manipulation.
8) A scan was taken on both power lines, Line 1 and Line 2, recording at least the six highest emissions.
9) 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.

The test data of the worst case condition(s) was reported on the Summary Data page.

14.4 TEST RESULT OF LINE CONDUCTED EMISSION TEST

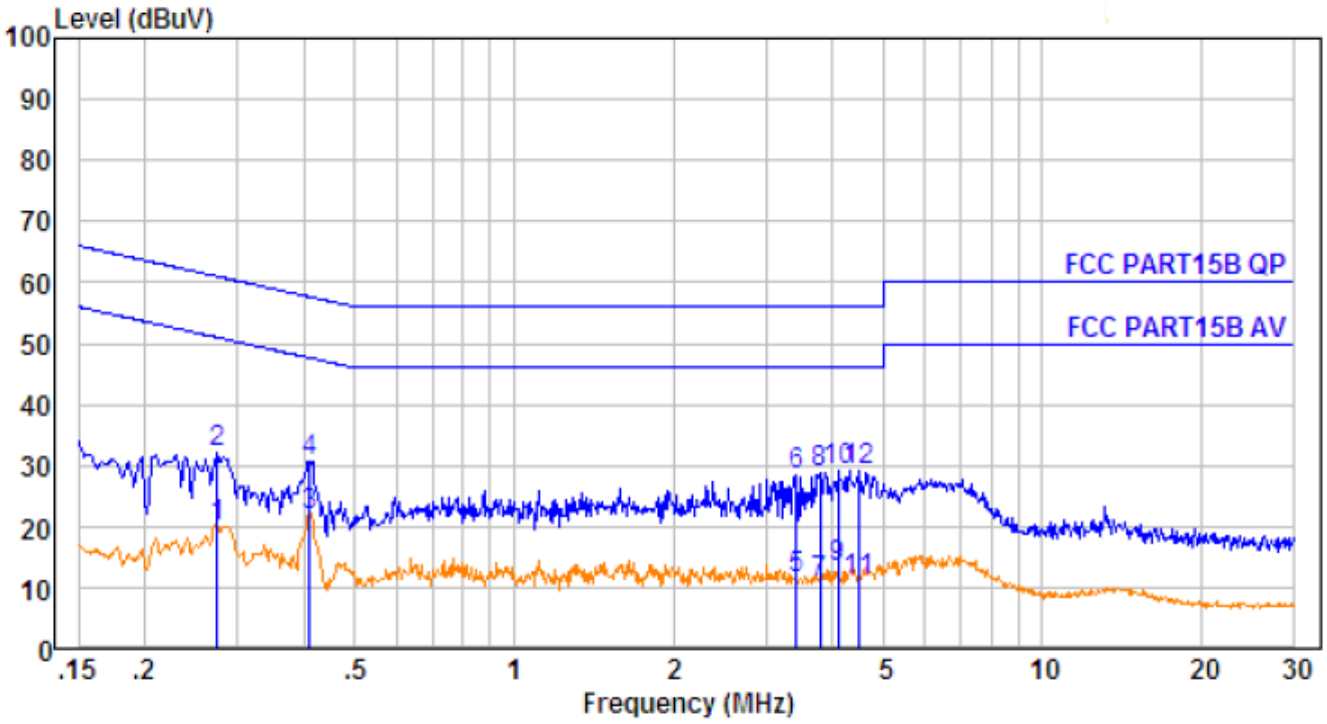
LINE CONDUCTED EMISSION TEST-L



No.	Freq MHz	Cable Loss dB	AMN Factor dB	Receiver Reading dBuV	Emission Level dBuV	Limit dBuV	Over Limit dB	Remark
1.	0.219	10.61	0.60	11.57	22.78	52.88	-30.10	Average
2.	0.219	10.61	0.60	25.57	36.78	62.88	-26.10	Peak
3.	0.274	10.62	0.60	13.71	24.93	50.98	-26.05	Average
4.	0.274	10.62	0.60	22.71	33.93	60.98	-27.05	Peak
5.	0.410	10.64	0.60	17.22	28.46	47.64	-19.18	Average
6.	0.410	10.64	0.60	22.22	33.46	57.64	-24.18	Peak
7.	0.449	10.64	0.60	9.11	20.35	46.89	-26.54	Average
8.	0.449	10.64	0.60	15.11	26.35	56.89	-30.54	Peak
9.	4.092	10.72	0.60	2.46	13.78	46.00	-32.22	Average
10.	4.092	10.72	0.60	17.46	28.78	56.00	-27.22	Peak
11.	5.961	10.74	0.60	4.76	16.10	50.00	-33.90	Average
12.	5.961	10.74	0.60	18.76	30.10	60.00	-29.90	Peak

RESULT: PASS

LINE CONDUCTED EMISSION TEST-N

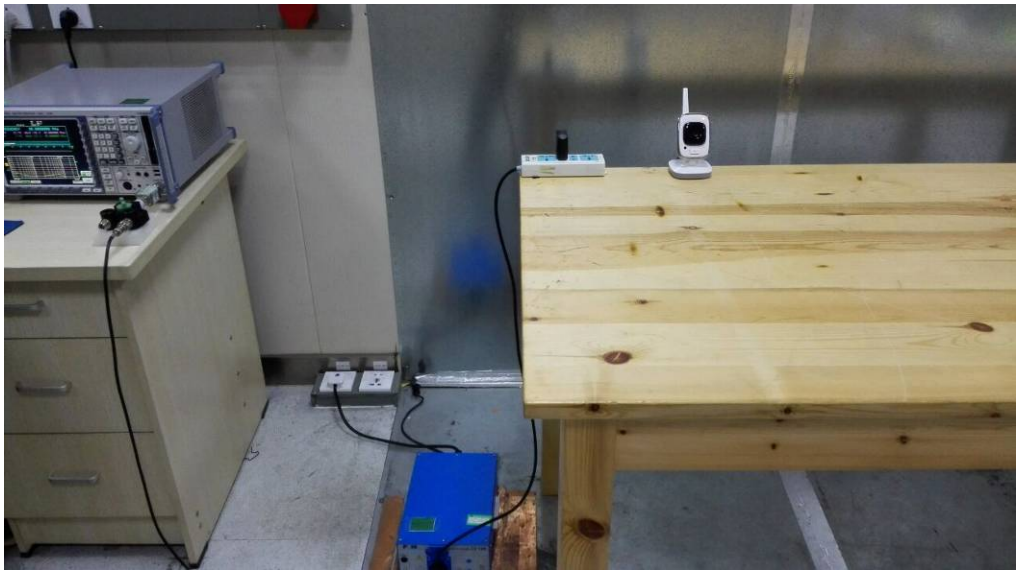


No.	Freq MHz	Cable Loss dB	AMN Factor dB	Receiver Reading dBuV	Emission Level dBuV	Limit dBuV	Over Limit dB	Remark
1.	0.274	10.62	0.60	8.71	19.93	50.98	-31.05	Average
2.	0.274	10.62	0.60	20.71	31.93	60.98	-29.05	Peak
3.	0.410	10.64	0.60	10.35	21.59	47.64	-26.05	Average
4.	0.410	10.64	0.60	19.35	30.59	57.64	-27.05	Peak
5.	3.417	10.72	0.60	0.26	11.58	46.00	-34.42	Average
6.	3.417	10.72	0.60	17.26	28.58	56.00	-27.42	Peak
7.	3.799	10.72	0.60	-0.52	10.80	46.00	-35.20	Average
8.	3.799	10.72	0.60	17.48	28.80	56.00	-27.20	Peak
9.	4.114	10.72	0.60	1.87	13.19	46.00	-32.81	Average
10.	4.114	10.72	0.60	17.87	29.19	56.00	-26.81	Peak
11.	4.501	10.73	0.60	-0.21	11.12	46.00	-34.88	Average
12.	4.501	10.73	0.60	17.79	29.12	56.00	-26.88	Peak

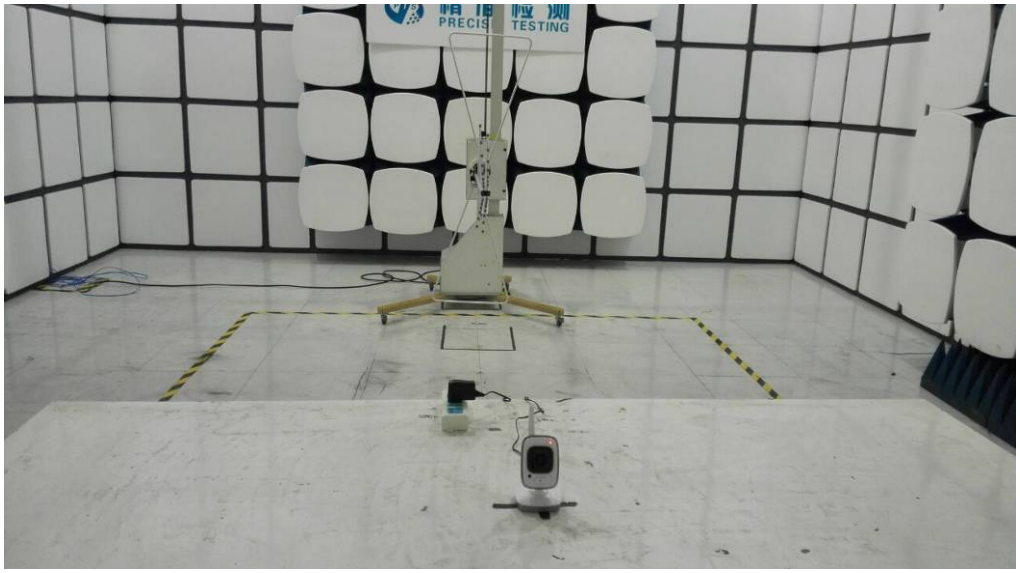
RESULT: PASS

APPENDIX I:PHOTOGRAPHS OF THE TEST SETUP

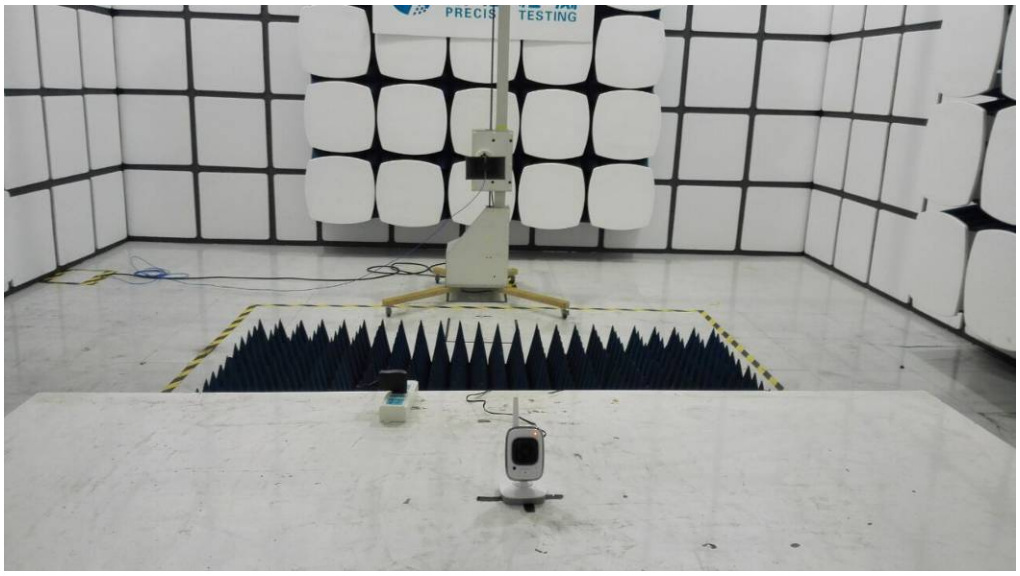
CONDUCTED EMISSION



RADIATED EMISSION BELOW 1GHZ TEST SETUP



RADIATED EMISSION ABOVE 1GHZ TEST SETUP

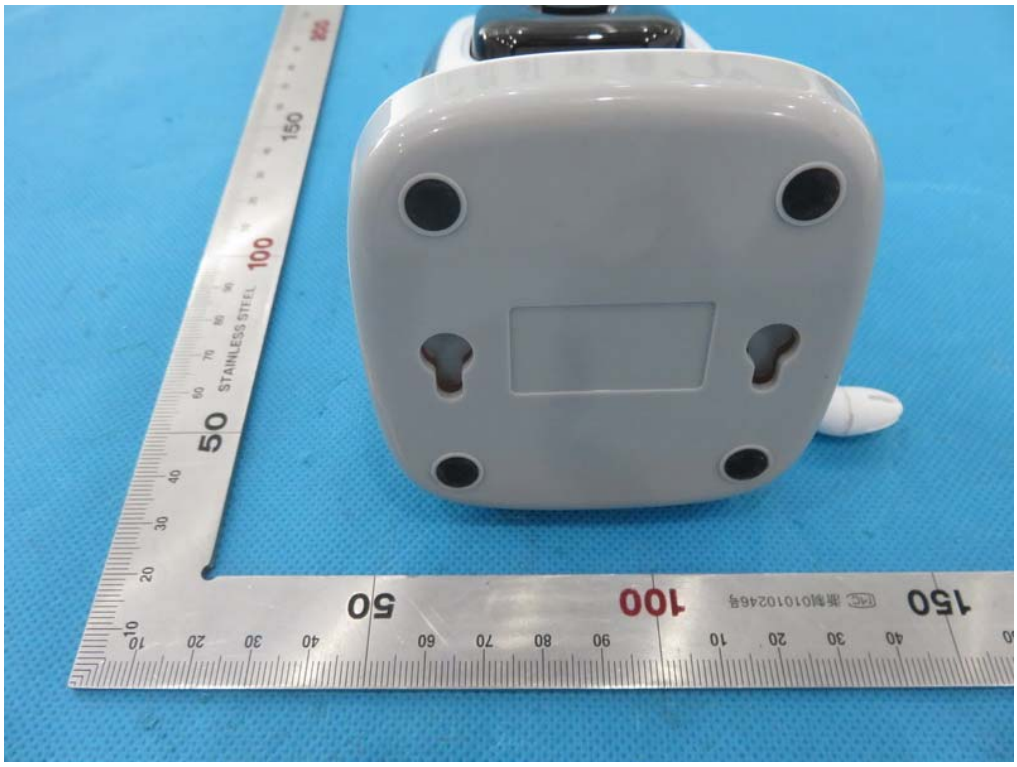


APPENDIX II:PHOTOGRAPHS OF THE EUT

ALL VIEW OF EUT

TOP VIEW OF EUT

BOTTOM VIEW OF EUT



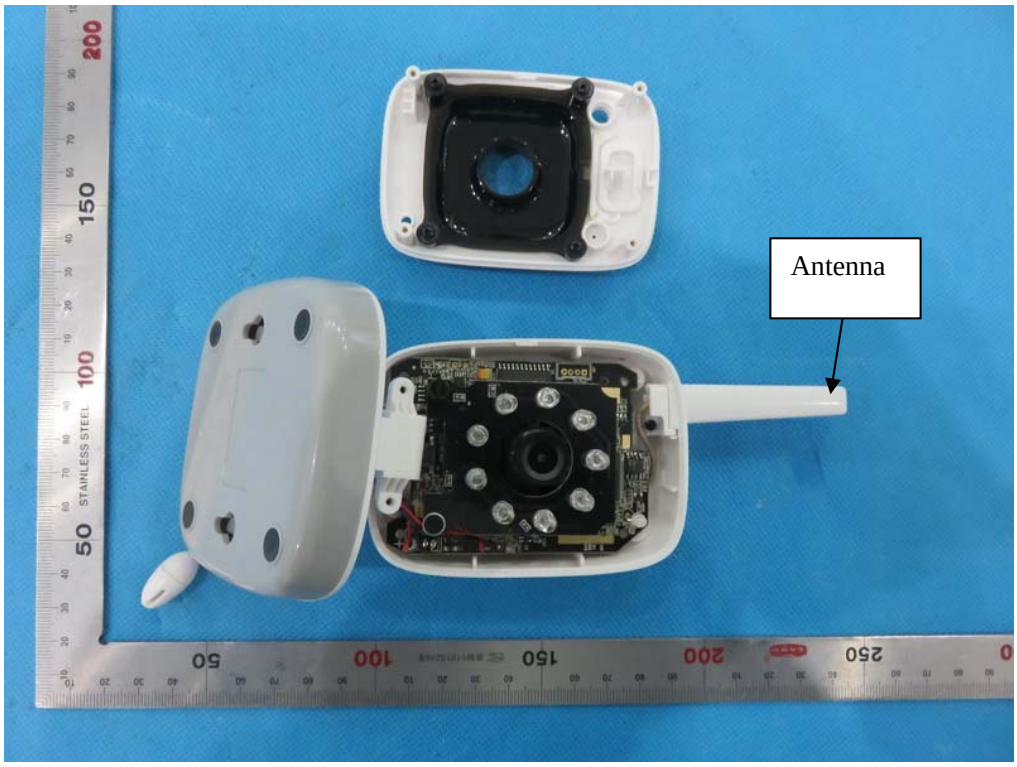
FRONT VIEW OF EUT

BACK VIEW OF EUT

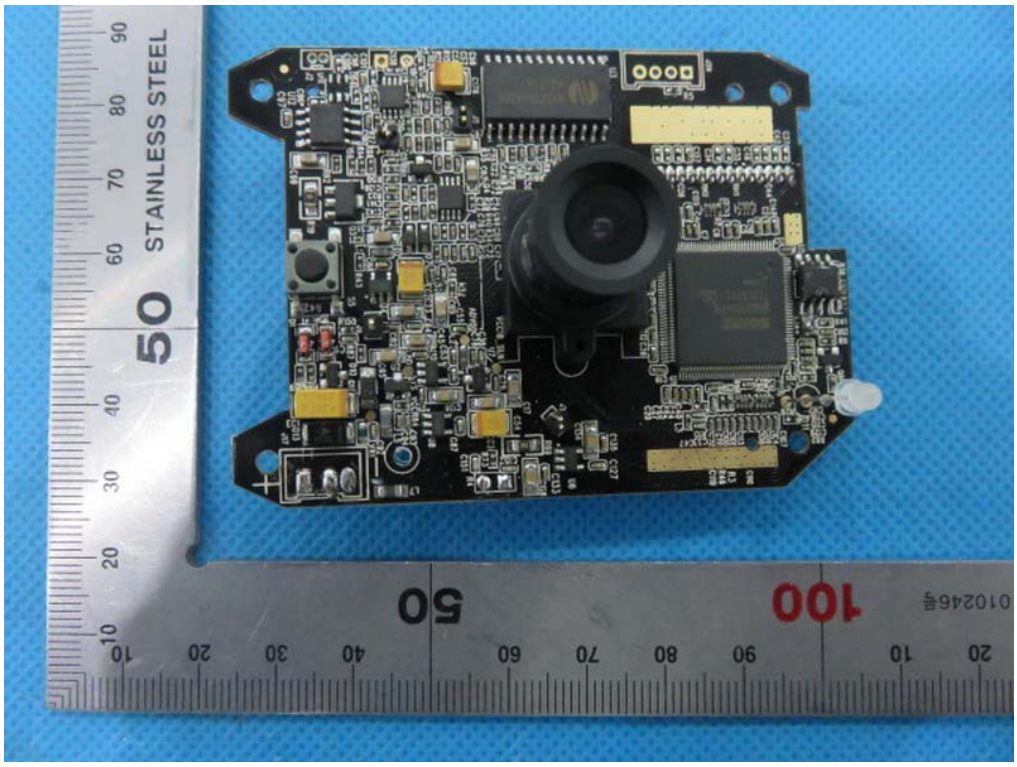
LEFT VIEW OF EUT

RIGHT VIEW OF EUT

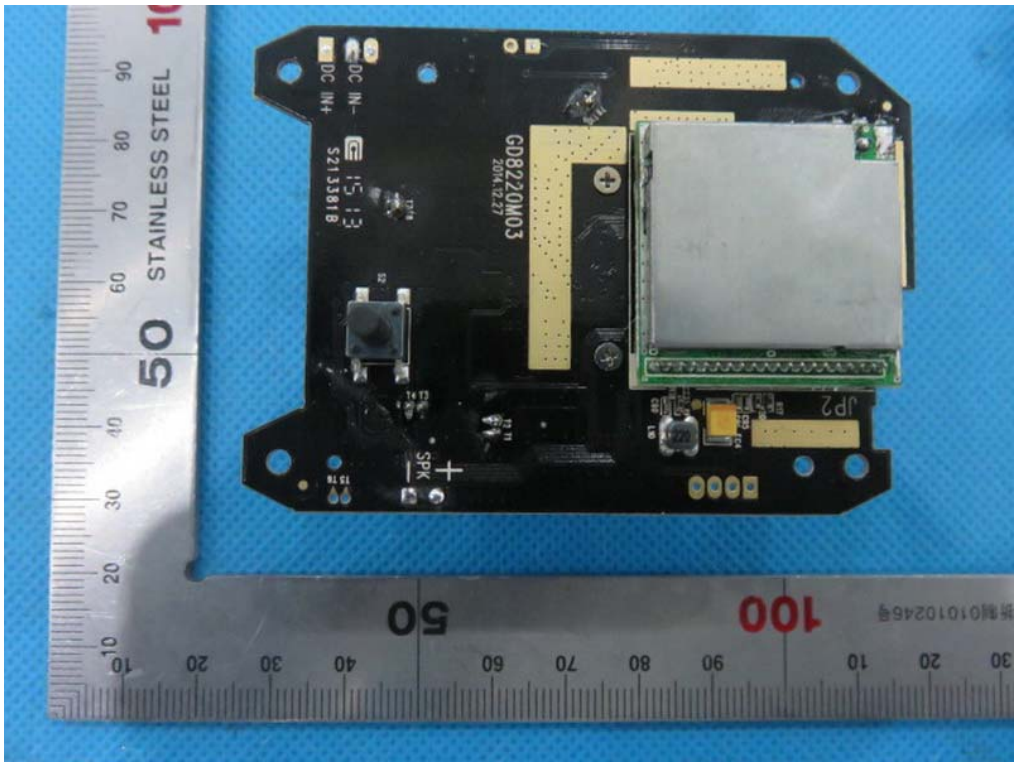
OPEN VIEW OF EUT



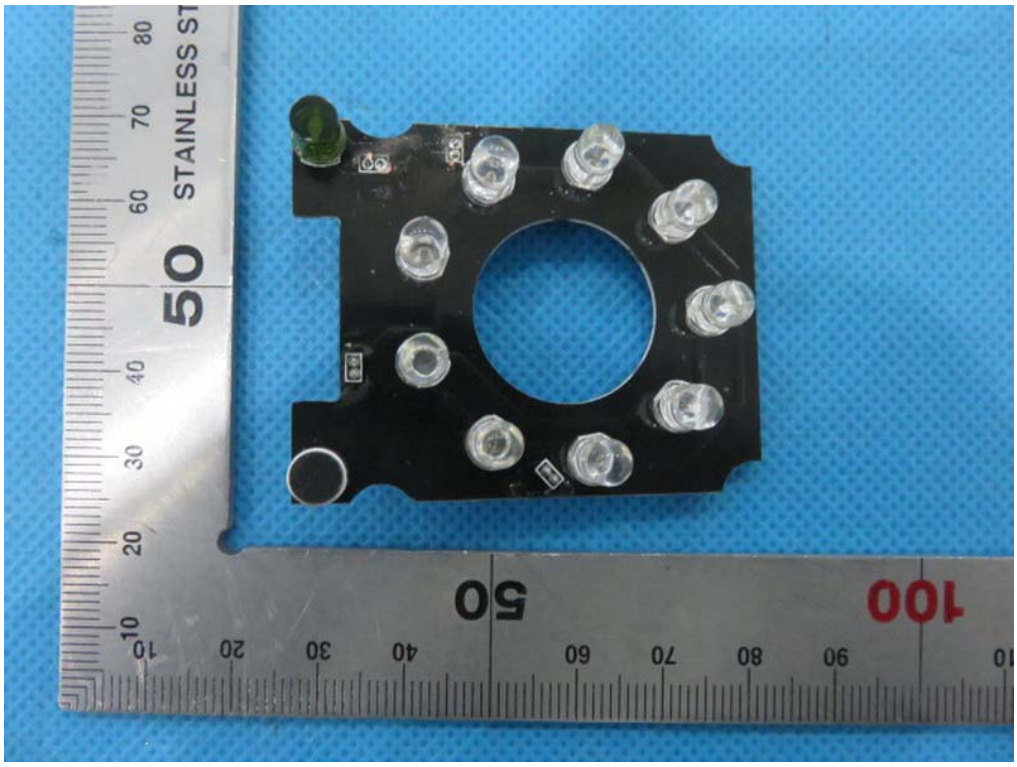
INTERNAL VIEW OF EUT-1



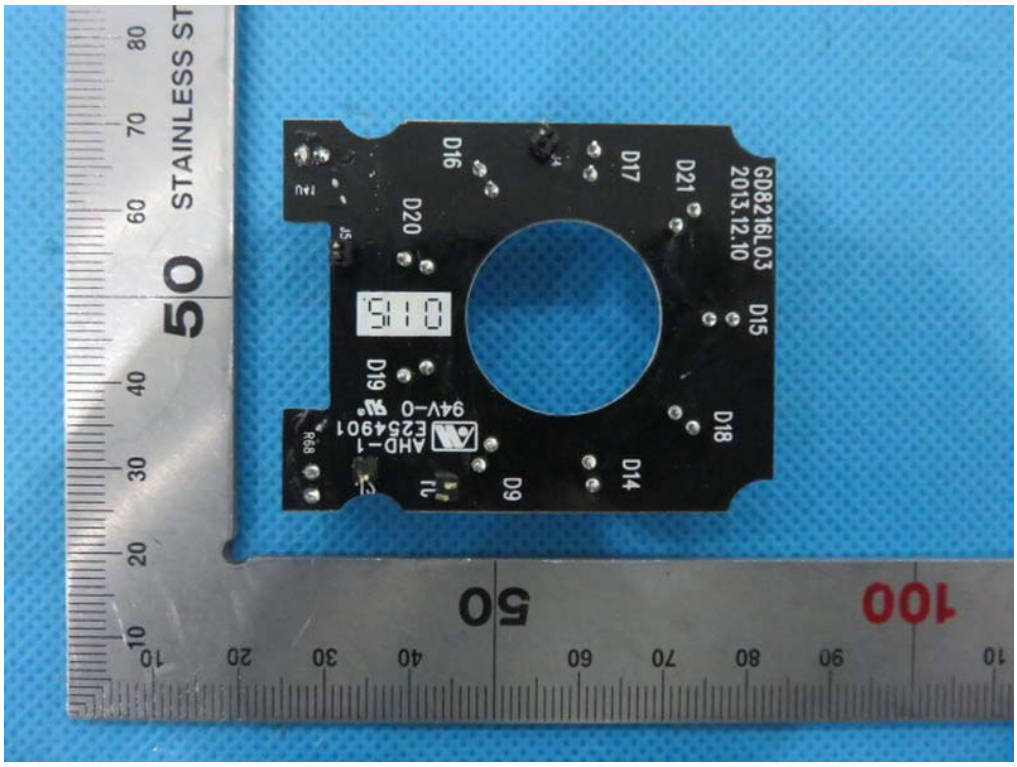
INTERNAL VIEW OF EUT-2



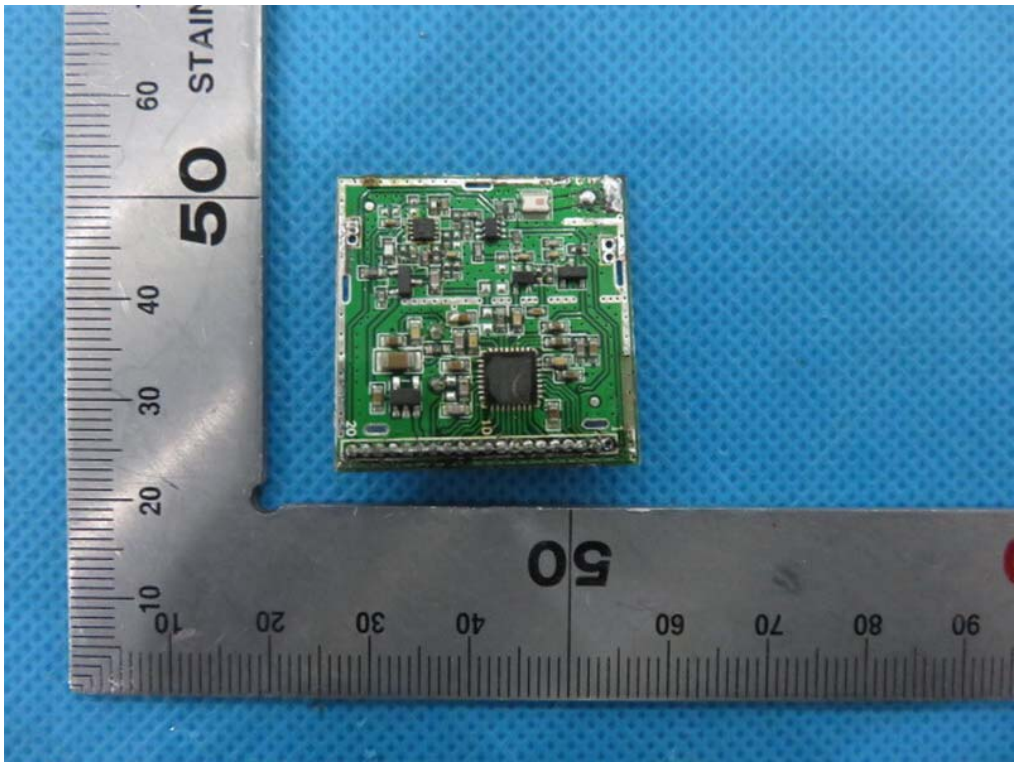
INTERNAL VIEW OF EUT-3



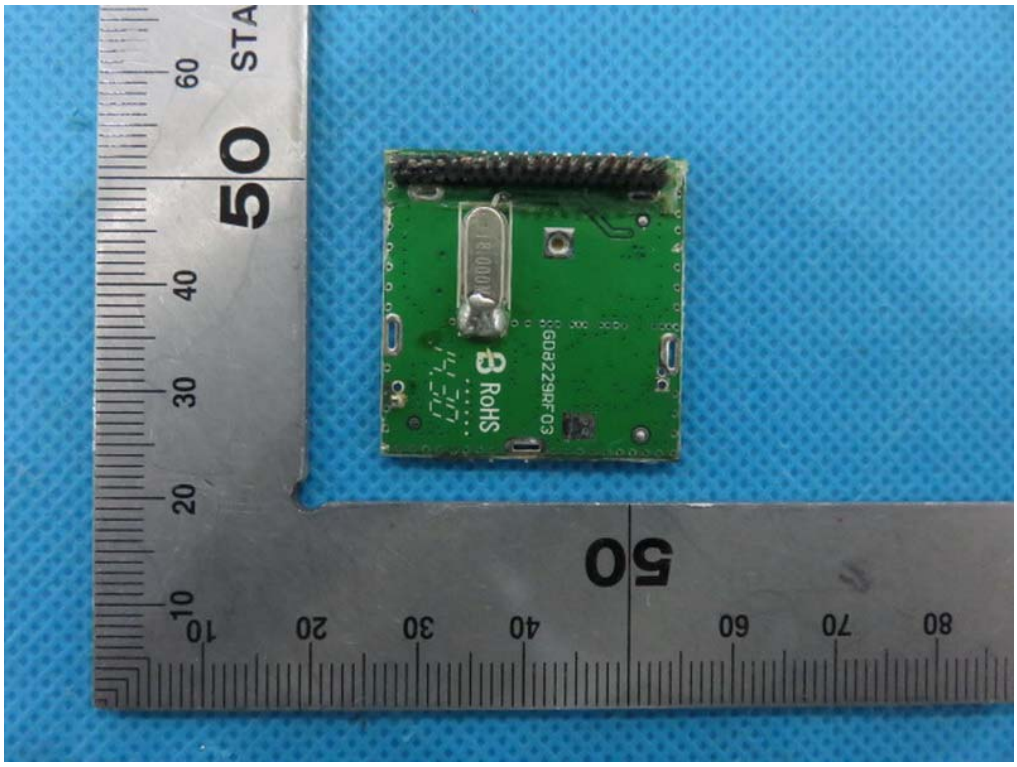
INTERNAL VIEW OF EUT-4



INTERNAL VIEW OF EUT-5



INTERNAL VIEW OF EUT-6



----END OF REPORT----