FCC Test Report

Report No.: AGC061110401F2

FCC ID	:	VO8-D10
PRODUCT DESIGNATION	:	Bluetooth Headset
BRAND NAME	:	Bluedio
TEST MODEL	:	D10
CLIENT	:	Guangzhou LiWei Electronics Co.,Ltd.
DATE OF ISSUE	:	Apr.13, 2011
STANDARD(S)	:	FCC Part 15 Rules

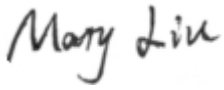
Attestation of ***G***lobal ***C***ompliance Co., Ltd.

VERIFICATION OF COMPLIANCE

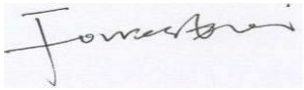
Applicant	Guangzhou LiWei Electronics Co.,Ltd.
	NO.33 Zhenzhong North Rd, ShenShan Ind. Park, BaiYun District, GuangZhou, GuangDong
Manufacturer	Guangzhou LiWei Electronics Co.,Ltd.
	NO.33 Zhenzhong North Rd, ShenShan Ind. Park, BaiYun District, GuangZhou, GuangDong
Product Designation	Bluetooth Headset
Brand Name	Bluedio
Model Name	D10
FCC ID	VO8-D10
Report Number	AGC0161110401F2
Date of Test	Apr.8, 2011 to Apr.12, 2011

WE HEREBY CERTIFY THAT:

The above equipment was tested by Attestation of Global Compliance 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 (2003) 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.

Checked By: 

Mary Liu Apr.13, 2011

Authorized By 

Forrest Lei Apr.13, 2011

TABLE OF CONTENTS

1 GENERAL INFORMATION

1.1 PRODUCT DESCRIPTION

The EUT is a **Bluetooth Headset** designed as an “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	2.402 GHz to 2.480GHz
Rated Output Power	BT (1Mbps):2.3dBm, BT EDR(2Mbps):2.33dBm,BT EDR(3Mbps): 2.35dBm
Modulation	BT (1Mbps):GFSK,BT EDR(2Mbps):π /4-DQPSK,BT EDR(3Mbps): 8-DPSK
Number of channels	79
Antenna Designation	PCB Antenna
Antenna Gain	0.8dBi
Power Supply	DC3.7V by Battery (Charging by Adapter)
Adapter Input	AC100-240V, 50-60Hz
Adapter Output	DC5V, 200mA (Max)

1.2 TABLE OF CARRIER FREQUENCYS

Frequency Band	Channel Number	Frequency
2400~2483.5MHZ	0	2402MHZ
	1	2403MHZ
	:	:
	38	2440 MHZ
	39	2441 MHZ
	40	2442 MHZ
	:	:
	77	2479 MHZ
	78	2480 MHZ

1.3 RECEIVER INPUT BANDWIDTH

The input bandwidth of the receiver is 1MHZ,In every connection one Bluetooth device is the master and the other one is slave. The master determines the hopping sequence. The slave follows this sequence. Both devices shift between RX and TX time slot according to the clock of the master. Additionally the type of connection(e.g. single of multislot packet) is set up at the beginning of the connection. The master adapts its hopping frequency and its TX/RX timing according to the packet type of the connection. Also the slave of the connection will use these settings.
Repeating of a packet has no influence on the hopping sequence. The hopping sequence generated by the master of the connection will be followed in any case. That means, a repeated packet will not be send on the same frequency, it is send on the next frequency of the hopping sequence.

1.4 EXAMPLE OF A HOPPING SEQUENCY IN DATA MODE

Example of a 79 hopping sequence in data mode:
40,21,44,23,42,53,46,55,48,33,52,35,50,65,54,67
56,37,60,39,58,69,62,71,64,25,68,27,66,57,70,59
72,29,76,31,74,61,78,63,01,41,05,43,03,73,07,75
09,45,13,47,11,77,15,00,64,49,66,53,68,02,70,06
01,51,03,55,05,04

1.5 EQUALLY AVERAGE USE OF FREQUENCIES AND BEHAVIOUR

The generation of the hopping sequence in connection mode depends essentially on two input values:
1 LAP/UAP of the master of the connection
2 Internal master clock
The LAP(lower address part) are the 24 LSB's of the 48 BD_ADDRESS. The BD_ADDRESS is an unambiguous number of every Bluetooth unit. The UAP(upper address part) are the 24MSB's of the 48BD_ADDRESS
The internal clock of a Bluetooth unit is derived from a free running clock which is never adjusted and Is never turned off. For synchronisation with other units only offset are used. It has no relation to the time Of the day. Its resolution is at least half the RX/TX slot length of 312.5us.The clock has a cycle of about One day(23h30).In most case it is implemented as 28 bit counter. For the deriving of the hopping sequence the entire.
LAP(24 bits),4LSB's(4bits)(Input 1) and the 27MSB's of the clock(Input 2) are used. With this input values different mathematical procedures(permutations, additions, XOR-operations)are performed to generate te
Sequence. This will be done at the beginning of every new transmission.
Regarding short transmissions the Bluetooth system has the following behaviour:
The first connection between the two devices is established, a hopping sequence was generated. For Transmitting the wanted data the complete hopping sequence was not used. The connection ended.
The second connection will be established. A new hopping sequence is generated. Due to the fact the Bluetooth clock has a different value, because the period between the two transmission is longer(and it Cannot be shorter)than the minimum resolution of the clock(312.5us).The hopping sequence will always Differ from the first one.

1.6 RELATED SUBMITTAL(S) / GRANT (S)

This submittal(s) (test report) is intended for **FCC ID: VO8-D10** filing to comply with Section 15.247 of the FCC Part 15, Subpart C Rules.

1.7 TEST METHODOLOGY

Both conducted and radiated testing were performed according to the procedures in ANSI C63.4 (2003). Radiated testing was performed at an antenna to EUT distance 3 meters.

1.8 TEST FACILITY

All measurement facilities used to collect the measurement data are located at
Attestation of Global Compliance Co., Ltd.
1F., No.2 Building, Huafeng No.1 Technical Industrial Park, Sanwei, Xixiang, Baoan District, Shenzhen
The test site is constructed and calibrated to meet the FCC requirements in documents ANSI C63.4: 2003.
FCC register No.: 259865

1.9 SPECIAL ACCESSORIES

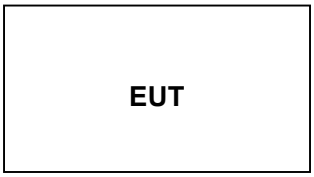
Not available for this EUT intended for grant.

1.10 EQUIPMENT MODIFICATIONS

Not available for this EUT intended for grant.

2 SYSTEM TEST CONFIGURATION

2.1 CONFIGURATION OF TESTED SYSTEM



Note:Radiation Test

2.2 EQUIPMENT USED IN TESTED SYSTEM

Item	Equipment	Mfr/Brand	Model/Type No.	FCC ID
1	Bluetooth Headset	LiWei	D10	VO8-D10

3 SUMMARY OF TEST RESULTS

FCC RULES	DESCRIPTION OF TEST	RESULT
§15.247	Maximum 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	Channel Separation	Compliant
§15.207	Conduction Emission	Compliant

4 DESCRIPTION OF TEST MODES

TEST ITEM	TEST MODES
Maximum output power 20dB bandwidth,Conducted Emission Radiated Emission above 1GHz Time of Occupancy	Bluetooth Low ,Middle,High Channel
Radiation Emission Below 1GHz	Bluetooth (Normal Hopping)
Band Edge	Low and High Channel
Number of Hopping Frequency	Bluetooth0~78channel
Channel Seperation	1th&2th Channel
Conduction Emission	Charging

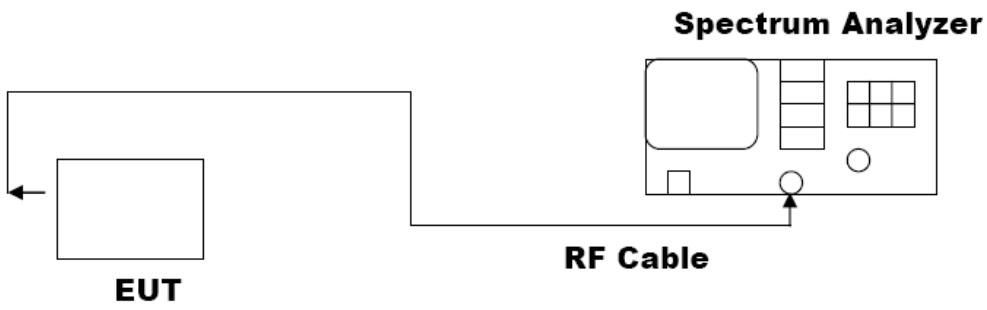
Note:Above test item performed on battery full charge condition except for conduction emission.

5 MAXIMUM OUTPUT POWER

5.1 MEASUREMENT PROCEDURE

1. The EUT was placed on a turn table which is 0.8m above ground plane.
2. Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
3. Set the EUT Work on the top, the middle and the bottom operation frequency individually.
4. Set SPA Centre Frequency = Operation Frequency, RBW= 1 MHz,
   VBW= 1 MHz.
5. Set SPA Trace 1 Max hold, then View.

5.2 TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)



5.3 MEASUREMENT EQUIPMENT USED

Description	Manufacturer	Model	SERIAL NUMBER	Cal. Date	Cal. Due
Spectrum Analyzer	Agilent	E4440A	N/A	06/29/2010	06/28/2011
Amplifier	EM	EM30180	0607030	06/29/2010	06/28/2011
Horn Antenna	EM	EM-AH-10180	N/A	06/29/2010	06/28/2011
EMI Test Receiver	Rohde & Schwarz	ESCI	N/A	06/29/2010	06/28/2011
Amplifier	EM	EM30180	N/A	06/29/2010	06/28/2011
Bilogical Antenna	A.H. Systems Inc.	SAS-521-4	N/A	06/29/2010	06/28/2011
Loop Antenna	Daze	ZN30900N	SEL0097	06/29/2010	06/28/2011
Isolation Transformer	LETEAC	LTBK	--	06/29/2010	06/28/2011

5.4 LIMITS AND MEASUREMENT RESULT

BLUETOOTH 1MBPS TEST RESULT

CONDUCTED POWER LIMITS AND MEASUREMENT RESULT			
Frequency (GHz)	Result (dBm)	Applicable Limits (dBm)	Pass or Fail
2.402	2.3	30	Pass
2.441	2.25	30	Pass
2.480	2.28	30	Pass

BLUETOOTH 2MBPS TEST RESULT

CONDUCTED POWER LIMITS AND MEASUREMENT RESULT			
Frequency (GHz)	Result (dBm)	Applicable Limits (dBm)	Pass or Fail
2.402	2.15	30	Pass
2.441	2.33	30	Pass
2.480	2.09	30	Pass

BLUETOOTH 3MBPS TEST RESULT

CONDUCTED POWER LIMITS AND MEASUREMENT RESULT			
Frequency (GHz)	Result (dBm)	Applicable Limits (dBm)	Pass or Fail
2.402	2.35	30	Pass
2.441	2.14	30	Pass
2.480	2.17	30	Pass

6 20 DB BANDWIDTH

6.1 MEASUREMENT PROCEDURE

1. The EUT was placed on a turn table which is 0.8m above ground plane.
2. Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
3, Set the EUT Work on the top, the middle and the bottom operation frequency individually.
3. Set SPA Centre Frequency = Operation Frequency, RBW= 30 KHz or 100kHz,
   VBW= 100or300 KHz.
4. Set SPA Trace 1 Max hold, then View.

6.2 TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)

The Same as described in Section 5.2

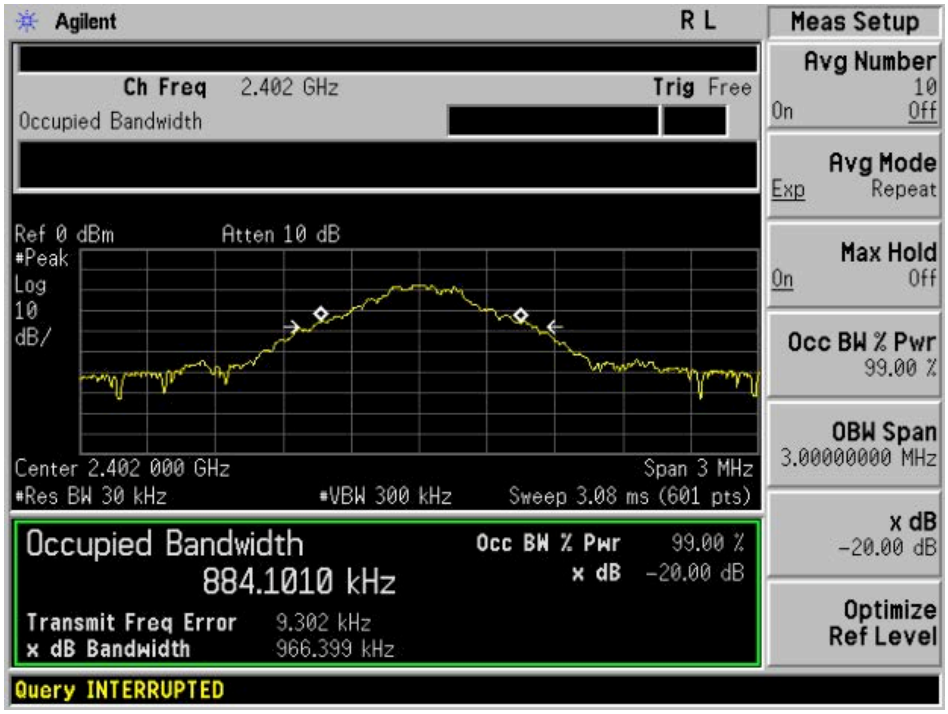
6.3 MEASUREMENT EQUIPMENT USED

The same as described in Section 5.3

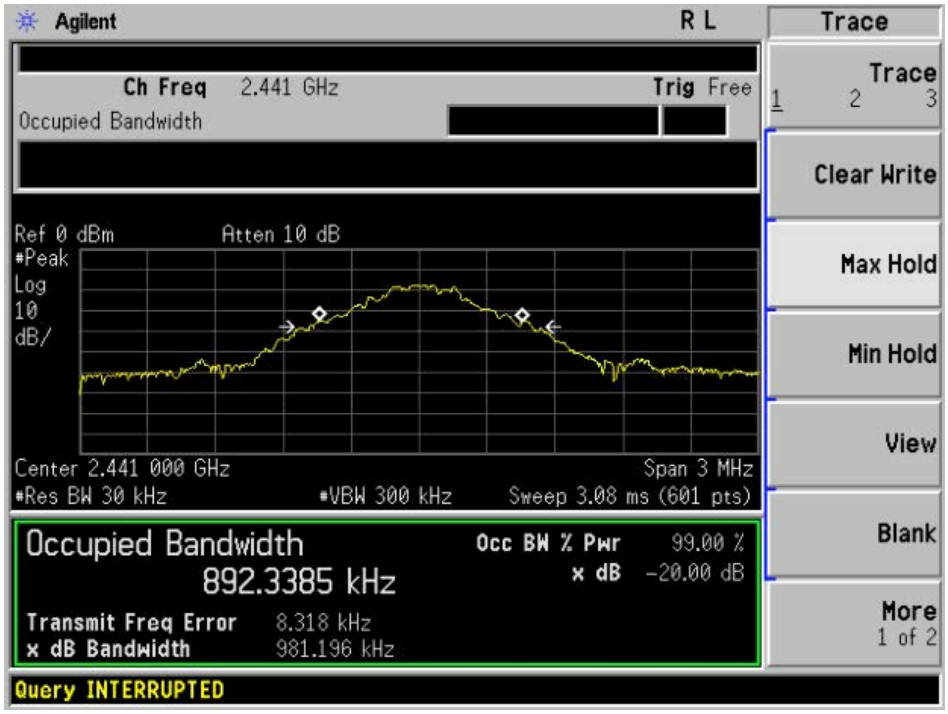
6.4 LIMITS AND MEASUREMENT RESULTS

BLUETOOTH 1MBPS LIMITS AND MEASUREMENT RESULT			
Applicable Limits	Measurement Result		
	Test Data (MHz)		Criteria
--	Low Channel	0.966	PASS
	Middle Channel	0.981	PASS
	High Channel	0.965	PASS

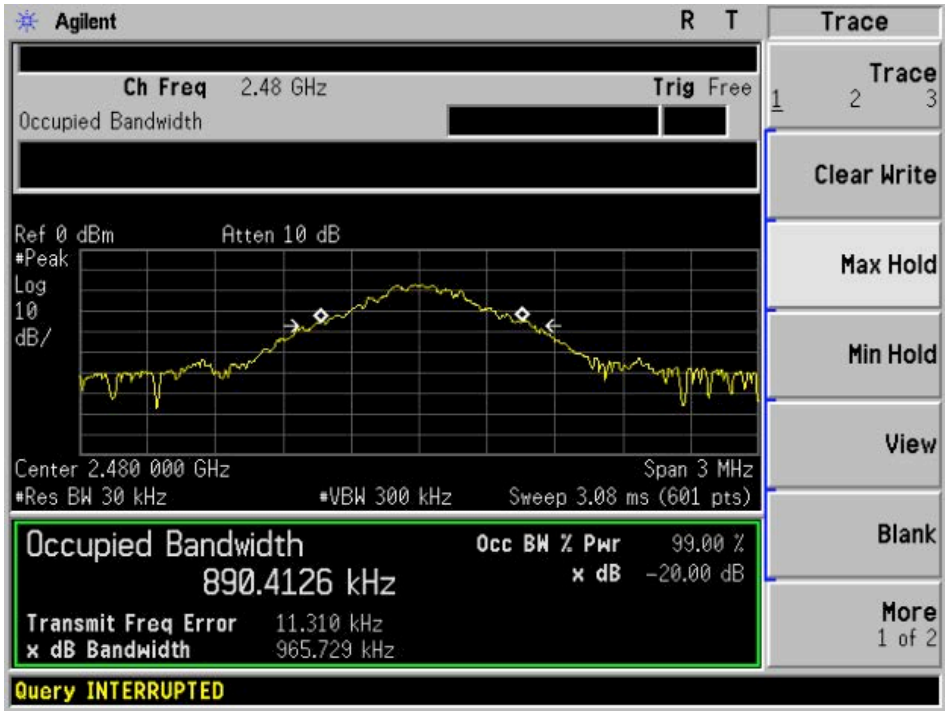
TEST PLOT OF BANDWIDTH FOR LOW CHANNEL



TEST PLOT OF BANDWIDTH FOR MIDDLE CHANNEL

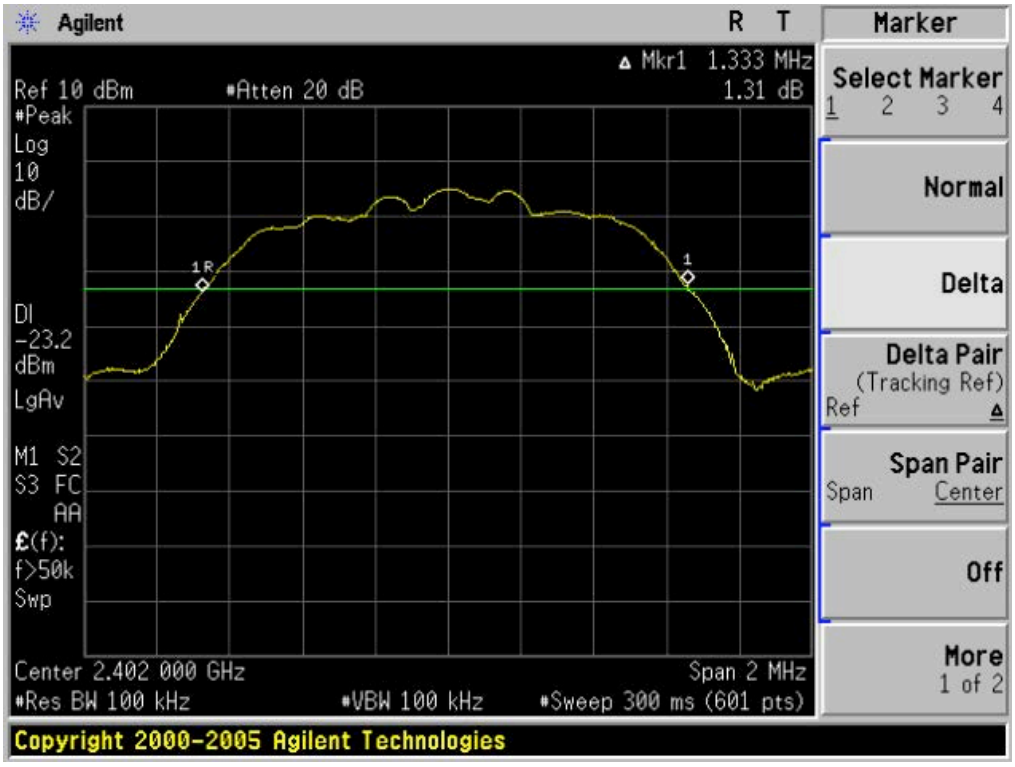


TEST PLOT OF BANDWIDTH FOR HIGH CHANNEL

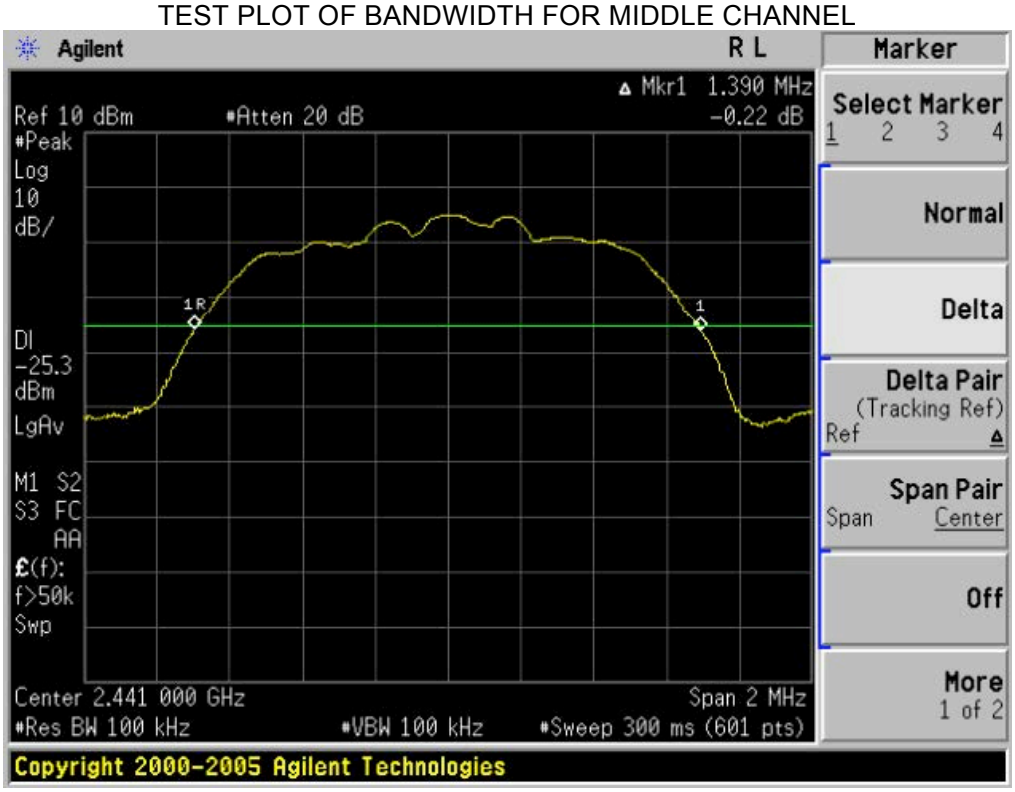


BLUETOOTH 2MBPS LIMITS AND MEASUREMENT RESULT			
Applicable Limits	Measurement Result		
	Test Data (MHz)		Criteria
--	Low Channel	1.333	PASS
	Middle Channel	1.390	PASS
	High Channel	1.383	PASS

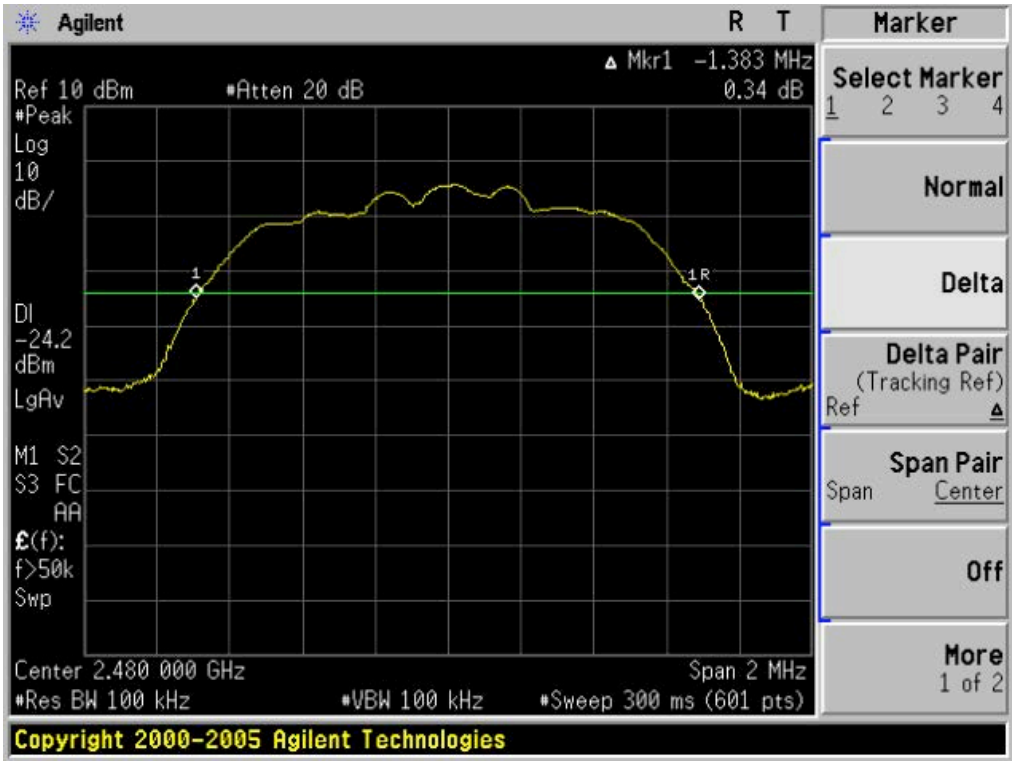
TEST PLOT OF BANDWIDTH FOR LOW CHANNEL



TEST PLOT OF BANDWIDTH FOR MIDDLE CHANNEL

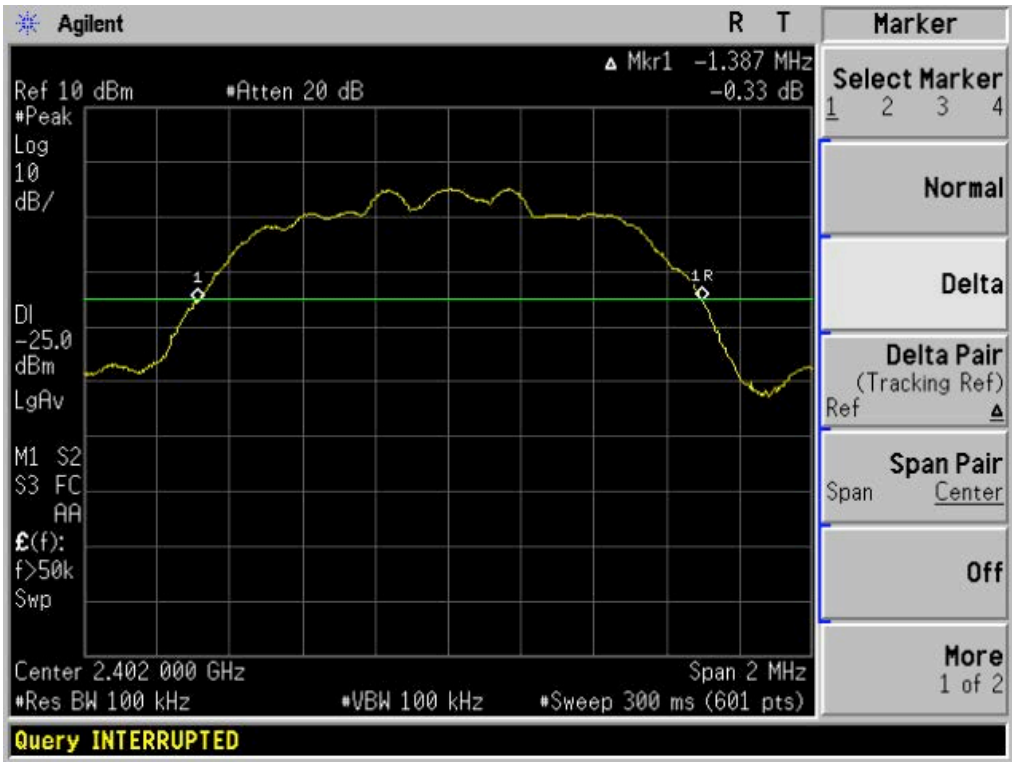


TEST PLOT OF BANDWIDTH FOR HIGH CHANNEL

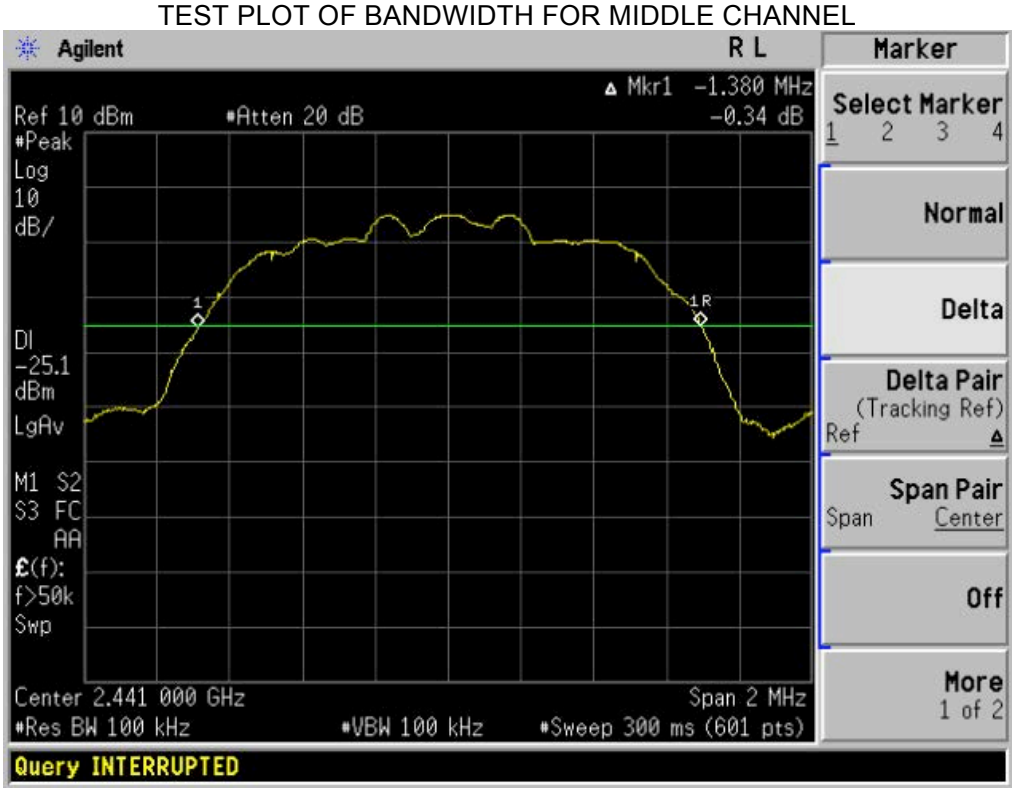


BLUETOOTH 3MBPS LIMITS AND MEASUREMENT RESULT			
Applicable Limits	Measurement Result		
	Test Data (MHz)		Criteria
--	Low Channel	1.387	PASS
	Middle Channel	1.380	PASS
	High Channel	1.383	PASS

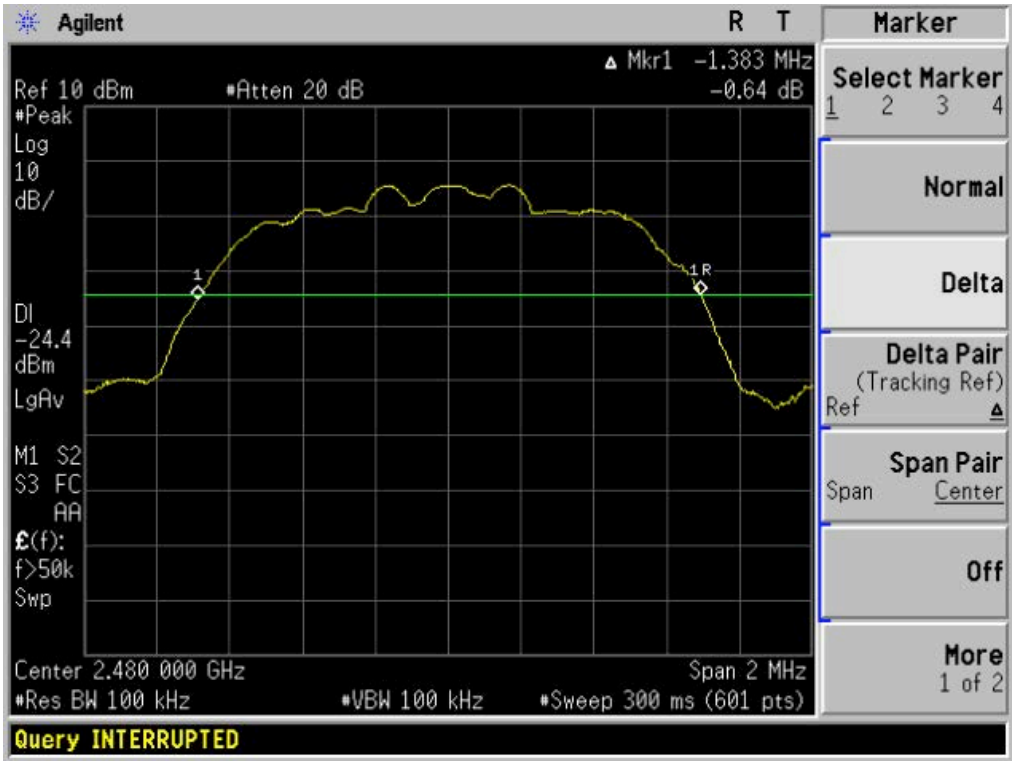
TEST PLOT OF BANDWIDTH FOR LOW CHANNEL



TEST PLOT OF BANDWIDTH FOR MIDDLE CHANNEL



TEST PLOT OF BANDWIDTH FOR HIGH CHANNEL

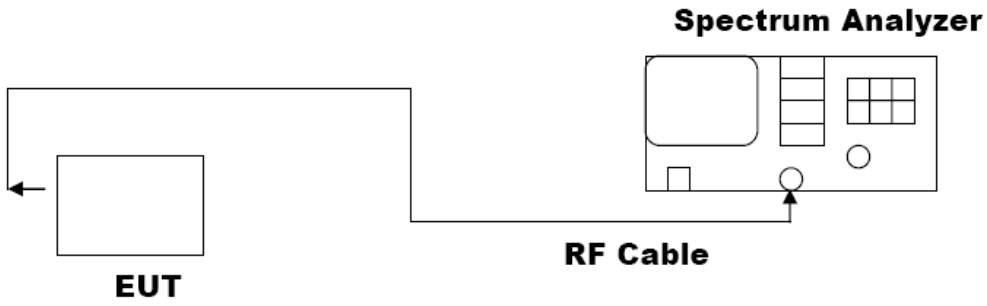


7. MAXIMUM CONDUCTED OUTPUT POWER SPECTRAL DENSITY (N/A)

7.1 MEASUREMENT PROCEDURE

(1). The EUT was placed on a turn table which is 0.8m above ground plane.
(2). Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
(3), Set the EUT Work on the top, the middle and the bottom operation frequency individually.
(4). Set SPA Centre Frequency = Operation Frequency, RBW= 3 KHz,
VBW= 10 KHz., Sweep time= Auto
(5). Set SPA Trace 1 Max hold, then View.

7.2 TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)



7.3 MEASUREMENT EQUIPMENT USED

SHIELDING ROOM					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Spectrum Analyzer	Agilent	E4440A	N/A	06/29/2010	06/28/2011

7.4 LIMITS AND MEASUREMENT RESULT

LIMITS AND MEASUREMENT RESULT			
Applicable Limits	Measurement Result		
	Test Data (dBm/3KHz)		Criteria
8 dBm / 3KHz	Low Channel	--	--
	Middle Channel	--	--
	High Channel	--	--

8. CONDUCTED SPURIOUS EMISSION

8.1 MEASUREMENT PROCEDURE

1. The EUT was placed on a turn table which is 0.8m above ground plane.
2. Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
3, Set the EUT Work on the top, the middle and the bottom operation frequency individually.
3. Set SPA Centre Frequency = Operation Frequency, RBW= 100 KHz, VBW= 100 KHz.
4. Set SPA Trace 1 Max hold, then View.

8.2 TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)

The Same as described in section 5.2

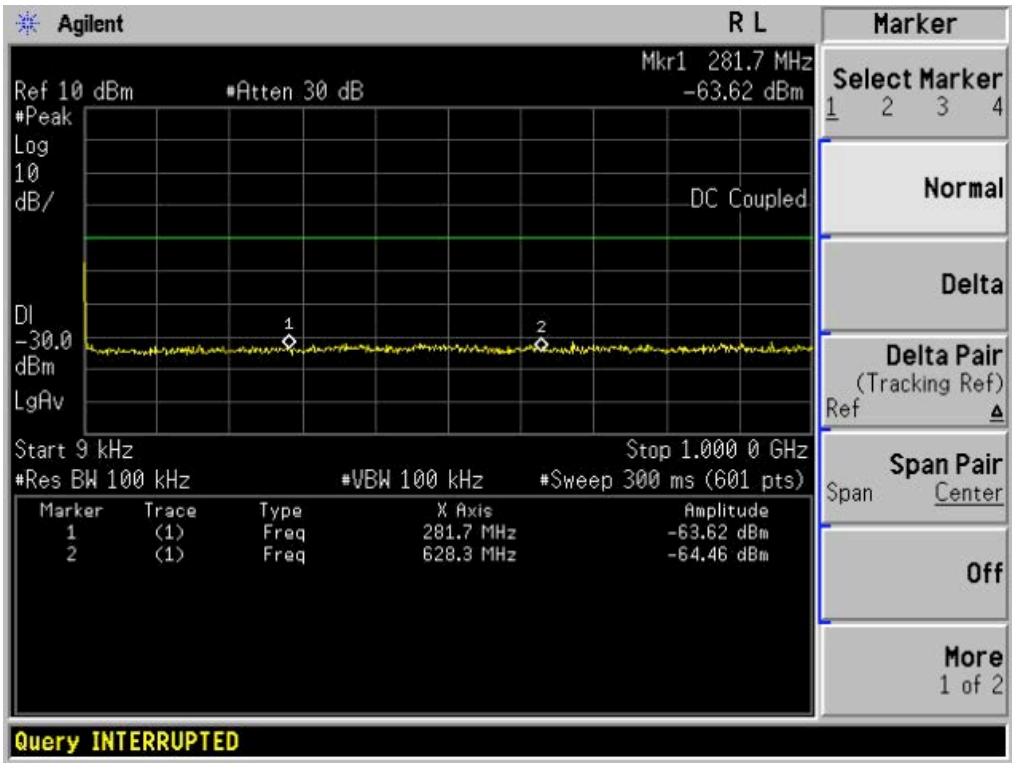
8.3 MEASUREMENT EQUIPMENT USED

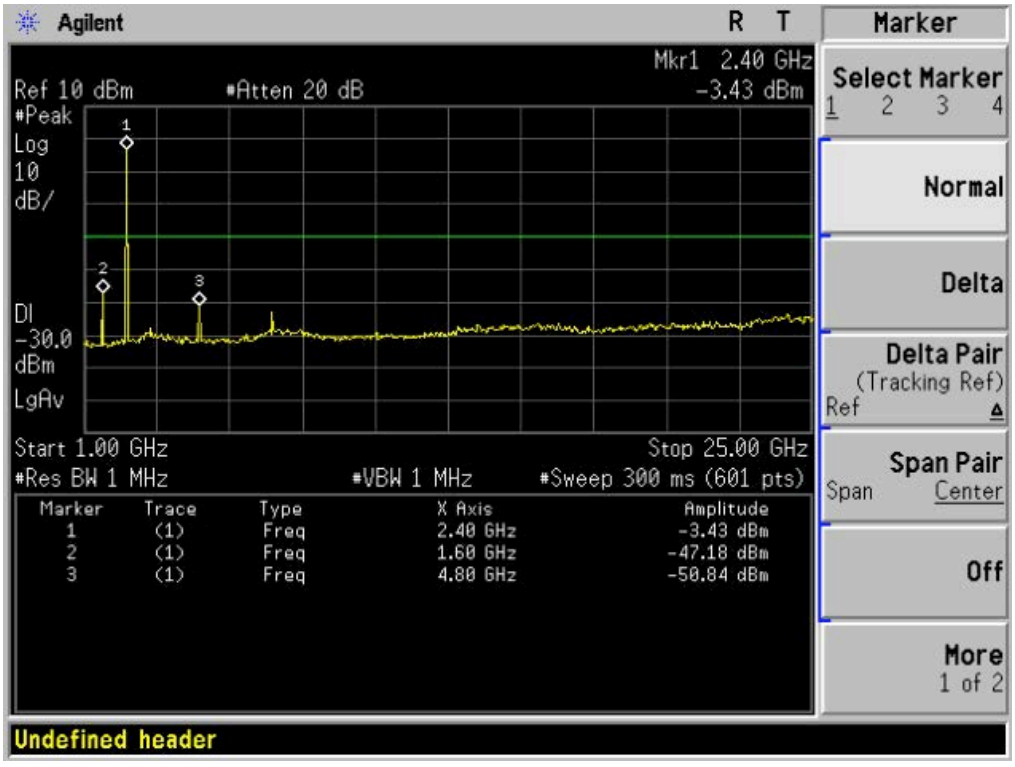
The Same as described in section 5.3

8.4 LIMITS AND MEASUREMENT RESULT

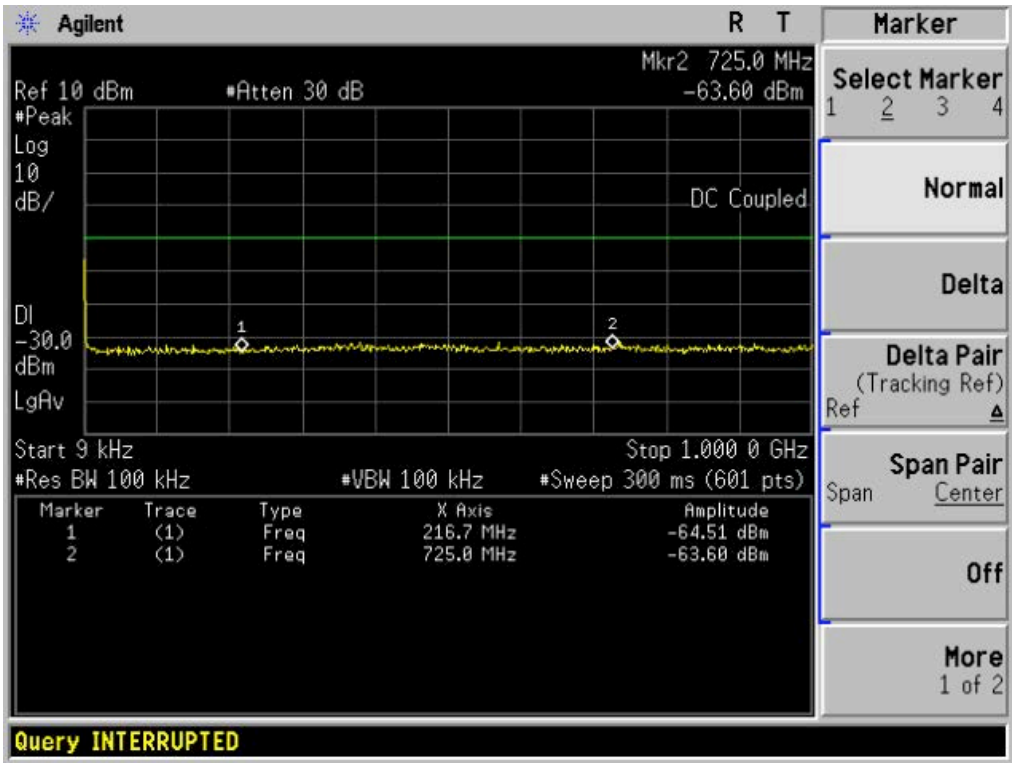
LIMITS AND MEASUREMENT RESULT		
Applicable Limits	Measurement Result	
	Test Data	Criteria
In any 100 KHz Bandwidth Outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produce by the intentional radiator shall be at least 20 dB below that in 100KHz bandwidth within the band that contains the highest level of the desired power.	At least -20dBc than the limit Specified on the BOTTOM Channel	PASS
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 TOP Channel	PASS

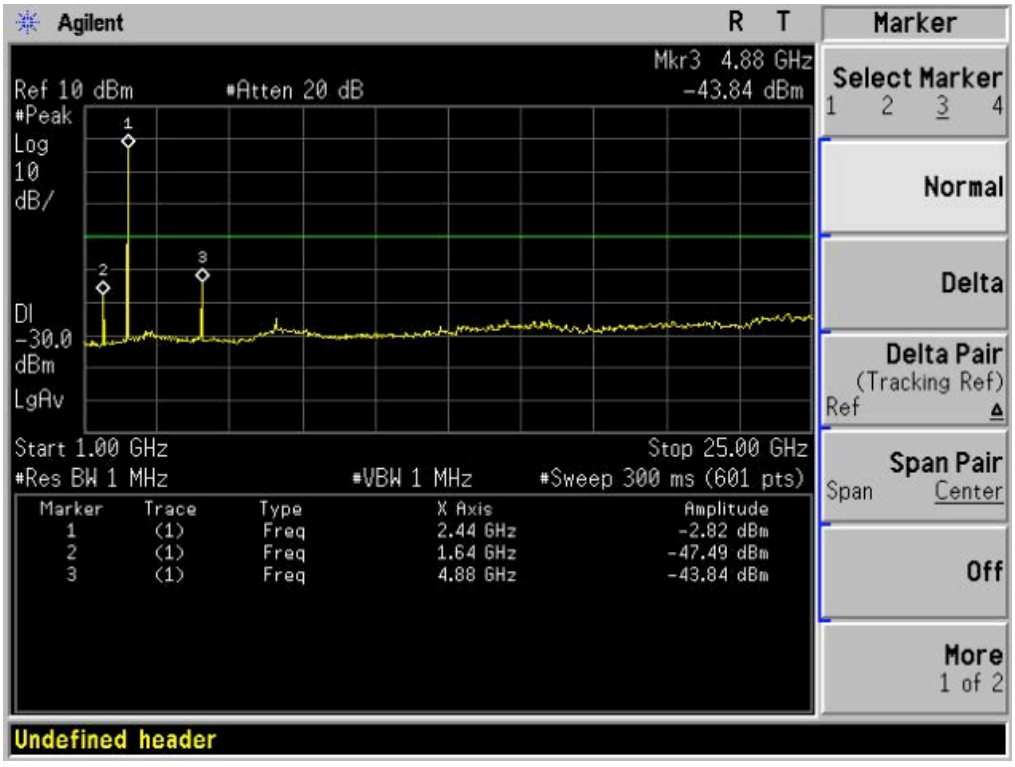
TEST PLOT OF OUT OF BAND EMISSIONS FOR LOW CHANNEL(1MBPS)



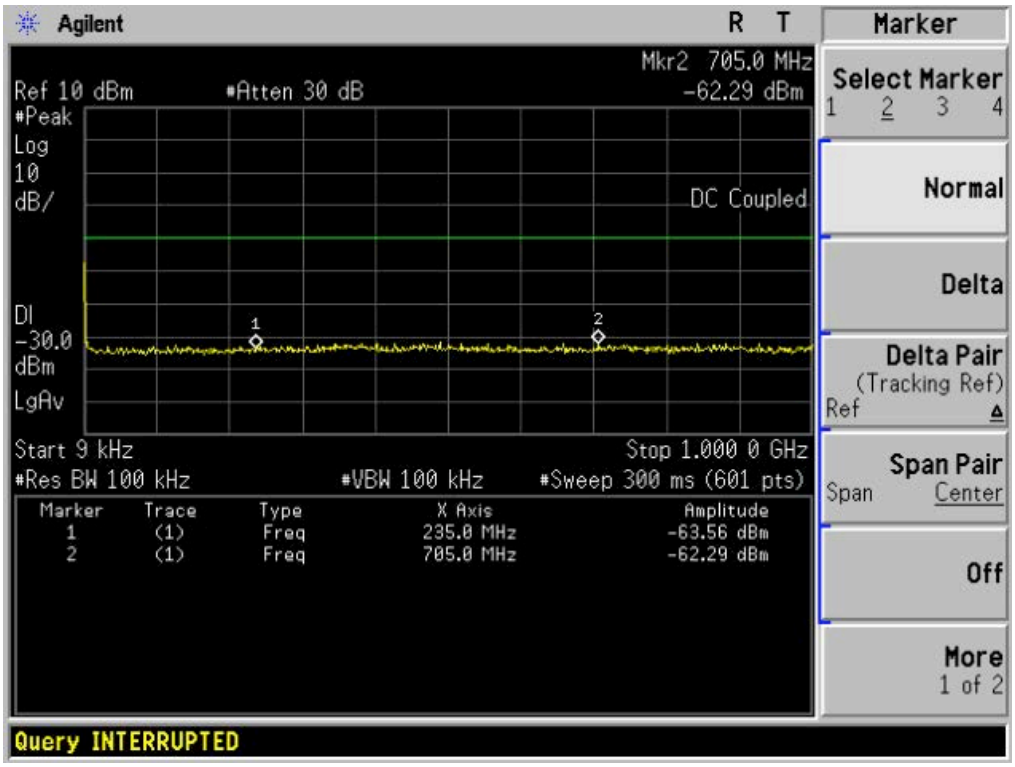


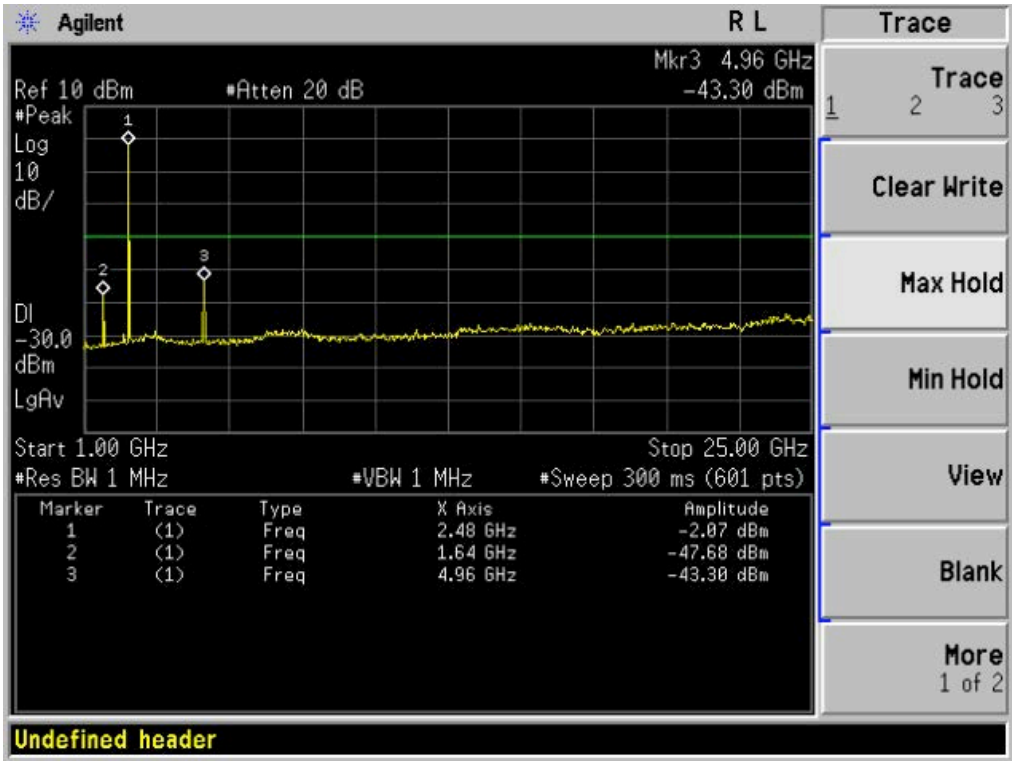
TEST PLOT OF OUT OF BAND EMISSIONS FOR MIDDLE CHANNEL (1MBPS)



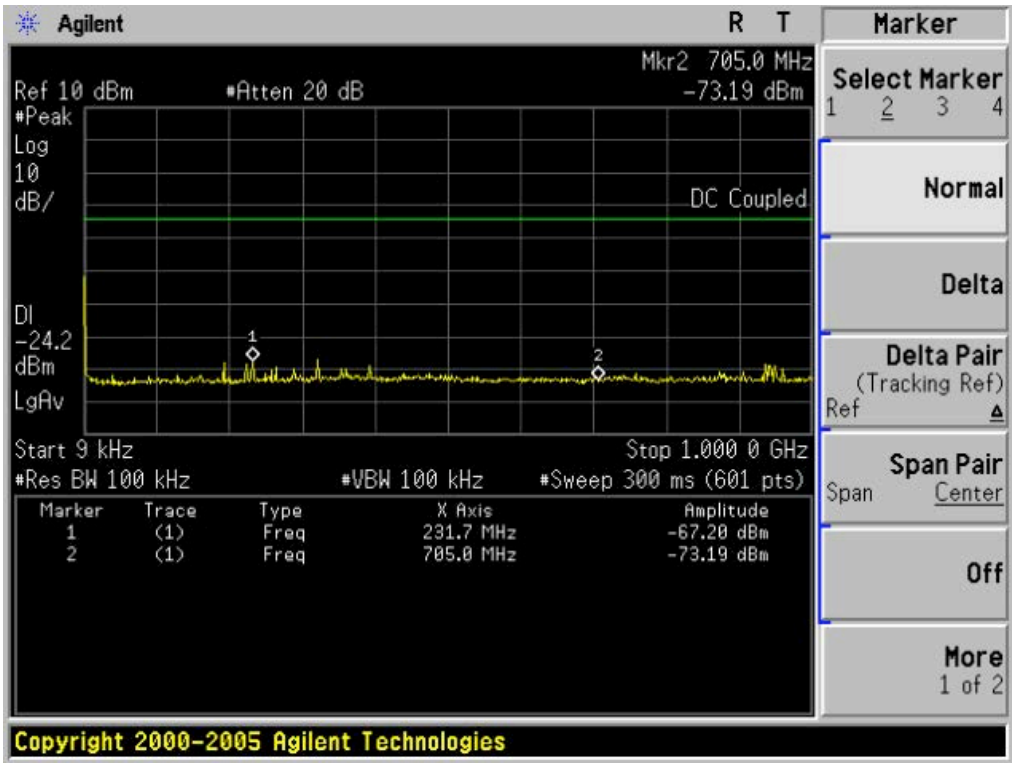


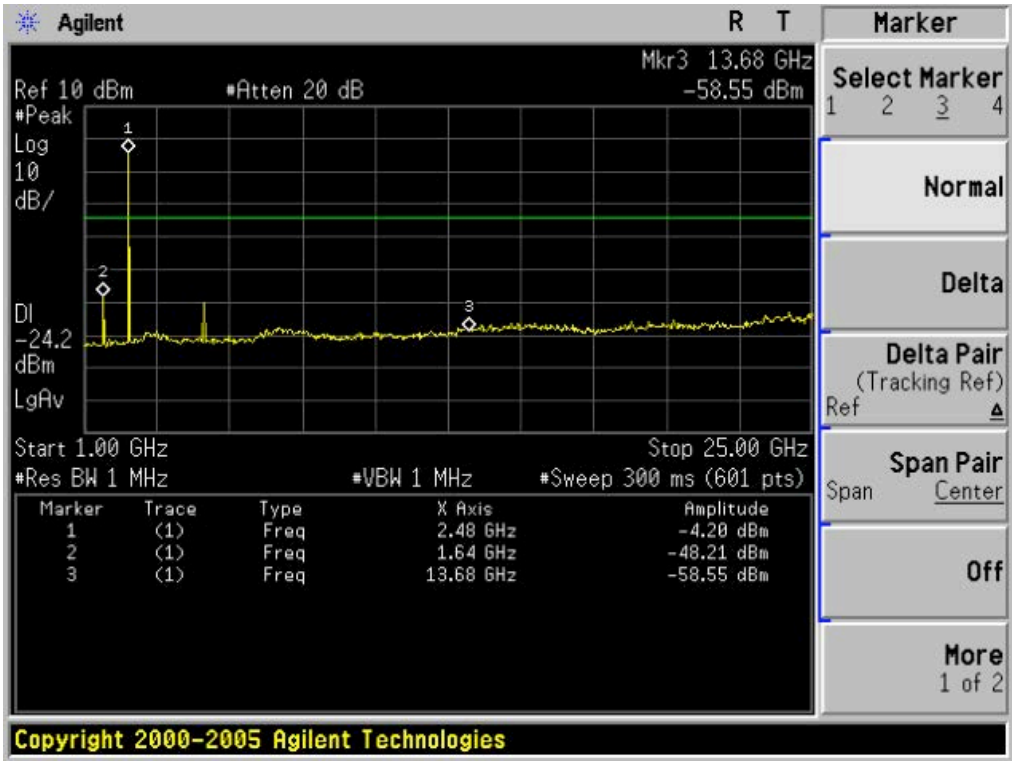
TEST PLOT OF OUT OF BAND EMISSIONS FOR HIGH CHANNEL(1MBPS)



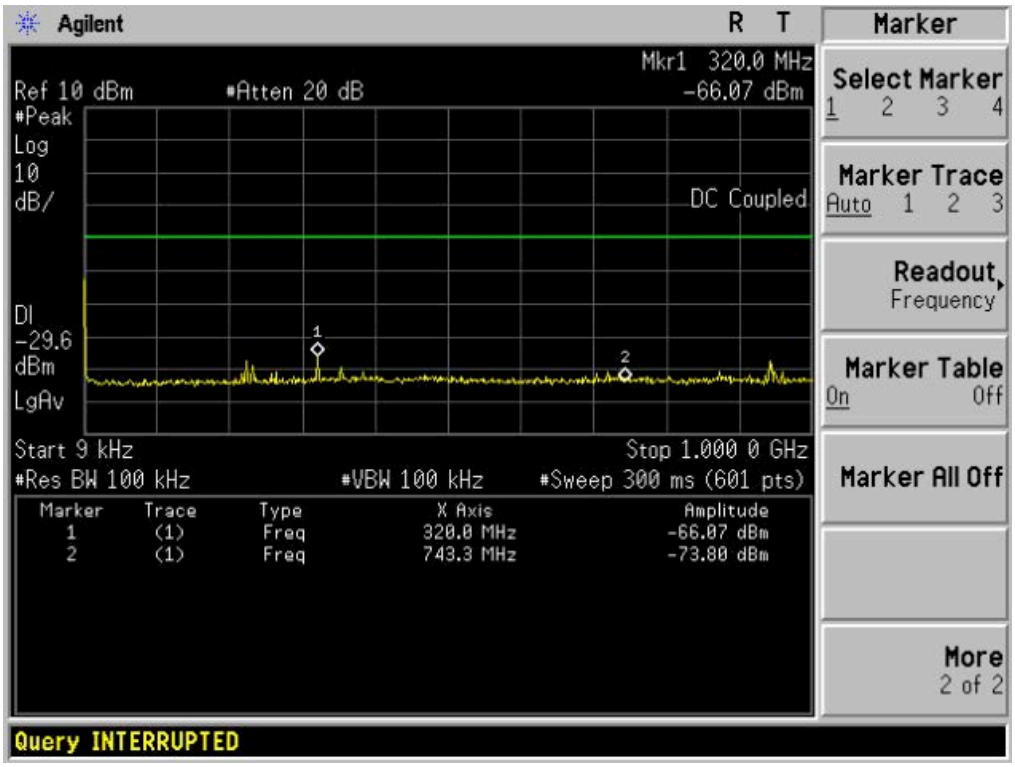


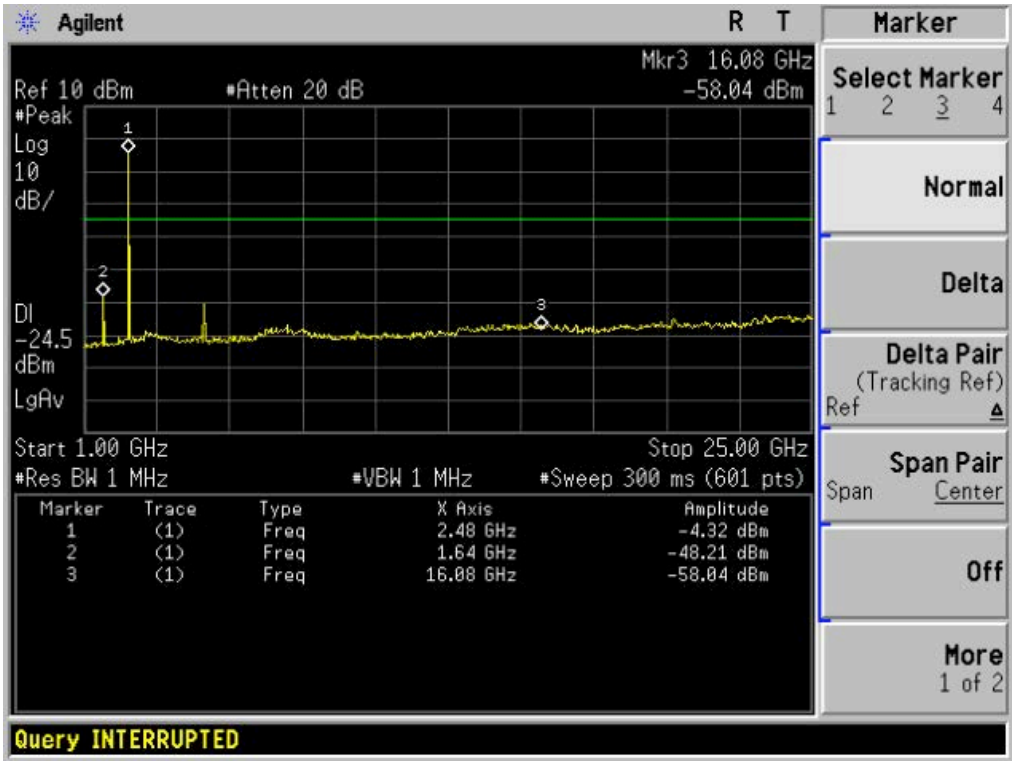
TEST PLOT OF OUT OF BAND EMISSIONS FOR HIGH CHANNEL(2Mbps)





TEST PLOT OF OUT OF BAND EMISSIONS FOR HIGH CHANNEL(3Mbps)





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 value.
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.

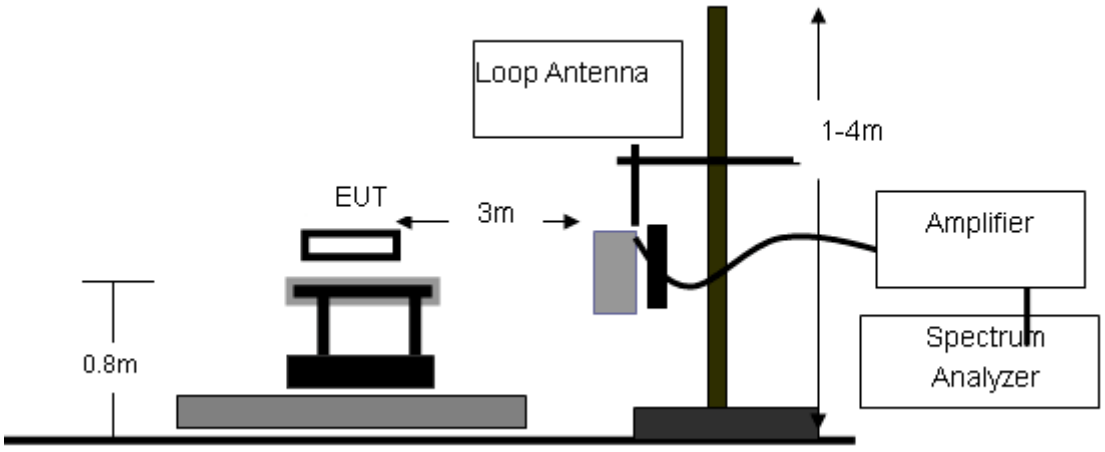
The following table is the setting of spectrum analyzer and receiver.'

Spectrum Parameter	Setting
Start Frequency	1GHz
Stop Frequency	26.5GHz
RB/VB(Emission in restricted band)	1MHz/1MHz for Peark, 1MHz/10Hz for Average
RB/VB(Emission in non-restricted band)	1MHz/1MHz for Peak

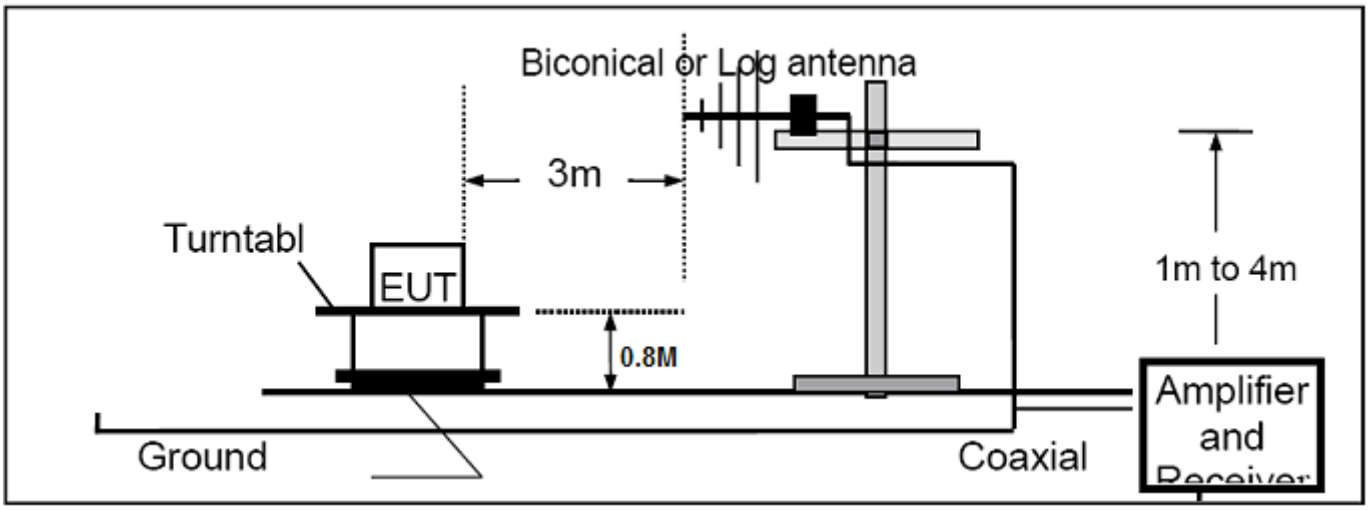
Receiver Parameter	Setting
Start ~Stop Frequency	9KHz~150KHz/RB 200Hz for QP
Start ~Stop Frequency	150KHz~30MHz/RB 9KHz for QP
Start ~Stop Frequency	30MHz~1000MHz/RB 100KHz for QP

9.2 TEST SETUP

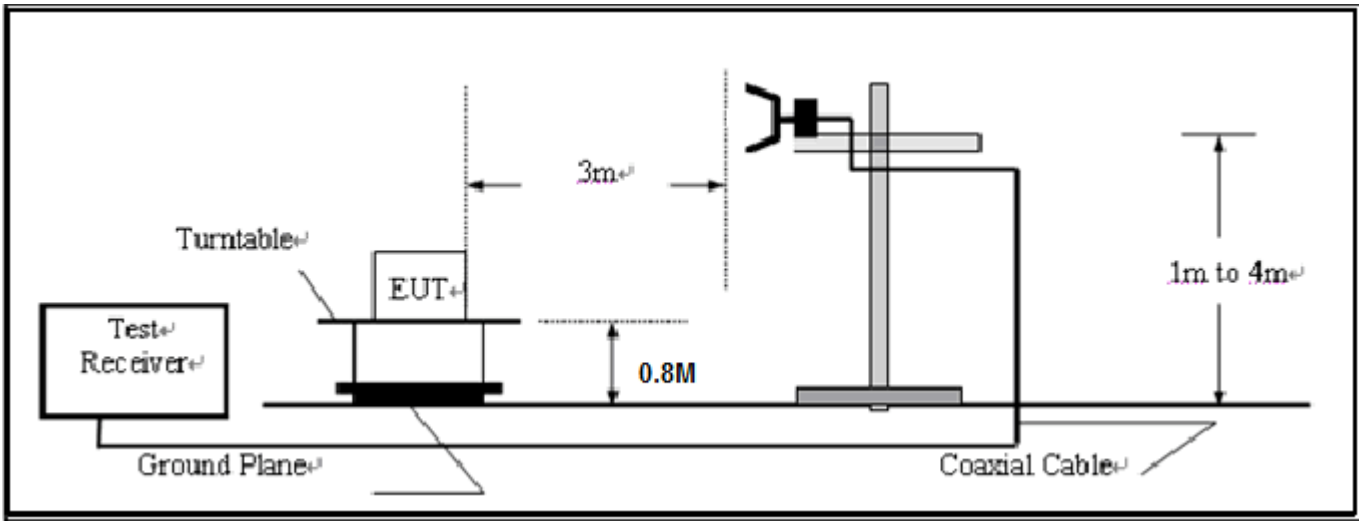
RADIATED MISSION TEST SETUP BELOW 30MHz



RADIATED MISSION TEST SETUP 30MHz-1000MHz



RADIATED MISSION TEST SETUP ABOVE 1000MHz



9.2 TEST EQUIMENT LIST

Description	Manufacturer	Model	SERIAL NUMBER	Cal. Date	Cal. Due
Spectrum Analyzer	Agilent	E4440A	N/A	06/29/2010	06/28/2011
Amplifier	EM	EM30180	0607030	06/29/2010	06/28/2011
Horn Antenna	EM	EM-AH-10180	N/A	06/29/2010	06/28/2011
Horn Antenna	A.H. Systems Inc.	SAS-574	--	06/29/2010	06/28/2011
EMI Test Receiver	Rohde & Schwarz	ESCI	N/A	06/29/2010	06/28/2011
Amplifier	EM	EM30180	N/A	06/29/2010	06/28/2011
Bilogical Antenna	A.H. Systems Inc.	SAS-521-4	N/A	06/29/2010	06/28/2011
Loop Antenna	Daze	ZN30900N	SEL0097	06/29/2010	06/28/2011
Isolation Transformer	LETEAC	LTBK	--	06/29/2010	06/28/2011

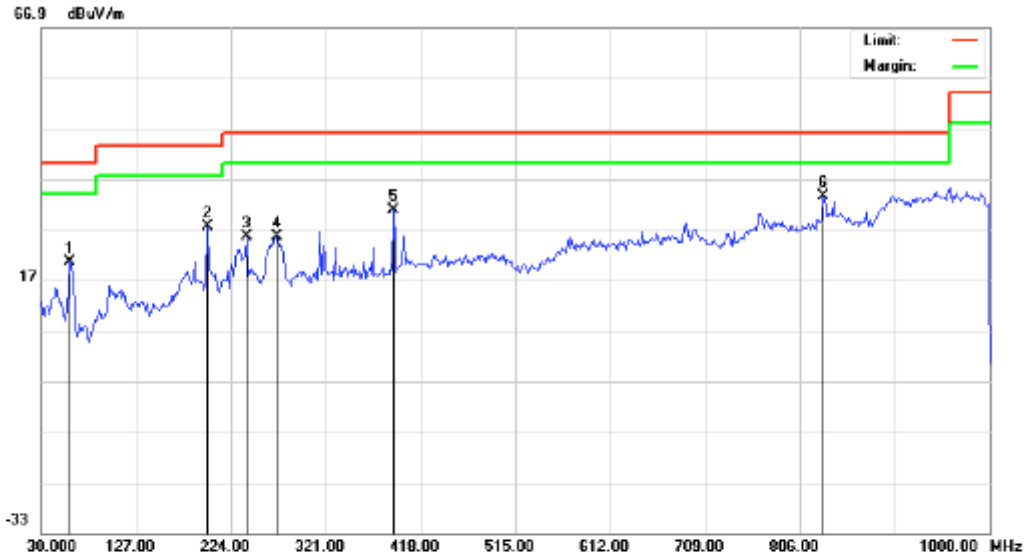
9.3 TEST RESULT

RADIATED EMISSION BELOW 30MHZ

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

RADIATED EMISSION BELOW 1GHZ

EUT	Bluetooth Headset	Model Name	D10
Temperature	25° C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	DC3.7V
Test Mode	Normal(hopping mode)		

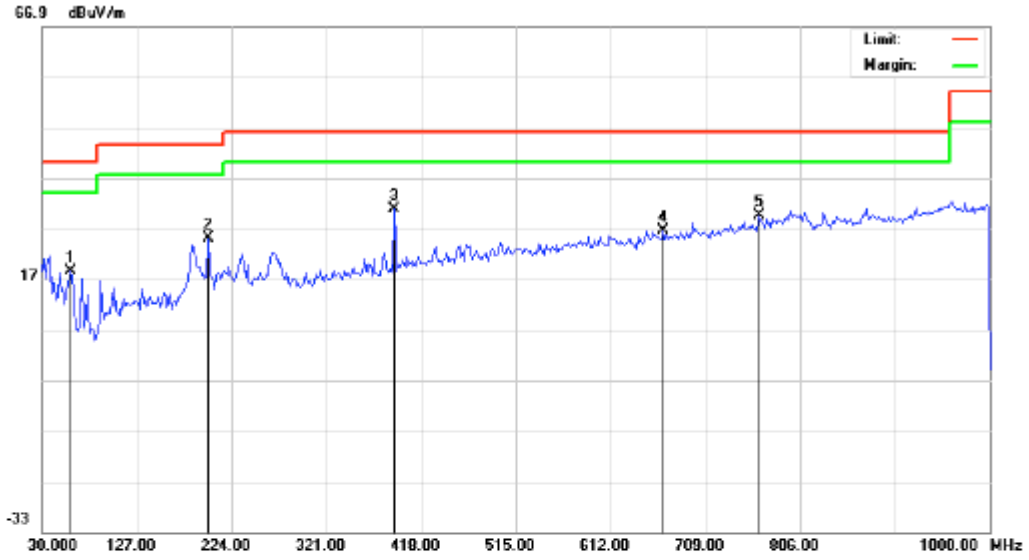


Site: site #1
Limit: FCC Class B 3M Radiation
EUT: Bluetooth Headset
M/N: D10
Mode:Normal(hopping)
Note:

Polarization: *Horizontal*
Power
Distance: 3m

Temperature: 26
Humidity: 60 %

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		59.1000	1.71	18.84	20.55	40.00	-19.45	peak			
2		199.7500	15.27	12.23	27.50	43.50	-16.00	peak			
3		240.1667	8.19	17.23	25.42	46.00	-20.58	peak			
4		270.8833	8.33	17.22	25.55	46.00	-20.45	peak			
5		390.5167	10.80	20.08	30.88	46.00	-15.12	peak			
6	*	830.2500	3.82	29.75	33.57	46.00	-12.43	peak			



Site: site #1
Limit: FCC Class B 3M Radiation
EUT: Bluetooth Headset
M/N: D10
Mode:Normal(Hopping)
Note:

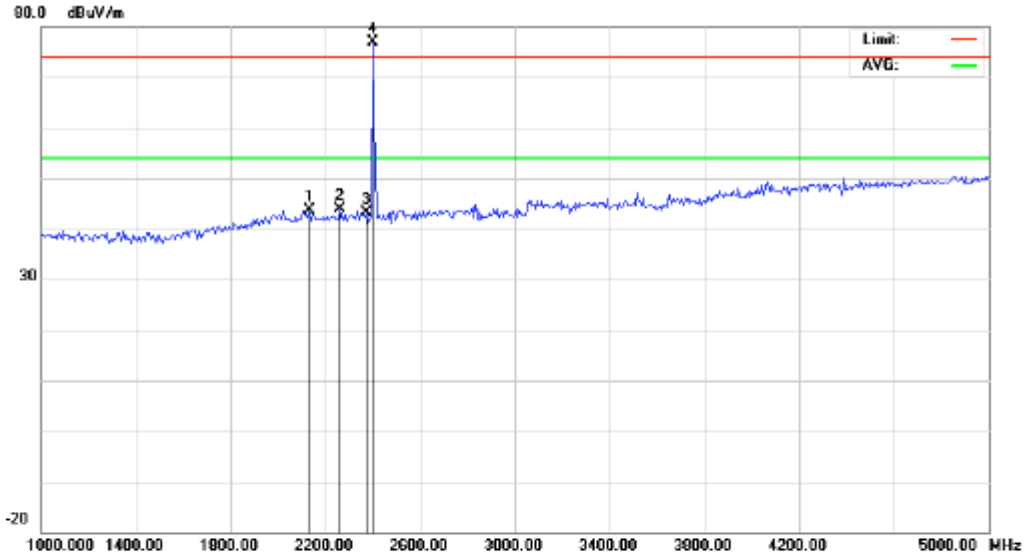
Polarization: *Vertical*
Power:
Distance: 3m

Temperature: 26
Humidity: 60 %

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		59.1000	-0.50	19.08	18.58	40.00	-21.42	peak			
2		199.7500	9.91	15.23	25.14	43.50	-18.36	peak			
3	*	390.5167	10.70	20.08	30.78	46.00	-15.22	peak			
4		665.3500	0.59	25.82	26.41	46.00	-19.59	peak			
5		763.9667	1.92	27.67	29.59	46.00	-16.41	peak			

RADIATED EMISSION ABOVE 1GHZ(1-10th Harmonics)

EUT	Bluetooth Headset	Model Name	D10
Temperature	25° C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	DC3.7V
Test Mode	BT2402MHZ	Modulation	8-DPSK

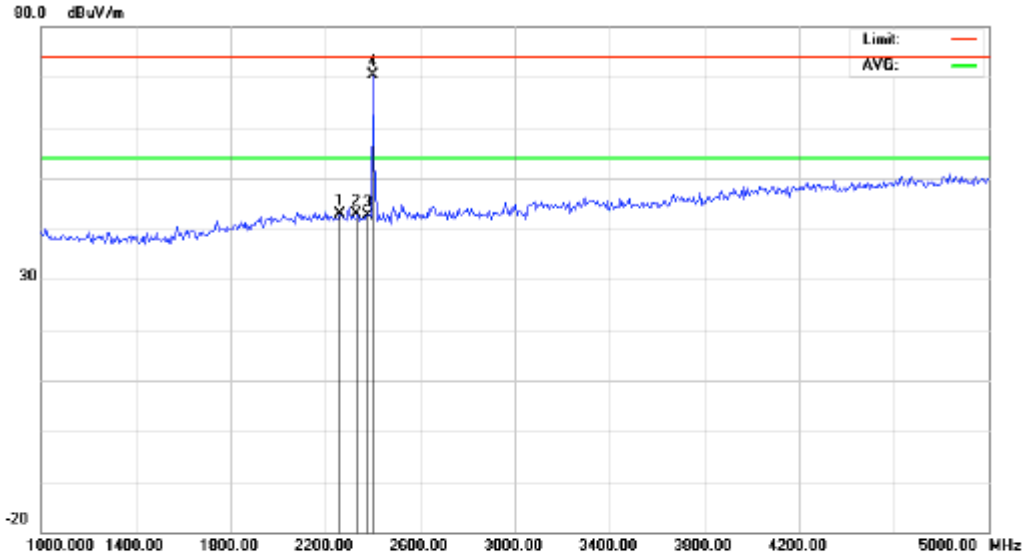


Site: site #1
Limit: FCC Class B 3M Radiation above 1GHZ(PK)
EUT: Bluetooth Headset
M/N: D10
Mode: 2402TX
Note:

Polarization: *Horizontal*
Power:
Distance: 3m

Temperature: 26
Humidity: 60 %

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		2133.333	53.53	-9.97	43.56	74.00	-30.44	peak			
2		2260.000	53.66	-9.83	43.83	74.00	-30.17	peak			
3		2373.333	52.85	-9.71	43.14	74.00	-30.86	peak			
4	*	2400.000	86.51	-9.68	76.83	74.00	2.83	peak			



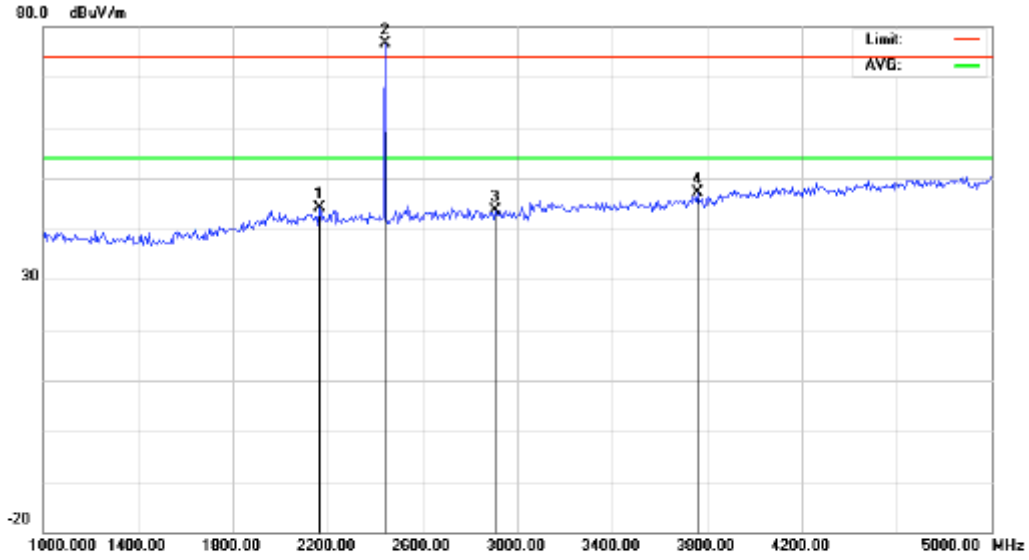
Site: site #1
Limit: FCC Class B 3M Radiation above 1GHZ(PK)
EUT: Bluetooth Headset
M/N: D10
Mode: 2402-TX
Note:

Polarization: *Vertical*
Power:
Distance: 3m

Temperature: 26
Humidity: 60 %

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		2260.000	52.65	-9.83	42.82	74.00	-31.18	peak			
2		2333.333	52.62	-9.75	42.87	74.00	-31.13	peak			
3		2380.000	52.42	-9.70	42.72	74.00	-31.28	peak			
4	*	2400.000	80.11	-9.68	70.43	74.00	-3.57	peak			

EUT	Bluetooth Headset	Model Name	D10
Temperature	25° C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	DC3.7V
Test Mode	BT2441MHZ	Modulation	8-DPSK

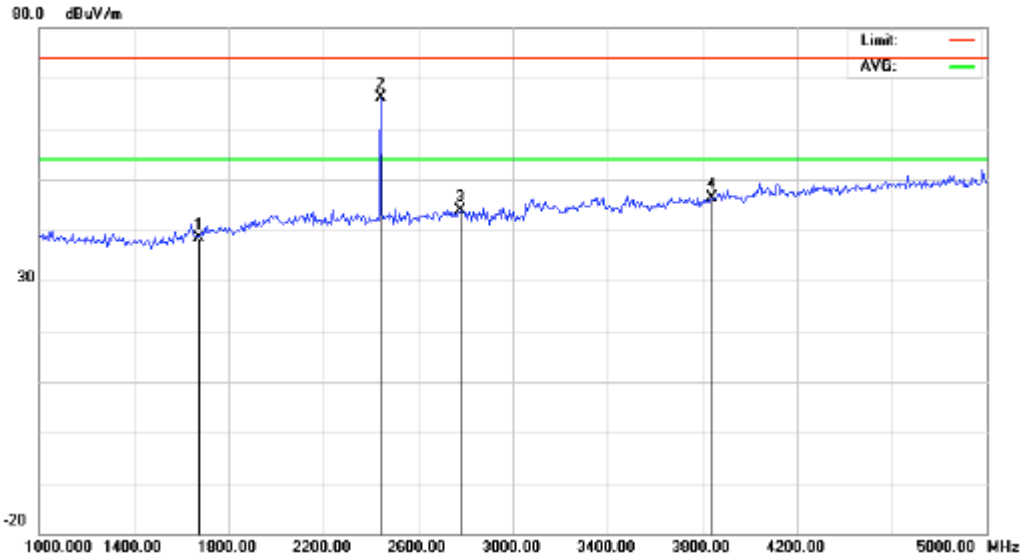


Site: site #1
Limit: FCC Class B 3M Radiation above 1GHZ(PK)
EUT: Bluetooth Headset
M/N: D10
Mode: 2441TX
Note:

Polarization: *Horizontal*
Power:
Distance: 3m

Temperature: 26
Humidity: 60 %

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		2166.667	54.05	-9.94	44.11	74.00	-29.89	peak			
2	*	2440.000	86.17	-9.64	76.53	74.00	2.53	peak			
3		2906.667	52.11	-8.59	43.52	74.00	-30.48	peak			
4		3760.000	53.33	-6.29	47.04	74.00	-26.96	peak			



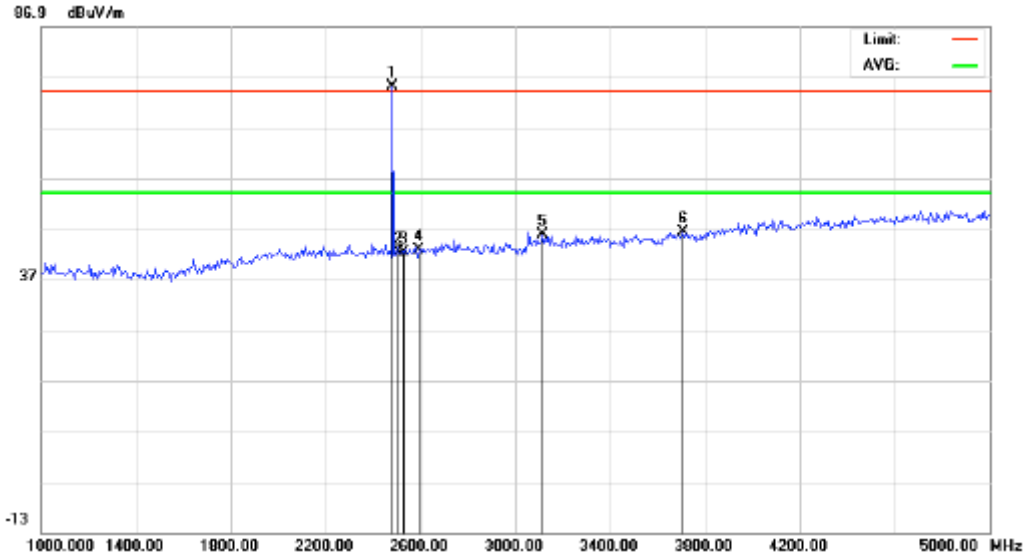
Site: site #1
Limit: FCC Class B 3M Radiation above 1GHZ(PK)
EUT: Bluetooth Headset
M/N: D10
Mode: 2441TX
Note:

Polarization: *Vertical*
Power
Distance: 3m

Temperature: 26
Humidity: 60 %

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		1673.333	52.06	-13.56	38.50	74.00	-35.50	peak			
2	*	2440.000	75.68	-9.64	66.04	74.00	-7.96	peak			
3		2780.000	52.79	-8.89	43.90	74.00	-30.10	peak			
4		3840.000	52.15	-5.80	46.35	74.00	-27.65	peak			

EUT	Bluetooth Headset	Model Name	D10
Temperature	25° C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	DC3.7V
Test Mode	BT2480MHZ	Modulation	8-DPSK

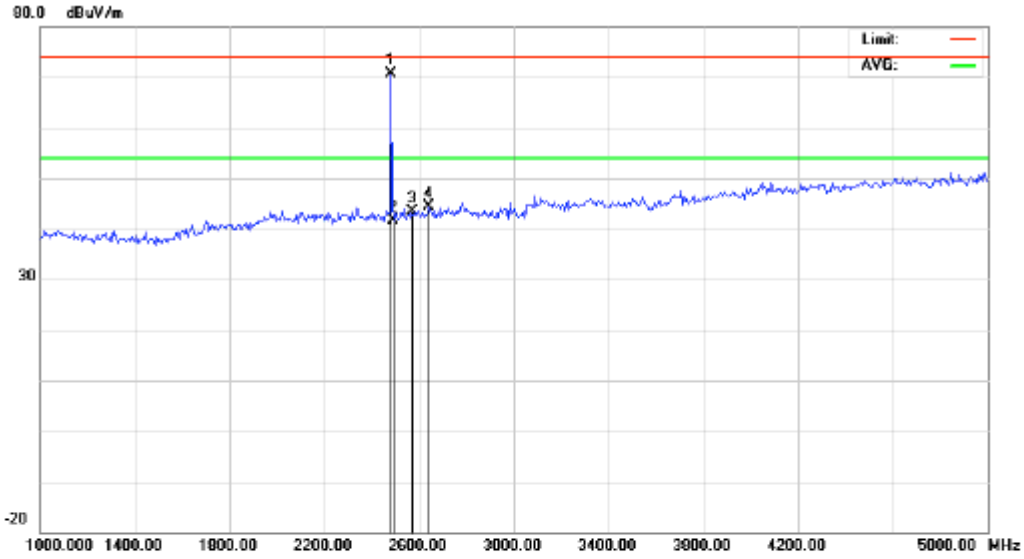


Site: site #1
Limit: FCC Class B 3M Radiation above 1GHZ(PK)
EUT: Bluetooth Headset
M/N: D10
Mode: 2480TX
Note:

Polarization: *Horizontal*
Power
Distance: 3m

Temperature: 26
Humidity: 60 %

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	*	2480.000	84.66	-9.59	75.07	74.00	1.07	peak			
2		2506.667	51.90	-9.55	42.35	74.00	-31.65	peak			
3		2526.667	51.74	-9.51	42.23	74.00	-31.77	peak			
4		2593.333	52.06	-9.34	42.72	74.00	-31.28	peak			
5		3113.333	54.13	-8.25	45.88	74.00	-28.12	peak			
6		3706.667	52.99	-6.62	46.37	74.00	-27.63	peak			



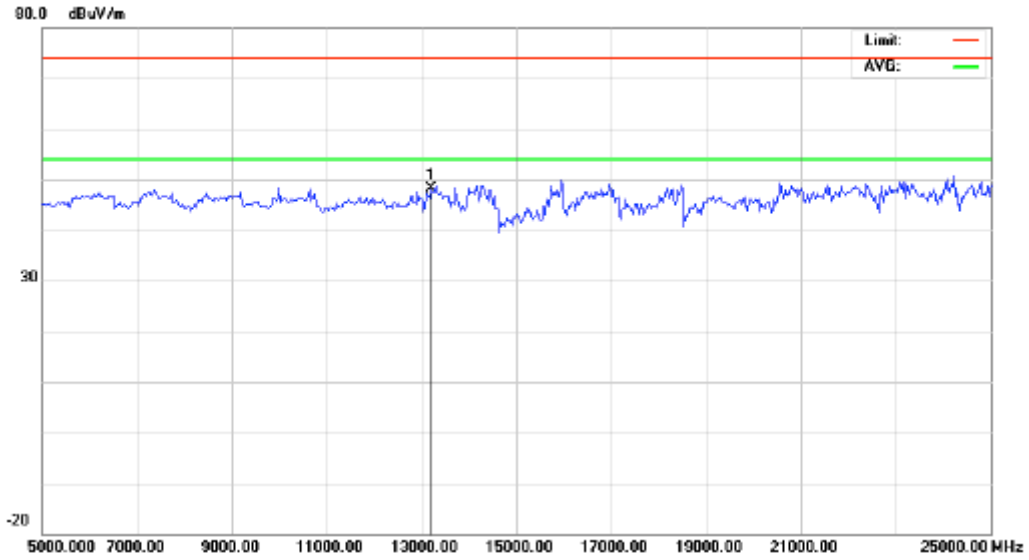
Site: site #1
Limit: FCC Class B 3M Radiation above 1GHZ(PK)
EUT: Bluetooth Headset
M/N: D10
Mode: 2480TX
Note:

Polarization: *Vertical*
Power:
Distance: 3m

Temperature: 26
Humidity: 60 %

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	*	2480.000	80.34	-9.59	70.75	74.00	-3.25	peak			
2		2493.333	51.31	-9.58	41.73	74.00	-32.27	peak			
3		2573.333	52.75	-9.39	43.36	74.00	-30.64	peak			
4		2640.000	53.58	-9.23	44.35	74.00	-29.65	peak			

EUT	Bluetooth Headset	Model Name	D10
Temperature	25° C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	DC3.7V
Test Mode	BT2441MHZ	Modulation	8-DPSK

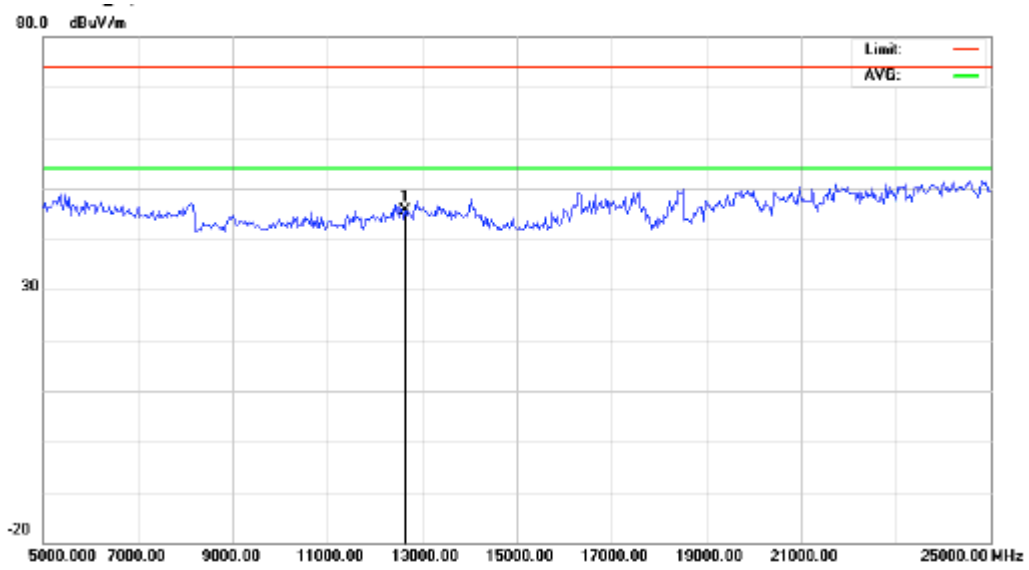


Site: site #1
Limit: FCC Class B 3M Radiation above 1GHZ(PK)
EUT: Bluetooth Headset
M/N: D10
Mode: 2441TX
Note:

Polarization: *Horizontal*
Power:
Distance: 3m

Temperature: 26
Humidity: 60 %

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	*	13200.000	41.22	7.02	48.24	74.00	-25.76	peak			



Site: site #1
Limit: FCC Class B 3M Radiation above 1GHZ(PK)
EUT: Bluetooth Headset
M/N: D10
Mode: 2441TX
Note:

Polarization: *Vertical*
Power:
Distance: 3m

Temperature: 26
Humidity: 60 %

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	*	12833.333	38.71	7.01	45.72	74.00	-28.28	peak			

Note: Factor=Antenna Factor+Cable loss-Amplifier gain,Margin=Measurement-Limit.
Above is 3mbps mode and other modes at least have 20dB margin.

10 BAND EDGE EMISSION

10.1 MEASUREMENT PROCEDURE

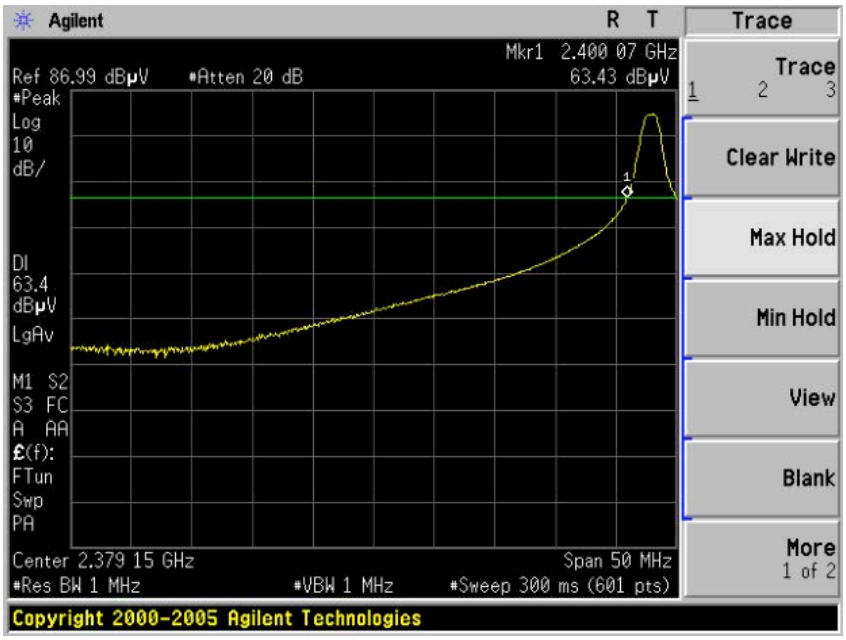
1, Set the EUT Work on the top, the bottom operation frequency individually.
2. Set SPA Start or Stop Frequency = Operation Frequency, RBW= 100kHz, VBW= 1MHz.
3. The band edges was measured and recorded.
4. Radiated test procedure same as 9.1

10.2 TEST SET-UP

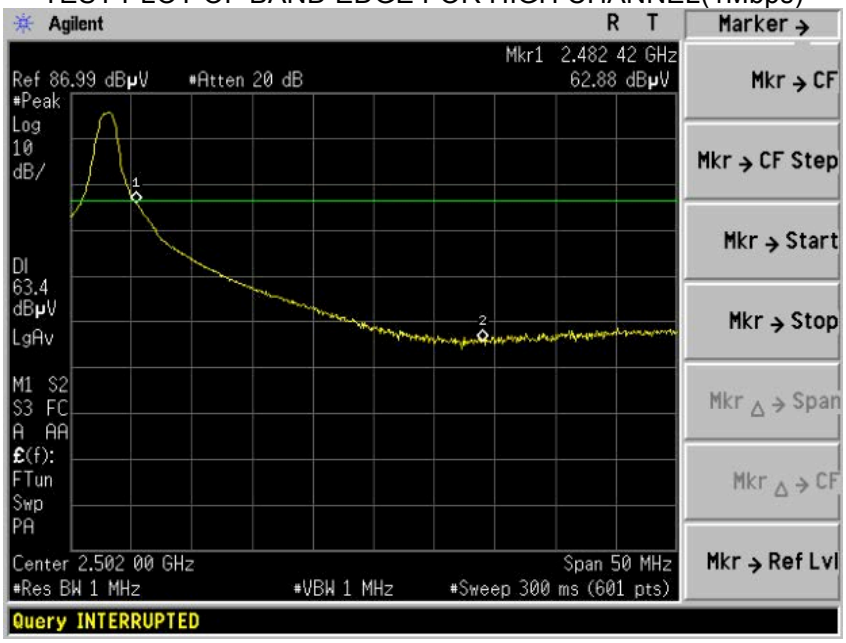
The Same as described in section 5.2&9.2

10.3 TEST RESULT

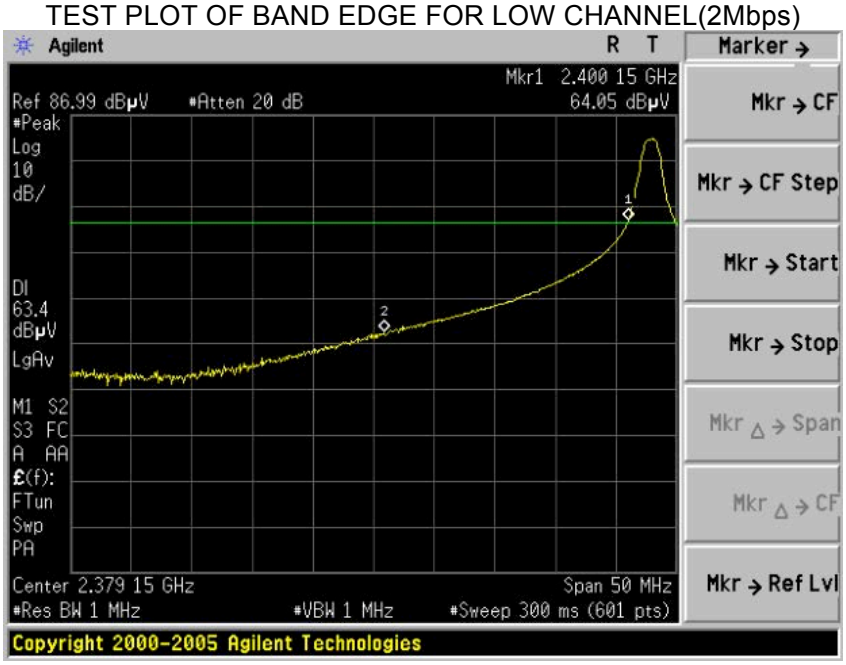
CONDUCTED TEST RESULT
TEST PLOT OF BAND EDGE FOR LOW CHANNEL(1Mbps)



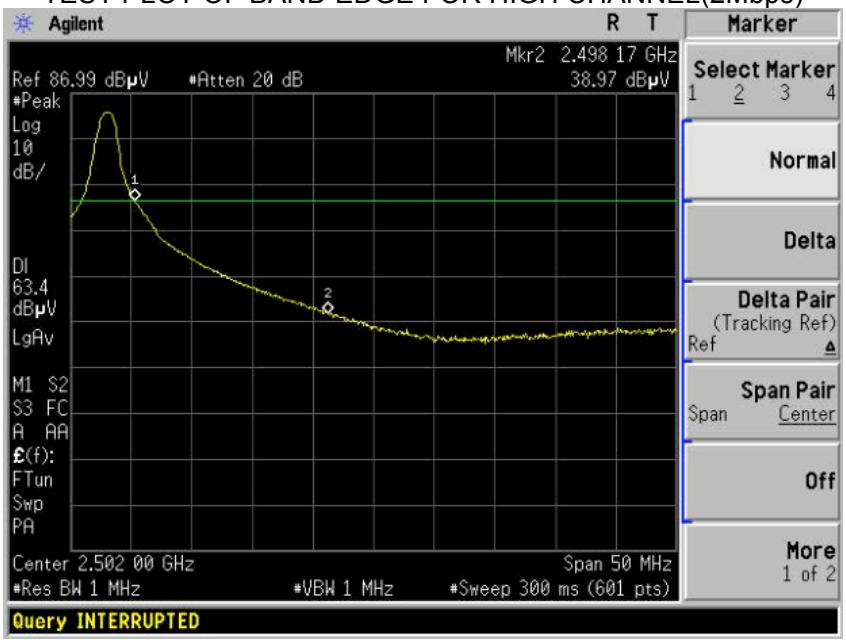
TEST PLOT OF BAND EDGE FOR HIGH CHANNEL(1Mbps)



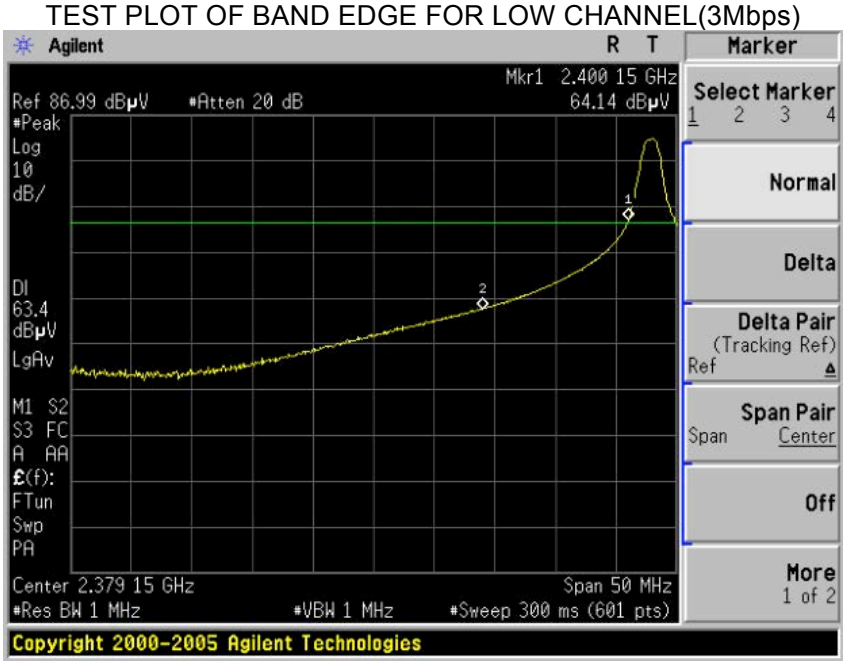
TEST PLOT OF BAND EDGE FOR LOW CHANNEL(2Mbps)



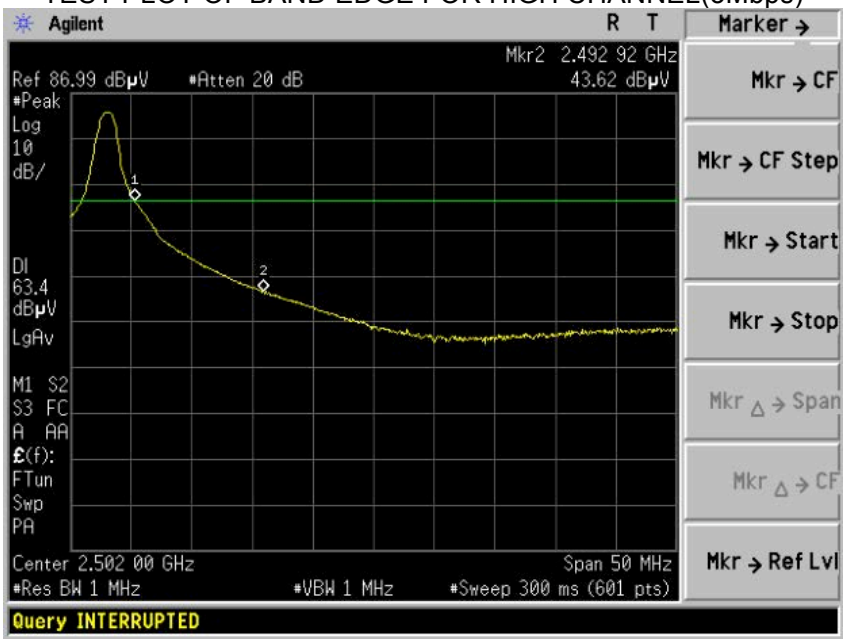
TEST PLOT OF BAND EDGE FOR HIGH CHANNEL(2Mbps)



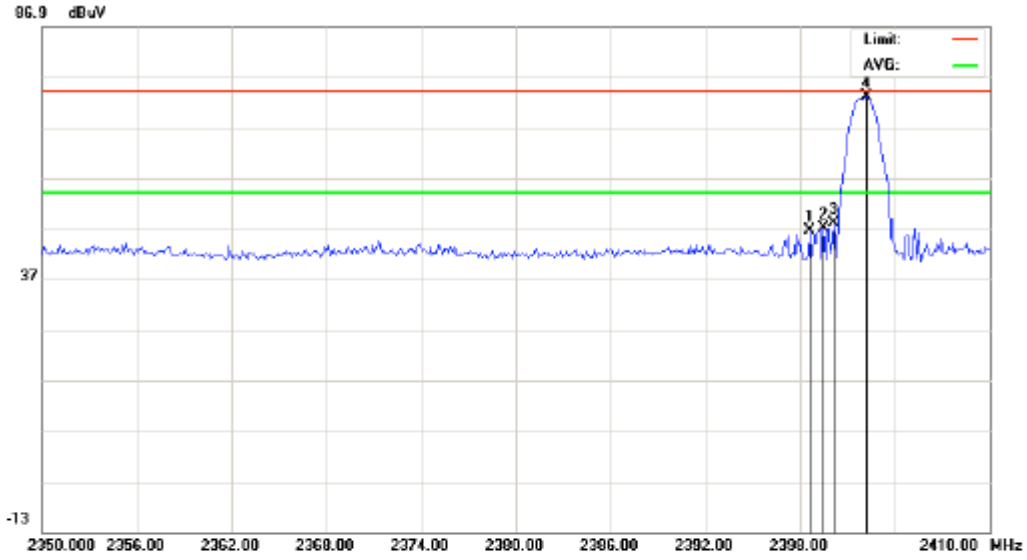
TEST PLOT OF BAND EDGE FOR LOW CHANNEL(3Mbps)



TEST PLOT OF BAND EDGE FOR HIGH CHANNEL(3Mbps)



RADIATED TEST RESULT

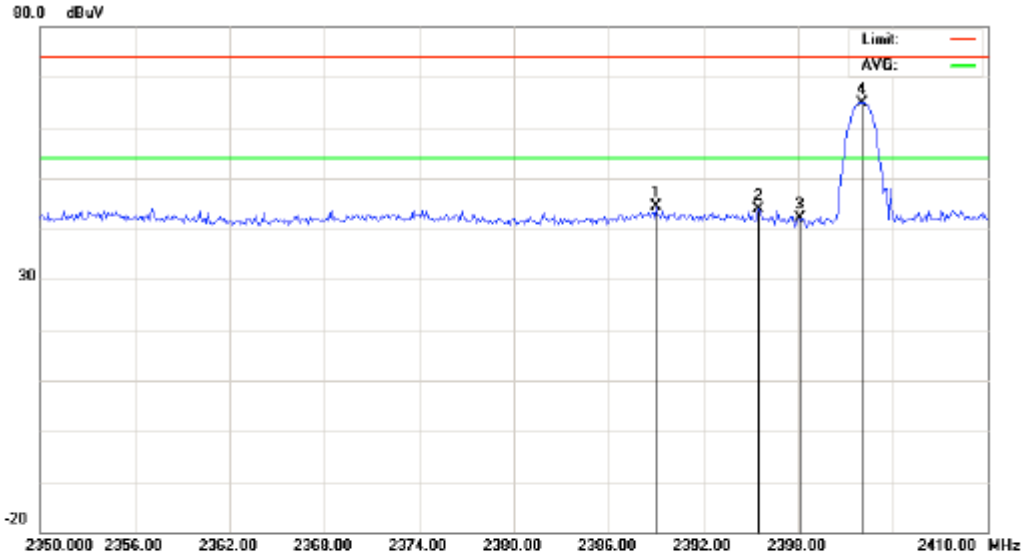


Site: site #1
Limit: FCC Class B 3M Radiation above 1GHZ(PK)
EUT: Bluetooth Headset
M/N: D10
Mode:2402TX
Note:

Polarization: *Horizontal*
Power:
Distance: 3m

Temperature: 26
Humidity: 60 %

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB	dBuV	dBuV	dB		cm	degree	
1		2398.600	56.33	-9.68	46.65	74.00	-27.35	peak			
2		2399.500	56.81	-9.68	47.13	74.00	-26.87	peak			
3		2400.100	57.73	-9.68	48.05	74.00	-25.95	peak			
4	*	2402.200	82.69	-9.68	73.01	74.00	-0.99	peak			

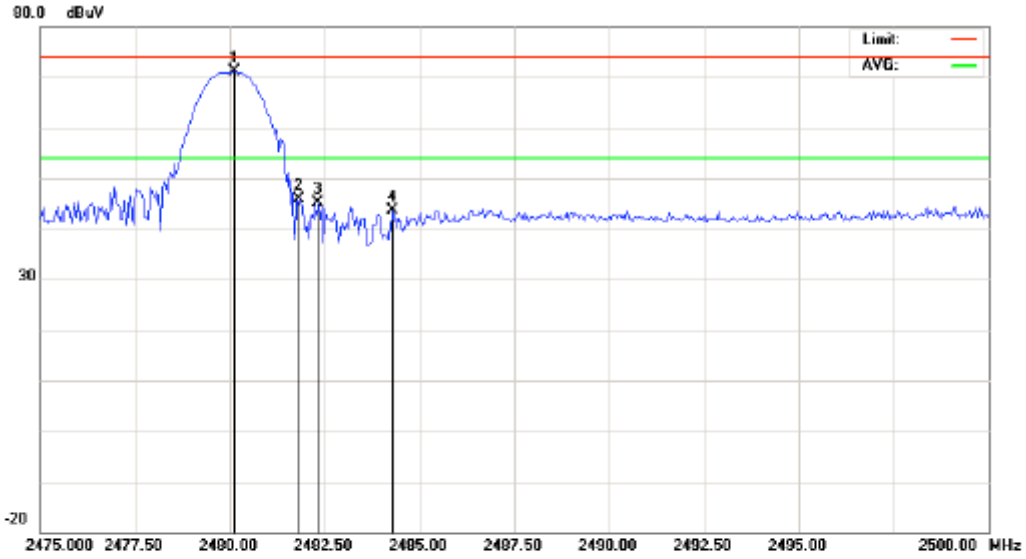


Site: site #1
Limit: FCC Class B 3M Radiation above 1GHZ(PK)
EUT: Bluetooth Headset
M/N: D10
Mode:2402 TX
Note:

Polarization: *Vertical*
Power:
Distance: 3m

Temperature: 26
Humidity: 60 %

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB	dBuV	dBuV	dB		cm	degree	
1		2389.000	54.13	-9.69	44.44	74.00	-29.56	peak			
2		2395.500	53.61	-9.68	43.93	74.00	-30.07	peak			
3		2398.100	51.85	-9.68	42.17	74.00	-31.83	peak			
4	*	2402.000	74.62	-9.68	64.94	74.00	-9.06	peak			

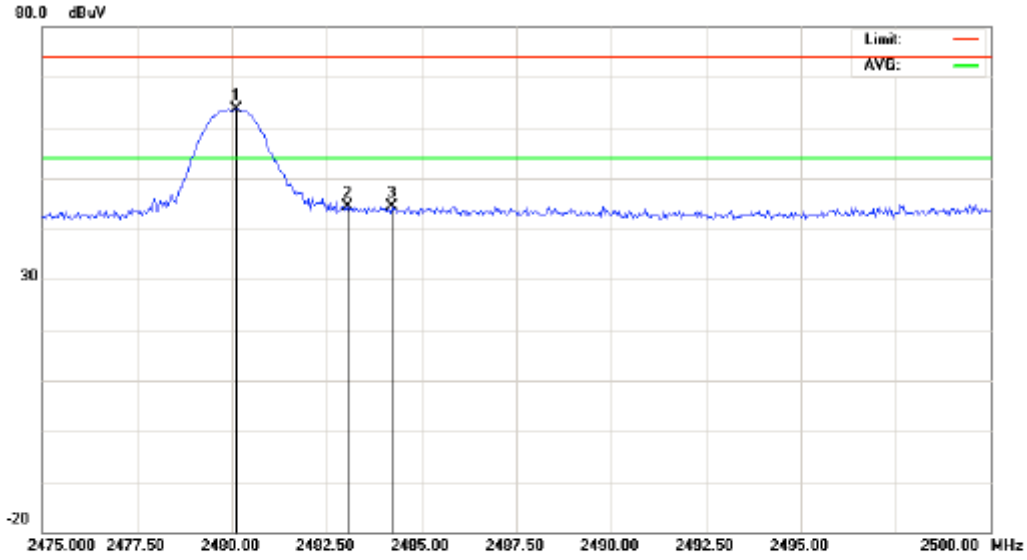


Site: site #1
Limit: FCC Class B 3M Radiation above 1GHZ(PK)
EUT: Bluetooth Headset
M/N: D10
Mode:2480TX
Note:

Polarization: *Horizontal*
Power:
Distance: 3m

Temperature: 26
Humidity: 60 %

No.	Mk.	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB	dBuV	dBuV	dB		cm	degree	
1	*	2480.125	80.63	-9.59	71.04	74.00	-2.96	peak			
2		2481.833	55.42	-9.59	45.83	74.00	-28.17	peak			
3		2482.333	54.79	-9.59	45.20	74.00	-28.80	peak			
4		2484.292	53.12	-9.59	43.53	74.00	-30.47	peak			



Site: site #1
Limit: FCC Class B 3M Radiation above 1GHZ(PK)
EUT: Bluetooth Headset
M/N: D10
Mode:2480TX
Note:

Polarization: *Vertical*
Power:
Distance: 3m

Temperature: 26
Humidity: 60 %

No.	Mk.	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB	dBuV	dBuV	dB		cm	degree	
1	*	2480.125	73.25	-9.59	63.66	74.00	-10.34	peak			
2		2483.042	54.05	-9.59	44.46	74.00	-29.54	peak			
3		2484.208	53.85	-9.59	44.26	74.00	-29.74	peak			

Note:Above is 3MBPS Test mode and other modes at least have 20dB margin.

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 = 100KHZ

11.2 TEST SETUP (BLOCK DIAGRAM OF CONFIGURATION)

Same as described in section 5.2
1. Conducted Method.

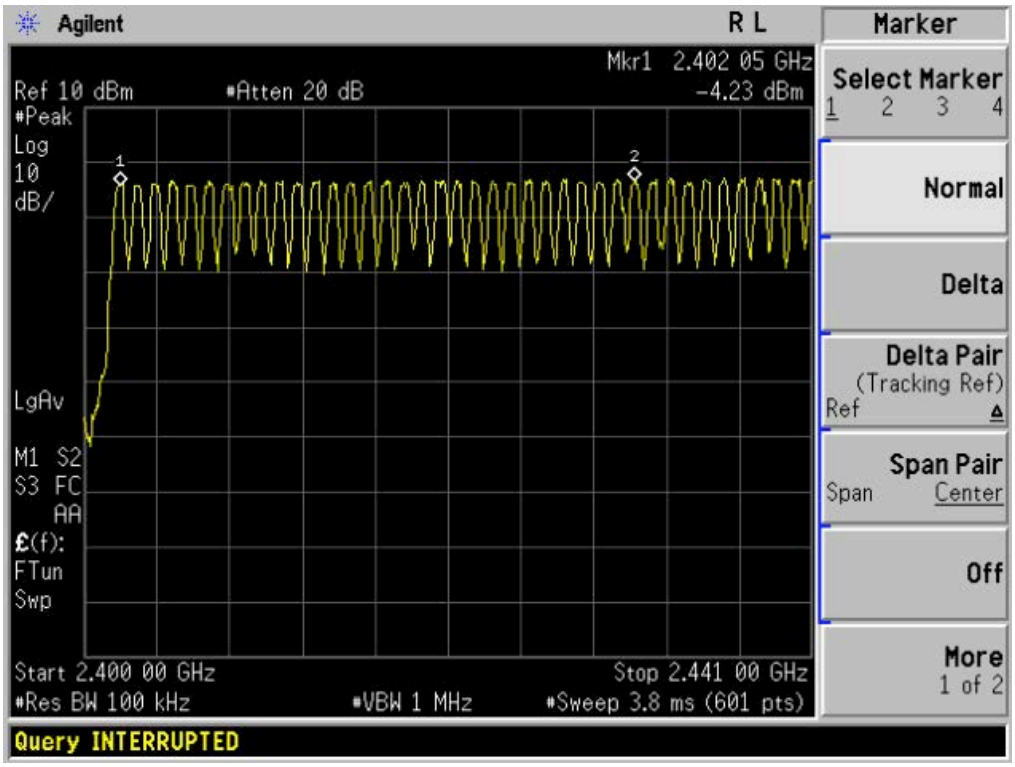
11.3 MEASUREMENT EQUIPMENT USED

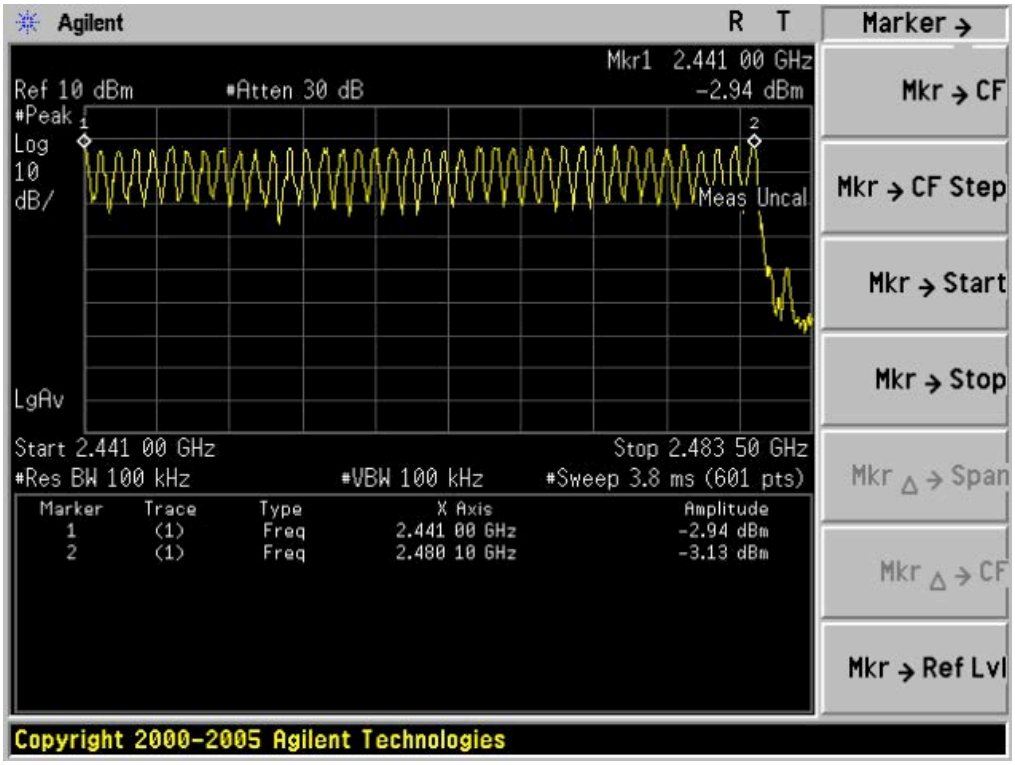
The Same as described in section 5.3

11.4 LIMITS AND MEASUREMENT RESULT

TOTAL NO. OF HOPPING CHANNEL	LIMIT (NO. OF CH)	MEASUREMENT (NO. OF CH)	RESULT
	>=15	79	PASS

TEST PLOT FOR NO. OF TOTAL CHANNELS





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 center frequency of spectrum analyzer = Operating frequency
4. Set the spectrum analyzer as RBW, VBW=1MHz, Span = 0 Hz,

12.2 TEST SETUP (BLOCK DIAGRAM OF CONFIGURATION)

Same as described in section 5.2

12.3 MEASUREMENT EQUIPMENT USED

The same as described in section 5.3

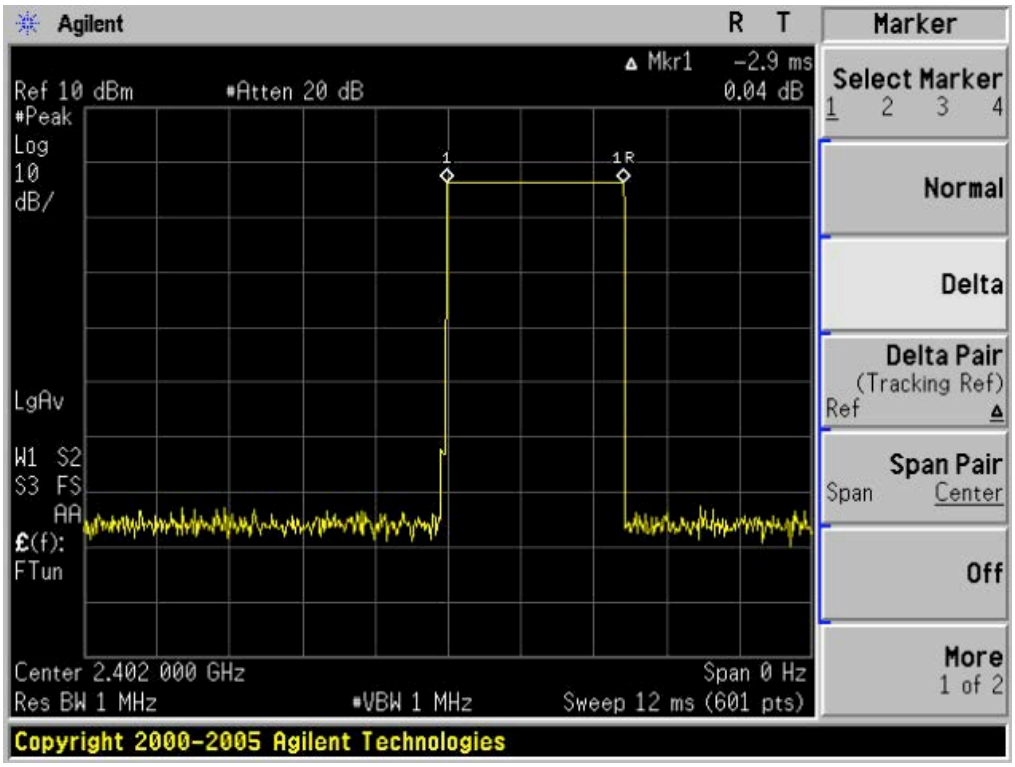
12.4 LIMITS AND MEASUREMENT RESULT

Bluetooth 1Mbps Test Result

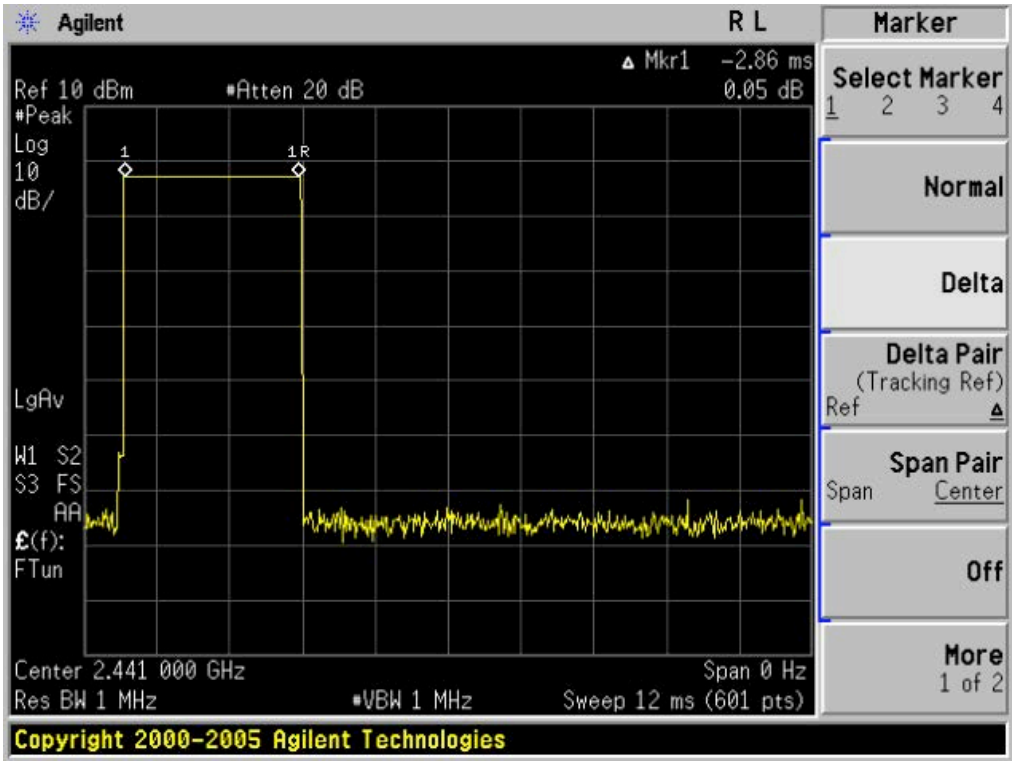
Channel	Time of Pulse for DH5 (ms)	Period Time (s)	Sweep Time (ms)	Limit (ms)
Low	2.90	31.6	309.33	400
Middle	2.86	31.6	305.07	400
High	2.88	31.6	307.20	400

Low Channel Time
2.90*(1600/6)/79*31.6=309.33ms
Middle Channel Time
2.86*(1600/6)/79*31.6=305.07ms
High Channel Time
2.88*(1600/6)/79*31.6=307.20ms

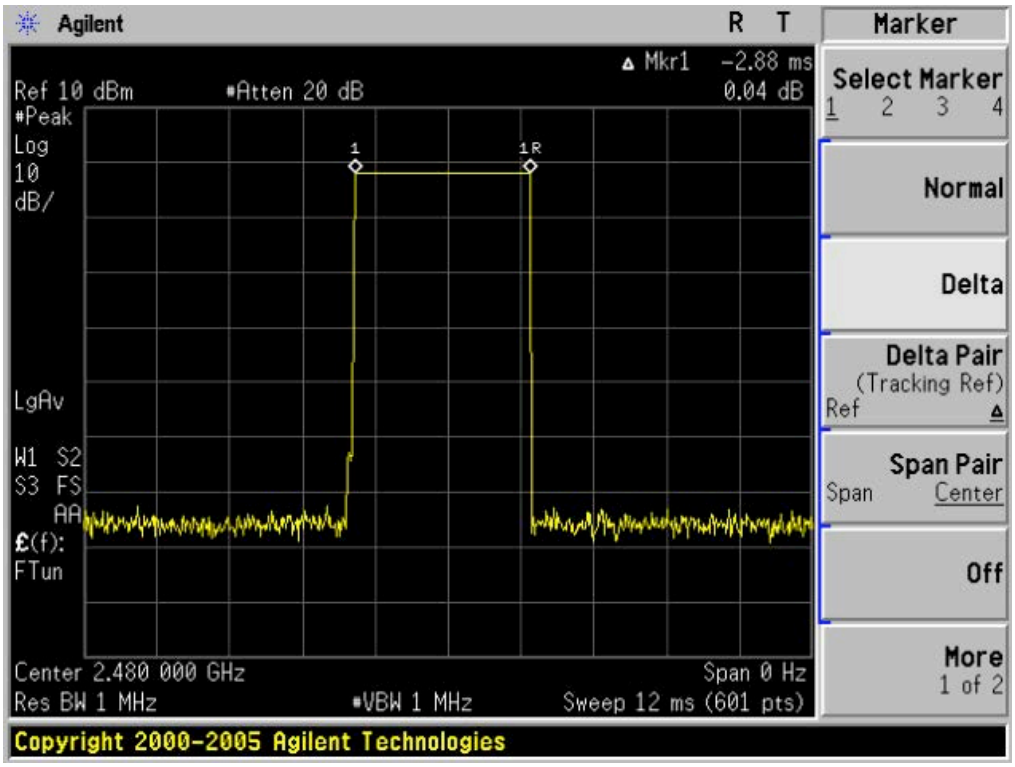
TEST PLOT OF LOW CHANNEL



TEST PLOT OF MIDDLE CHANNEL



TEST PLOT OF HIGH CHANNEL

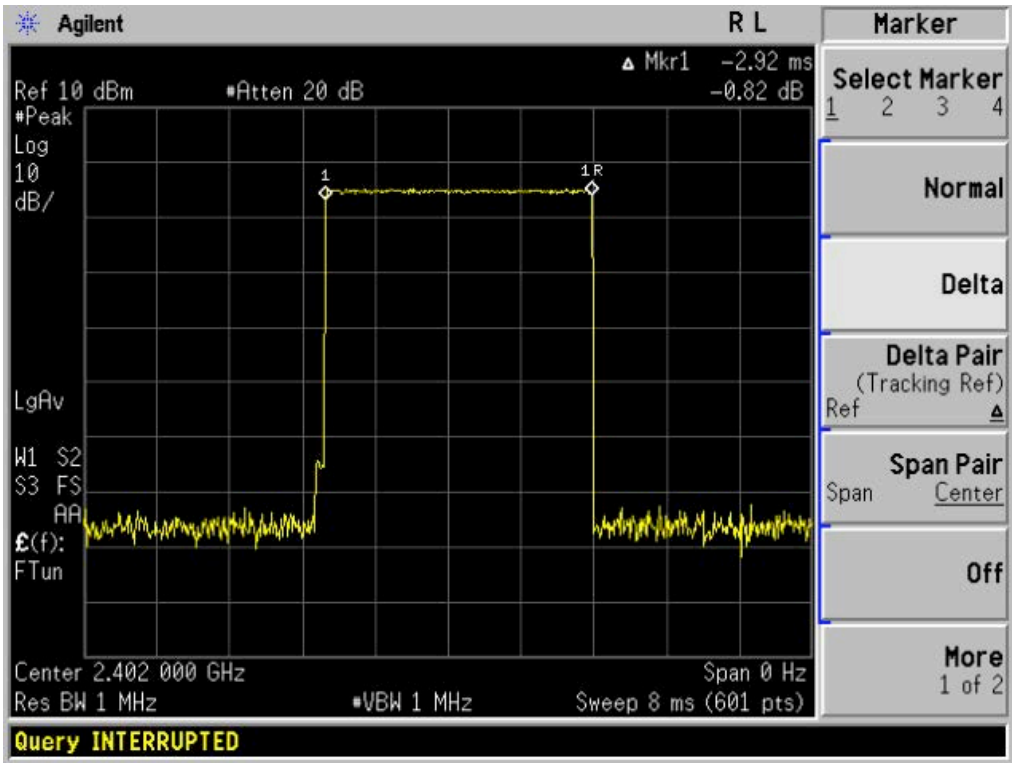


Bluetooth 2Mbps Test Result

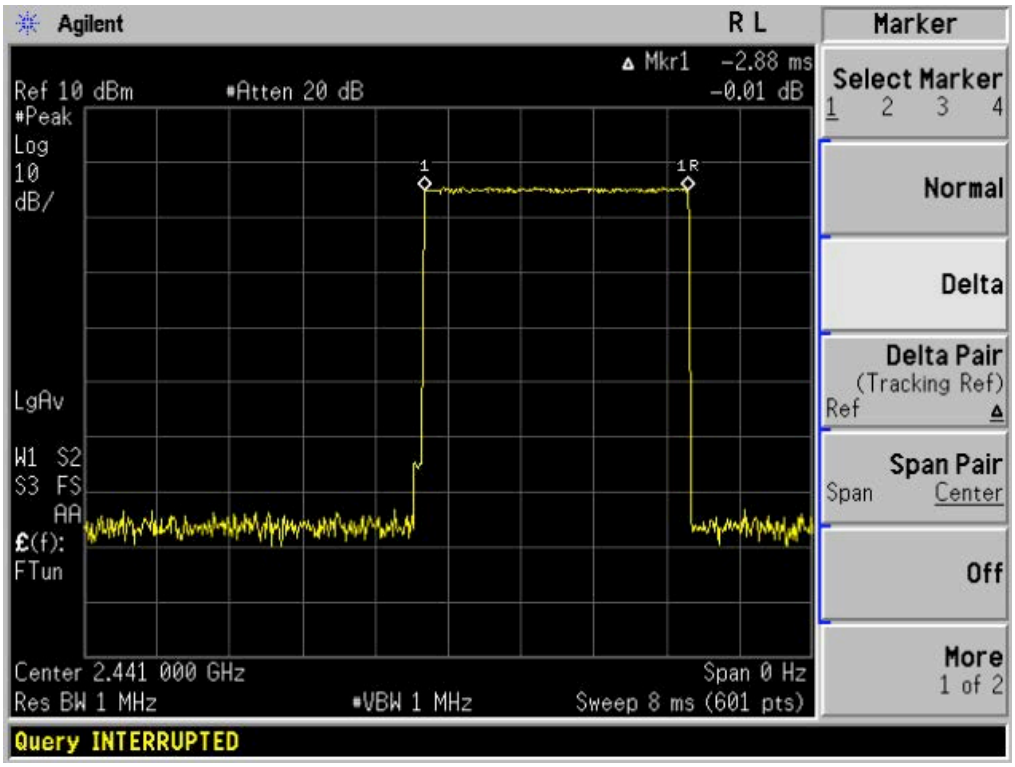
Channel	Time of Pulse for DH5 (ms)	Period Time (s)	Sweep Time (ms)	Limit (ms)
Low	2.92	31.6	311.47	400
Middle	2.88	31.6	307.20	400
High	2.893	31.6	308.59	400

Low Channel Time
2.92*(1600/6)/79*31.6=311.47ms
Middle Channel Time
2.88*(1600/6)/79*31.6=307.20ms
High Channel Time
2.893*(1600/6)/79*31.6=308.59ms

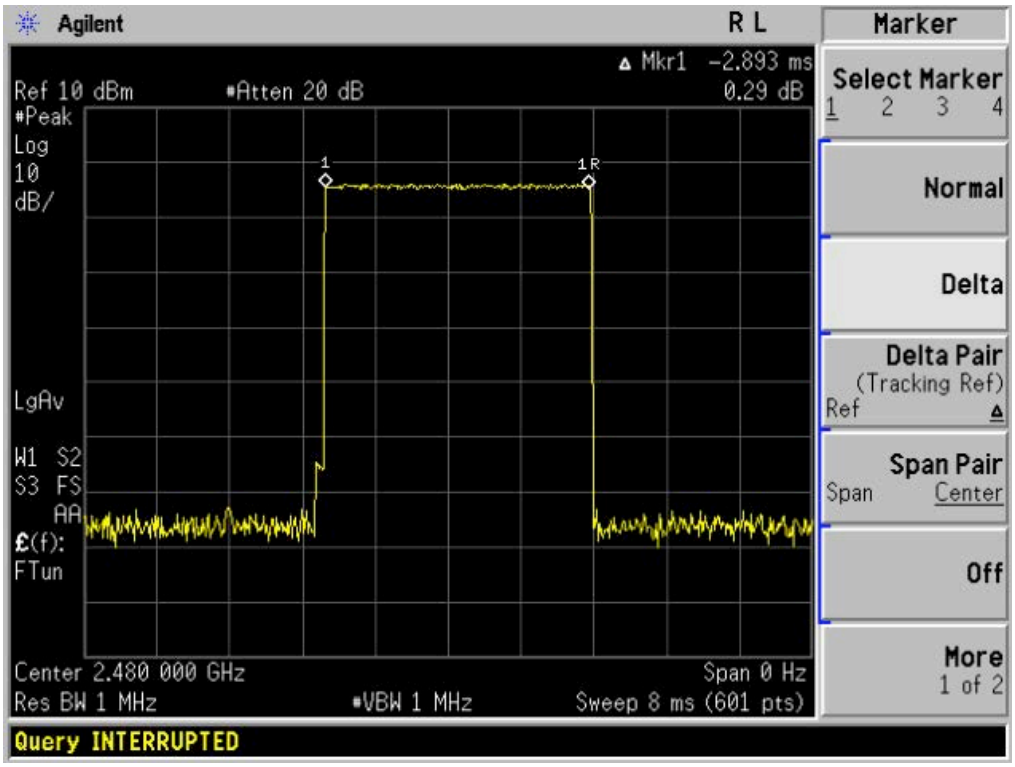
TEST PLOT OF LOW CHANNEL



TEST PLOT OF MIDDLE CHANNEL



TEST PLOT OF HIGH CHANNEL

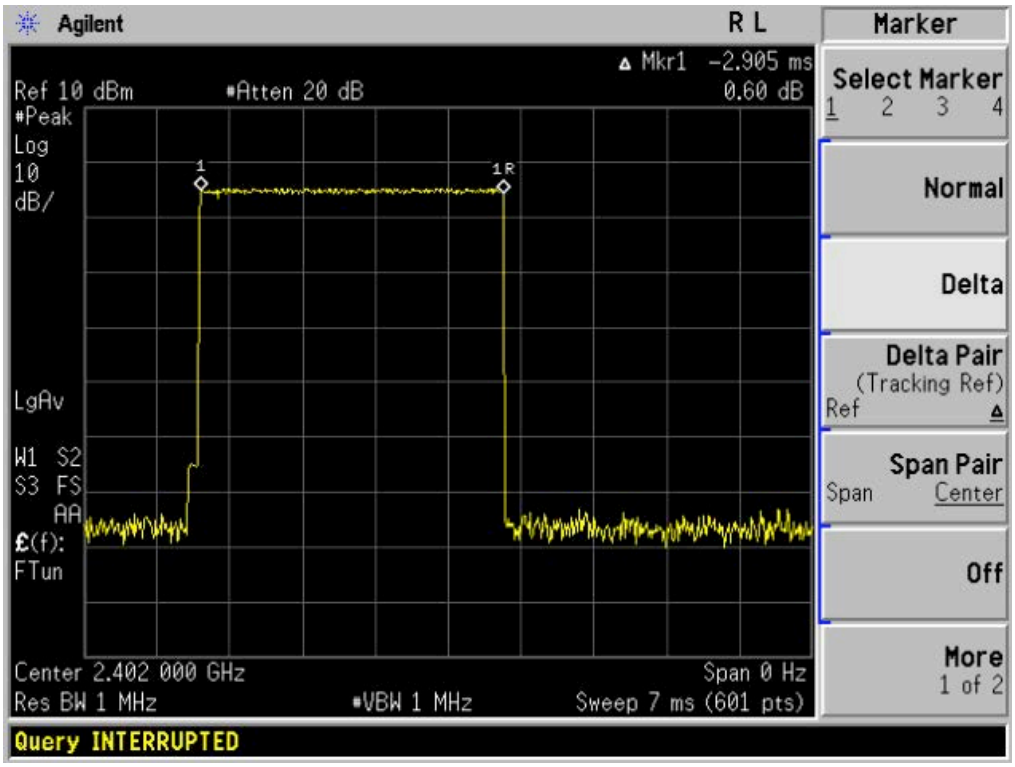


Bluetooth 3Mbps Test Result

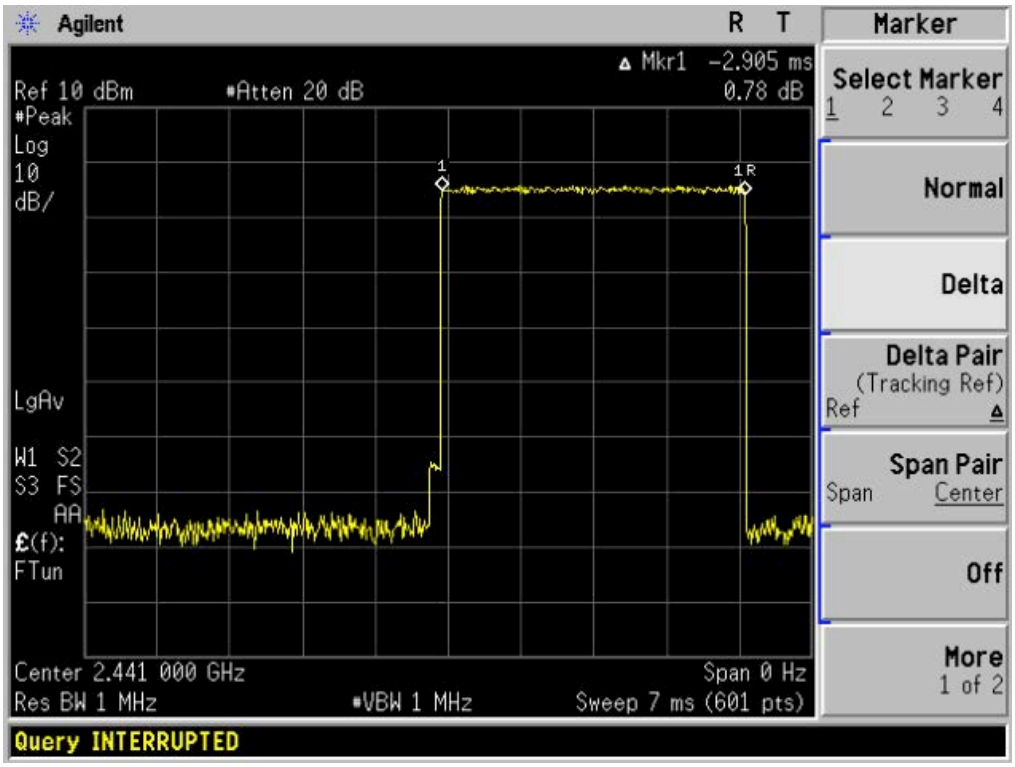
Channel	Time of Pulse for DH5 (ms)	Period Time (s)	Sweep Time (ms)	Limit (ms)
Low	2.905	31.6	309.87	400
Middle	2.905	31.6	309.87	400
High	2.917	31.6	311.15	400

Low Channel Time
2.905*(1600/6)/79*31.6=309.87ms
Middle Channel Time
2.905*(1600/6)/79*31.6=309.87ms
High Channel Time
2.917*(1600/6)/79*31.6=311.15ms

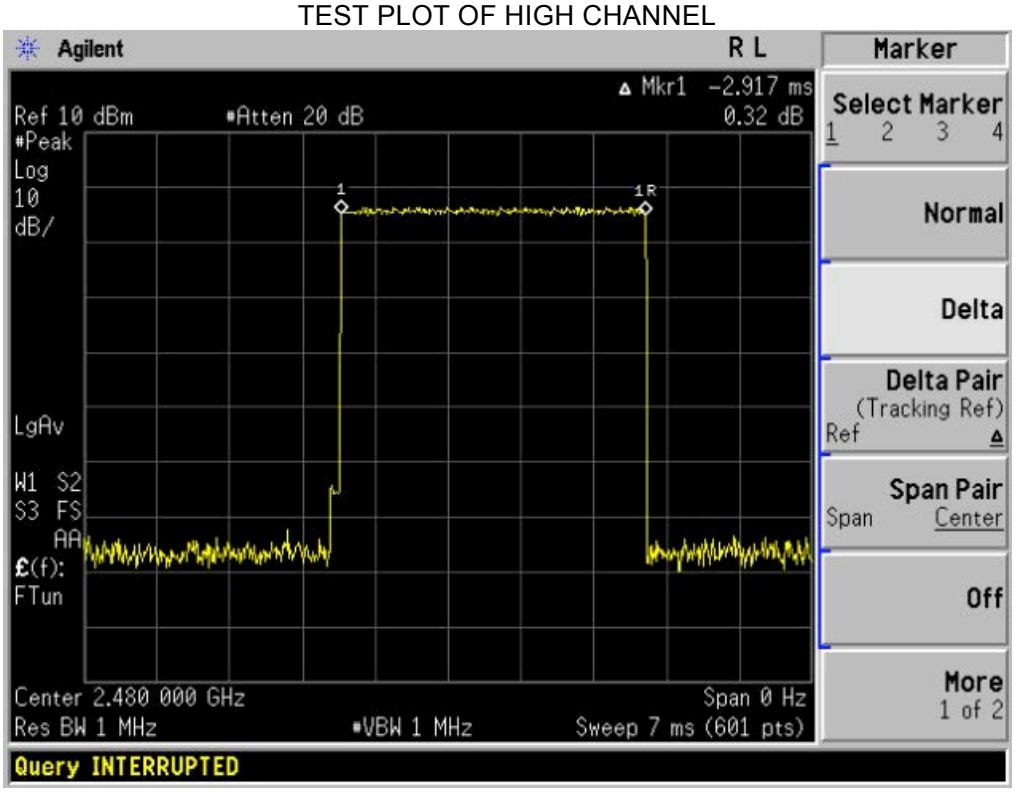
TEST PLOT OF LOW CHANNEL



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 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 center frequency of spectrum analyzer = Middele of Operating frequency
4. Set the spectrum analyzer as RBW, VBW=100KHz, Span = 5 MHz,

13.2 TEST SETUP (BLOCK DIAGRAM OF CONFIGURATION)

Same as described in section 5.2

13.3 MEASUREMENT EQUIPMENT USED

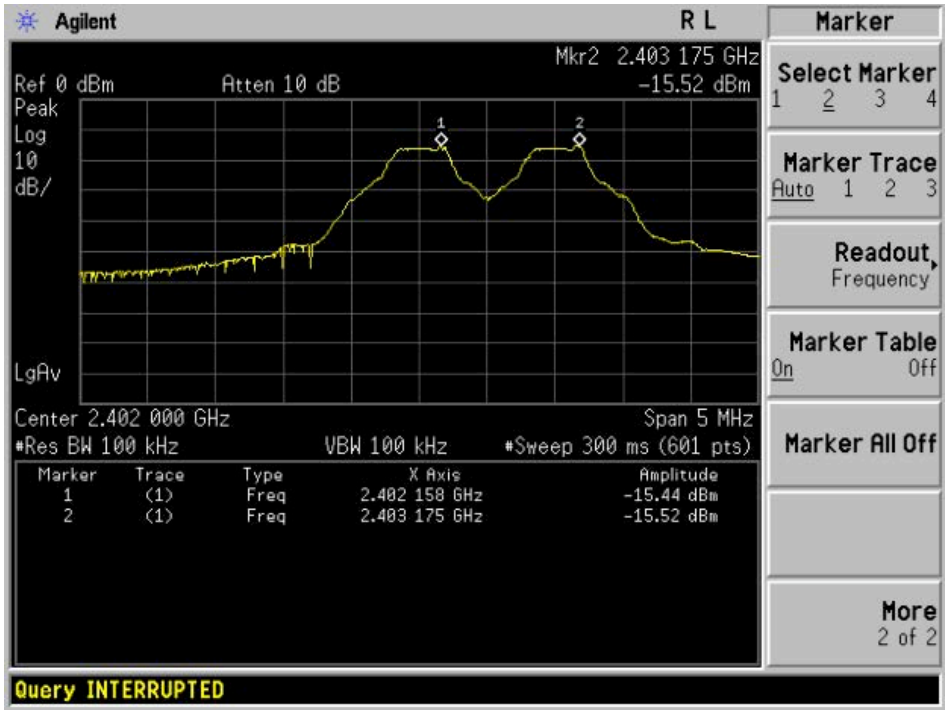
The same as described in section 5.3

13.4 LIMITS AND MEASUREMENT RESULT

TEST RESULT

CHANNEL	CHANNEL SEPARATION	LIMIT	RESULT
	KHz	KHz	Pass
CH00-CH01	1017	>=25 KHz or 2/3 20 dB BW	

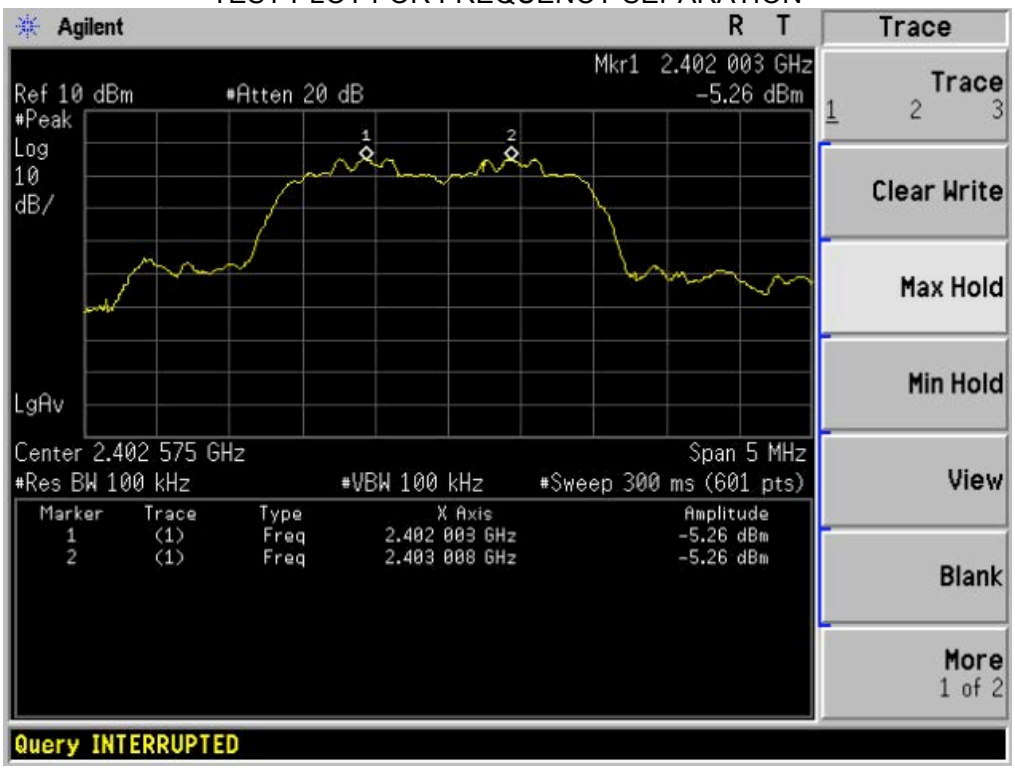
TEST PLOT FOR FREQUENCY SEPARATION



BLUETOOTH 2MBPS TEST RESULT

CH00-CH01	1005	>=25 KHz or 2/3 20 dB BW	

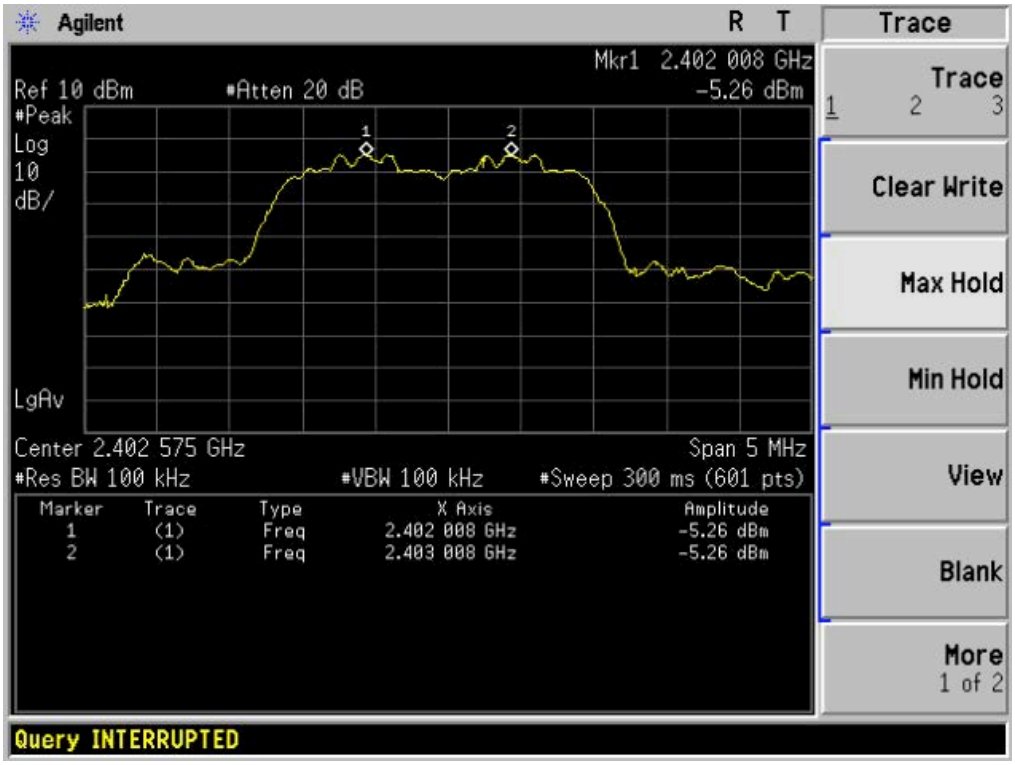
TEST PLOT FOR FREQUENCY SEPARATION



BLUETOOTH 3MBPS TEST RESULT

CHANNEL	CHANNEL SEPARATION	LIMIT	RESULT
	KHz	KHz	Pass
CH00-CH01	1000	>=25 KHz or 2/3 20 dB BW	

TEST PLOT FOR FREQUENCY SEPARATION



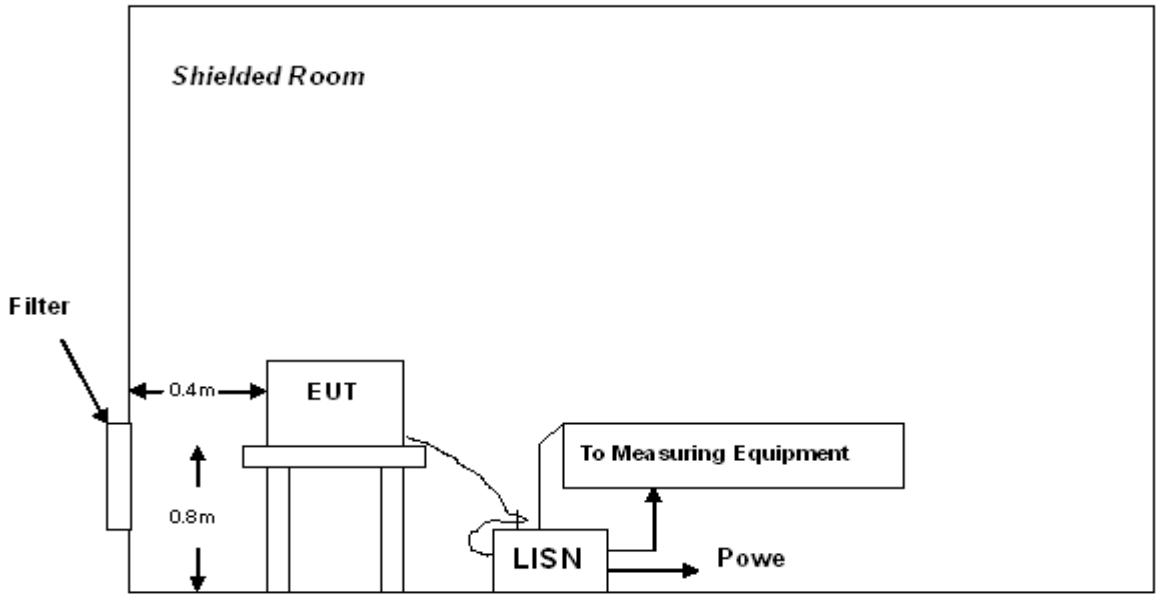
14 FCC LINE CONDUCTED EMISSION TEST

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



A: Powered through filter

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 C63.4 (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 C63.4.
3) All I/O cables were positioned to simulate typical actual usage as per ANSI C63.4.
4) All support equipments received AC120V/60Hz power from a LISN, if any.
5) The EUT received DC 3.7V power by adapter.
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 following test mode(s) were scanned during the preliminary test:

Preliminary Line Conducted Emission Test				
Frequency Range Investigated		**150 KHz TO 30 MHz**		
Mode of operation	Date	Report No.	Data#	Worst Mode
Charging	22/03/2011	AGC061110401F2	D10 (L,N)	☒

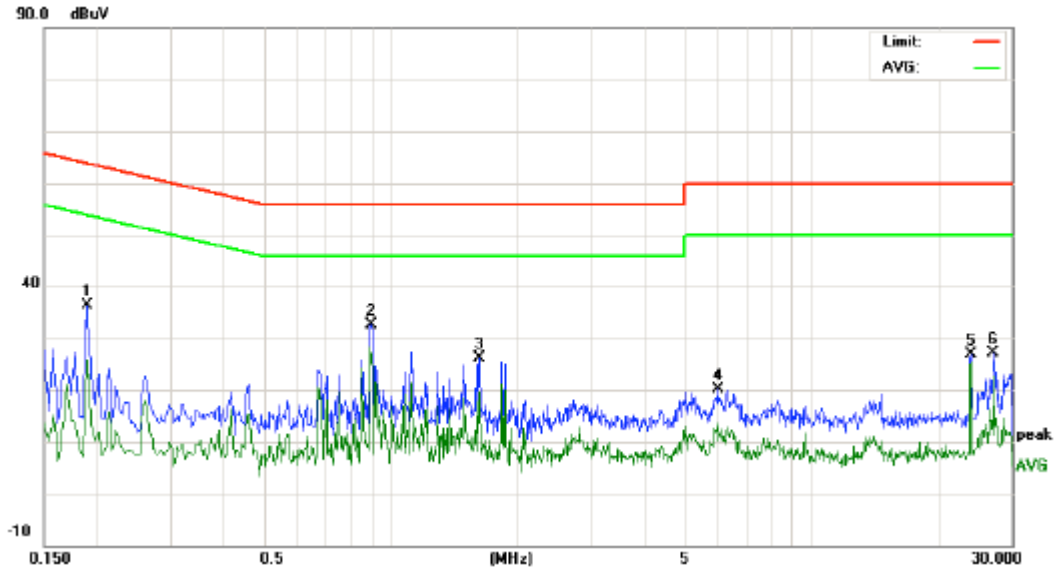
Then, the EUT configuration and cable configuration of the above highest emission level were recorded for reference of final testing.

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



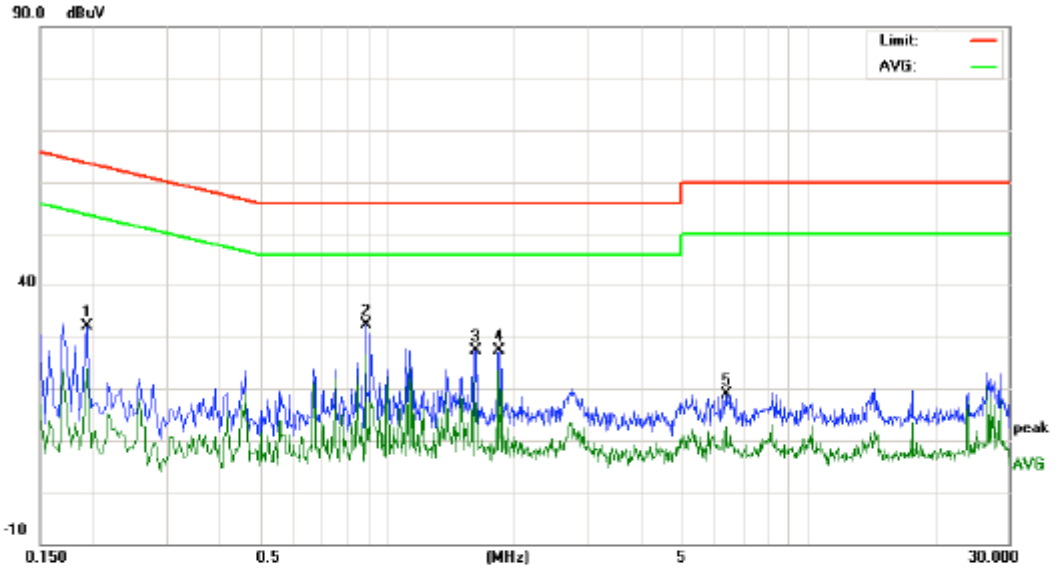
Site: Conduction
Limit: FCC Class B Conduction(QP)
EUT: Bluetooth Headset
M/N: D10
Mode: charging
Note:

Phase: L1
Power:

Temperature: 26
Humidity: 60 %

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	0.1900	26.14		15.68	10.20	36.34		25.88	64.03	54.03	-27.69	-28.15	P	
2	0.9020	22.13		15.97	10.41	32.54		26.38	56.00	46.00	-23.46	-19.62	P	
3	1.6340	15.85		9.33	10.34	26.19		19.67	56.00	46.00	-29.81	-26.33	P	
4	6.0060	9.97		3.32	10.28	20.25		13.60	60.00	50.00	-39.75	-36.40	P	
5	24.0180	16.82		15.31	10.11	26.93		25.42	60.00	50.00	-33.07	-24.58	P	
6	27.1460	17.04		12.55	10.12	27.16		22.67	60.00	50.00	-32.84	-27.33	P	

Line Conducted Emission Test Line 2-N



Site: Conduction
Limit: FCC Class B Conduction(QP)
EUT: Bluetooth Headset
M/N: D10
Mode: charging
Note:

Phase: N
Power:

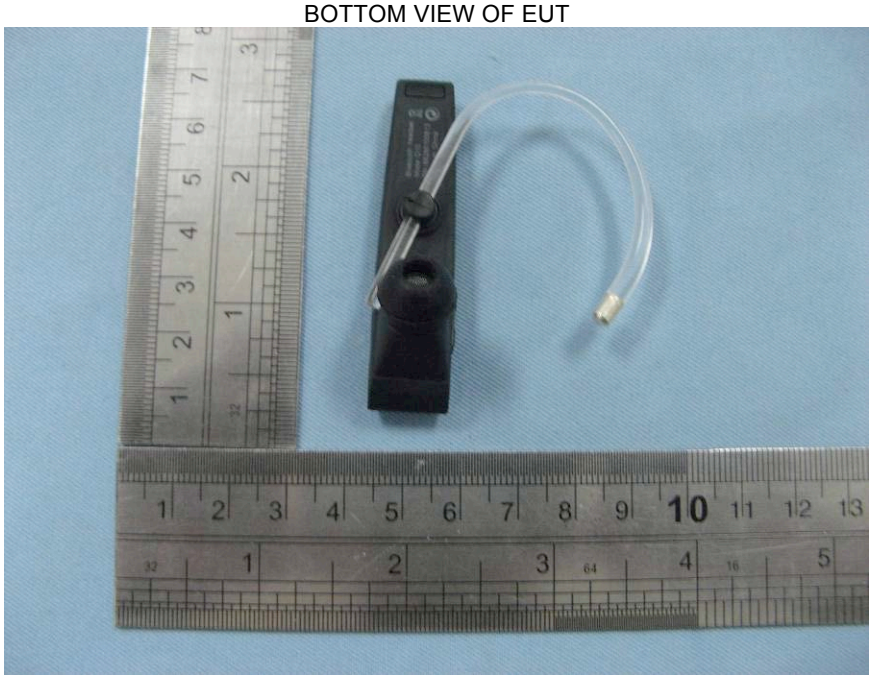
Temperature: 26
Humidity: 60 %

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	0.1940	21.96		13.71	10.21	32.17		23.92	63.86	53.86	-31.69	-29.94	P	
2	0.8940	21.88		16.15	10.40	32.28		26.55	56.00	46.00	-23.72	-19.45	P	
3	1.6340	17.15		6.99	10.34	27.49		17.33	56.00	46.00	-28.51	-28.67	P	
4	1.8500	17.01		6.39	10.27	27.28		16.66	56.00	46.00	-28.72	-29.34	P	
5	6.3900	8.55		2.26	10.30	18.85		12.56	60.00	50.00	-41.15	-37.44	P	

APPENDIX I
PHOTOGRAPHS OF THE EUT

TOP VIEW OF EUT

BOTTOM VIEW OF EUT

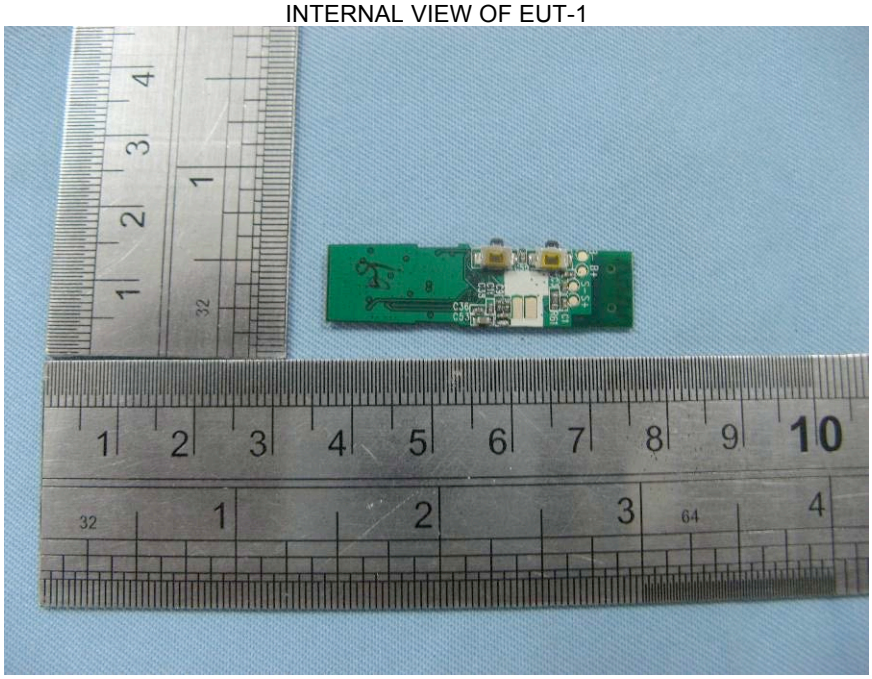


FRONT VIEW OF EUT

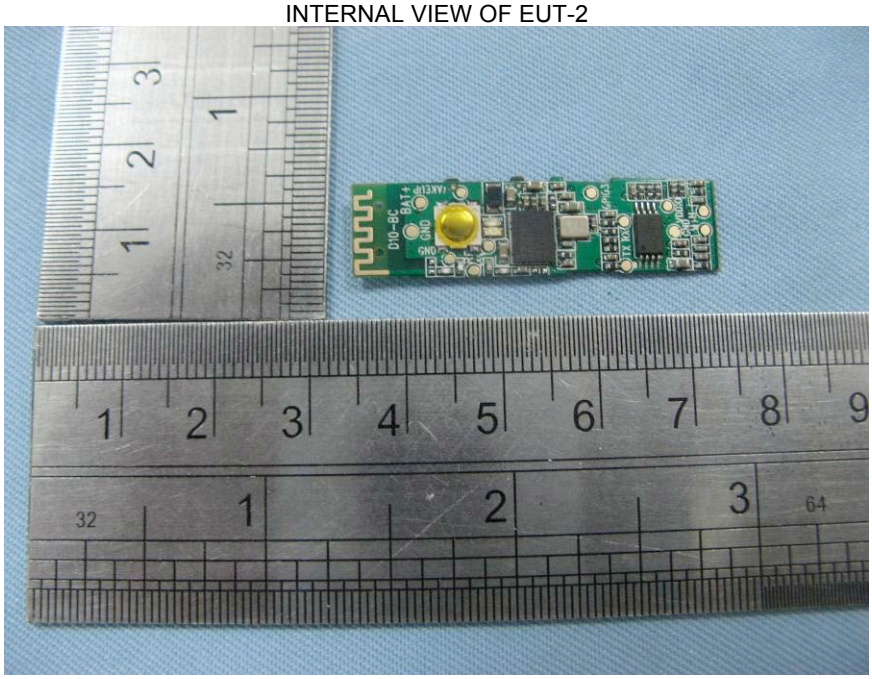
BACK VIEW OF EUT

ALL VIEW OF EUT

INTERNAL VIEW OF EUT-1



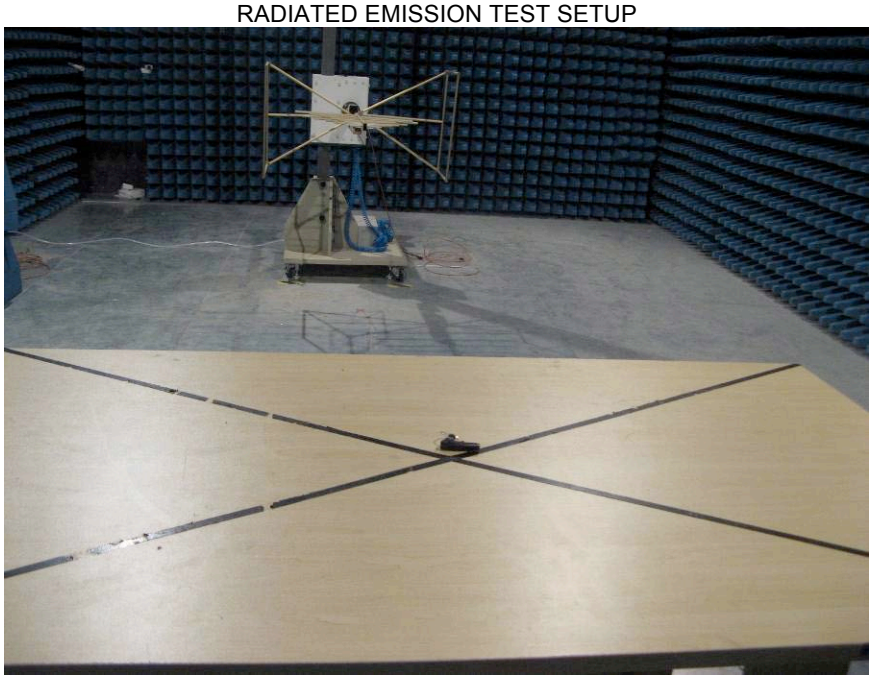
INTERNAL VIEW OF EUT-2



APPENDIX II
PHOTOGRAPHS OF THE TEST SETUP

LINE COMDUCTED EMISSION TEST SETUP

RADIATED EMISSION TEST SETUP



----END OF REPORT----