TEST REPORT

1. Applicant

Name	: Seoultek valley.Co.,Ltd
Address	: 51-1 Yujung Bldg 5F,Bang E-dong, Songpa-gu , Seoul South KOREA

2. Products

Name	: Bluetooth Handsfree Carkit
Model/Type	: ABT-C100
Manufacturer	: Seoultek valley.Co.,Ltd

3. Test Standard	: FCC CFR 47 Part 15, Subpart C section 15.247
4. Test Method	: ANSI C63.4-2003
5. Test Result	: Positive
6. Date of Application	: July 25, 2008
7. Date of Issue	: August 27, 2008

Tested by

Bum-Jong Kim
Telecommunication Team
Engineer

Approved by

Seok-Jin Kim
Telecommunication Team
Manager

Korea Testing Laboratory

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1. GENERAL INFORMATIONS

1.1. Applicant (Client)

Name	Seoultek valley.Co.,Ltd
Address	51-1 Yujung Bldg 5F,Bang E-dong, Songpa-gu , Seoul South KOREA
Contact Person	S.H.Kang
Telephone No.	82-2-3401-6030
Facsimile No.	82-2-3401-6080
E-mail address	shkang@seoultek.com
Manufacturer Name	Seoultek valley.Co.,Ltd
Manufacturer Address	51-1 Yujung Bldg 5F,Bang E-dong, Songpa-gu , Seoul South KOREA

1.2. Equipment (EUT)

Type of equipment	Bluetooth Handsfree Carkit
Model Name	ABT-C100
FCC ID	WG4ABT-C100
Frequency Band	Bluetooth : 2402 ~ 2480 MHz, FM transmitter : 88.3 ~ 88.9 MHz
Type of Modulation	Bluetooth : GFSK & DQPSK & 8DPSK, FM transmitter : FM
Moudlation technology	FHSS
Number of Channels	Bluetooth : 79 Channels, FM transmitter : 4 Channels
Antenna Gain	Max 0.48 dB
Function Type	Transceiver
Power Source	5VDC USB cable

1.3. Testing Laboratory

Testing Place	Korea Testing Labortory (KTL) 1271-12, Sa-Dong Sangnok-Gu, Ansan-si Gyunggi-Do , Korea
FCC registration number	408324
Industry Canada filing number	6298
Test Engineer	Bum-Jong KIM
Telephone number	+82 31 5000 131
Facsimile number	+82 31 5000 159
E-mail address	temple@ktl.re.kr
Other Comments	-

1.4. Description of Test Modes

RADIATED EMISSION MEASUREMENT;

Sinve the EUT is considered a portable unit, it was pre-tested on the position of each 3 axis. The worst case was found when positioned on Z-plane. Therefore only the test data of this Z-plane was used for radiated test.
Following channel was selected for the final test as listed below

EUT	Tested channel	Modulation technology	Modulation Type	Packet type	AXIS
Bluetooth	0,.39,78	FHSS	GFSK	DH5	Z
	0,.39,78	FHSS	8DPSK	DH5	Z
FM transmitter	1,3,4	-	FM	-	Z

ANTENNA PORT CONDUCTED MEASUREMENT;

Pre-scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, antenna ports and packet types.
Following channel was selected for the final test as listed below

	Tested channel	Modulation technology	Modulation Type	Packet type	AXIS
Bluetooth	0,.39,78	FHSS	GFSK	DH5	Z
	0,.39,78	FHSS	8DPSK	DH5	Z
FM transmitter	1,3,4	-	FM	-	Z

1.5. Channel numbers and Frequencies

FMtransmitter

Channels	Frequency (MHz)
1	88.3
2	88.5
3	88.7
4	88.9

Bluetooth

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
0	2402	20	2422	40	2442	60	2462
1	2403	21	2423	41	2443	61	2463
2	2404	22	2424	42	2444	62	2464
3	2405	23	2425	43	2445	63	2465
4	2406	24	2426	44	2446	64	2466
5	2407	25	2427	45	2447	65	2467
6	2408	26	2428	46	2448	66	2468
7	2409	27	2429	47	2449	67	2469
8	2410	28	2430	48	2450	68	2470
9	2411	29	2431	49	2451	69	2471
10	2412	30	2432	50	2452	70	2472
11	2413	31	2433	51	2453	71	2473
12	2414	32	2434	52	2454	72	2474
13	2415	33	2435	53	2455	73	2475
14	2416	34	2436	54	2456	74	2476
15	2417	35	2437	55	2457	75	2477
16	2418	36	2438	56	2458	76	2478
17	2419	37	2439	57	2459	77	2479
18	2420	38	2440	58	2460	78	2480
19	2421	39	2441	59	2461		

2. SUMMARY OF TEST RESULTS

Testing performed for : Seoultek valley.Co.,Ltd

Equipment Under Test : ABT-C100

Receipt of Test Sample : July 25, 2008

Test Start Date : August 4 , 2008

Test End Date : August 27, 2008

The following table represents the list of measurements required under the FCC CFR47 Part 15.207, 15.247, and 15.209

FCC Rules	Test Requirements	Result	Comments
15.247(a)(1)	20dB Bandwidth	Pass	See Data sheets
15.247(a)(1)	Hopping channel Separation	Pass	See Data sheets
15.247(a)(1)(iii)	Number of Hopping Frequency Used	Pass	See Data sheets
15.247(a)(1)(iii)	Dwell Time of Each Frequency	Pass	See Data sheets
15.247(b)	Output Power	Pass	See Data sheets
15.247(c)	100 KHz Bandwidth of Frequency Band Edges	Pass	See Data sheets
15.247(d)	Conducted Spurious Emission	Pass	See Data sheets
15.209(a)	Radiated Emission	Pass	See Data sheets

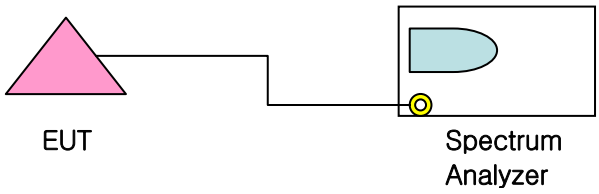
Note 1 : Test results reported in this document relate only to the items tested
Note 2 : The required tests demonstrated compliance as per client declaration of test configuration, monitoring methodology and associated pass/fail criteria
Note 3 : Test results apply only to the item(s) tested

*** Modifications required for compliance**
No modifications were implemented by KTL.
All results in this report pertain to the un-modified sample provided to KTL.

3. Measurement & Results

3.1. 20 dB Bandwidth

3.1.1. Test Setup Layout



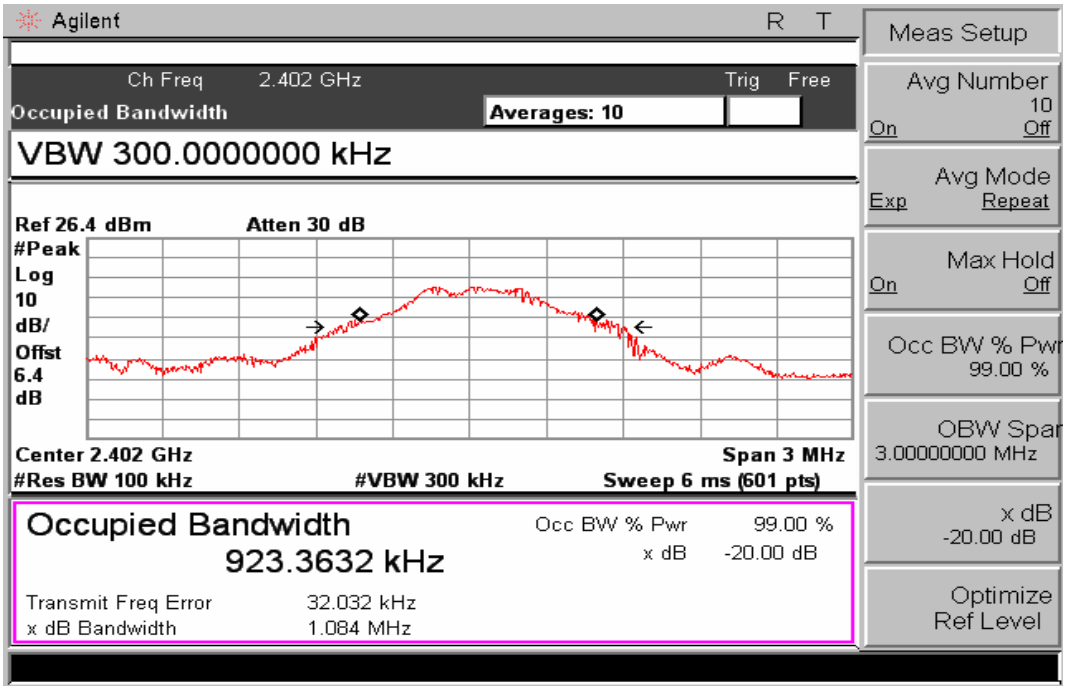
3.1.2. Test Condition

- Set RBW of Spectrum analyzer to 30 kHz
- The maximum power is defined as the total transmit power delivered to all antennas and antenna elements averaged across all symbols in the signaling alphabet when the transmitter is operating at its maximum power control level.
- For frequency hopping systems operating in the 2400-2483.5 MHz band, the maximum power shall be lower than 1 Watt, if the 20 dB channel bandwidth is less than the separation between the carriers or 25 kHz, whichever is greater. If the 20 dB channel bandwidth is higher, the following approach is applicable:
  - 2/3 of the 20 dB channel bandwidth shall be less than the separation between the carriers or 25 kHz, whichever is greater, and the maximum power shall be lower than 125 mWatt.

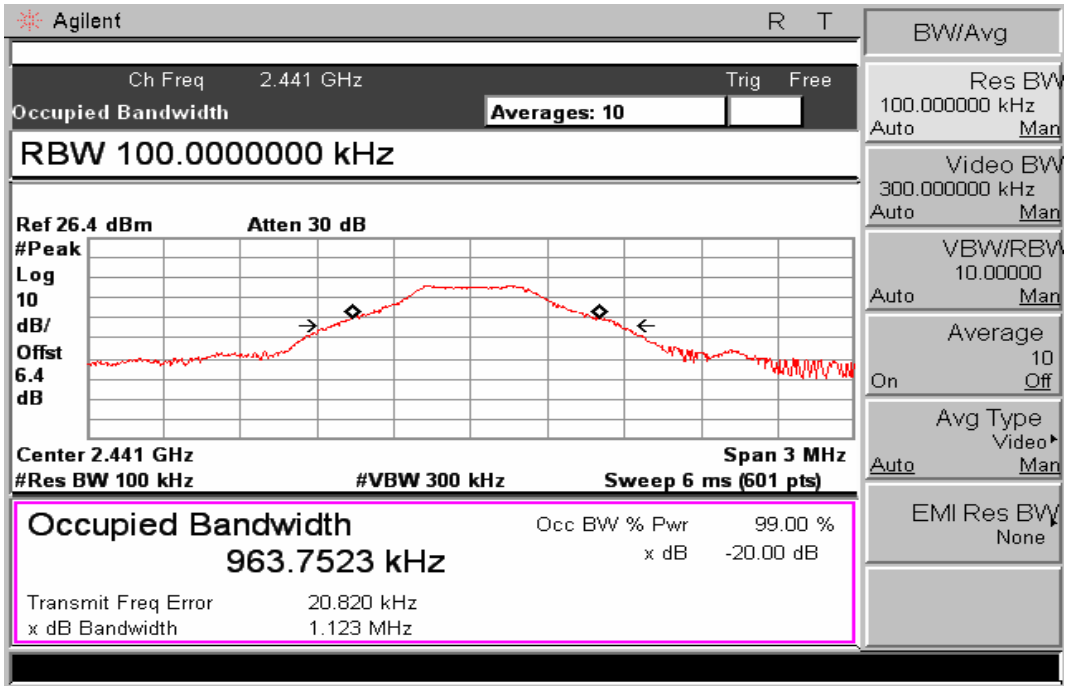
3.1.3. Test result

GFSK

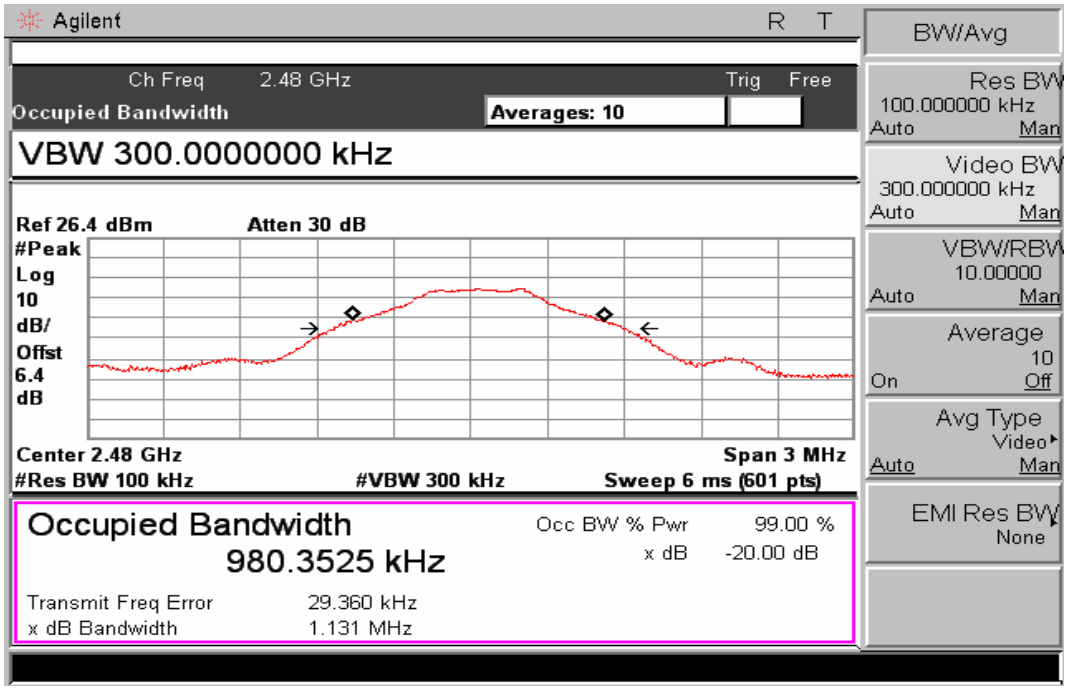
Channels	Frequency (MHz)	Result (kHz)	Verdict
0	2402	**1,084**	**Pass**
39	2441	**1,123**	**Pass**
78	2480	**1,131**	**Pass**



- Frequency 2402 CH 0 -



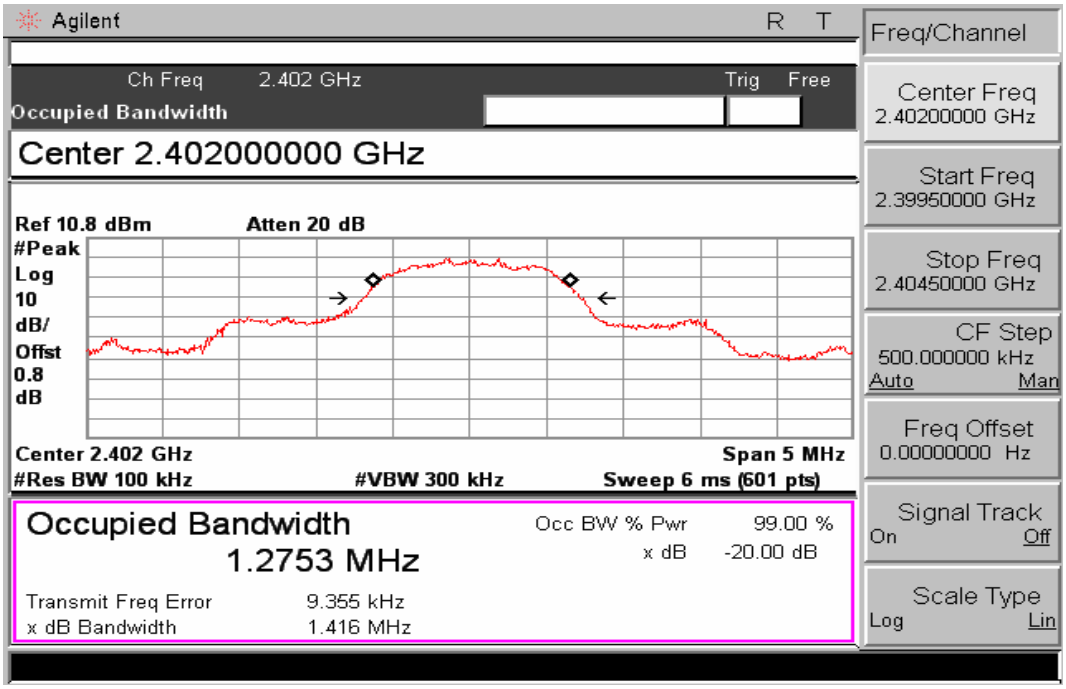
- Frequency 2441 CH 39 -



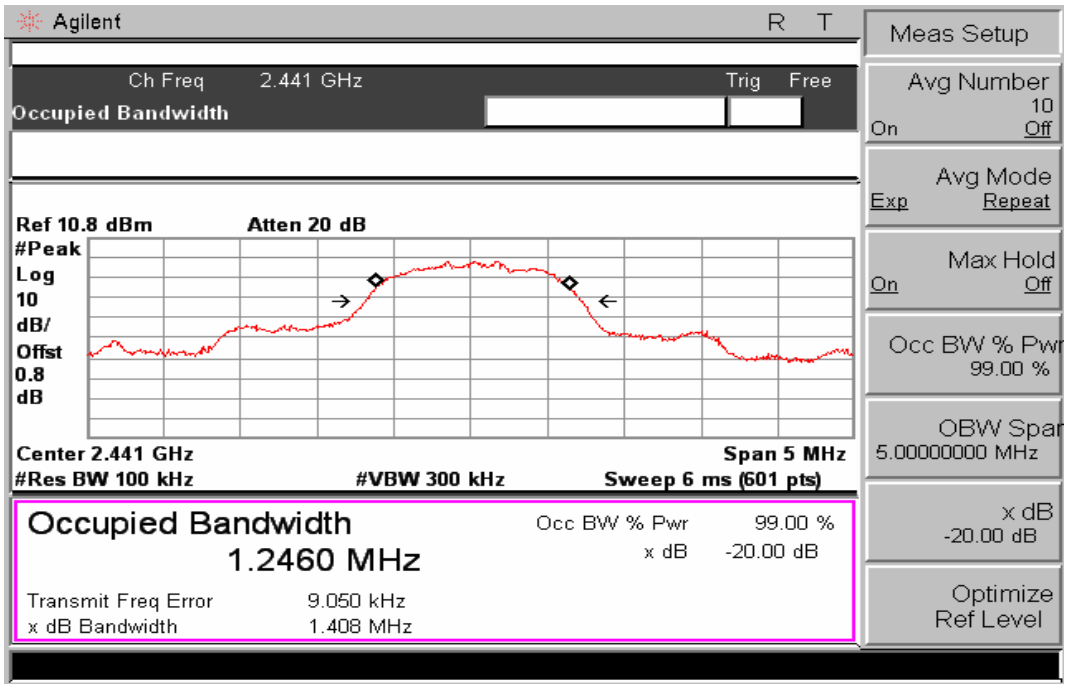
- Frequency 2480 CH 79 -

8DPSK

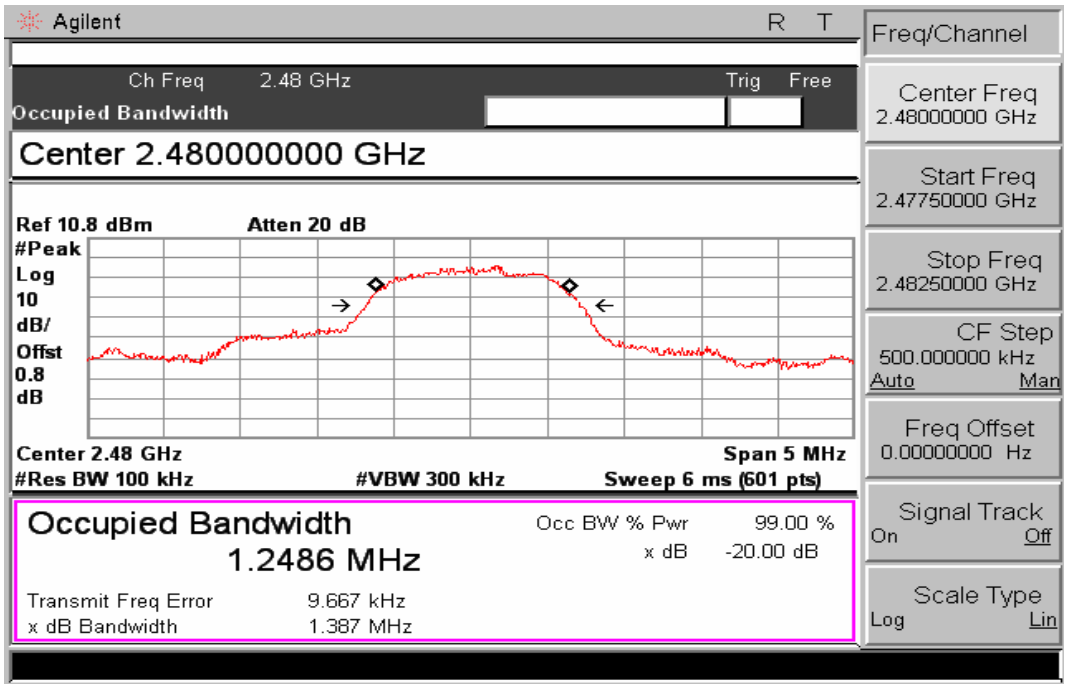
Channels	Frequency (MHz)	Result (kHz)	Verdict
0	2402	**1,416**	**Pass**
39	2441	**1,408**	**Pass**
78	2480	**1,387**	**Pass**



- Frequency 2402 CH 0 -



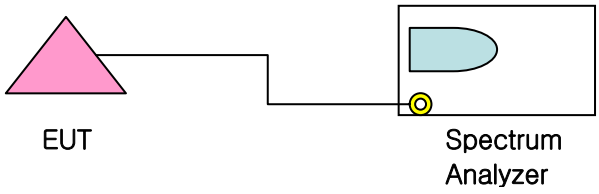
- Frequency 2441 CH 39 -



- Frequency 2480 CH 79 -

3.2. Maximum Peak Power

3.2.1. Test Setup Layout



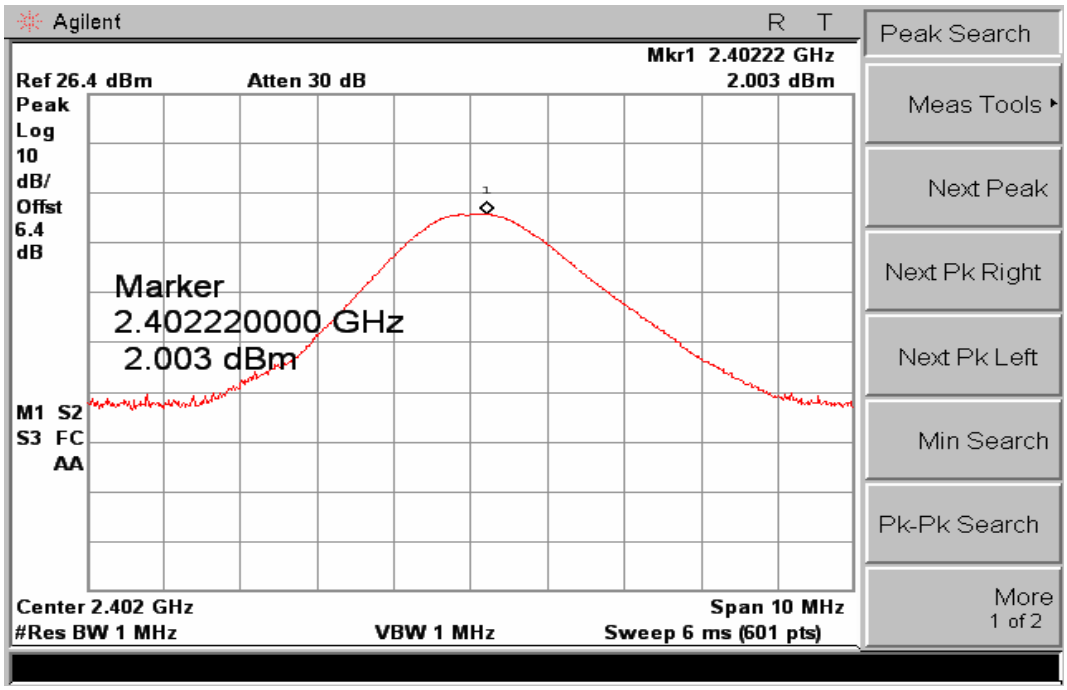
3.2.2. Test Condition

- Set RBW of Spectrum analyzer to 30 kHz
- The maximum power is defined as the total transmit power delivered to all antennas and antenna elements averaged across all symbols in the signaling alphabet when the transmitter is operating at its maximum power control level.
- For frequency hopping systems operating in the 2400-2483.5 MHz band, the maximum power shall be lower than 1 Watt, if the 20 dB channel bandwidth is less than the separation between the carriers or 25 kHz, whichever is greater. If the 20 dB channel bandwidth is higher, the following approach is applicable:
  - 2/3 of the 20 dB channel bandwidth shall be less than the separation between the carriers or 25 kHz, whichever is greater, and the maximum power shall be lower than 125 mWatt.

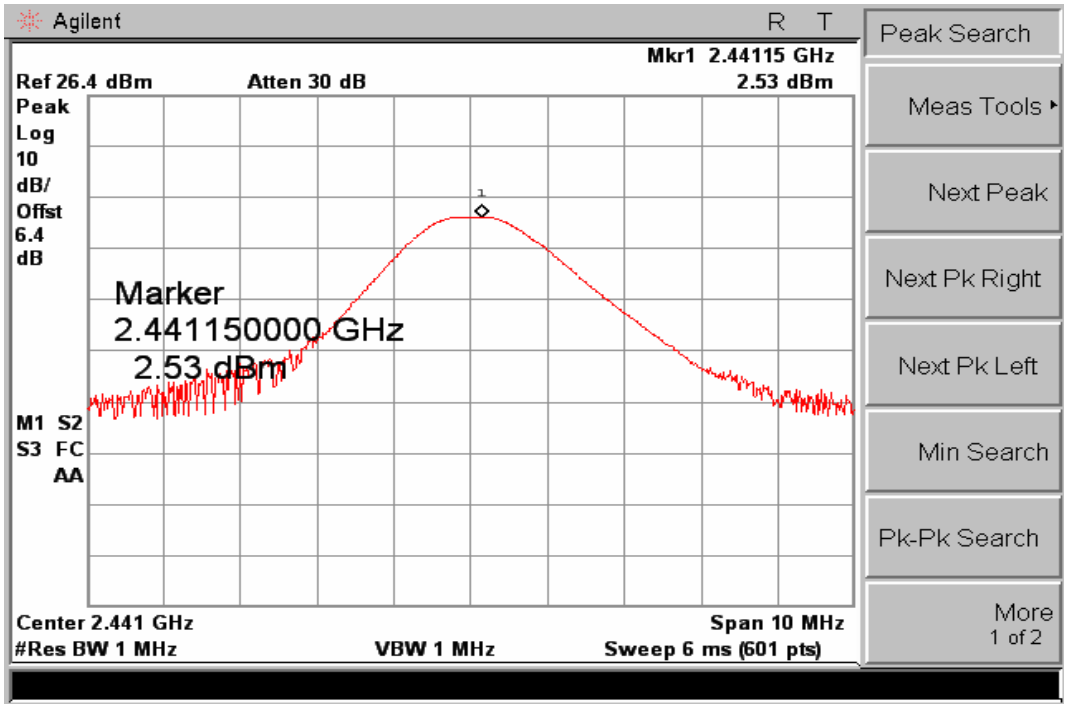
3.2.3. Test result

GFSK

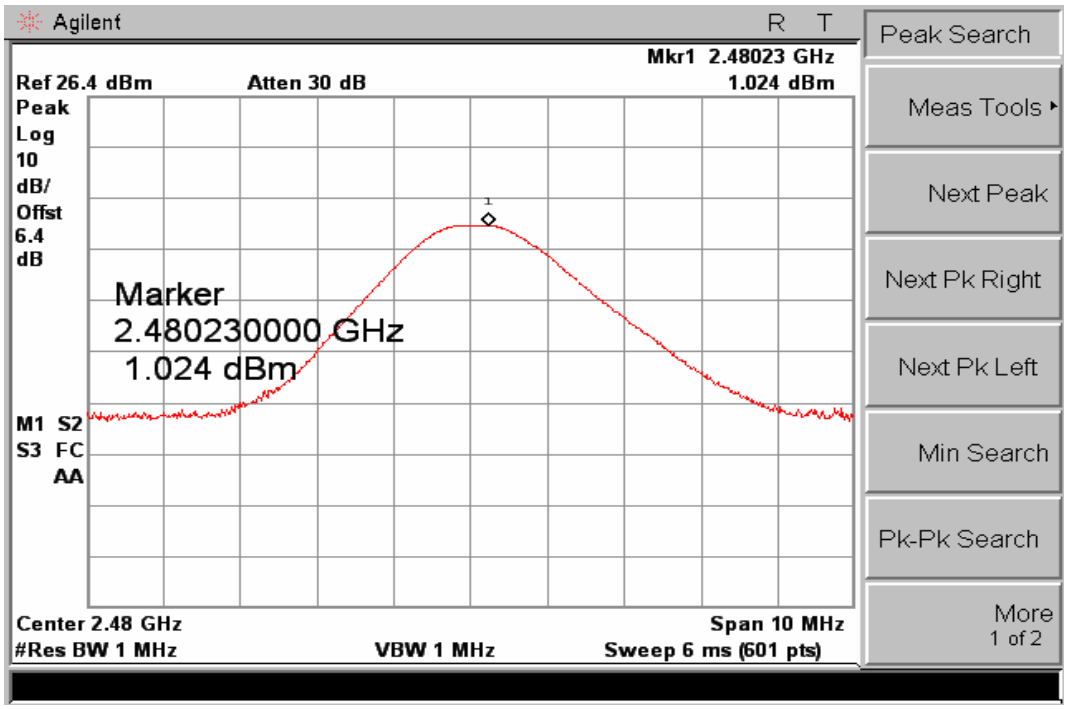
Channels	Frequency (MHz)	Result (dBm)	Limit (dBm) 125 mW = 20.96 dBm	Verdict
0	2402	**2.00**	≤ 20.96	**Pass**
39	2441	**2.53**	≤ 20.96	**Pass**
78	2480	**1.02**	≤ 20.96	**Pass**



- Frequency 2402 CH 0 -



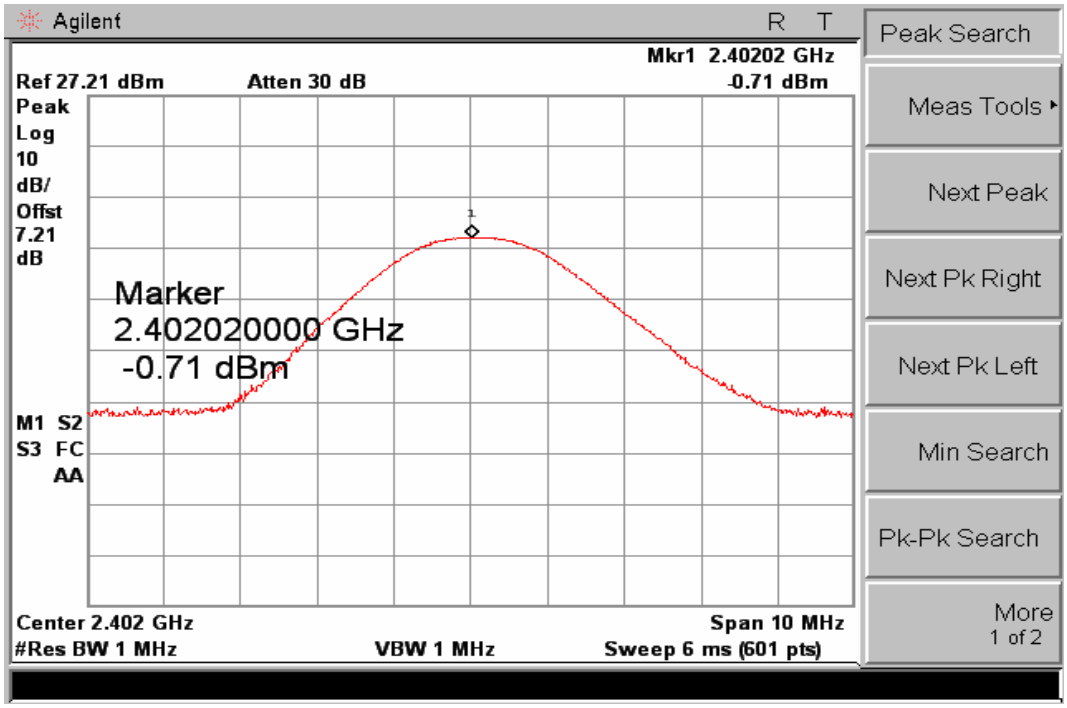
- Frequency 2441 CH 39 -



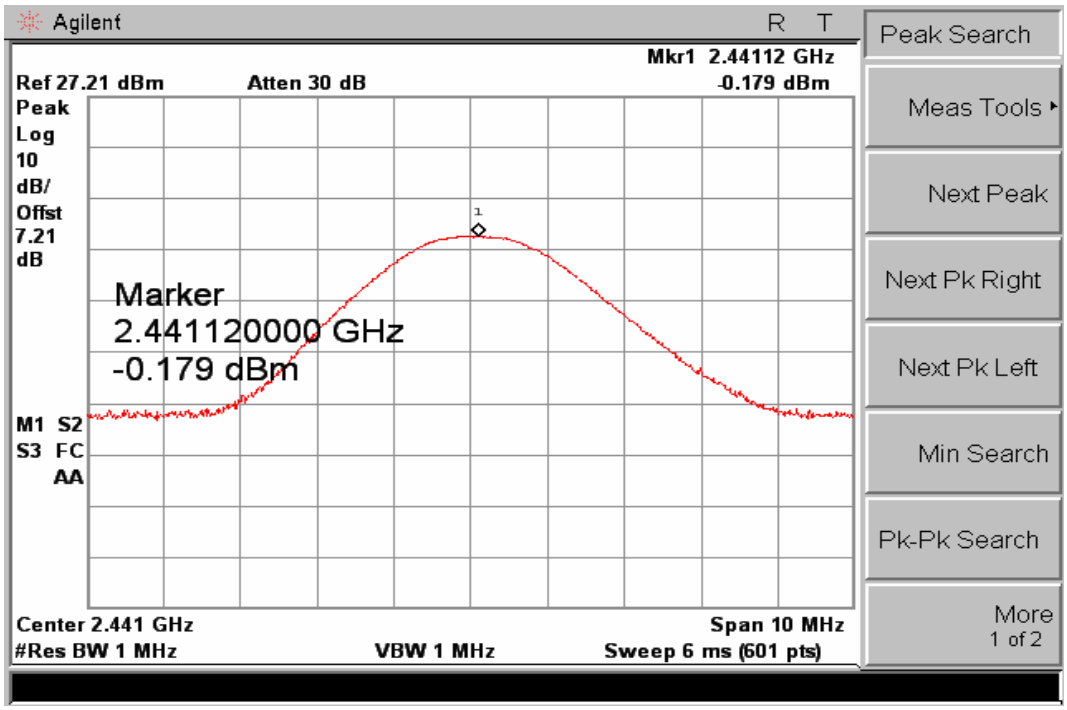
- Frequency 2480 CH 78 -

8DPSK

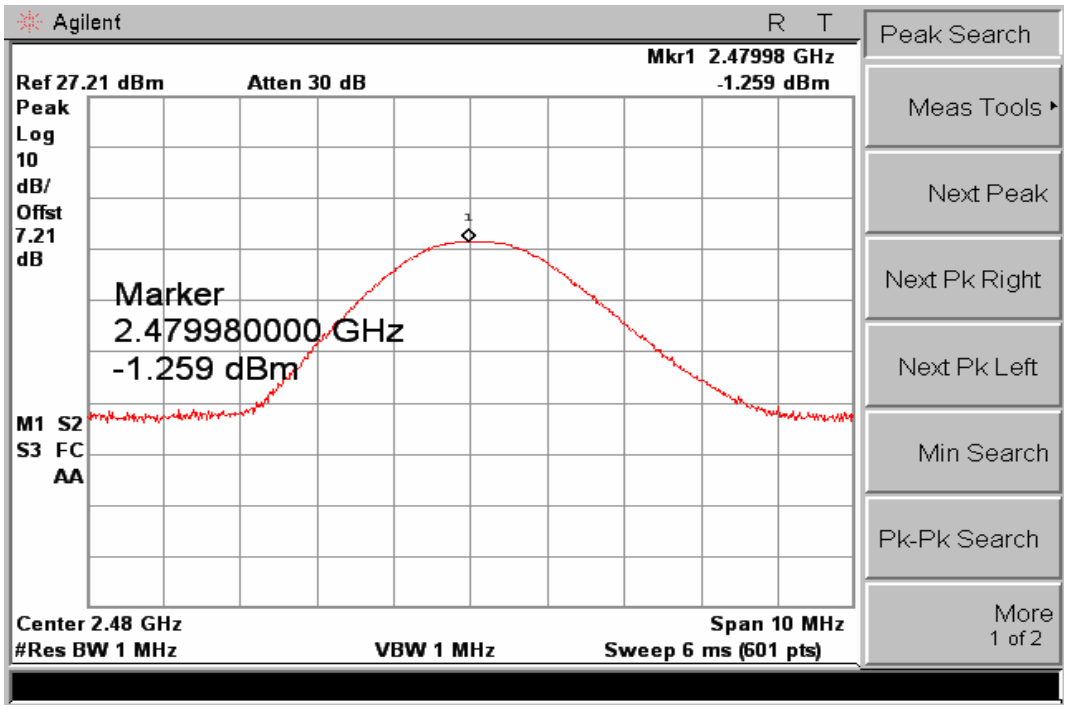
Channels	Frequency (MHz)	Result (dBm)	Limit (dBm) 125 mW = 20.96 dBm	Verdict
0	2402	**- 0.71**	≤ 20.96	**Pass**
39	2441	**- 0.79**	≤ 20.96	**Pass**
78	2480	**- 1.26**	≤ 20.96	**Pass**



- Frequency 2402 CH 0 -



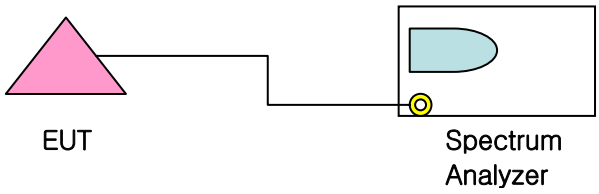
- Frequency 2441 CH 39 -



- Frequency 2480 CH 78 -

3.3. 100 KHz Bandwidth of Frequency Band Edges

3.3.1. Test Setup Layout



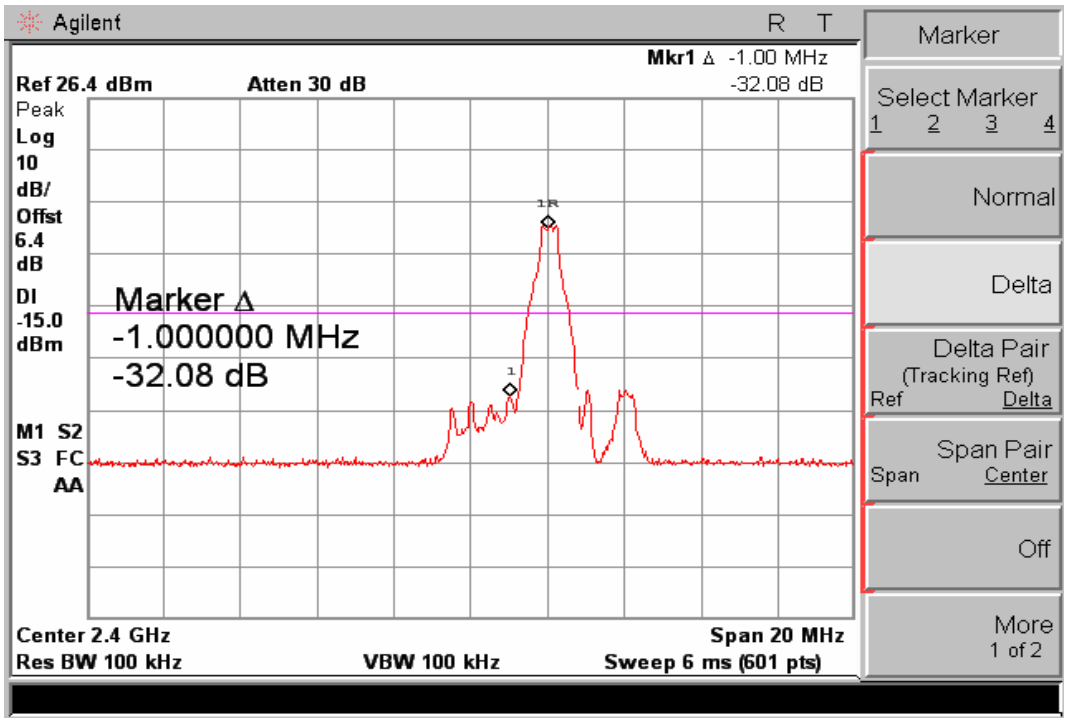
3.3.2. Test Condition

- Set RBW of Spectrum analyzer to 100 kHz
- The radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power.
- The maximum frequency range measuring with the spectrum from 30 MHz to 25 GHz is investigated with the transmitter

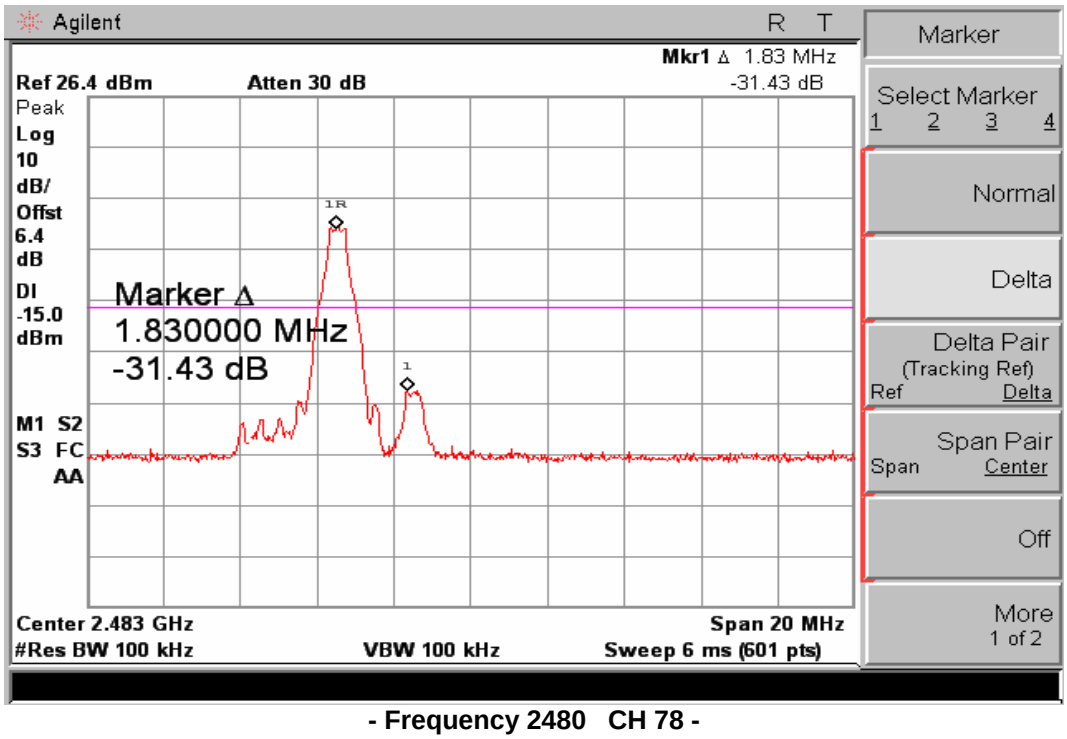
3.3.3. Test result

GFSK

Channels	Frequency (MHz)	Result (dBc)	Limit (dBc)	Verdict
0	2402	**- 32.08**	- 20	**Pass**
78	2480	**- 31.43**	- 20	**Pass**



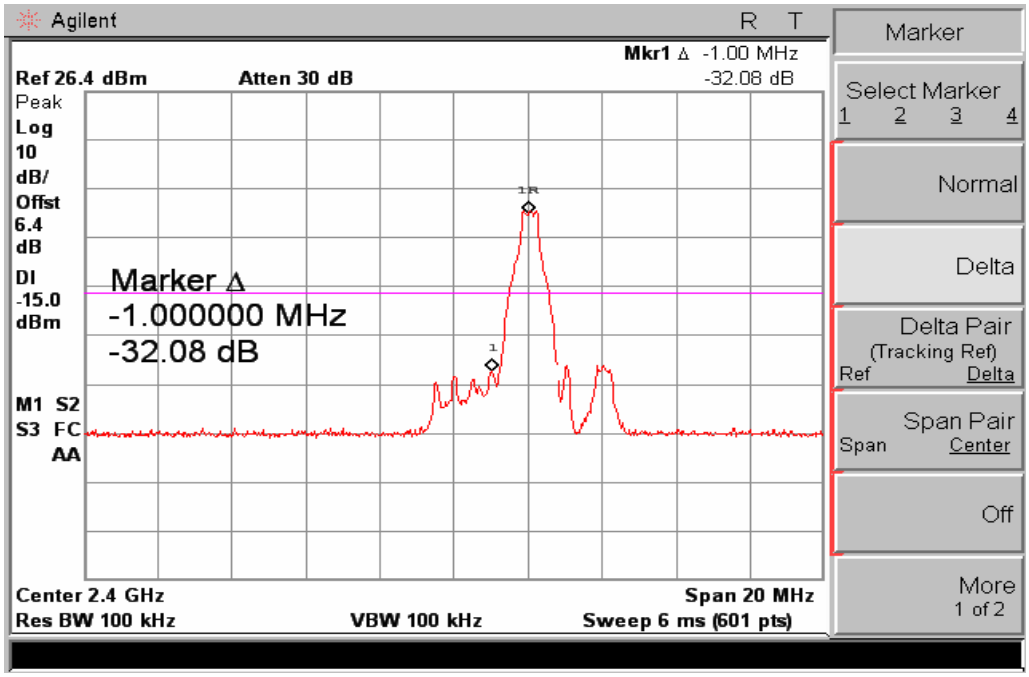
- Frequency 2402 CH 0 -



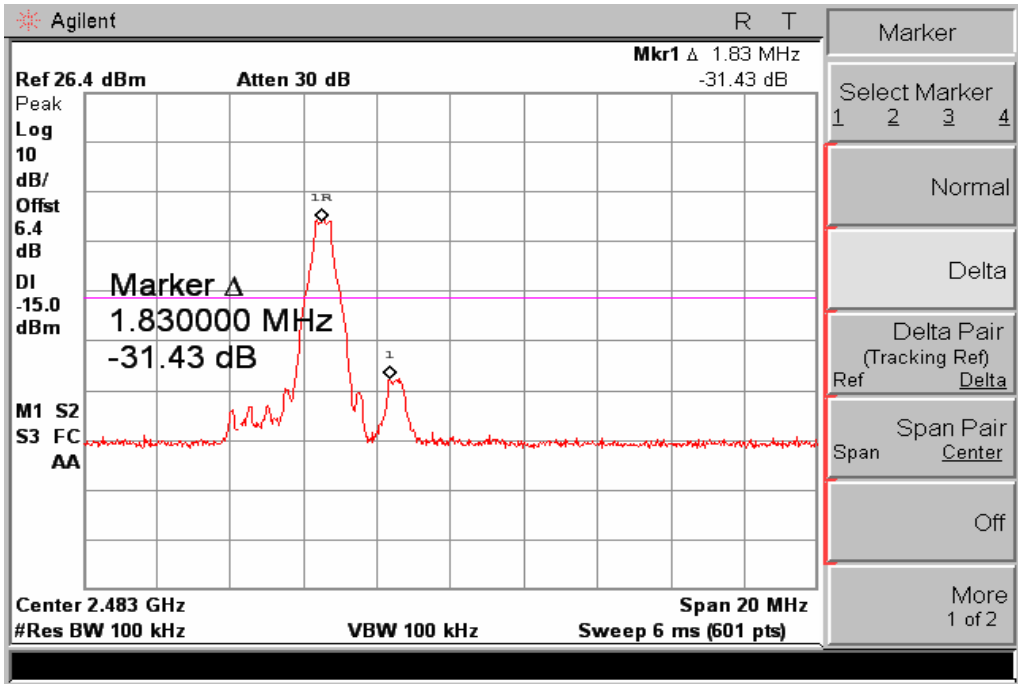
- Frequency 2480 CH 78 -

8DPSK

Channels	Frequency (MHz)	Result (dBc)	Limit (dBc)	Verdict
0	2402	**- 32.08**	- 20	**Pass**
78	2480	**- 31.43**	- 20	**Pass**



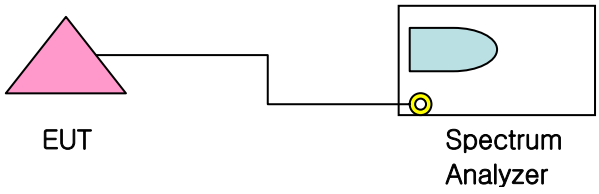
- Frequency 2402 CH 0 -



- Frequency 2480 CH 78 -

3.4. Hopping Channel Seperation

3.4.1. Test Setup Layout



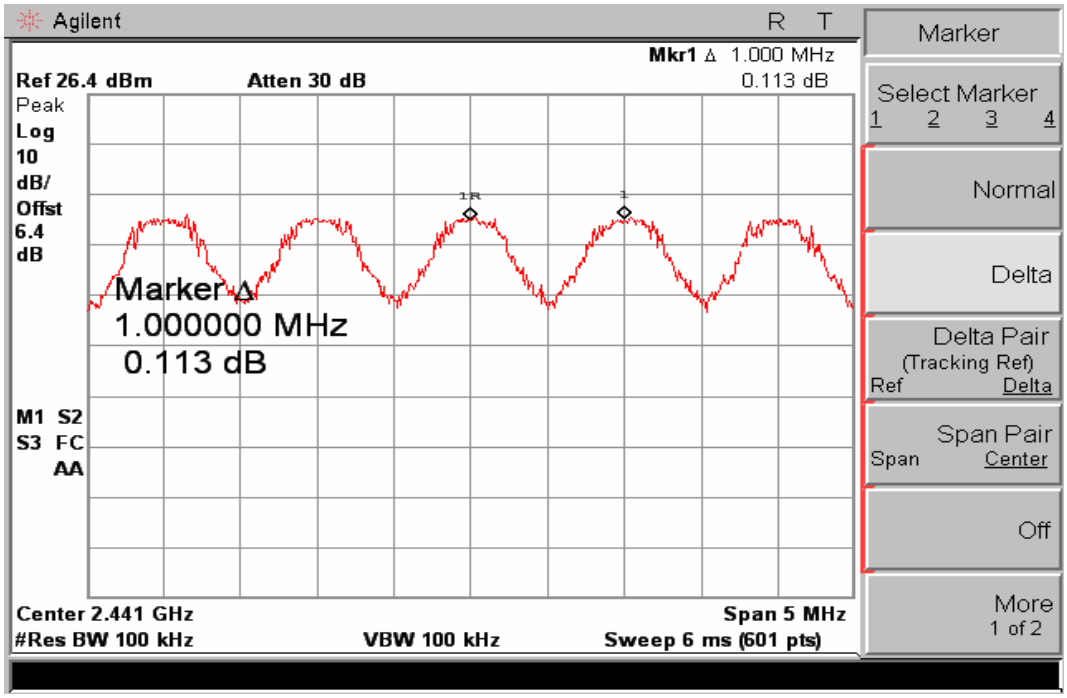
3.4.2. Test Condition

- Set RBW of Spectrum analyzer to 100 kHz
- At least 25 kHz or two-third of 20dB bandwidth of the hopping channel, whichever is greater.

3.4.3. Test result

Mode	Frequency (MHz)	Result (kHz)	Result (kHz)
8DPSK	2441	**1,000**	**944**

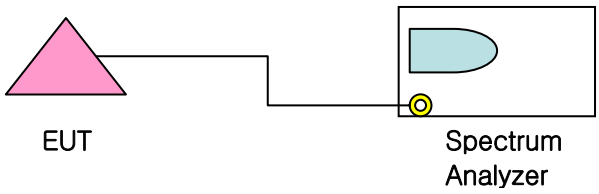
※ Two – third 20 dB bandwidth (1,461 kHz) is 944 kHz



- Frequency 2441 CH 39 -

3.5. Number of Hopping Channels

3.5.1. Test Setup Layout

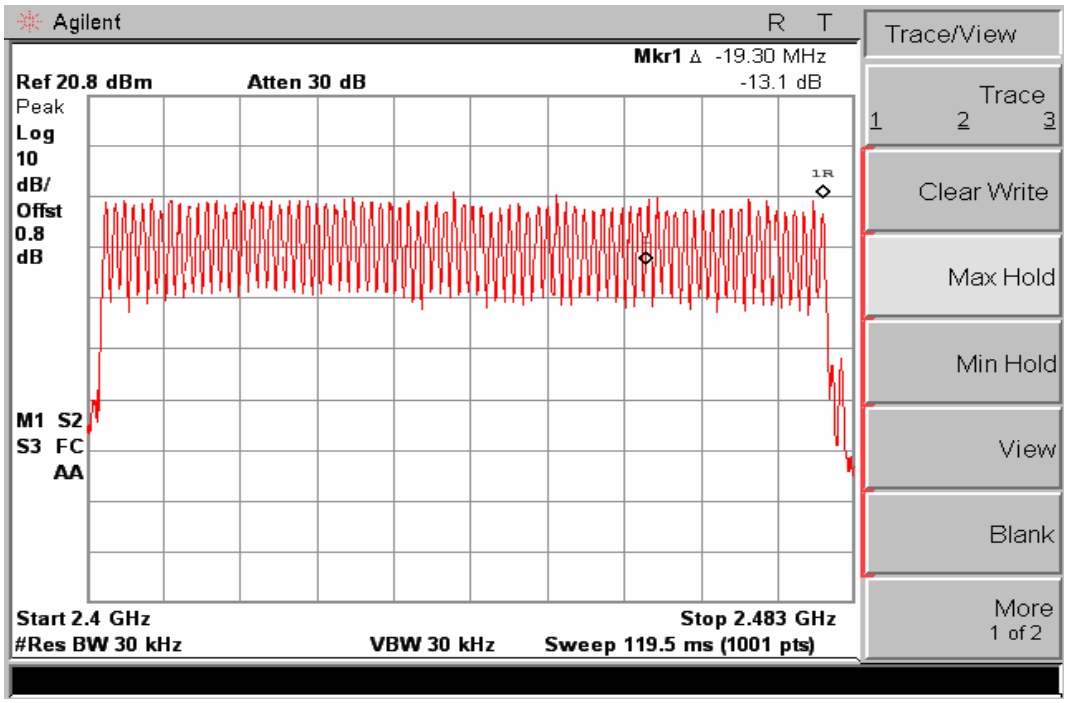


3.5.2. Test Condition

- Set RBW of Spectrum analyzer to 100 kHz
- Frequency hopping system shall have hopping channel carrier frequencies separated by minimum of 25 kHz or the 20dB bandwidth of the hopping channel, whichever is greater.

3.5.3. Test result

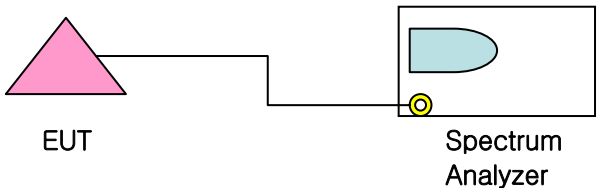
Mode	Frequency (MHz)	Result (channel)	Limit (channel)	Verdict
Hopping mode	2441	**79**	15	**Pass**



- Frequency 2441 CH 39 -

3.6. Dwell Time

3.6.1. Test Setup Layout



3.6.2. Test Condition

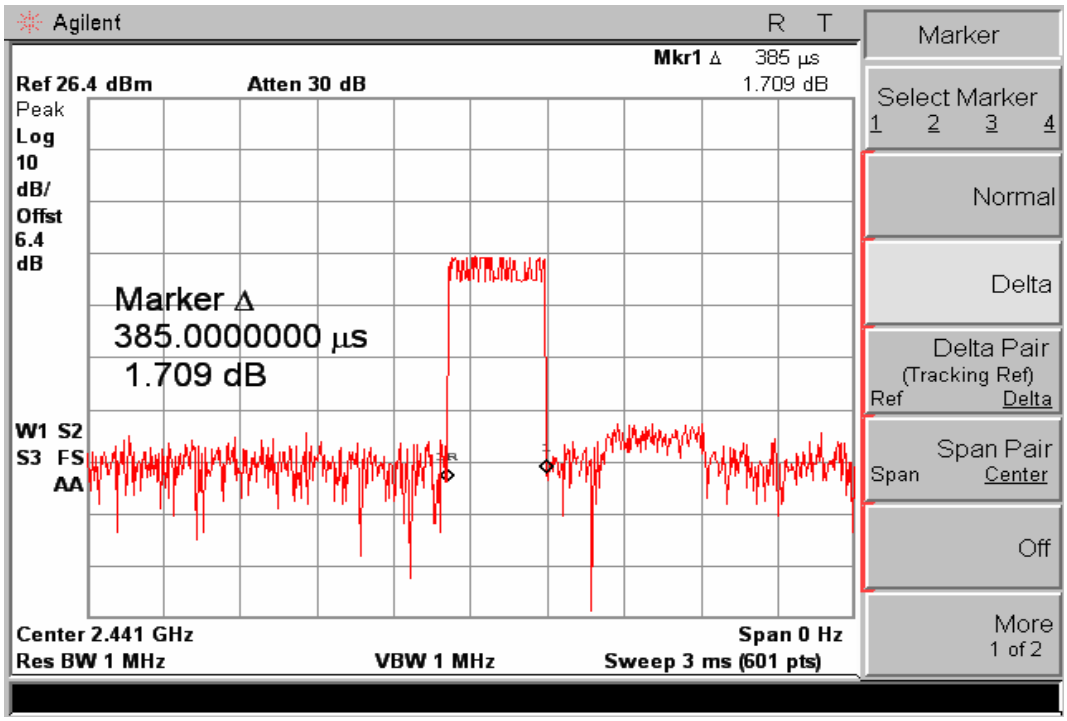
- Set RBW of Spectrum analyzer to 100 kHz, sweep time is 286.6 s
- Frequency hopping systems in the 2400-2483.5 MHz band shall use at least 15 channels. The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed. Since the Bluetooth technology uses 79 channels this period is calculated to be 31.6 seconds.

The dwell time is calculated by:
Dwell time = duty-cycle (Measured time length/Time slot) * 0.4 sec with:
- D1 Time slot = 2/1600 = 1250 us
- D3 Time slot = 4/1600 = 2500 us
- D5 Time slot = 6/1600 = 3750 us
- number of hopping channels=79

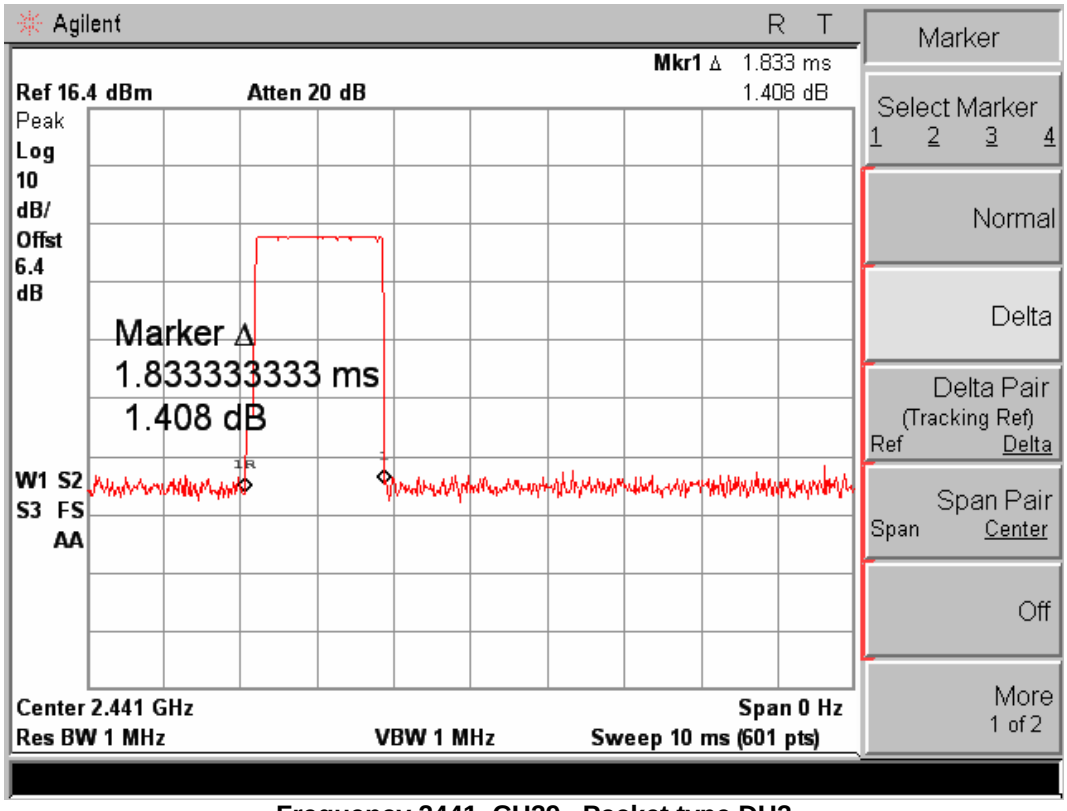
3.6.3. Test result

GFSK

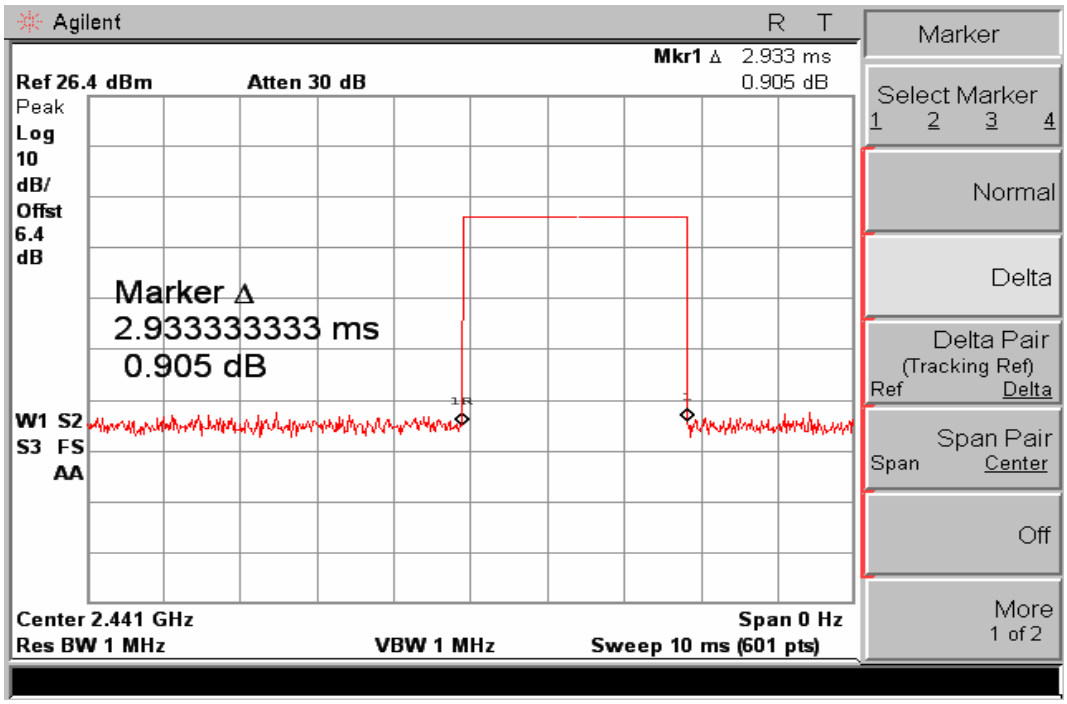
Type slot length(ms)	Dwell time (ms)	Limits (msec)	Packet type	Verdict
0.385	**123.20**	≤ 400	**DH1**	**Pass**
1.833	**293.28**	≤ 400	**DH3**	**Pass**
2.933	**312.85**	≤ 400	**DH5**	**Pass**



- Frequency 2441 CH39 Packet type DH1 -



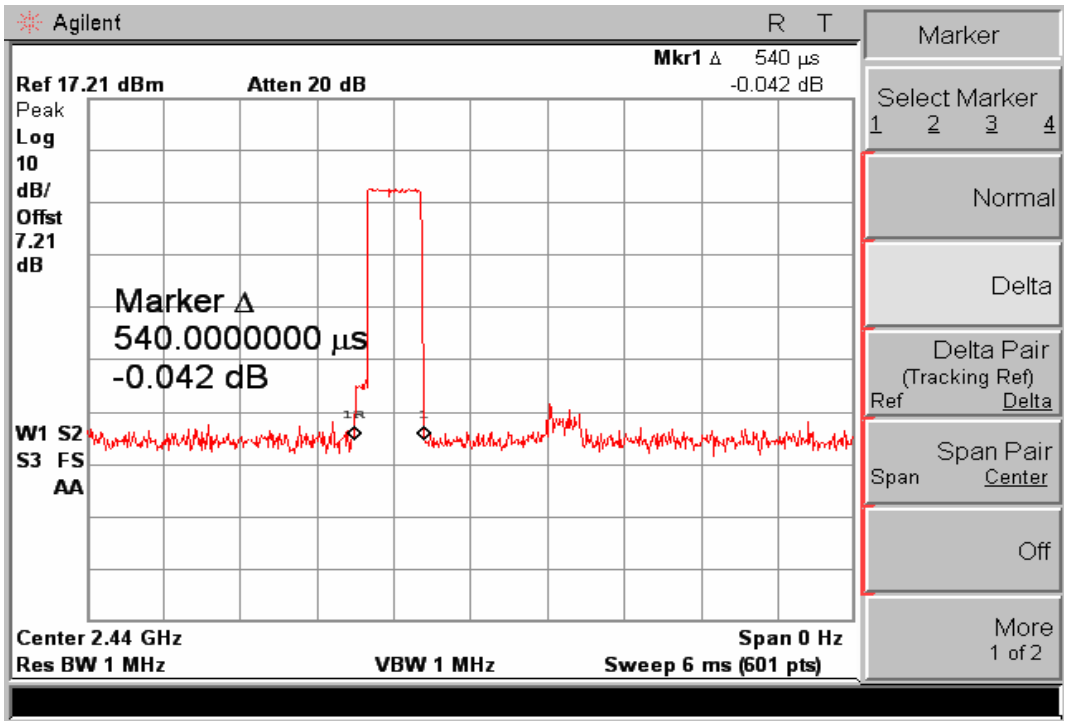
- Frequency 2441 CH39 Packet type DH3 -



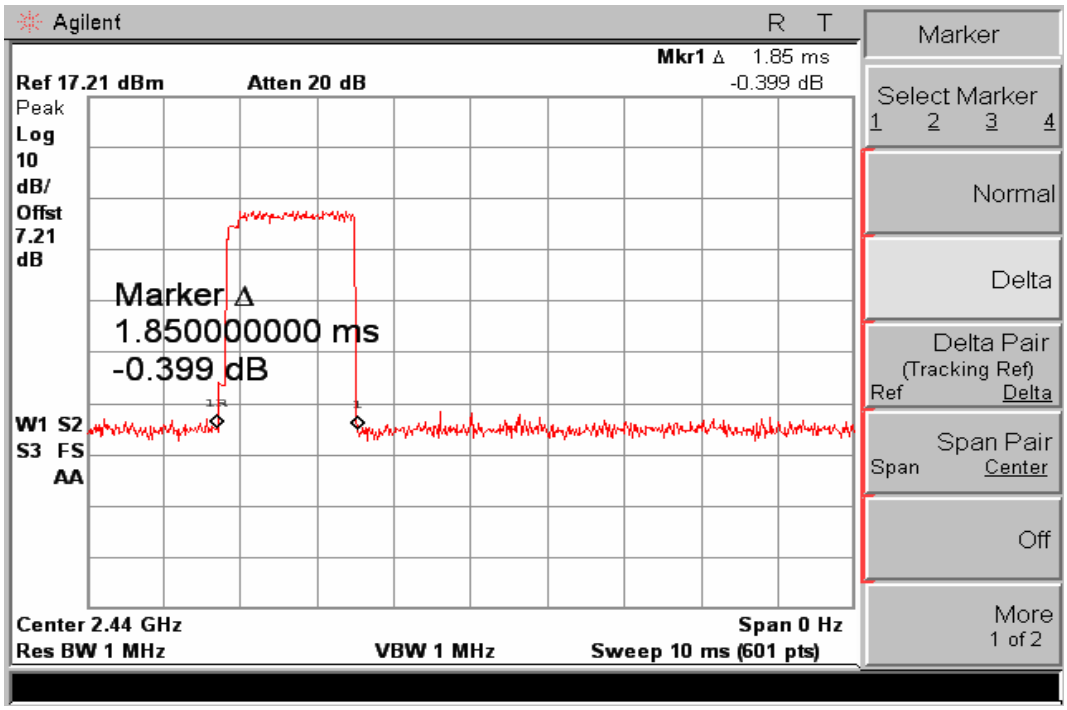
- Frequency 2480 CH 78 Packet type DH5 -

8DPSK

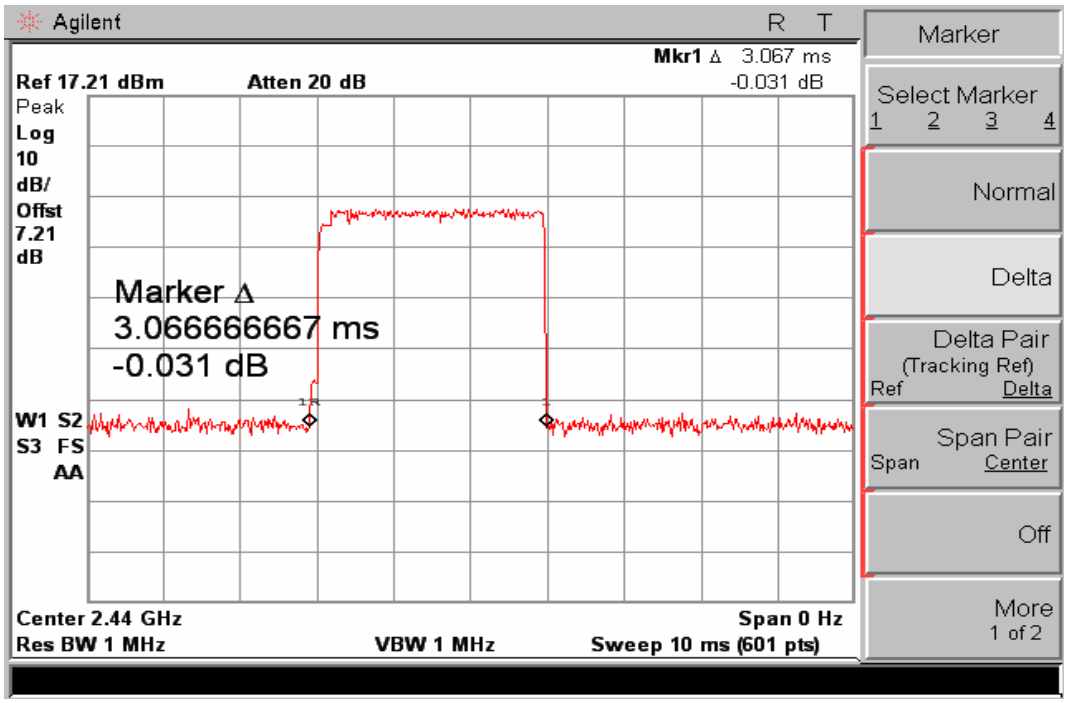
Type slot length(ms)	Dwell time (ms)	Limits (msec)	Packet type	Verdict
0.540	**172.80**	≤ 400	**DH1**	**Pass**
1.850	**296.00**	≤ 400	**DH3**	**Pass**
3.066	**327.04**	≤ 400	**DH5**	**Pass**



- Frequency 2441 CH39 Packet type DH1 -



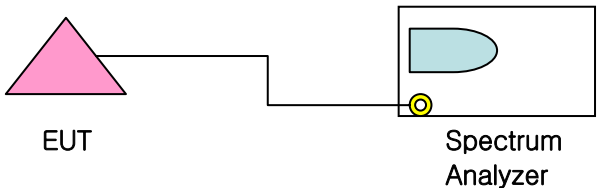
- Frequency 2441 CH39 Packet type DH3 -



- Frequency 2480 CH 78 Packet type DH5 -

3.7. Conducted Spurious Emission (FCC Part 15.247)

3.7.1. Test Setup Layout



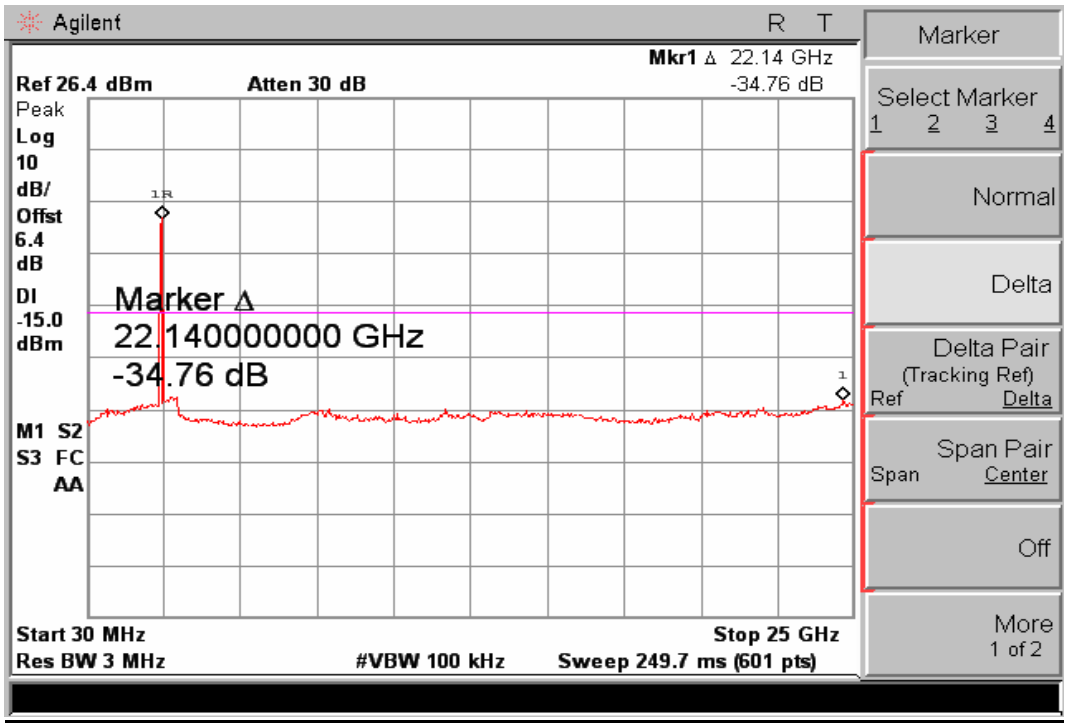
3.7.2. Test Condition

- The Equipment Under Test (EUT) was set up in a shielded room to perform the spurious emissions measurements.
- The EUT was connected to the spectrum analyzer and Bluetooth test set via a power splitter with a known loss.
- The reference value for the measurement of the spurious RF conducted emissions is determined during the test “band edge compliance” (cf. chapter 4.5). This value is used to calculate the 20 dBc limit.

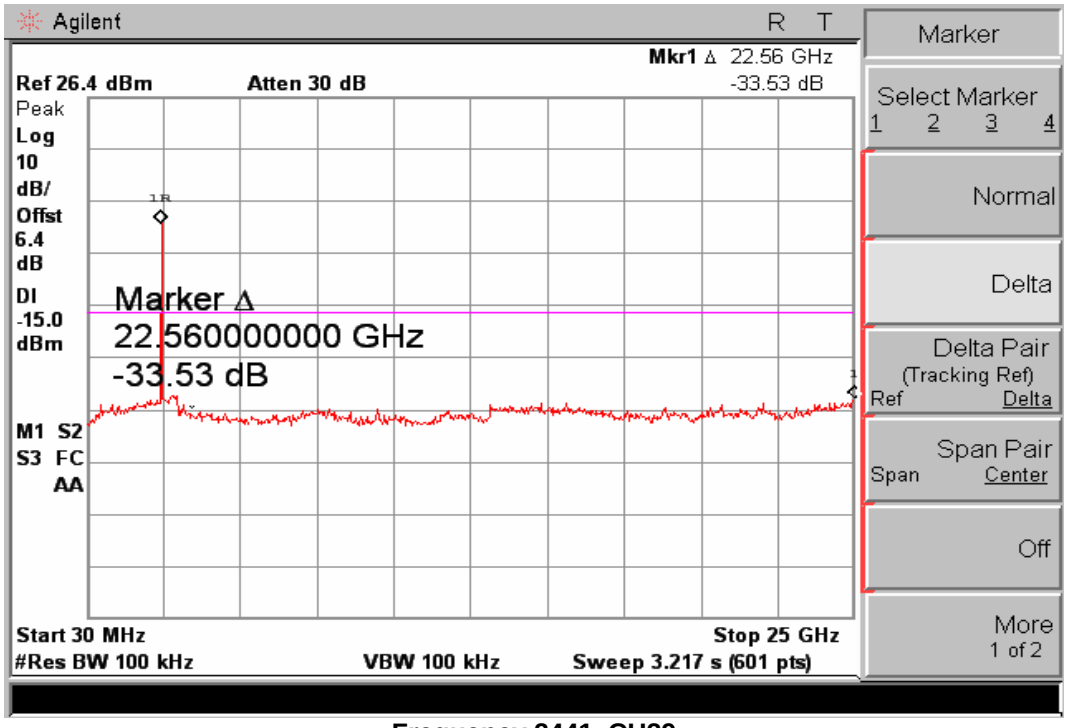
3.7.3. Test result

GFSK

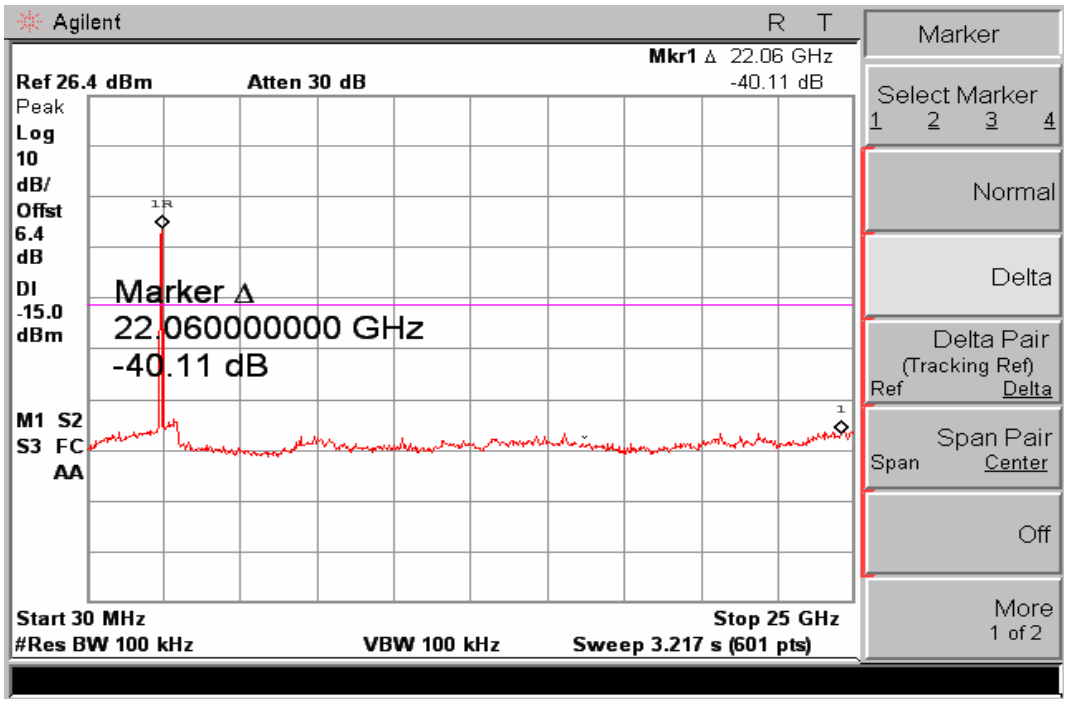
Channels	Frequency (MHz)	Result (dBc)	Limit (dBc)	Verdict
0	2402	**- 34.76**	- 20	**Pass**
39	2441	**- 33.53**	- 20	**Pass**
78	2480	**- 40.11**	- 20	**Pass**



- Frequency 2402 CH0 -



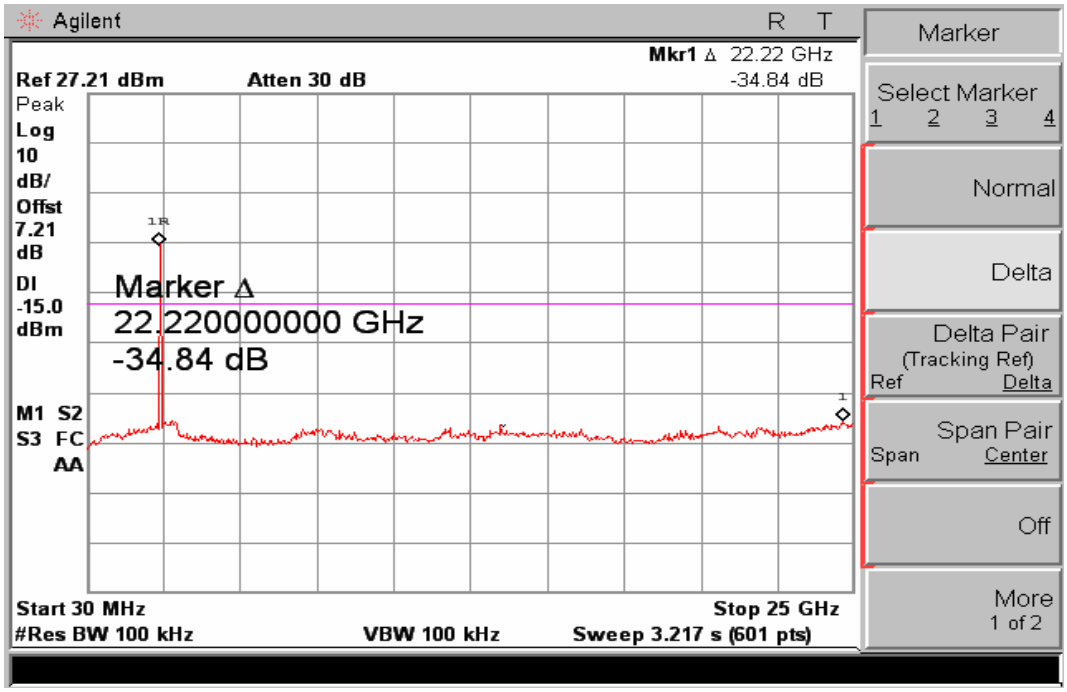
- Frequency 2441 CH39 -



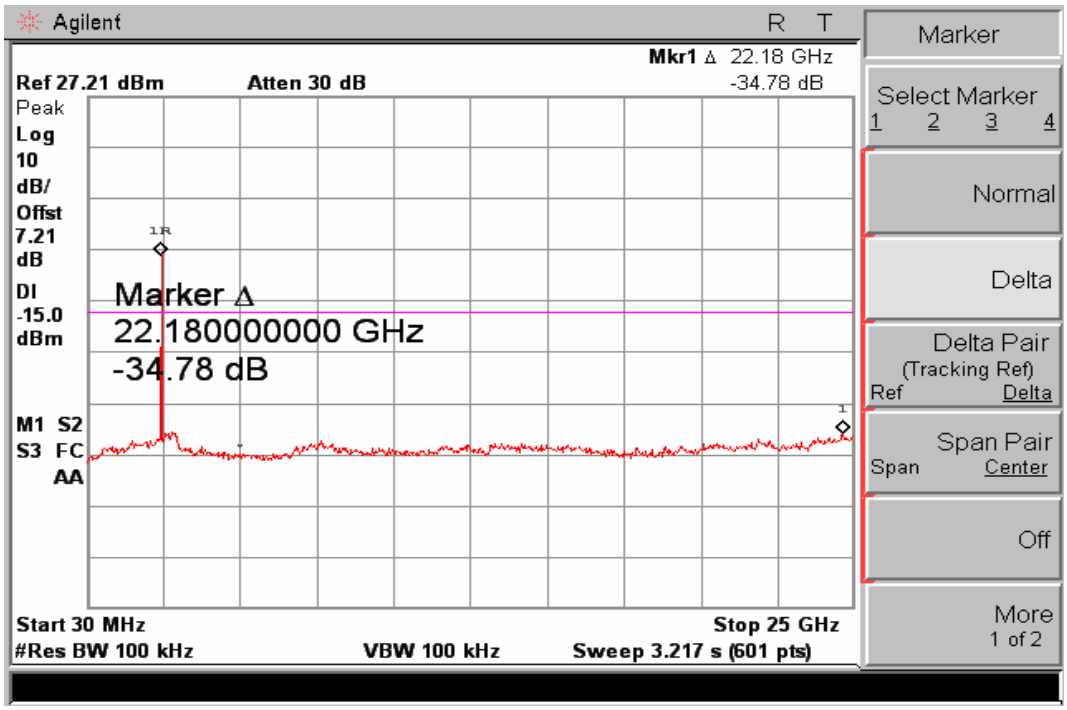
- Frequency 2480 CH 78 -

8DPSK

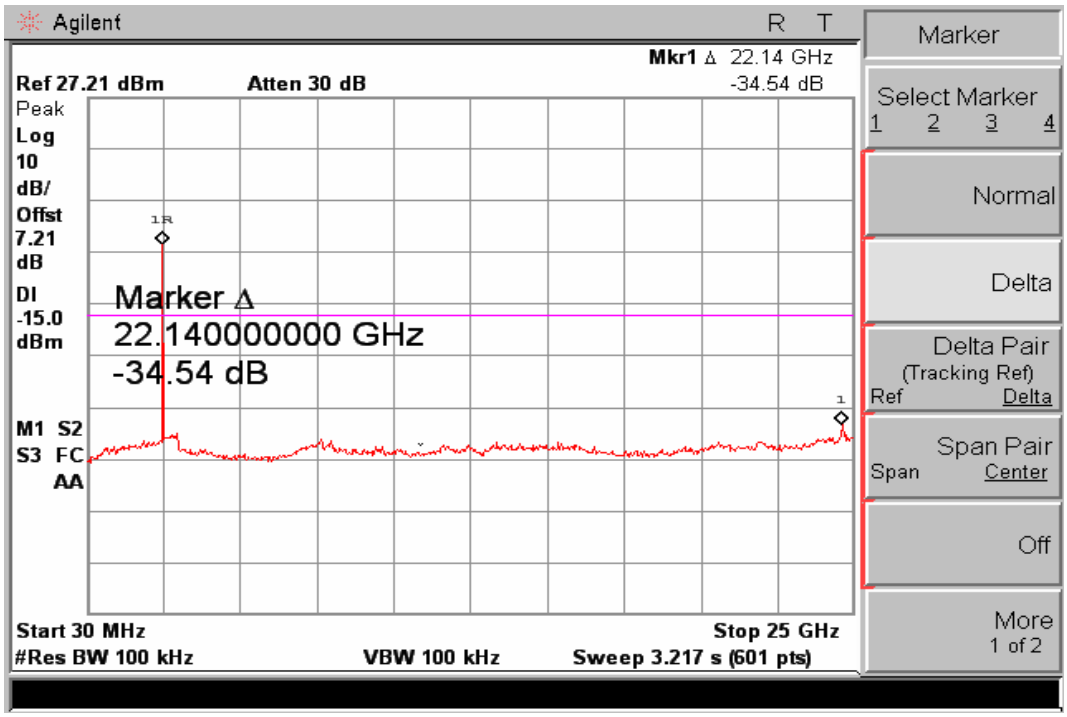
Channels	Frequency (MHz)	Result (dBc)	Limit (dBc)	Verdict
0	2402	**- 34.84**	- 20	**Pass**
39	2441	**- 34.78**	- 20	**Pass**
78	2480	**- 34.54**	- 20	**Pass**



- Frequency 2402 CH0 -



- Frequency 2441 CH39 -



- Frequency 2480 CH 78 -

3.8. Radiated Spurious Emissions

3.8.1. Test Procedure

3.8.1.1 Preliminary Testing for Reference

Preliminary testing was performed in a KTL absorber-lined room to determine the emission characteristics of the EUT. The EUT was placed on the wooden table which has dimensions of 0.8 meters in height, 1 meter in length and 1.5 meters in width. Receiving antenna (Biconi-Log antenna : 30 to 1000 MHz or Horn Antenna : 1 to 40 GHz) was placed at the distance of 3 meter from the EUT.

An attempt was made to maximize the emission level with the various configurations of the EUT. Emission levels from the EUT with various configurations were examined on a spectrum analyzer connected with a RF amplifier and graphed.
The emission was within the illumination area of the 3 dB beam width of the antenna so that the maximum emission from the EUT is measured.

3.8.1.2 Final Radiated Emission Test at an Absorber-Lined Room

The final measurement of radiated field strength was carried out in a KTL Absorber-Lined Room that was listed up at FCC according to the "Radiated Emissions Testing" procedure specified by ANSI C63.4.

Based on the test results in preliminary test, measurement was made in same test set up and configuration which produced maximum emission level. Receiving antenna was installed at 3-meter distance from the EUT, and was connected to an EMI receiver.

Turntable was rotated through 360 degrees and receiving antenna height was varied from 1 to 4 meters above the ground plane to read maximum emission level. Receiving antenna polarization was changed vertical and horizontal. The worst value was recorded.

If necessary, the radiated emission measurements could be performed at a closer distance than specified distance to ensure higher accuracy and their results were extrapolated to the specified distance using an inverse linear distance extrapolation factor (20 dB/decade) as per Section 15.31(f).

The maximum emission level from the EUT occurred in such configuration as shown in the following photograph.

Tested in x, y, z axis and worst case results are reported

The maximum frequency range measuring with the spectrum from 30 MHz to 40 GHz is investigated with the transmitter

3.8.2. Limits

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

MHz	MHz	MHz	MHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
[1]0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 - 156.52525	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2690 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.17	3260 - 3267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.2	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	322 - 335.4	3600 - 4400	[2]
13.36 - 13.41			

[1] Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.
[2] Above 38.6

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

Except as provided elsewhere in this Subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:
Frequency Field Strength Measurement Distance (MHz) (microvolts/meter) (meters)

30 - 88	100 **	3
88 - 216	150 **	3
216 - 960	200**	3
above 960	500	3

** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g., Sections 15.231 and 15.241.

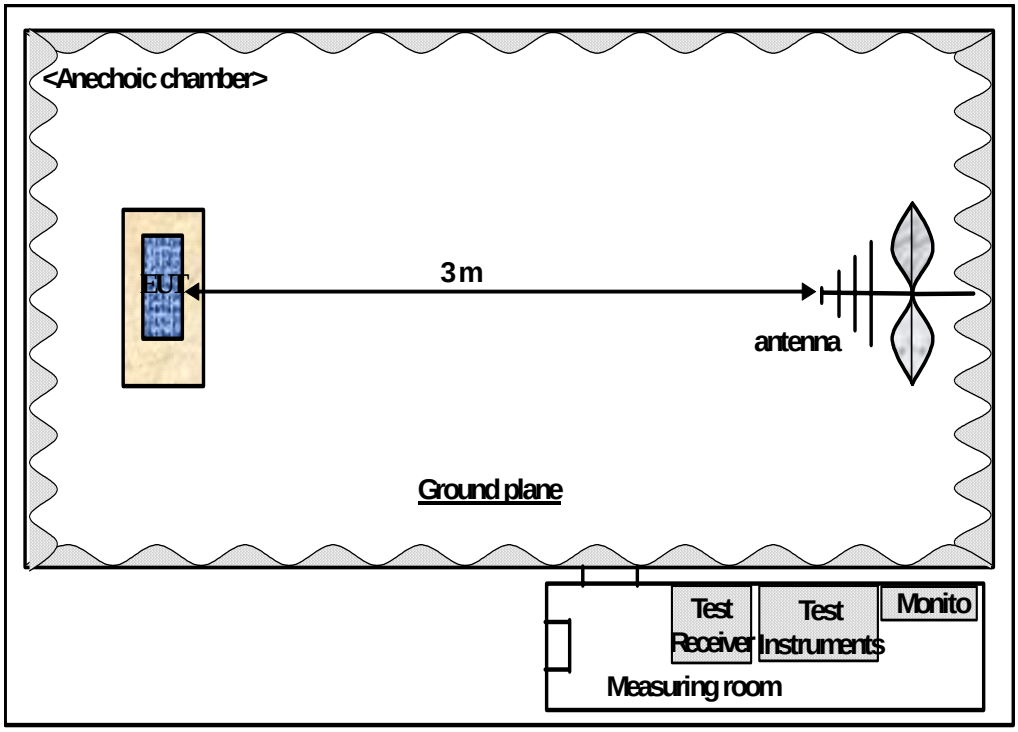
3.8.3. Sample Calculation

The emission level measured in decibels above one microvolt (dBμV) was following sample calculation.

For example ;

Measured Value at	1600 MHz	43.1 dBμV
Antenna Factor		26.5 dB
− Preamplifier& Cable loss		- 25.5dB
= Radiated Emission		dBμV/m

3.8.4. Photograph for the test configuration



3.8.5. Test Results

3.8.5.1 Spurious Radiated Emission - **GFSK**

Measurement mode	Spurious Emission Measurement continuous TX
Channel	Ch 0 (2402 MHz) / Ch 38 (2441 MHz) / Ch 78 (2480 MHz)
Resolution Bandwidth	■ Peak & Average (3dB Bandwidth : 1MHz for above 1GHz) □ Quasi-Peak (6dB Bandwidth : 120kHz for below 1GHz)
The worst case	Z axes

Frequency (MHz)	* D.M.	* A.P.	Measured Value (dBμV)	* A.F. (dB)	A.G. + C.L. (dB)	* D.C.F. (dB)	Emission Level (dBμV/m)	Limit (dBμV/m)	** Margin (dB)
1600	P	H	43.1	26.5	-25.5	0	44.1	74	-29.9
	A	H	35.4	26.5	-25.5	0	36.4	54	-17.6
1628	P	H	42.6	26.5	-25.3	0	43.8	74	-30.3
	A	H	34.4	26.5	-25.3	0	35.6	54	-18.4
1654	P	H	44.6	26.6	-25.3	0	45.9	74	-28.1
	A	H	36.3	26.6	-25.3	0	37.6	54	-16.4
3206	P	H	47.7	30.5	-20.5	0	57.7	74	-16.3
	A	H	37.2	30.5	-20.5	0	47.2	54	-6.8
3305	P	H	43.9	30.8	-20.7	0	54.0	74	-20.0
	A	H	35.1	30.8	-20.7	0	45.2	54	-8.8

Note

The observed EMI receiver (ESIB) & Spectrum Analyer(E4448A) noise floor level was 2.0 dBμV.
And all other emissions not reported on data were more than 25 dB below the permitted level.

* D.M. : Detect Mode (P : Peak, Q : Quasi-Peak, A : Average)
A.P. : Antenna Polarization (H : Horizontal, V : Vertical)
A.F. : Antenna Factor
C.L. : Cable Loss
A.G. : Amplifier Gain
D.C.F. : Distance Correction Factor
< : Less than

** Margin (dB) = Emission Level (dB) - Limit (dB)

3.8.5.2 Spurious Radiated Emission - **8DPSK**

Measurement mode	Spurious Emission Measurement continuous TX
Channel	Ch 0 (2402 MHz) / Ch 38 (2441 MHz) / Ch 78 (2480 MHz)
Resolution Bandwidth	■ Peak & Average (3dB Bandwidth : 1MHz for above 1GHz) □ Quasi-Peak (6dB Bandwidth : 120kHz for below 1GHz)
The worst case	Z axes

Frequency (MHz)	* D.M.	* A.P.	Measured Value (dB㎶)	* A.F. (dB)	* A.G. + C.L. (dB)	* D.C.F. (dB)	Emission Level (dB㎶/m)	Limit (dB㎶/m)	** Margin (dB)
1600	P	H	41.0	26.5	-25.5	0	42.0	74	-32.0
	A	H	33.5	26.5	-25.5	0	34.5	54	-19.5
1628	P	H	40.7	26.5	-25.3	0	41.9	74	-32.1
	A	H	31.6	26.5	-25.3	0	32.8	54	-21.2
1654	P	H	40.8	26.6	-25.3	0	42.1	74	-31.9
	A	H	32.9	26.6	-25.3	0	34.2	54	-19.8
3206	P	H	43.4	30.5	-20.5	0	53.4	74	-20.6
	A	H	32.9	30.5	-20.5	0	42.9	54	-11.1

Note

The observed EMI receiver (ESIB) & Spectrum Analyer(E4448A) noise floor level was 2.0 dB㎶.
And all other emissions not reported on data were more than 25 dB below the permitted level.

* D.M. : Detect Mode (P : Peak, Q : Quasi-Peak, A : Average)
A.P. : Antenna Polarization (H : Horizontal, V : Vertical)
A.F. : Antenna Factor
C.L. : Cable Loss
A.G. : Amplifier Gain
D.C.F. : Distance Correction Factor
< : Less than

** Margin (dB) = Emission Level (dB) - Limit (dB)

3.8.5.3 Radiated Emission

Measurement mode	Radiated Emission Measurement RX
Channel	Ch 0 (2402 MHz) / Ch 38 (2441 MHz) / Ch 78 (2480 MHz)
Resolution Bandwidth	☐ Peak & Average (3dB Bandwidth : 1MHz for above 1GHz) ■ Quasi-Peak (6dB Bandwidth : 120kHz for below 1GHz)
The worst case	Z axes

Frequency (MHz)	* D.M.	* A.P.	Measured Value (dBμV)	* A.F. (dB)	* A.G. + C.L. (dB)	* D.C.F. (dB)	Emission Level (dBμV/m)	Limit (dBμV/m)	** Margin (dB)
31.5	Q	V	16.5	12.2	0.7	0	29.4	40.0	-10.6
92.3	Q	H	22.0	8.0	1.2	0	31.2	43.5	-12.3
176.6	Q	H	18.8	11.4	1.6	0	31.8	43.5	-11.7
177.8	Q	H	19.7	11.4	1.6	0	32.7	43.5	-10.8
264.9	Q	H	19.6	11.8	2.0	0	33.4	46.4	-13.0
284.9	Q	V	16.7	12.4	2.1	0	31.2	46.4	-15.2
927.7	Q	H	17.0	23.8	4.0	0	44.8	46.4	-1.6

Note

The observed EMI receiver (ESIB) & Spectrum Analyer(E4448A) noise floor level was 2.0 dBμV.
And all other emissions not reported on data were more than 25 dB below the permitted level.

* D.M. : Detect Mode (P : Peak, Q : Quasi-Peak, A : Average)
A.P. : Antenna Polarization (H : Horizontal, V : Vertical)
A.F. : Antenna Factor
C.L. : Cable Loss
A.G. : Amplifier Gain
D.C.F. : Distance Correction Factor
< : Less than

** Margin (dB) = Emission Level (dB) - Limit (dB)

4. TEST EQUIPMENTS

No.	Equipment	Manufacturer	Model	S/N	Effective Cal.Duration
1	EMI Receiver (20 Hz ~ 26.5 GHz)	R&S	ESIB	100280	08/17/2007 ~ 08/17/2008
2	Spectrum Analyzer (100 Hz ~ 26.5 GHz)	Agilent	E4407B	US41443316	12/01/2007 ~ 12/01/2008
3	Spectrum Analyzer (3 Hz ~ 50 GHz)	Agilent	E4448A	MY43360322	08/30/2007 ~ 08/30/2008
4	Pre-Amplifier (100 kHz ~ 1 GHz)	SONOMA.	310N	186270	08/25/2007 ~ 08/25/2008
5	Pre-Amplifier (0.5 GHz ~ 26.5 GHz)	Agilent	83017A	MY39500982	04/02/2008 ~ 04/02/2009
6	LISN(50 Ω , 50 μH) (10 kHz ~ 100 MHz)	R&S	ESH3-Z5	826789009	07/05/2007 ~ 07/05/2008
7	Biconi-Log Ant. (30 MHz ~ 1000 MHz)	Schwarzbeck	VULB9168	9168-180	08/24/2007 ~ 08/24/2008
8	Horn Ant. (1 GHz ~ 18 GHz)	EMCO	3115	9012-3595	03/26/2007 ~ 03/26/2009
9	Horn Ant. (18 GHz ~ 40 GHz)	EMCO	3116	2664	03/26/2007 ~ 03/26/2009
10	Active Loop Ant. (9 kHz ~ 30 MHz)	EMCO	6502	2532	06/08/2007 ~ 06/08/2008
11	DC Power Supply	Agilent	E4356A	MY41000296	10/01/2007 ~ 10/01/2008
12	Power Meter	Agilent	E4417A	GB4129075	09/17/2007 ~ 09/17/2008
13	Bluetooth tester	anrisu	MT8852B	6K00006994	03/03/2008 ~ 03/03/2009

Appendix.1 EUT photo

Front

Appendix.2 Test setup photo

<Radiated Emission>