EMC
TEST REPORT

Report No. : TS08040046
Model No. : BT-3000
Issued Date : Jan. 14, 2009

Applicant:	**BPVOICE CO., LTD.** **2F, NO, 23-2 HONGMAO, SINFONG TOWNSHIP,** **HSINCHU COUNTY, 304, TAIWAN**
Test Method/ Standard:	**FCC Part 15 Subpart C Section §15.205、§15.207、§15.209、§15.247, DA 00-705 and ANSI C63.4/2003.**
Test By:	**Intertek Testing Services Taiwan Ltd.** **No. 11, Lane 275, Ko-Nan 1 Street, Chia-Tung Li,** **Shiang-Shan District, Hsinchu City, Taiwan**

The test report was prepared by: Sign on File
Julie Wang/ Assistant

These measurements were taken by: Sign on File
Jacky Chen/ Engineer

The test report was reviewed by: Jimmie Liu

Name Jimmie Liu
Title Engineer

Table of Contents

Summary of Tests

Bluetooth Telephone -Model: BT-3000
FCC ID: V9RBT-3000

Test	Reference	Results
20dB Bandwidth test	15.247(a)(1)	Pass
Carrier Frequency Separation test	15.247(a)(1)	Pass
Number of hopping frequencies test	15.247(a)(1)	Pass
Time of Occupancy (dwell time) test	15.247(a)(1)	Pass
Maximum Output Power test	15.247(b)	Pass
RF Antenna Conducted Spurious test	15.247(d)	Pass
Radiated Spurious Emission test	15.205, 15.209	Pass
Emission on the Band Edge test	15.247(d)	Pass
AC Power Line Conducted Emission test	15.207	Pass

1. General information

1.1 Identification of the EUT

Product:	Bluetooth Telephone
Model No.:	BT-3000
FCC ID.:	V9RBT-3000
Frequency Range:	2402 MHz ~ 2480 MHz
Channel Number:	79 channels
Frequency of Each Channel:	2402 + k MHz; k = 0-78
Type of Modulation:	FHSS
Power Supply:	DC 6 V from adapter (Model No:AM-6400) I/P Voltage: 120 Vac, 60Hz
Power Cord:	N/A
Sample Received:	Apr. 08, 2008
Test Date(s):	Oct. 13, 2008 ~ Oct. 17, 2008
Note 1:	This report is for the exclusive use of Intertek's Client and is provided pursuant to the agreement between Intertek and its Client. Intertek's responsibility and liability are limited to the terms and conditions of the agreement. Intertek assumes no liability to any party, other than to the Client in accordance with the agreement, for any loss, expense or damage occasioned by the use of this report. Only the Client is authorized to permit copying or distribution of this report and then only in its entirety. Any use of the Intertek name or one of its marks for the sale or advertisement of the tested material, product or service must first be approved in writing by Intertek. The observations and test results in this report are relevant only to the sample tested. This report by itself does not imply that the material, product, or service is or has ever been under an Intertek certification program.
Note 2:	When determining the test conclusion, the Measurement Uncertainty of test has been considered.

A FCC DoC report has been generated for the client.

1.2 Additional information about the EUT

The EUT is a Bluetooth Telephone, and was defined as information technology equipment.

For more detail features, please refer to User's manual as file name “Installation guide.pdf”

1.3 Antenna description

The EUT uses a permanently connected antenna.

Antenna Gain : 2.1 ± 0.5dBi max
Antenna Type : Dipole antenna
Connector Type : Direct connect

1.4 Peripherals equipment

Peripherals	Manufacturer	Product No.	Serial No.	FCC ID
Notebook PC	DELL	PP05L	CN-5G5152-48643-498-6810	CN-5G5152-48643-498-6810
Telephone	TENTEL	K-903S	0514000940	N/A
Exchange Board	Teltone	250-00193-07	94948	N/A
Modem	Dynalink	V1456VQE	00V230A00051494	00V230A00051494
Printer	HP	DeskJet 400	SG5CQ170C0	B94C2642X

2. Test specifications

2.1 Test standard

The EUT was performed according to the procedures in FCC Part 15 Subpart C Section § 15.205、§15.207、§15.209、§15.247, DA 00-705 and ANSI C63.4/2003.

The test of radiated measurements according to FCC Part15 Section 15.33(a) had been conducted and the field strength of this frequency band were all meet limit requirement, thus we evaluate the EUT pass the specified test.

2.2 Operation mode

The EUT was supplied with DC 6 V from adapter (Test Voltage: 120 Vac, 60 Hz) and it was running in control program “Blue tool” mode.

2.3 Test equipment

Equipment	Brand	Frequency range	Model No.
EMI Test Receiver	Rohde & Schwarz	9kHz~2.75GHz	ESCS 30
Spectrum Analyzer	Rohde & Schwarz	9kHz~30GHz	FSP 30
Spectrum Analyzer	Rohde & Schwarz	20Hz~40GHz	FSEK 30
Horn Antenna	SCHWARZBECK	1GHz~18GHz	BBHA 9120 D
Horn Antenna	SCHWARZBECK	14GHz~40GHz	BBHA 9170
Bilog Antenna	SCHWARZBECK	25MHz~1.7GHz	VULB 9168
Pre-Amplifier	MITEQ	100MHz~26.5GHz	919981
Pre-Amplifier	MITEQ	26GHz~40GHz	828825
Wideband Peak Power Meter/ Sensor	Anritsu	100MHz~18GHz	ML2487A/ MA2491A
Controller	HDGmbH	N/A	HD 100
Antenna Tower	HDGmbH	N/A	MA 240
Turn Table	HDGmbH	N/A	DS 420S
LISN	Rohde & Schwarz	9KHz~30MHz	ESH3-Z5

Note: The above equipments are within the valid calibration period.

3. 20dB Bandwidth test

3.1 Operating environment

Temperature:	23	℃
Relative Humidity:	53	%
Atmospheric Pressure:	1023	hPa

3.2 Test setup & procedure

The test procedure was according to FCC measurement guidelines DA 00-705.
The 20dB bandwidth per FCC §15.247(a)(1) was measured using a 50 ohm spectrum analyzer with the resolutions bandwidth set at 100 kHz, the video bandwidth≧RBW, and the SPAN may equal to approximately 2 to 3 times the 20dB bandwidth. The test was performed at 3 channels (lowest, middle and highest channel). The maximum 20dB modulation bandwidth is in the following Table.

3.3 Measured data of modulated bandwidth test results

Test Mode: GFSK

Channel	Frequency (MHz)	Bandwidth (kHz)
0	2402	866.73
39	2441	826.65
78	2480	876.75

Test Mode: π/4 DQPSK

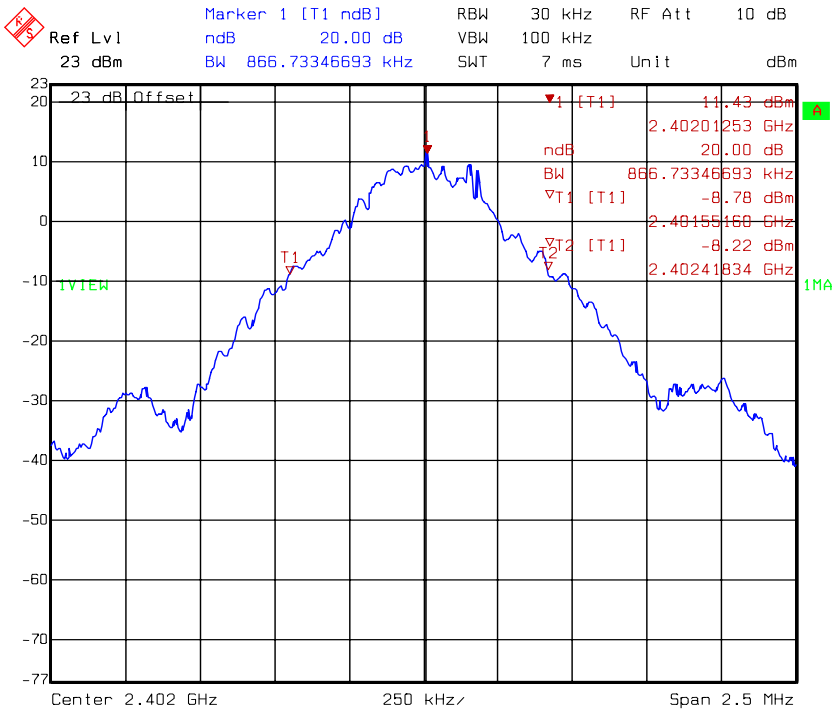
Channel	Frequency (MHz)	Bandwidth (kHz)
0	2402	1267.54
39	2441	1257.52
78	2480	1257.52

Test Mode: 8DPSDK

Channel	Frequency (MHz)	Bandwidth (kHz)
0	2402	1277.56
39	2441	1272.55
78	2480	1287.58

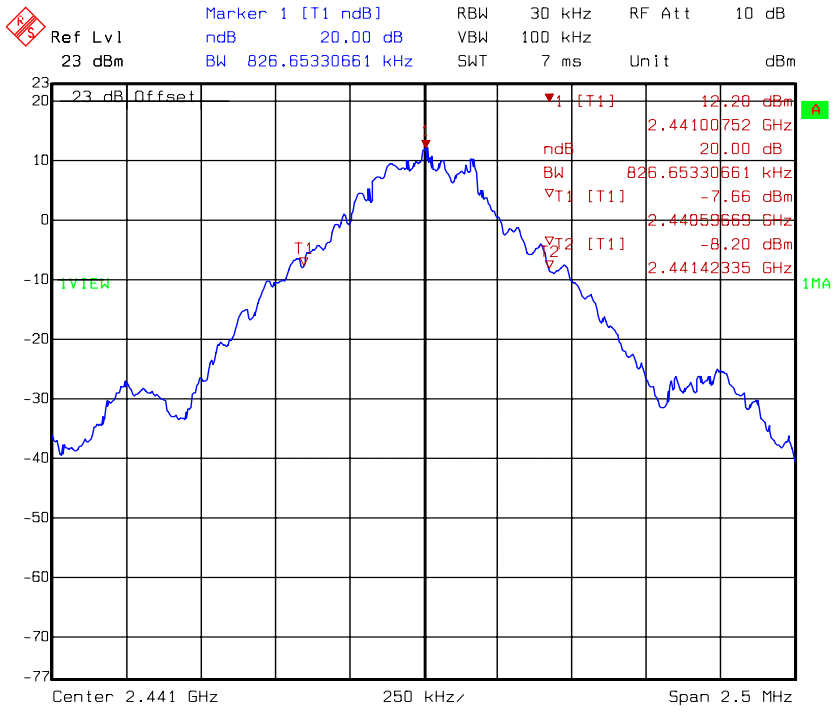
Please see the plot below.

20 dB Bandwidth @ GFSK mode channel 0



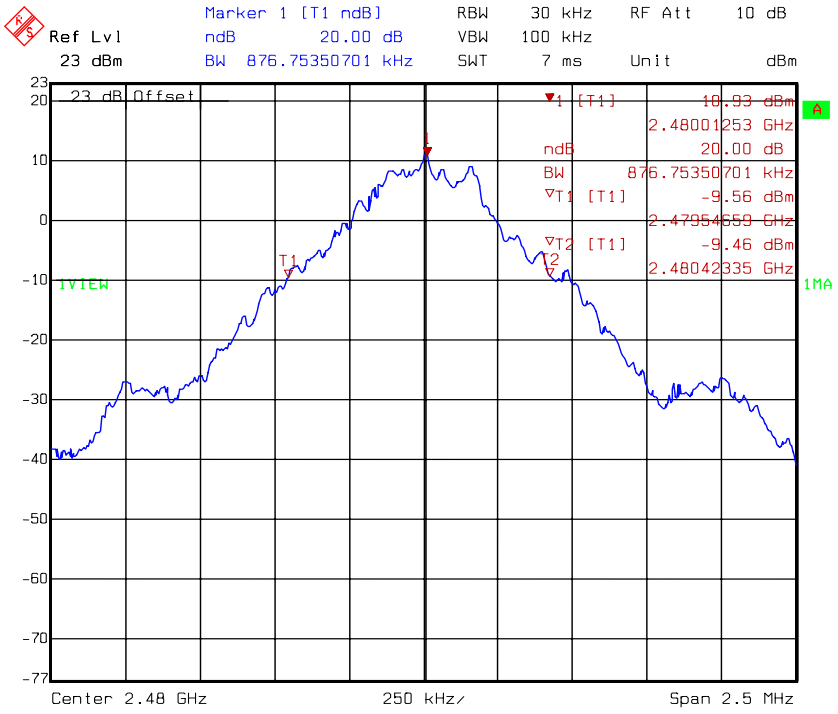
Title: 20dB Bandwidth
Comment A: CH 0 at Bluetooth mode

20 dB Bandwidth @ GFSK mode channel 39



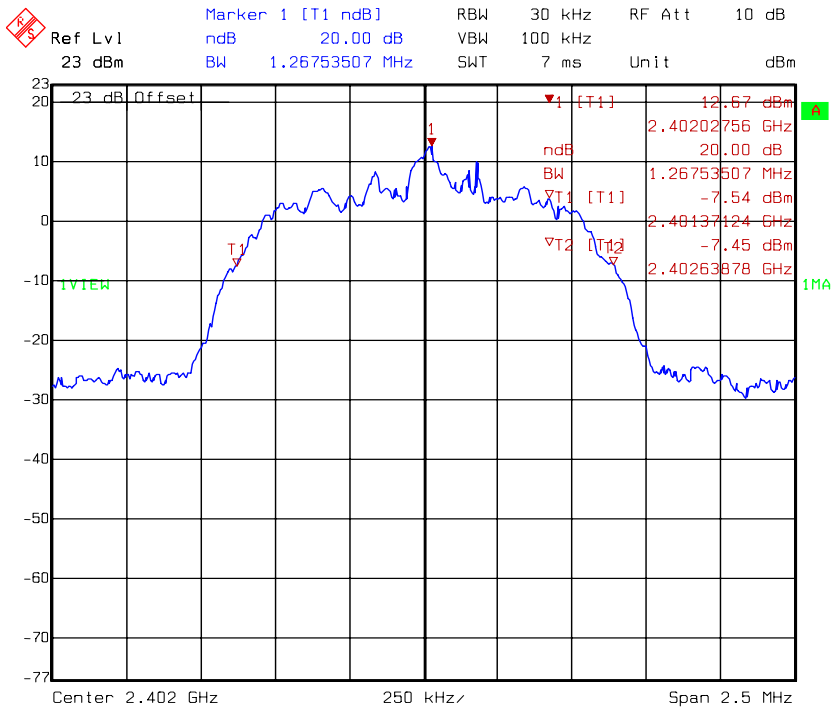
Title: 20dB Bandwidth
Comment A: CH 39 at Bluetooth mode

20 dB Bandwidth @ GFSK mode channel 78



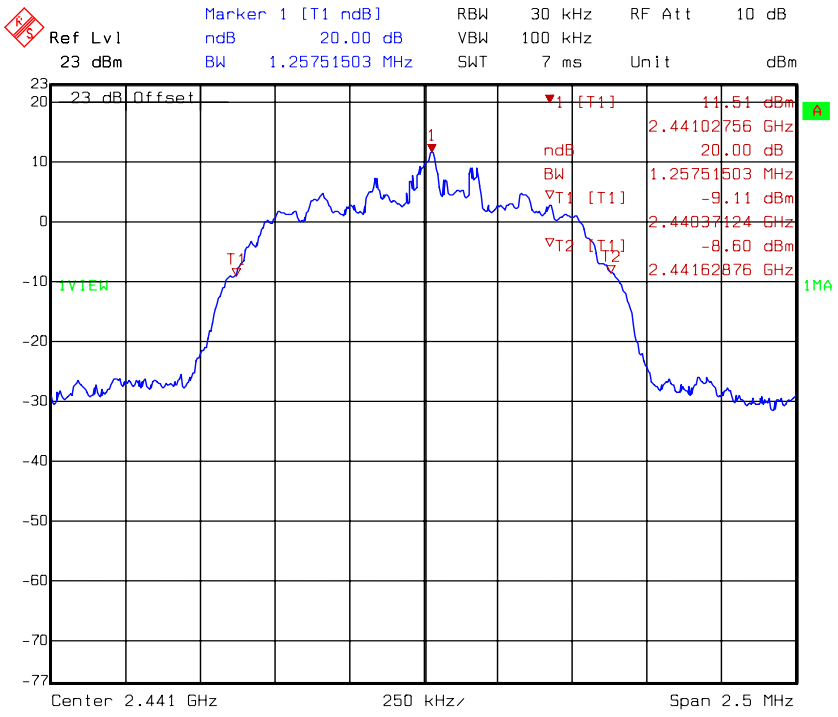
Title: 20dB Bandwidth
Comment A: CH 78 at Bluetooth mode

20 dB Bandwidth @ π/4 DPSK mode channel 0



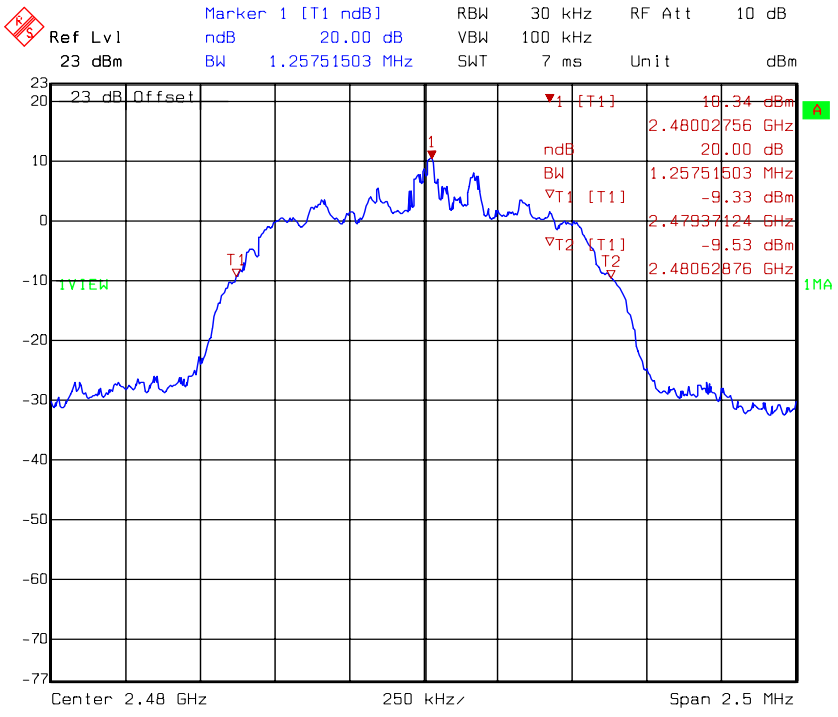
Title: 20dB Bandwidth
Comment A: CH 0 at Bluetooth mode

20 dB Bandwidth @ π/4 DPSK mode channel 39



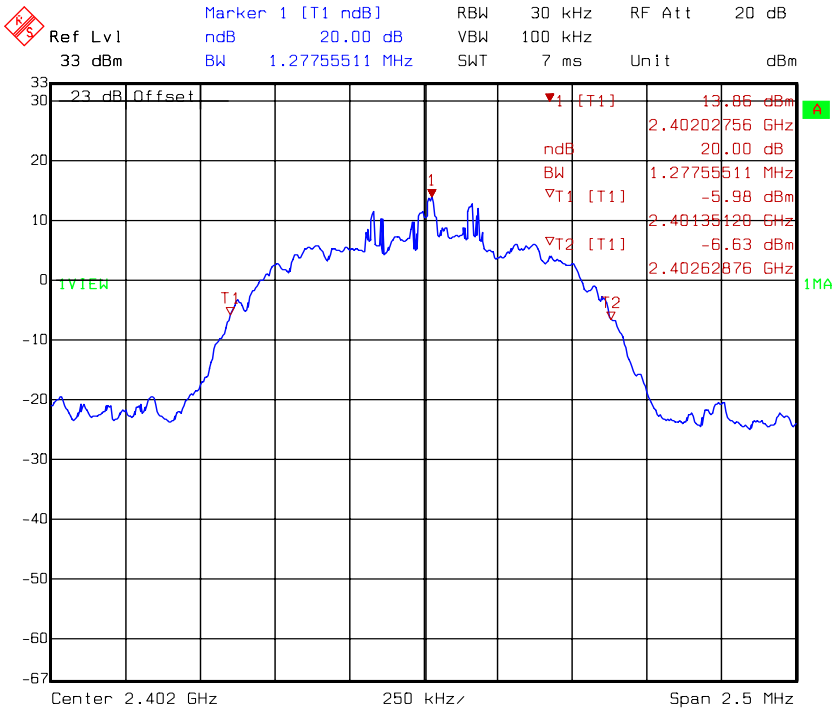
Title: 20dB Bandwidth
Comment A: CH 39 at Bluetooth mode

20 dB Bandwidth @ π/4 DPSK mode channel 78



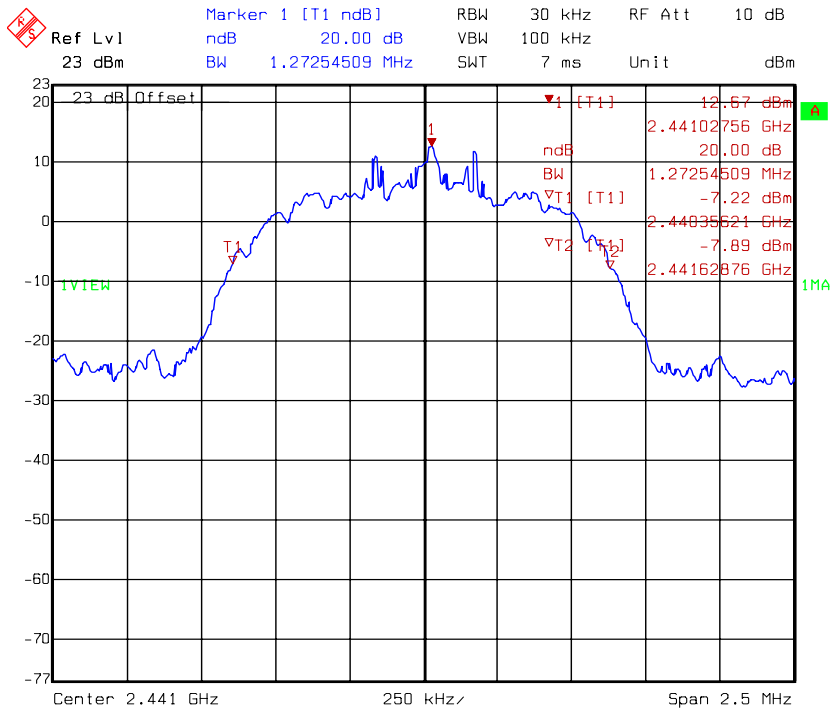
Title: 20dB Bandwidth
Comment A: CH 78 at Bluetooth mode

20 dB Bandwidth @ 8 DPSK mode channel 0



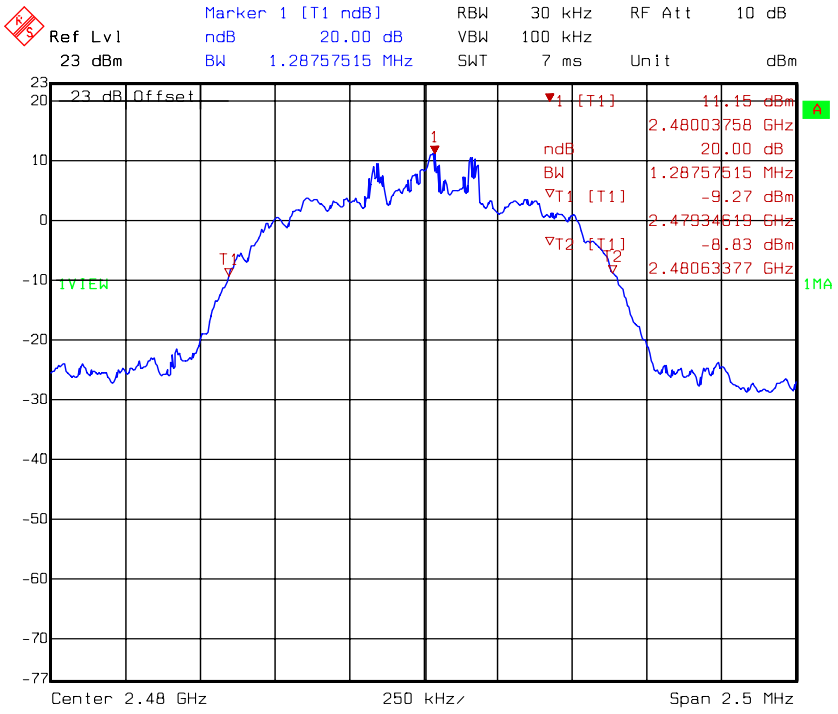
Title: 20dB Bandwidth
Comment A: CH 0 at Bluetooth mode

20 dB Bandwidth @ 8 DPSK mode channel 39



Title: 20dB Bandwidth
Comment A: CH 39 at Bluetooth mode

20 dB Bandwidth @ 8 DPSK mode channel 78



Title: 20dB Bandwidth
Comment A: CH 78 at Bluetooth mode

4. Carrier Frequency Separation test

4.1 Operating environment

Temperature:	23	℃
Relative Humidity:	55	%
Atmospheric Pressure:	1023	hPa

4.2 Test setup & procedure

The test procedure was according to FCC measurement guidelines DA 00-705.
The carrier frequency separation per FCC §15.247(a)(1) was measured using a 50 ohm spectrum analyzer with the resolutions bandwidth set at ≧1% of the span, the video bandwidth≧RBW, and the SPAN was wide enough to capture the peaks of two adjacent channels. The carrier frequency separation result is in the following Table.

4.3 Measured data of Carrier Frequency Separation test result

Test Mode: GFSK

Channel	Frequency (MHz)	Measurement Frequency separation (kHz)
1	2402	1.002
2	2403	

Test Mode: π/4 DQPSK

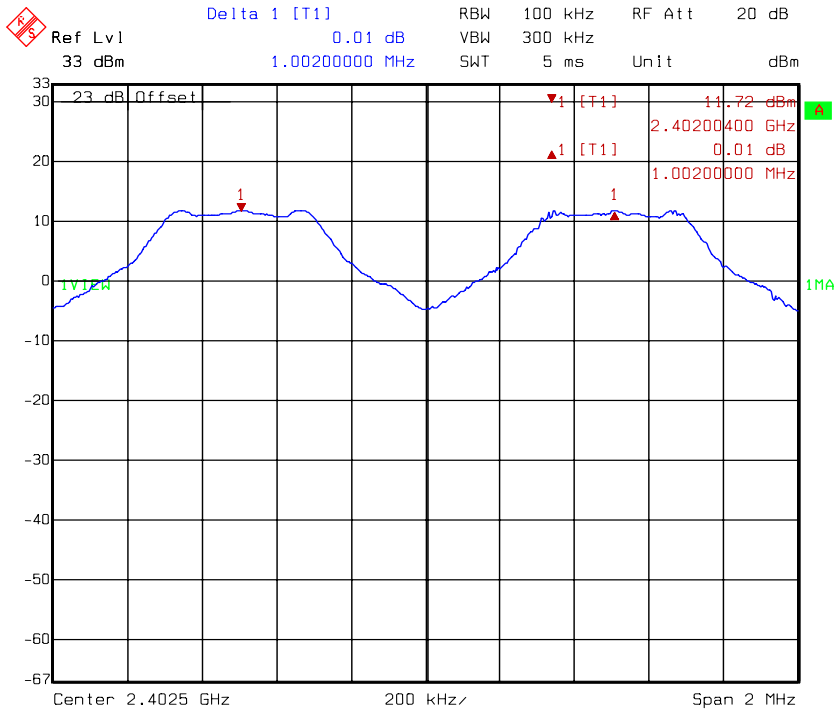
Channel	Frequency (MHz)	Measurement Frequency separation (kHz)
1	2402	0.998
2	2403	

Test Mode: 8DPSK

Channel	Frequency (MHz)	Measurement Frequency separation (kHz)
1	2402	0.998
2	2403	

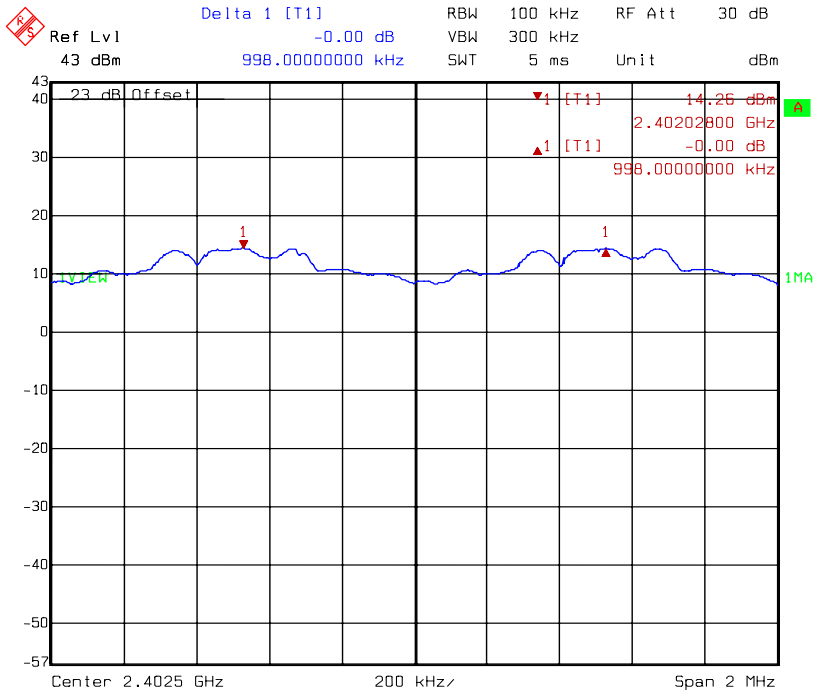
Please see the plot below.

Carrier Frequency Separation @ GFSK mode



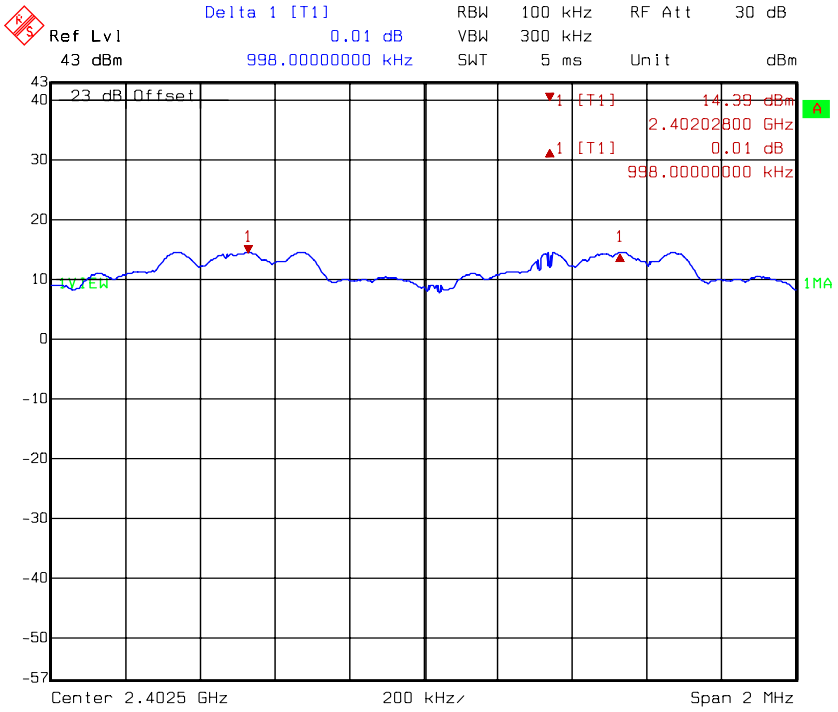
Title: Carrier freq. separation
Comment A: at Bluetooth mode

Carrier Frequency Separation @ π /4 DPSK mode



Title: Carrier freq. separation
Comment A: at Bluetooth mode
Date: 12.OCT.2007 12:57:46

20 dB Bandwidth @ 8DPSK mode



Title: Carrier freq. separation
Comment A: at Bluetooth mode

5. Number of hopping frequencies test

5.1 Operating environment

Temperature:	23	℃
Relative Humidity:	55	%
Atmospheric Pressure:	1023	hPa

5.2 Test setup & procedure

The test procedure was according to FCC measurement guidelines DA 00-705.
The number of hopping frequencies per FCC §15.247(a)(1) was measured using a 50 ohm spectrum analyzer with the resolutions bandwidth set at ≧1% of the span, the video bandwidth≧RBW, and the SPAN was the frequency band of operation. The carrier frequency separation result is in the following Table.

5.3 Measured data of number of hopping frequencies test result

Test Mode: GFSK

Frequency Range (MHz)	Total hopping channels
2400 ~ 2483.5	79

Test Mode: π/4 DQPSK

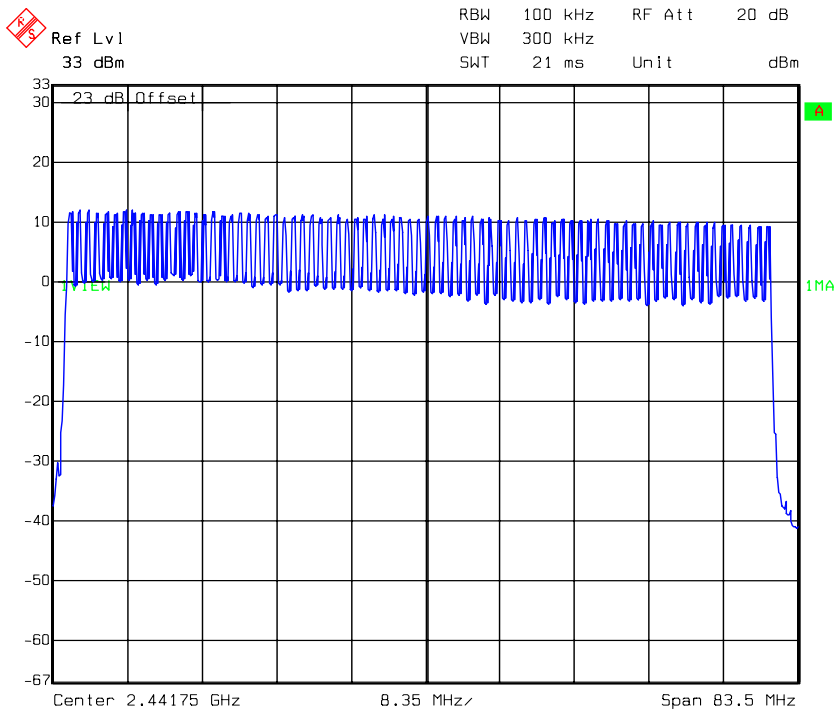
Frequency Range (MHz)	Total hopping channels
2400 ~ 2483.5	79

Test Mode: 8DPSK

Frequency Range (MHz)	Total hopping channels
2400 ~ 2483.5	79

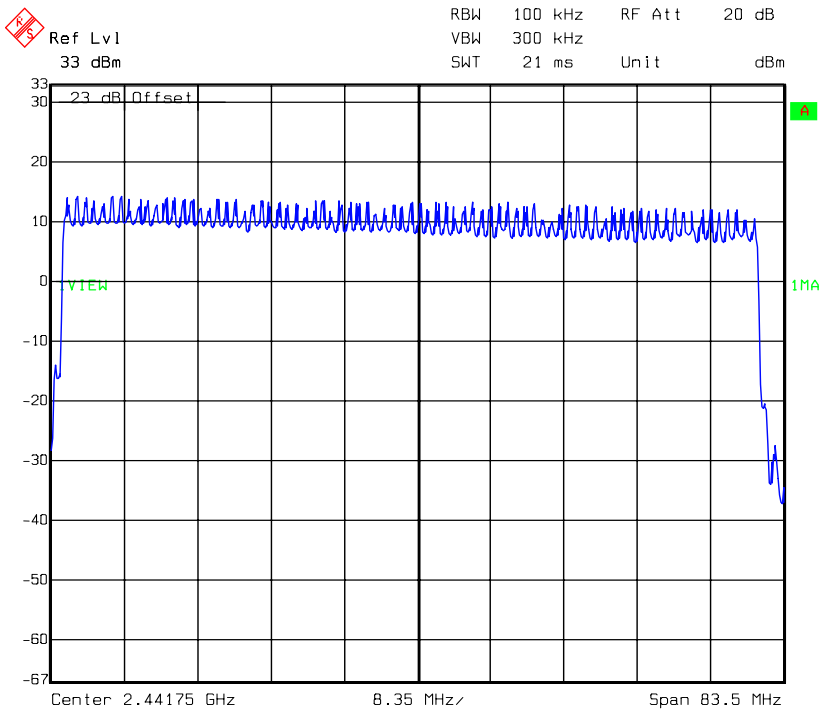
Please see the plot below.

Number of hopping frequencies @ GFSK mode



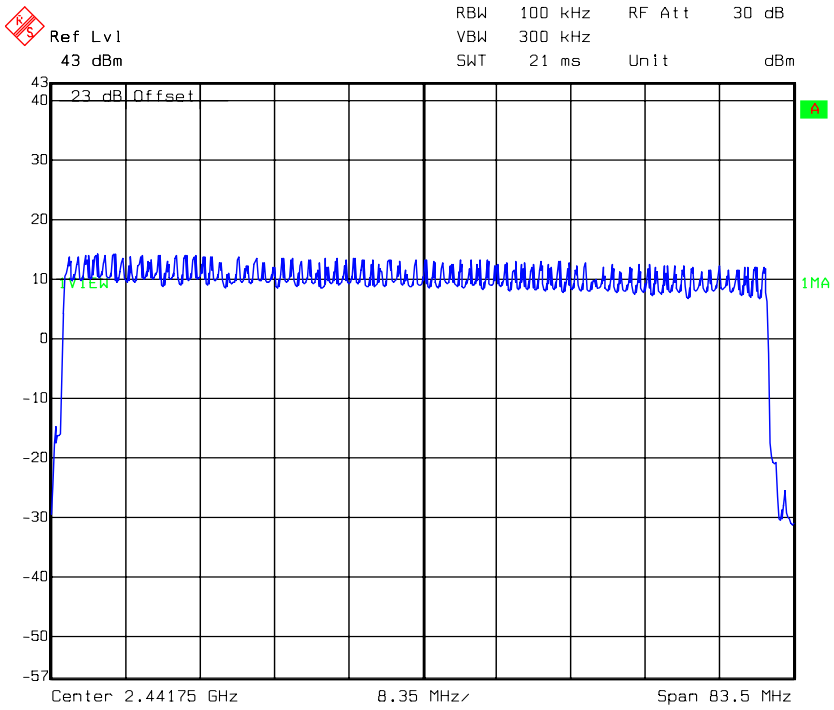
Title: Number of hopping freq.
Comment A: CH 0 at Bluetooth mode

Number of hopping frequencies @ π /4 DPSK mode



Title: Number of hopping freq.
Comment A: CH 0 at Bluetooth mode

Number of hopping frequencies @ 8DPSK mode



Title: Number of hopping freq.
Comment A: CH 0 at Bluetooth mode

6. Time of Occupancy (dwell time) test

6.1 Operating environment

Temperature:	25	℃
Relative Humidity:	55	%
Atmospheric Pressure:	1023	hPa

6.2 Test setup & procedure

The test procedure was according to FCC measurement guidelines DA 00-705.
The time of occupancy (dwell time) per FCC §15.247(a)(1) was measured using a 50 ohm spectrum analyzer with the resolutions bandwidth set at 1MHz, the video bandwidth≧RBW, and the zero span function of spectrum analyzer was enable. The EUT has its hopping function enable.

The system makes worst case 1600 hops per second or 1 time slot has a length of 625μs with 79 channels.

Test Mode: GFSK

Time of occupancy (dwell time) for DH1

hop rate = 1/2 * 1600 = 800
Dwell time = 417μs * 800Hz / 79 * 31.6sec = 133.44 ms

Time of occupancy (dwell time) for DH3

hop rate = 1/4 * 1600 = 400
Dwell time = 1.67ms * 400Hz / 79 * 31.6sec = 267.20 ms

Time of occupancy (dwell time) for DH5

hop rate = 1/6 * 1600 = 266.667
Dwell time = 2.92ms * 266.667Hz / 79 * 31.6sec =311.47 ms

Test Mode: π /4 DQPSK

Time of occupancy (dwell time) for DH1

hop rate = 1/2 * 1600 = 800
Dwell time = 428μs * 800Hz / 79 * 31.6sec = 136.96 ms

Time of occupancy (dwell time) for DH3

hop rate = 1/4 * 1600 = 400
Dwell time = 1.68ms * 400Hz / 79 * 31.6sec = 268.80 ms

Time of occupancy (dwell time) for DH5

hop rate = 1/6 * 1600 = 266.667
Dwell time =2.93ms * 266.667Hz / 79 * 31.6sec =312.53 ms

Test Mode: 8DPSK

Time of occupancy (dwell time) for DH1

hop rate = 1/2 * 1600 = 800
Dwell time = 425μs * 800Hz / 79 * 31.6sec = 136.00 ms

Time of occupancy (dwell time) for DH3

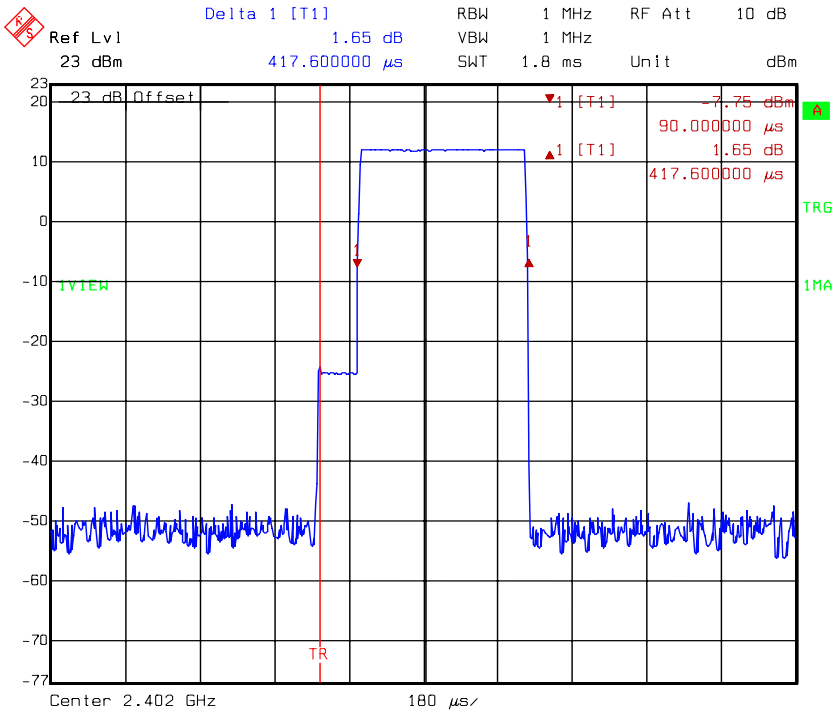
hop rate = 1/4 * 1600 = 400
Dwell time = 1.68ms * 400Hz / 79 * 31.6sec = 268.80 ms

Time of occupancy (dwell time) for DH5

hop rate = 1/6 * 1600 = 266.667
Dwell time =2.94ms * 266.667Hz / 79 * 31.6sec =313.60 ms

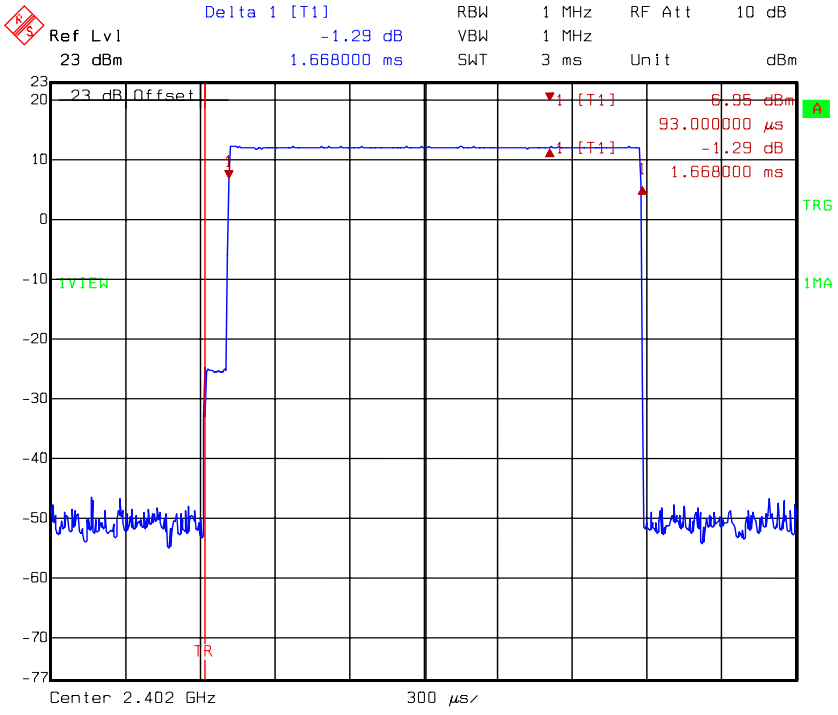
Please see the plot below.

Dwell time @ GFSK mode DH 1



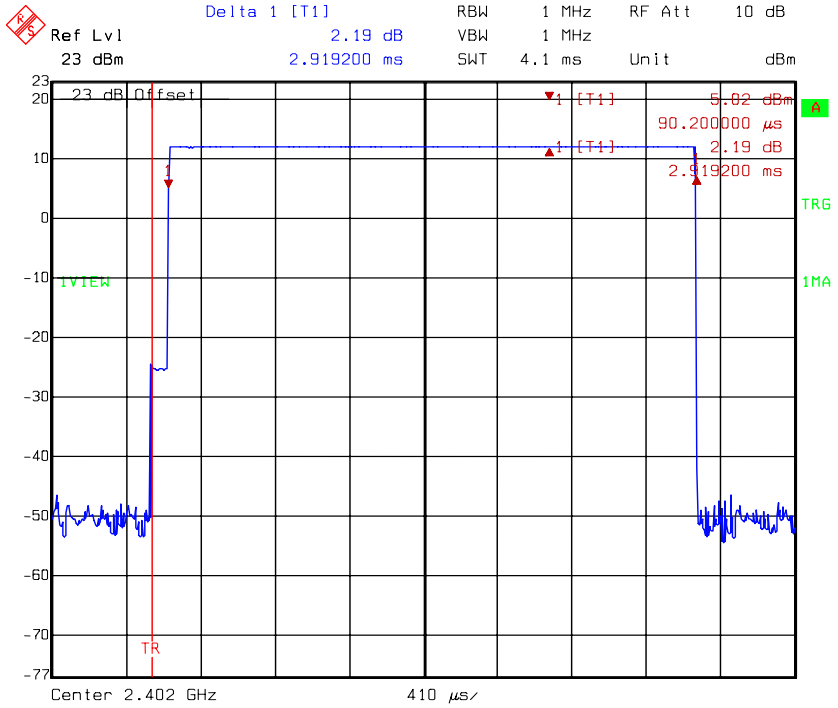
Title: Time of occupancy
Comment A: CH 0 at Bluetooth mode DH1

Dwell time @ GFSK mode DH 3



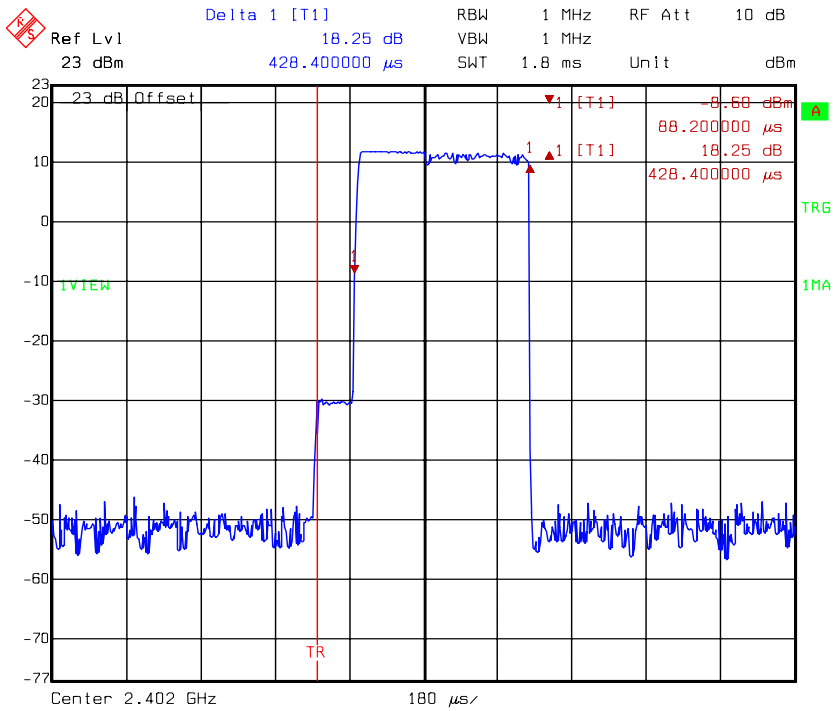
Title: Time of occupancy
Comment A: CH 0 at Bluetooth mode DH3

Dwell time @ GFSK mode DH 5



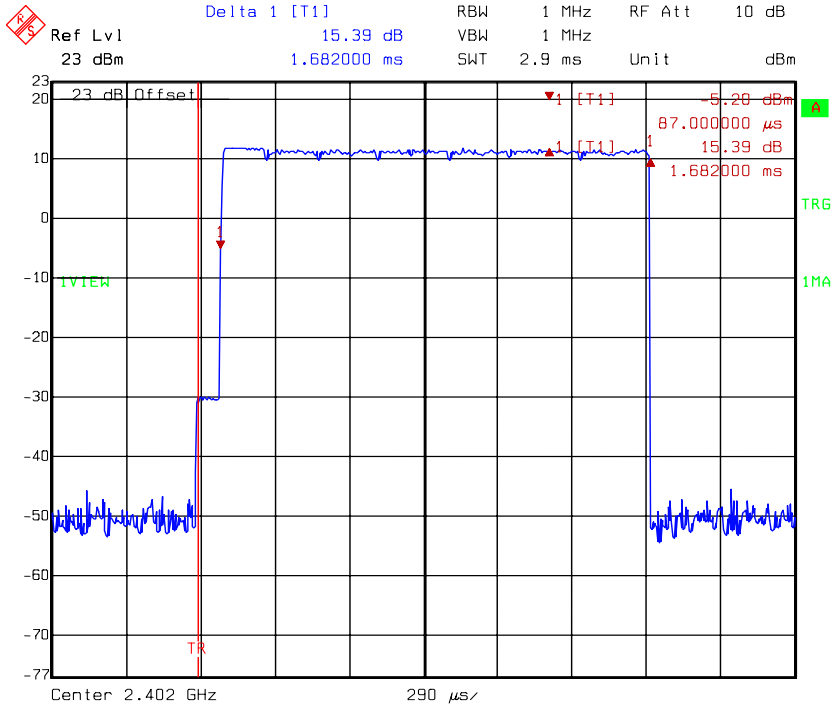
Title: Time of occupancy
Comment A: CH 0 at Bluetooth mode DH5

Dwell time @ π/4 DPSK mode DH 1



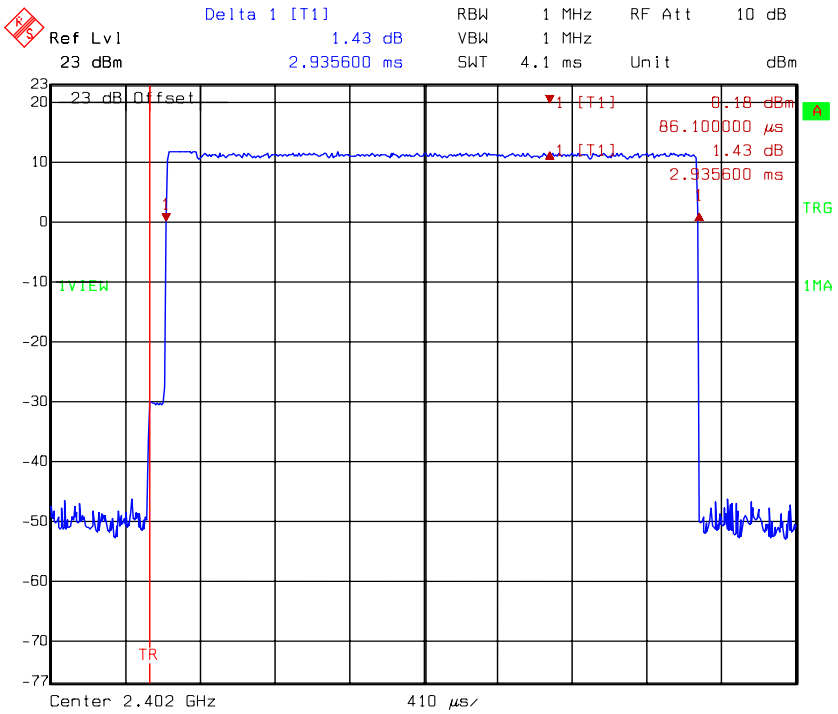
Title: Time of occupancy
Comment A: CH 0 at Bluetooth mode DH1

Dwell time @ π/4 DPSK mode DH 3



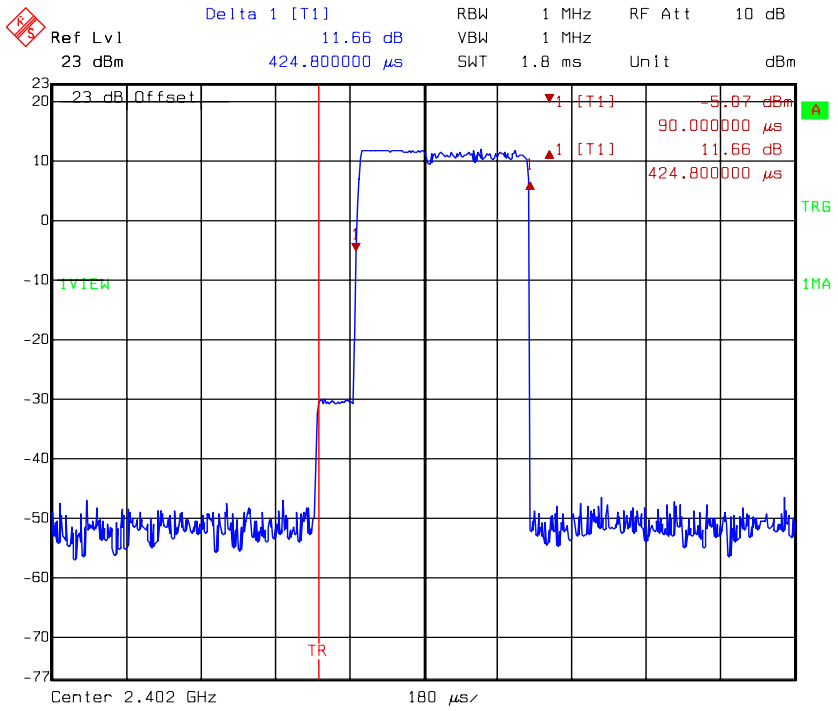
Title: Time of occupancy
Comment A: CH 0 at Bluetooth mode DH3

Dwell time @ π/4 DPSK mode DH 5



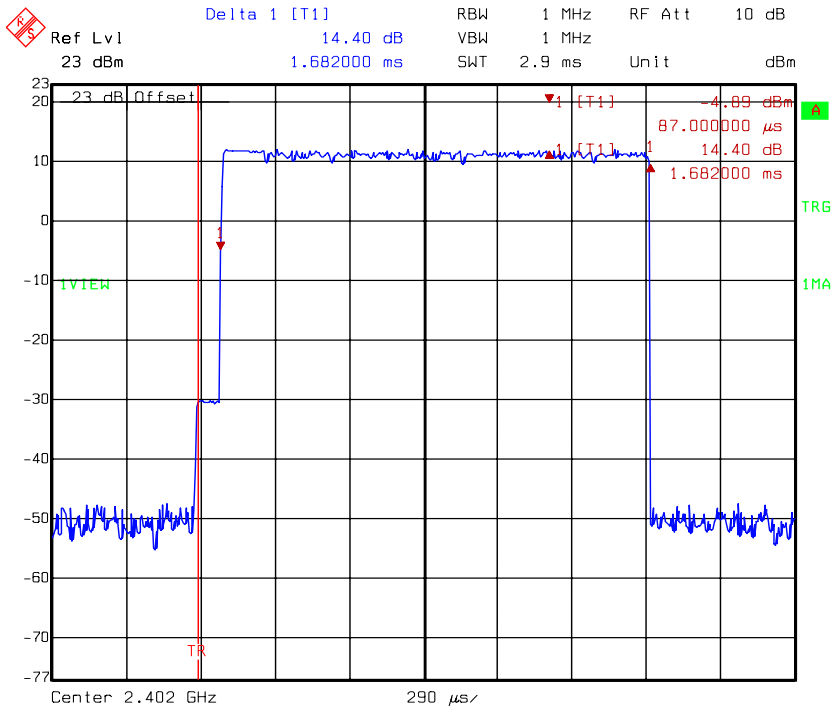
Title: Time of occupancy
Comment A: CH 0 at Bluetooth mode DH5

Dwell time @ 8 DPSK mode DH 1



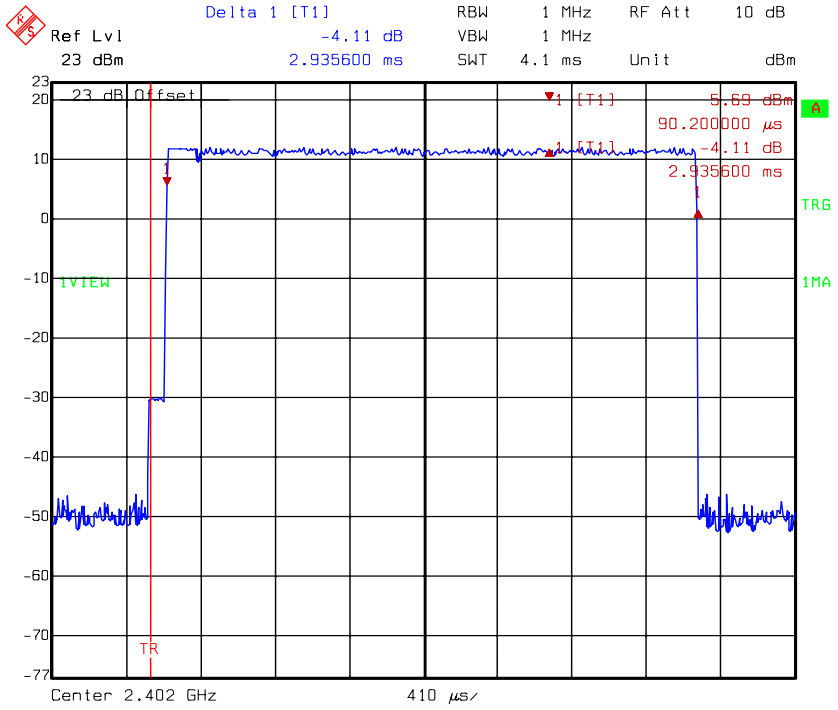
Title: Time of occupancy
Comment A: CH 0 at Bluetooth mode DH1

Dwell time @ 8 DPSK mode DH 3



Title: Time of occupancy
Comment A: CH 0 at Bluetooth mode DH3

Dwell time @ 8 DPSK mode DH 5



7. Maximum Output Power test

7.1 Operating environment

Temperature:	25	℃
Relative Humidity:	54	%
Atmospheric Pressure:	1022	hPa

7.2 Test setup & procedure

The test procedure was according to FCC measurement guidelines DA 00-705.
The power output per FCC §15.247(b) was measured on the EUT using a 50 ohm SMA cable connected to peak power meter via power sensor. Power was read directly and cable loss correction (2 dB) was added to the reading to obtain power at the EUT antenna terminals. The test was performed at 3 channels (lowest, middle and highest channel).

7.3 Measured data of Maximum Output Power test results

Test Mode: GFSK

Channel	Freq. (MHz)	C.L. (dB)	Reading (dBm)	Conducted Peak Output Power		Limit (dBm)
				(dBm)	(mW)	
0 (lowest)	2402	2	5.02	7.02	5.04	30
39 (middle)	2441	2	4.79	6.79	4.78	30
78 (highest)	2480	2	3.58	5.58	3.61	30

Test Mode: π/4 DQPSK

Channel	Freq. (MHz)	C.L. (dB)	Reading (dBm)	Conducted Peak Output Power		Limit (dBm)
				(dBm)	(mW)	
0 (lowest)	2402	2	4.96	6.96	4.97	30
39 (middle)	2441	2	4.73	6.73	4.71	30
78 (highest)	2480	2	4.53	6.53	4.50	30

Test Mode: 8DPSK

Channel	Freq. (MHz)	C.L. (dB)	Reading (dBm)	Conducted Peak Output Power		Limit (dBm)
				(dBm)	(mW)	
0 (lowest)	2402	2	4.95	6.95	4.95	30
39 (middle)	2441	2	4.71	6.71	4.69	30
78 (highest)	2480	2	4.50	6.50	4.47	30

Remark:

Conducted Peak Output Power = Reading + C.L.

8. RF Antenna Conducted Spurious test

8.1 Operating environment

Temperature:	25	℃
Relative Humidity:	58	%

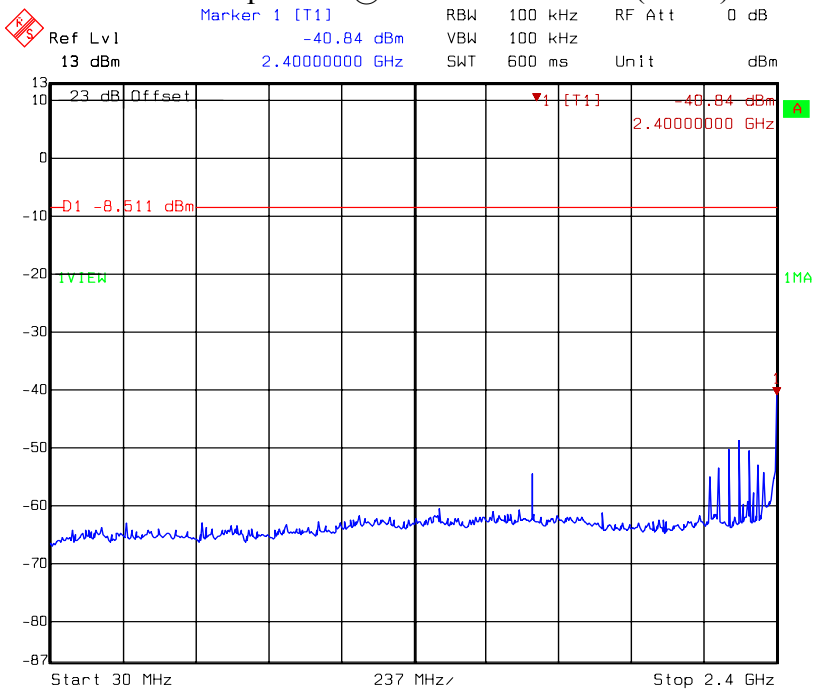
8.2 Test setup & procedure

The test procedure was according to FCC measurement guidelines DA 00-705.
The measurements were performed from 30MHz to 25GHz RF antenna conducted per FCC 15.247 (c) was measured from the EUT antenna port using a 50ohm spectrum analyzer with the resolution bandwidth set at 100 kHz, and the video bandwidth set at 100 kHz.
Harmonics and spurious noise must be at least 20dB down from the highest emission level within the authorized band as measured with a 100 kHz RBW. The table below is the results from the highest emission for each channel within the authorized band. This table was used to determine the spurious limits for each channel.

8.3 Measured data of the highest RF Antenna Conducted Spurious test result

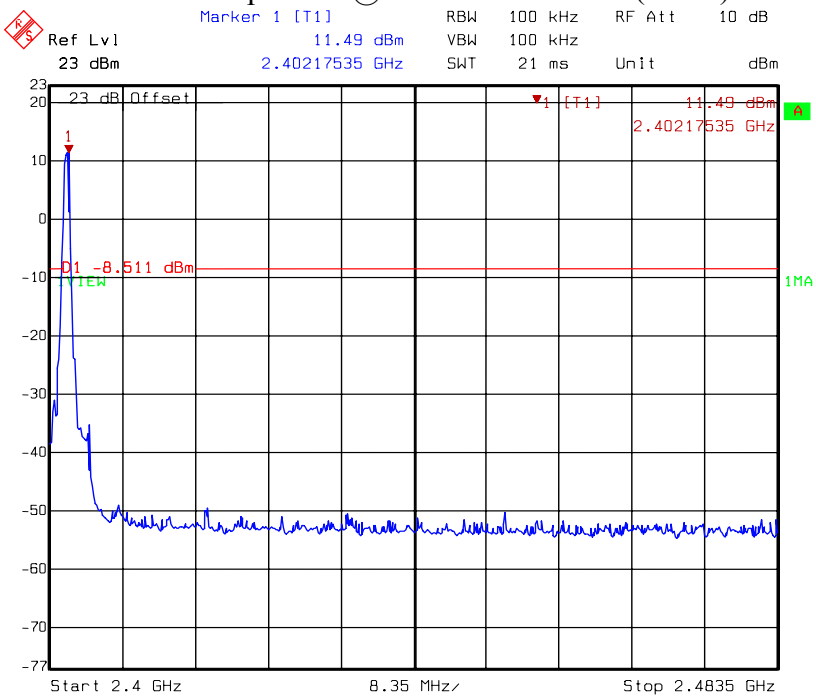
The test results please see the plot below.

conducted spurious @ GFSK channel 0 (1 of 3)



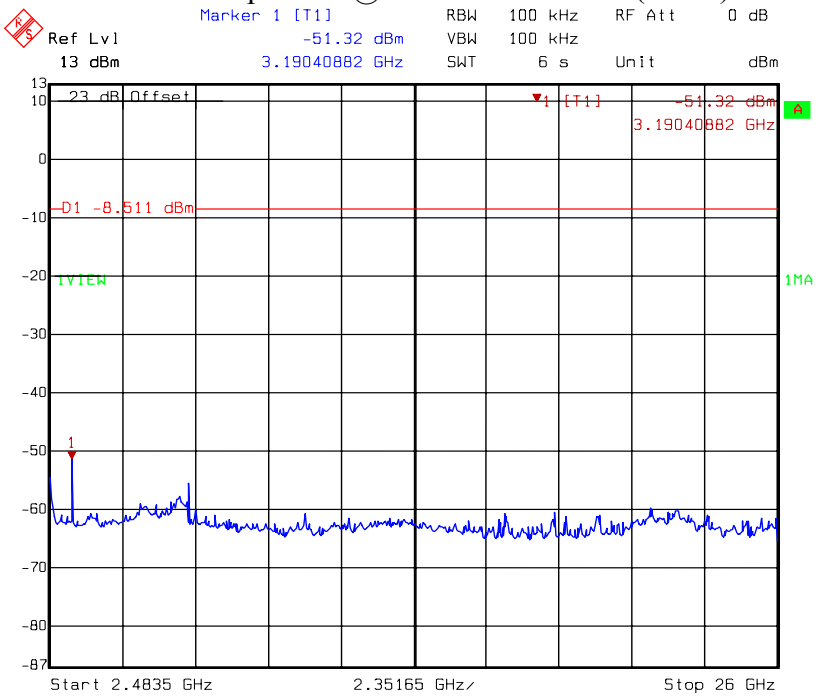
Title: Spurious
Comment A: CH 0 at Bluetooth mode 30MHz~2400MHz

conducted spurious @ GFSK channel 0 (2 of 3)



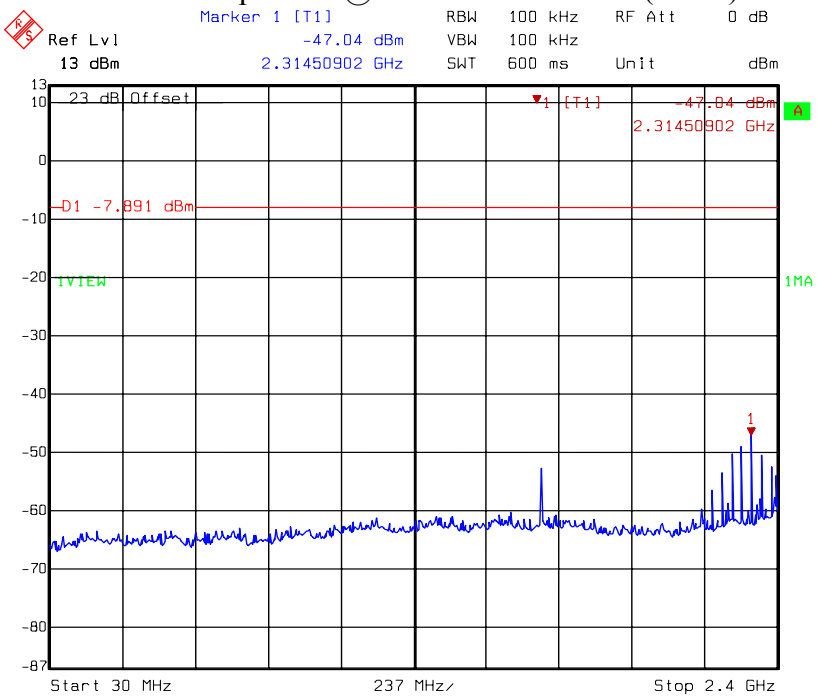
Title: Spurious
Comment A: CH 0 at Bluetooth mode 2400MHz~2483.5MHz

conducted spurious @ GFSK channel 0 (3 of 3)



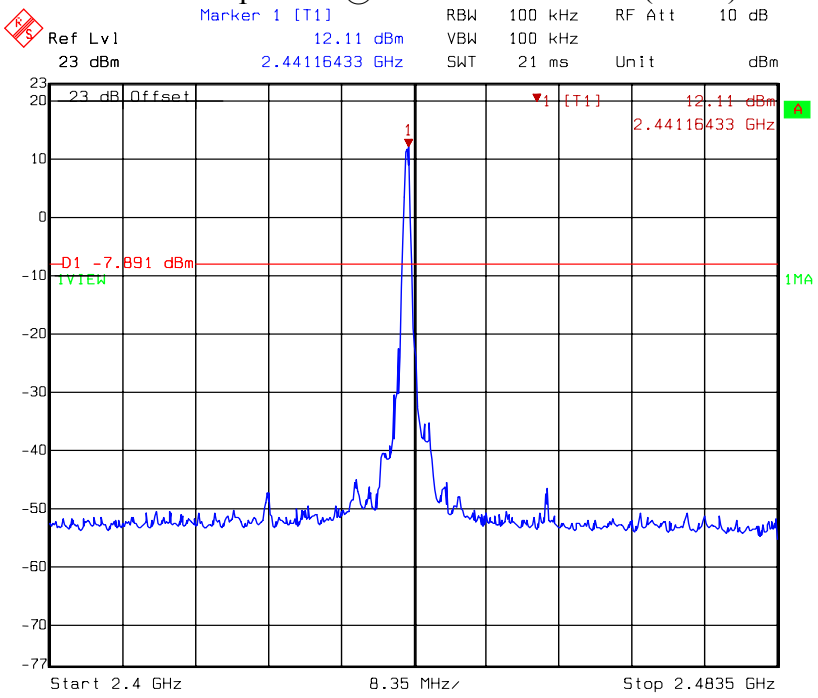
Title: Spurious
Comment A: CH 0 at Bluetooth mode 2483.5MHz~26000MHz

conducted spurious @ GFSK channel 39 (1 of 3)



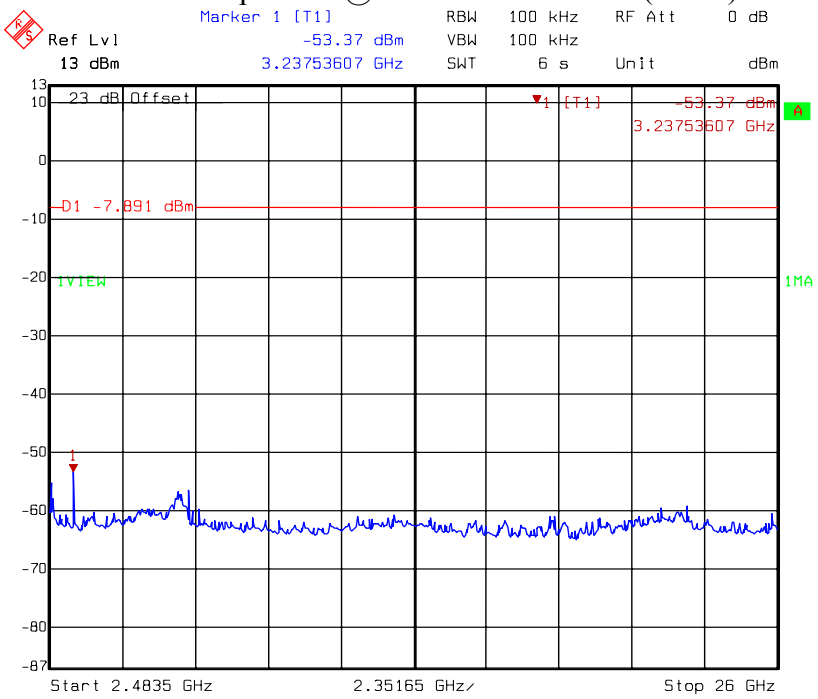
Title: Spurious
Comment A: CH 39 at Bluetooth mode 30MHz~2400MHz

conducted spurious @ GFSK channel 39 (2 of 3)



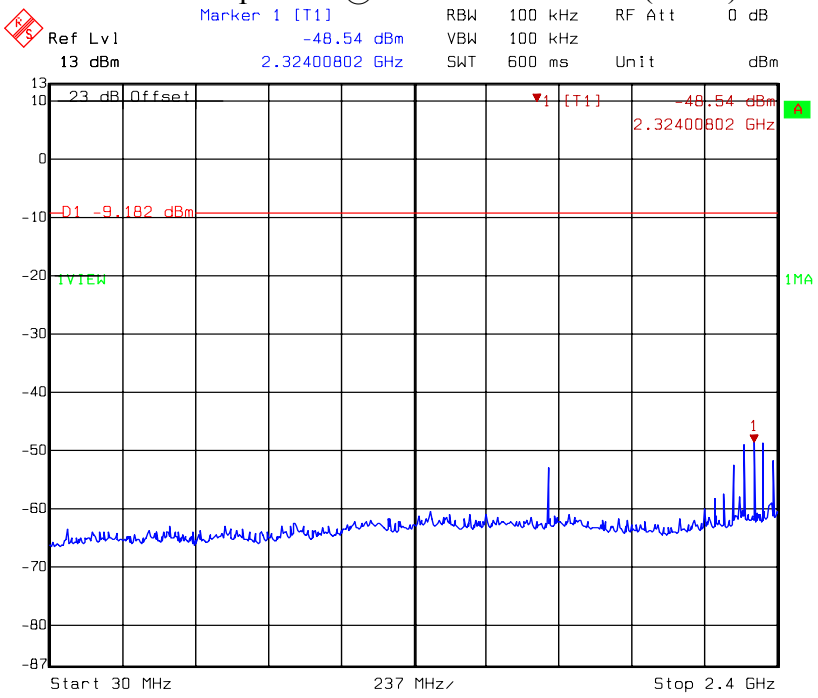
Title: Spurious
Comment A: CH 39 at Bluetooth mode 2400MHz~2483.5MHz

conducted spurious @ GFSK channel 39 (3 of 3)



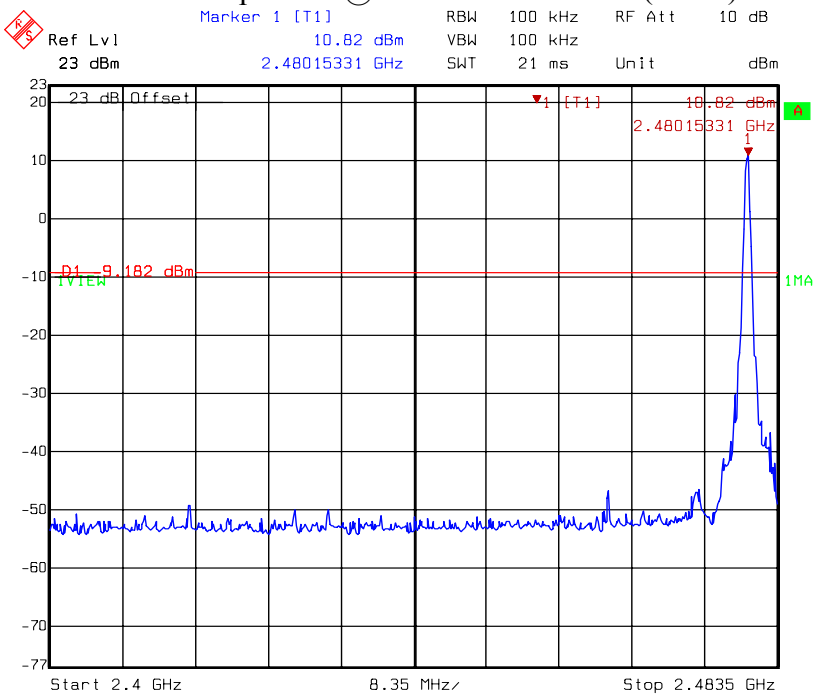
Title: Spurious
Comment A: CH 39 at Bluetooth mode 2483.5MHz~26000MHz

conducted spurious @ GFSK channel 78 (1 of 3)



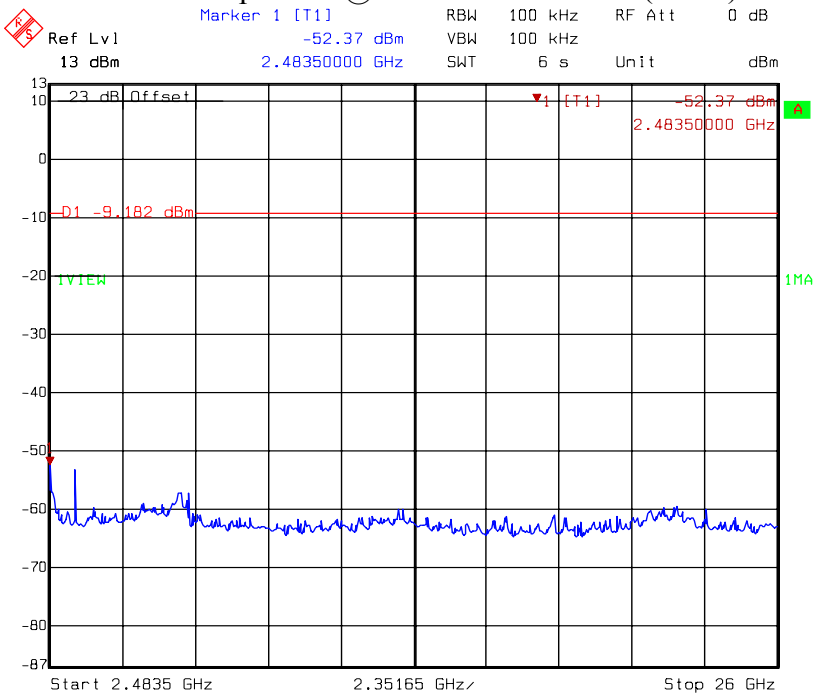
Title: Spurious
Comment A: CH 78 at Bluetooth mode 30MHz~2400MHz

conducted spurious @ GFSK channel 78 (2 of 3)



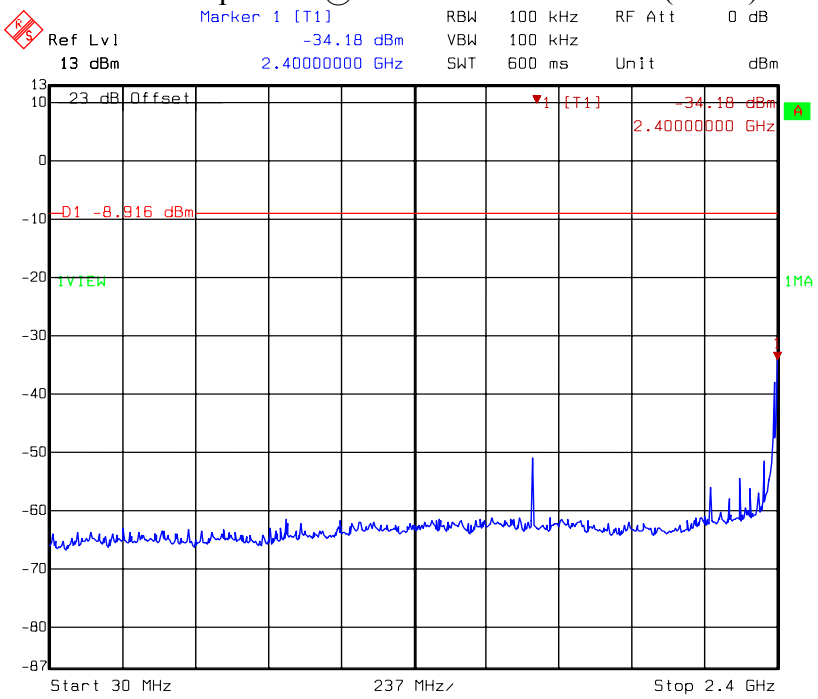
Title: Spurious
Comment A: CH 78 at Bluetooth mode 2400MHz~2483.5MHz

conducted spurious @ GFSK channel 78 (3 of 3)



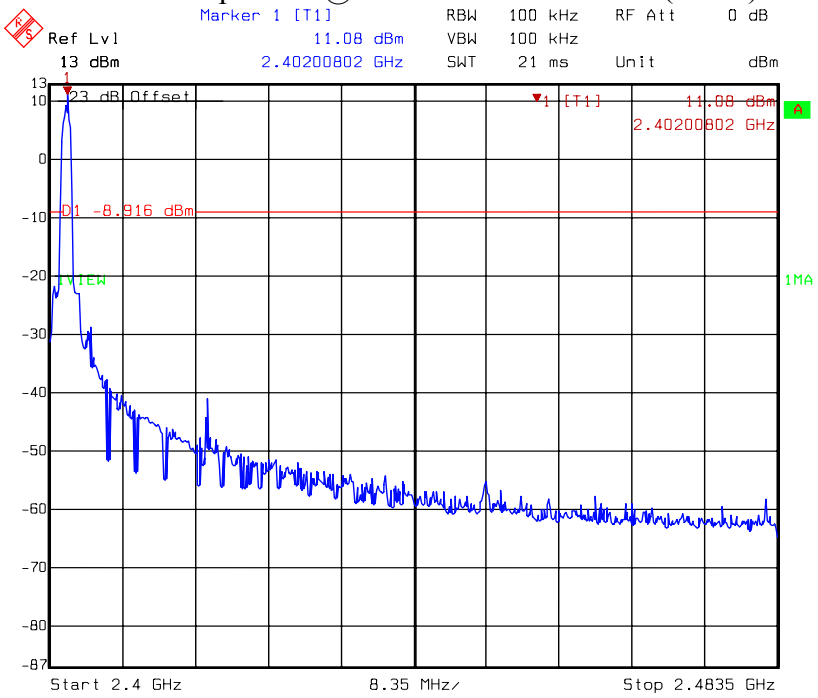
Title: Spurious
Comment A: CH 78 at Bluetooth mode 2483.5MHz~26000MHz

conducted spurious @ π /4 DPSK channel 0 (1 of 3)



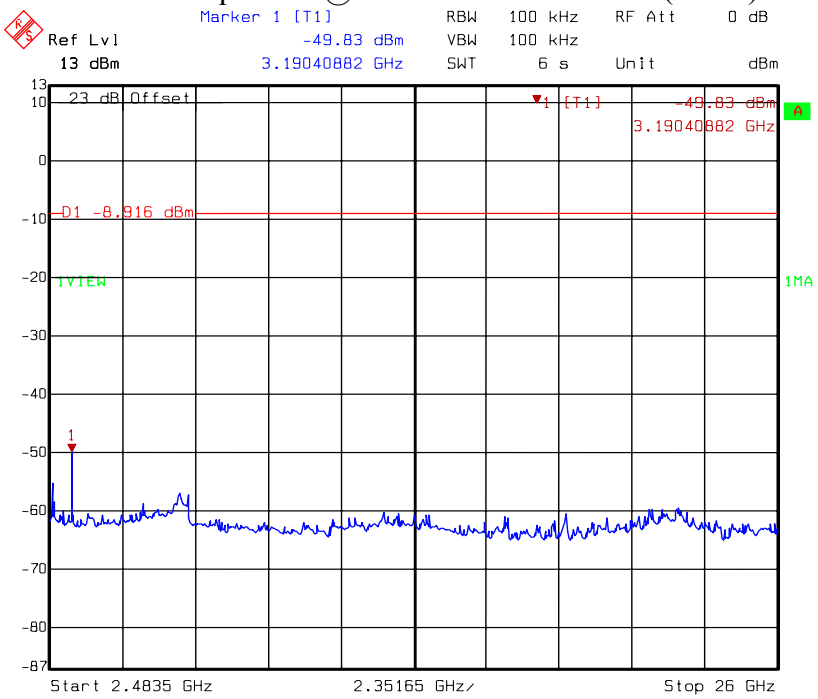
Title: Spurious
Comment A: CH 0 at Bluetooth mode 30MHz~2400MHz

conducted spurious @ π /4 DPSK channel 0 (2 of 3)



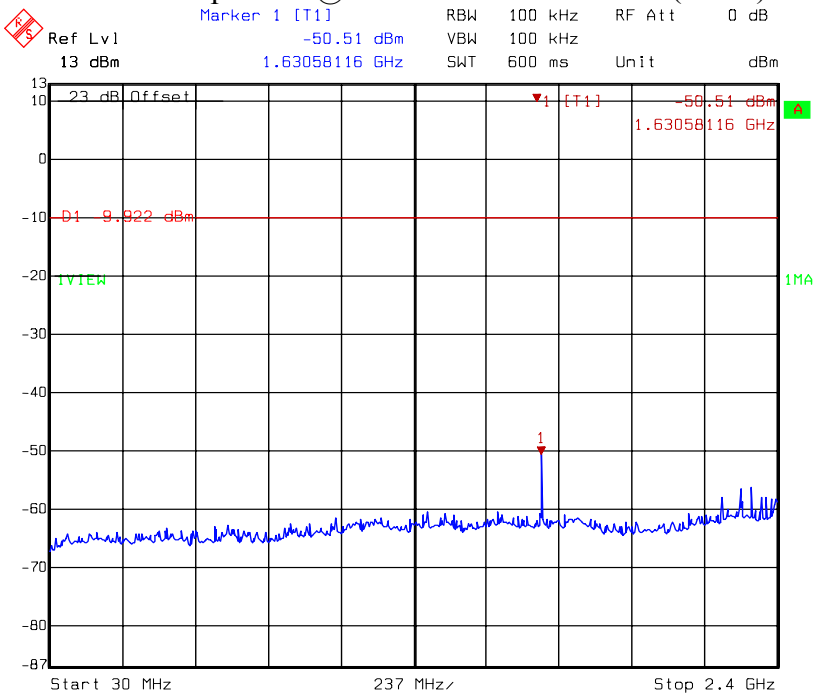
Title: Spurious
Comment A: CH 0 at Bluetooth mode 2400MHz~2483.5MHz

conducted spurious @ π /4 DPSK channel 0 (3 of 3)



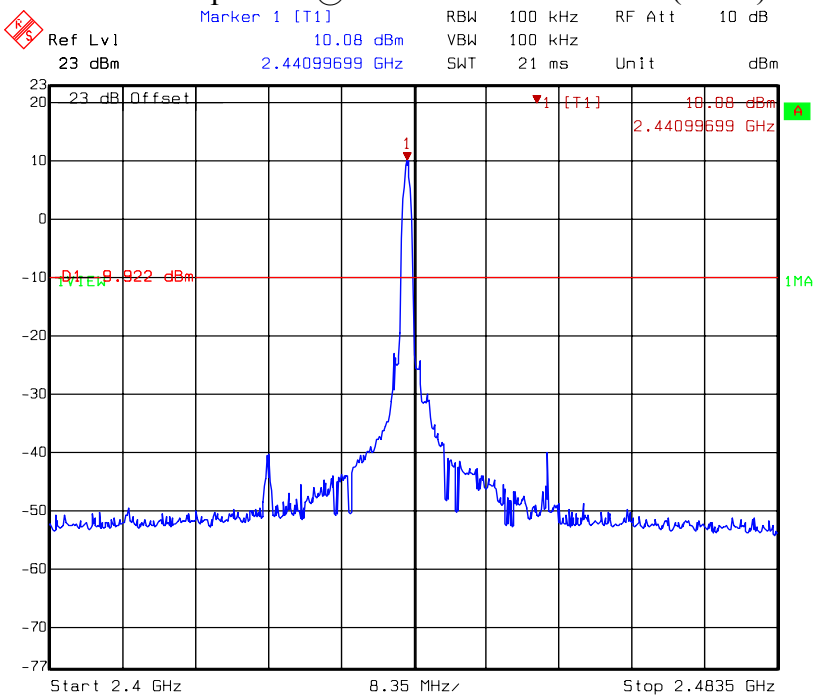
Title: Spurious
Comment A: CH 0 at Bluetooth mode 2483.5MHz~26000MHz

conducted spurious @ π /4 DPSK channel 39 (1 of 3)



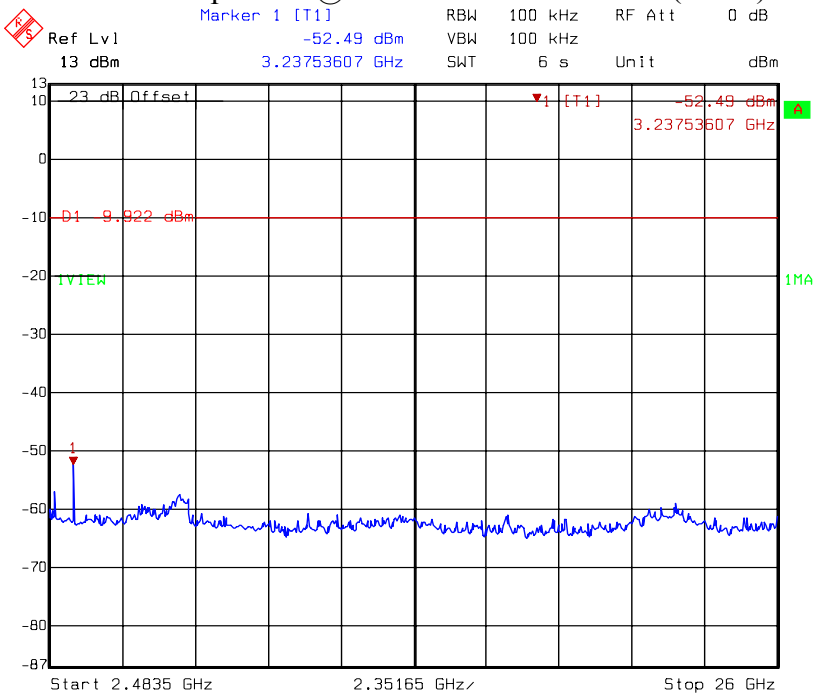
Title: Spurious
Comment A: CH 39 at Bluetooth mode 30MHz~2400MHz

conducted spurious @ π /4 DPSK channel 39 (2 of 3)



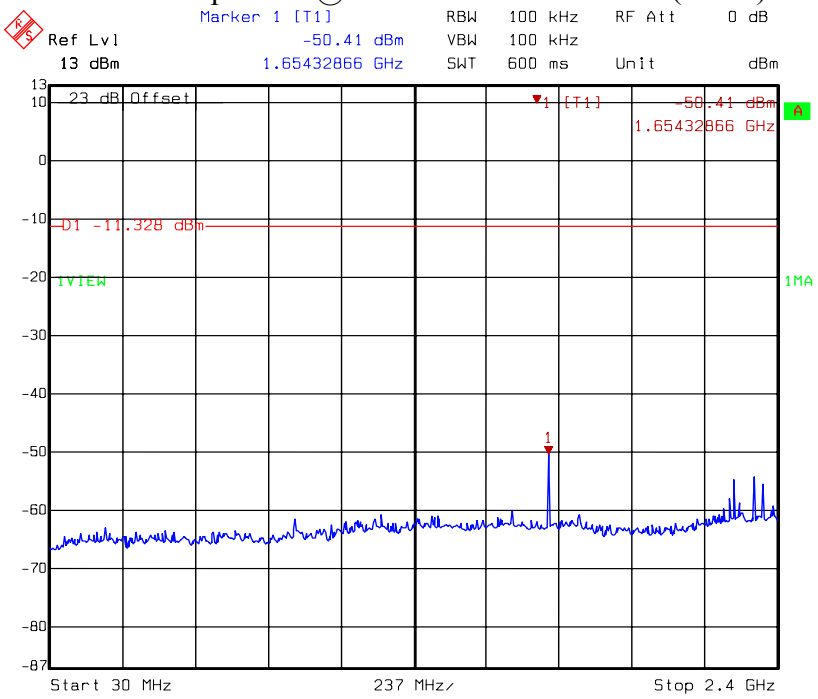
Title: Spurious
Comment A: CH 39 at Bluetooth mode 2400MHz~2483.5MHz

conducted spurious @ π /4 DPSK channel 39 (3 of 3)



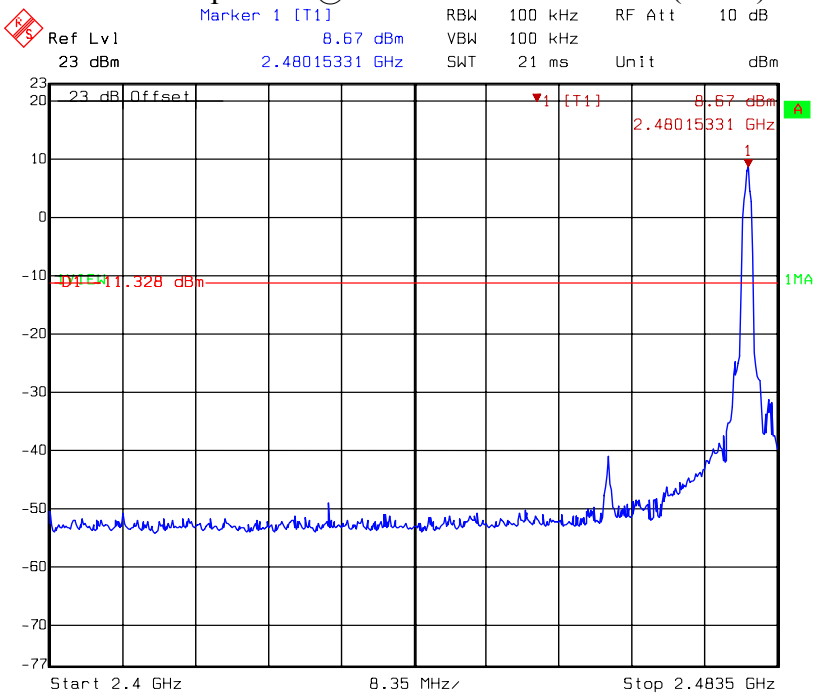
Title: Spurious
Comment A: CH 39 at Bluetooth mode 2483.5MHz~26000MHz

conducted spurious @ π /4 DPSK channel 78 (1 of 3)



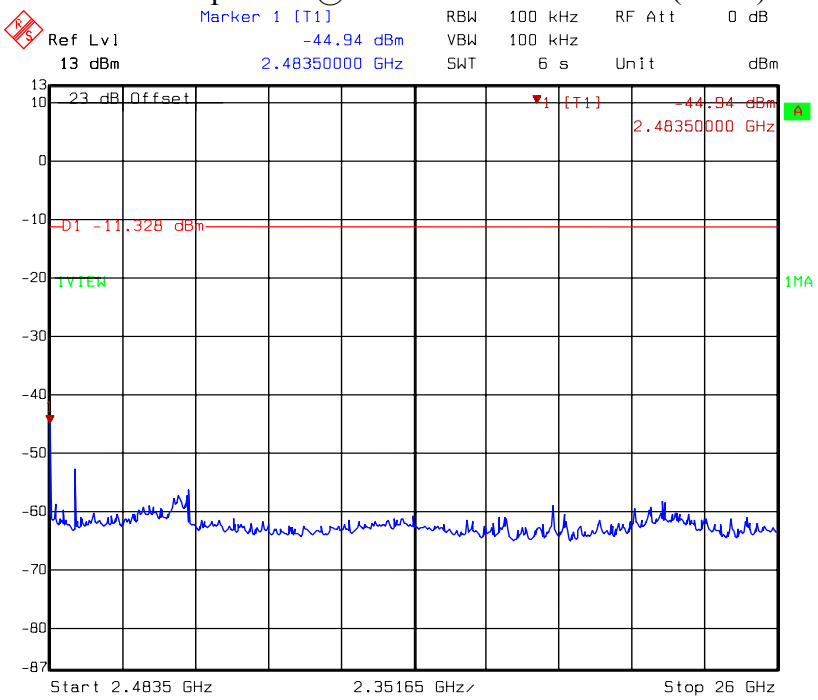
Title: Spurious
Comment A: CH 78 at Bluetooth mode 30MHz~2400MHz

conducted spurious @ π /4 DPSK channel 78 (2 of 3)



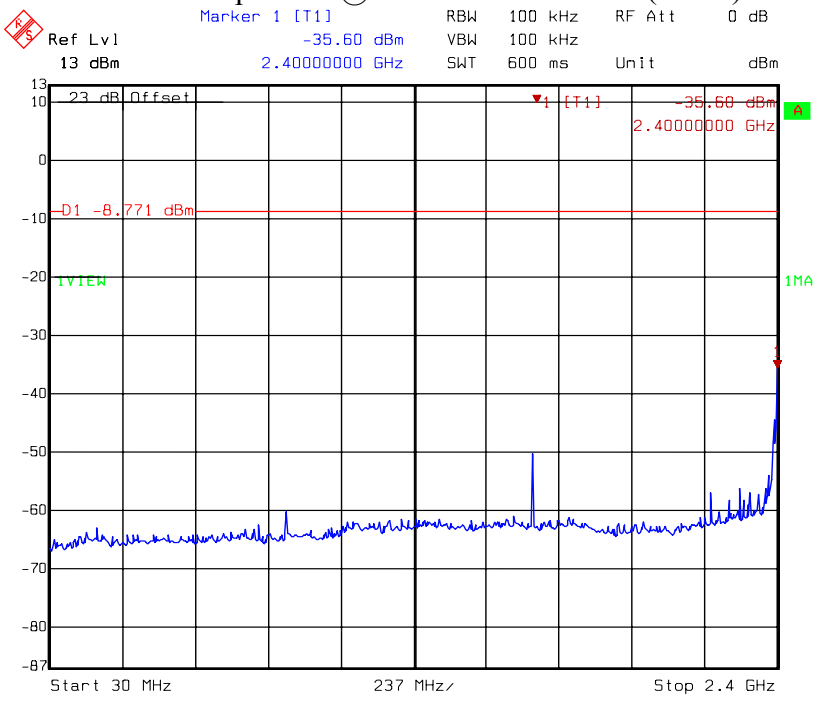
Title: Spurious
Comment A: CH 78 at Bluetooth mode 2400MHz~2483.5MHz

conducted spurious @ π /4 DPSK channel 78 (3 of 3)



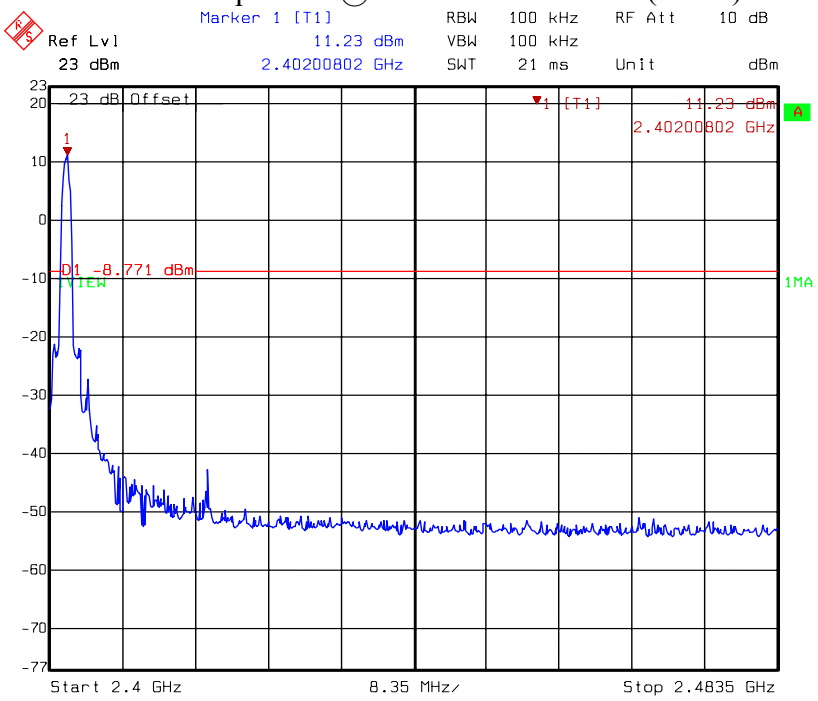
Title: Spurious
Comment A: CH 78 at Bluetooth mode 2483.5MHz~26000MHz

conducted spurious @ 8 DPSK channel 0 (1 of 3)



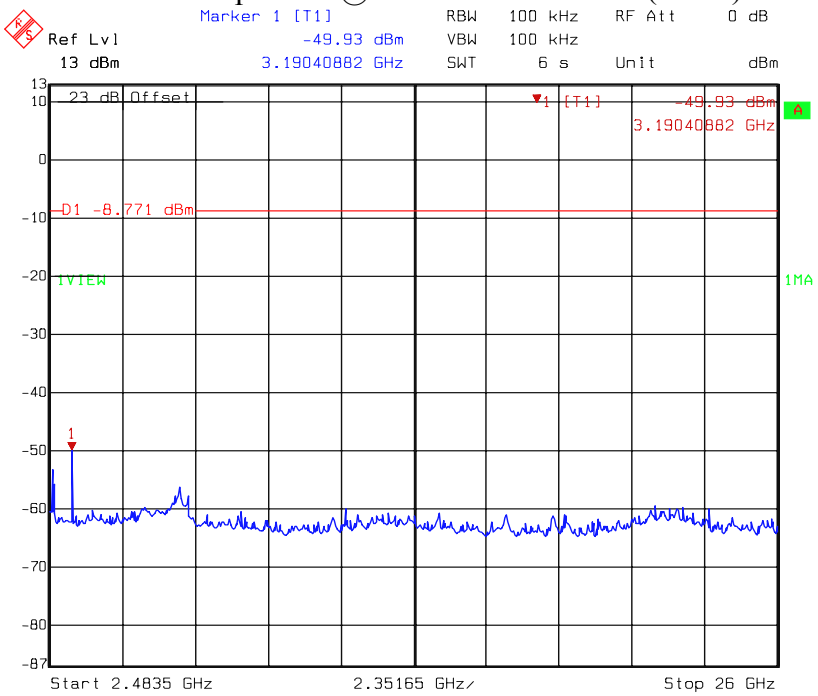
Title: Spurious
Comment A: CH 0 at Bluetooth mode 30MHz~2400MHz

conducted spurious @ 8 DPSK channel 0 (2 of 3)



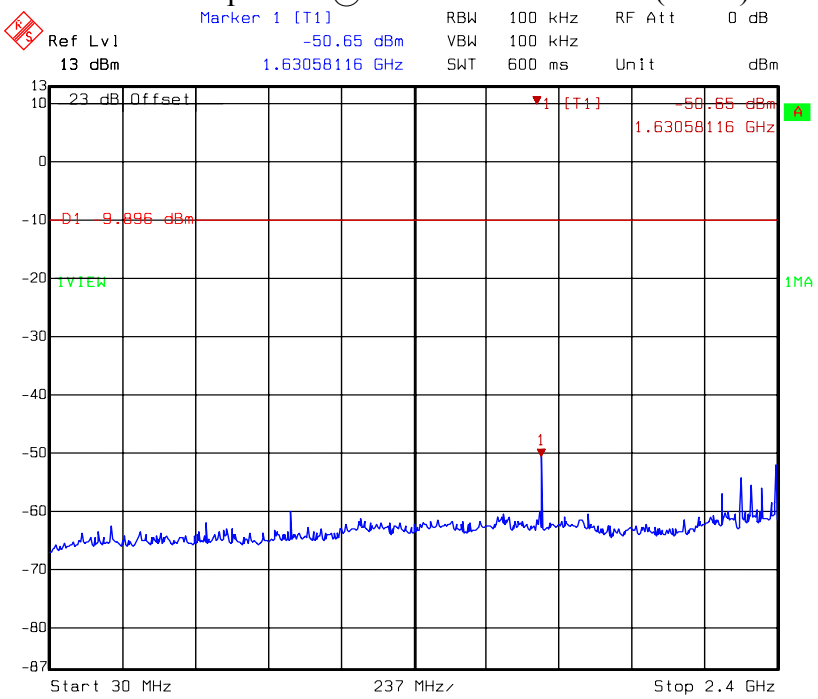
Title: Spurious
Comment A: CH 0 at Bluetooth mode 2400MHz~2483.5MHz

conducted spurious @ 8 DPSK channel 0 (3 of 3)



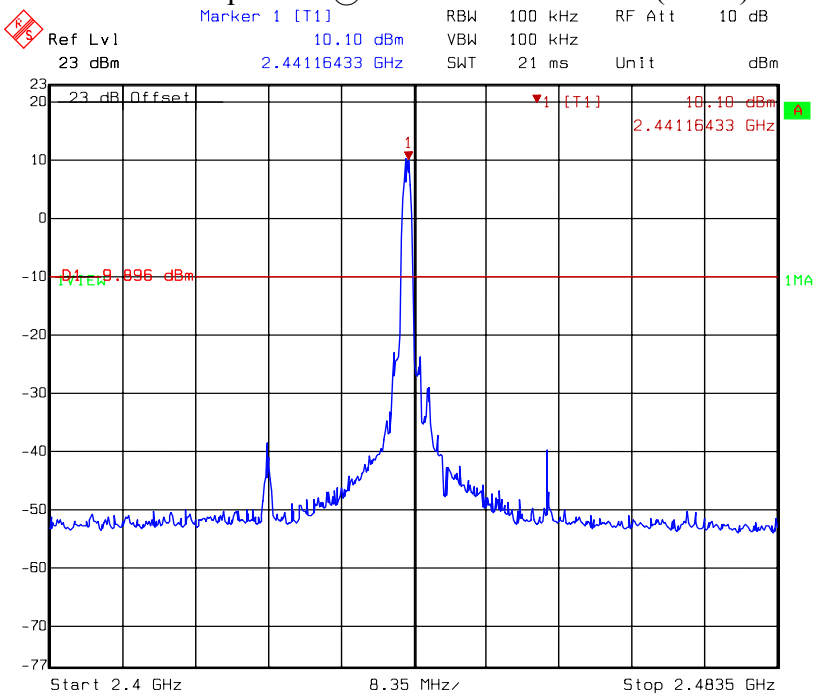
Title: Spurious
Comment A: CH 0 at Bluetooth mode 2483.5MHz~26000MHz

conducted spurious @ 8 DPSK channel 39 (1 of 3)



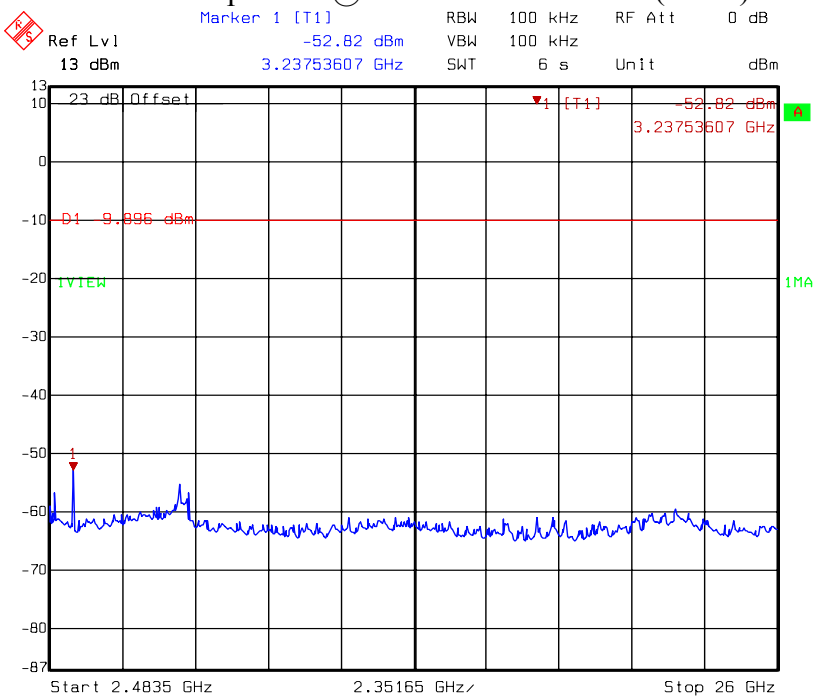
Title: Spurious
Comment A: CH 39 at Bluetooth mode 30MHz~2400MHz

conducted spurious @ 8 DPSK channel 39 (2 of 3)



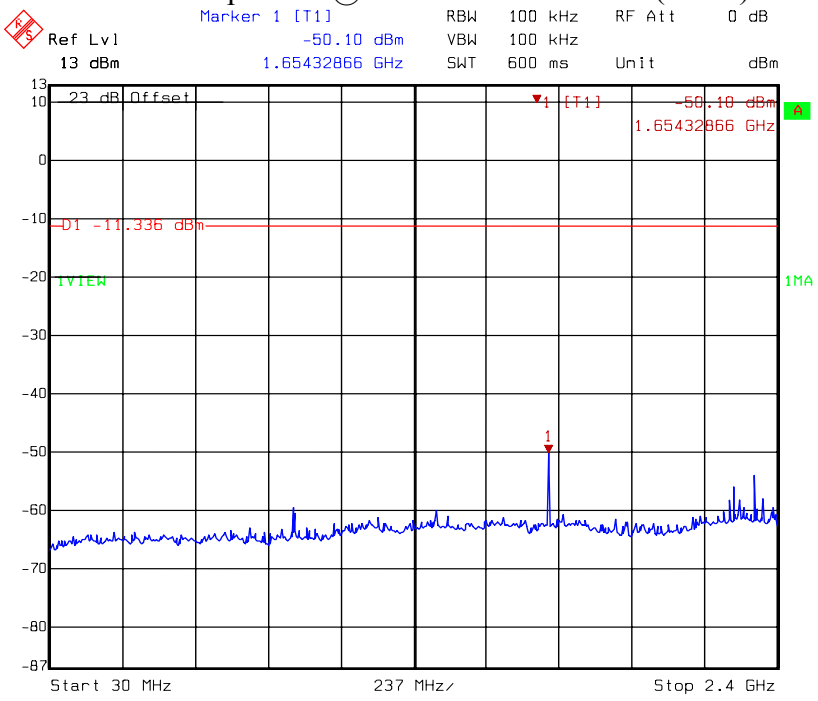
Title: Spurious
Comment A: CH 39 at Bluetooth mode 2400MHz~2483.5MHz

conducted spurious @ 8 DPSK channel 39 (3 of 3)



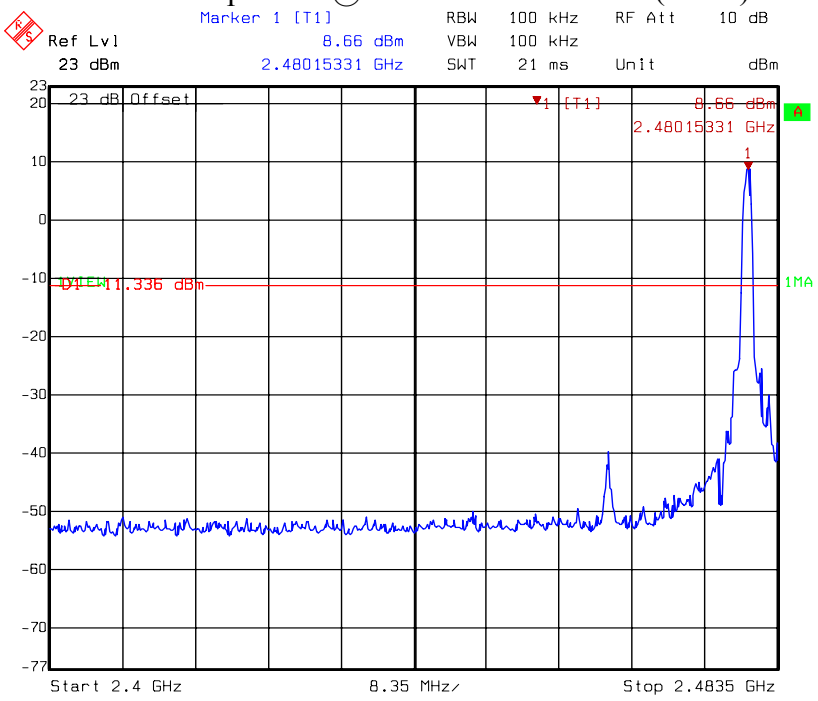
Title: Spurious
Comment A: CH 39 at Bluetooth mode 2483.5MHz~26000MHz

conducted spurious @ 8 DPSK channel 78 (1 of 3)



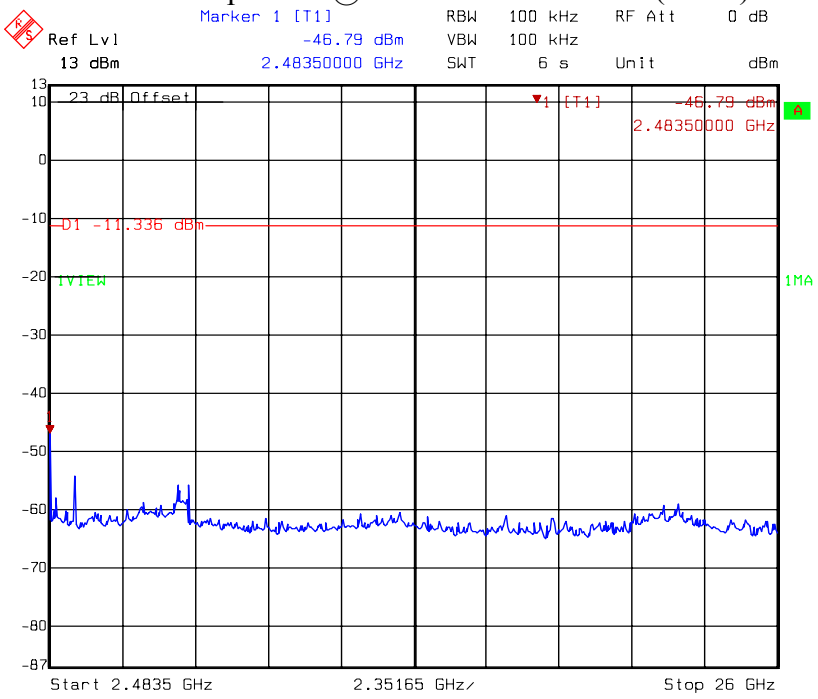
Title: Spurious
Comment A: CH 78 at Bluetooth mode 30MHz~2400MHz

conducted spurious @ 8 DPSK channel 78 (2 of 3)



Title: Spurious
Comment A: CH 78 at Bluetooth mode 2400MHz~2483.5MHz

conducted spurious @ 8 DPSK channel 78 (3 of 3)



Title: Spurious
Comment A: CH 78 at Bluetooth mode 2483.5MHz~26000MHz

9. Radiated Emission test

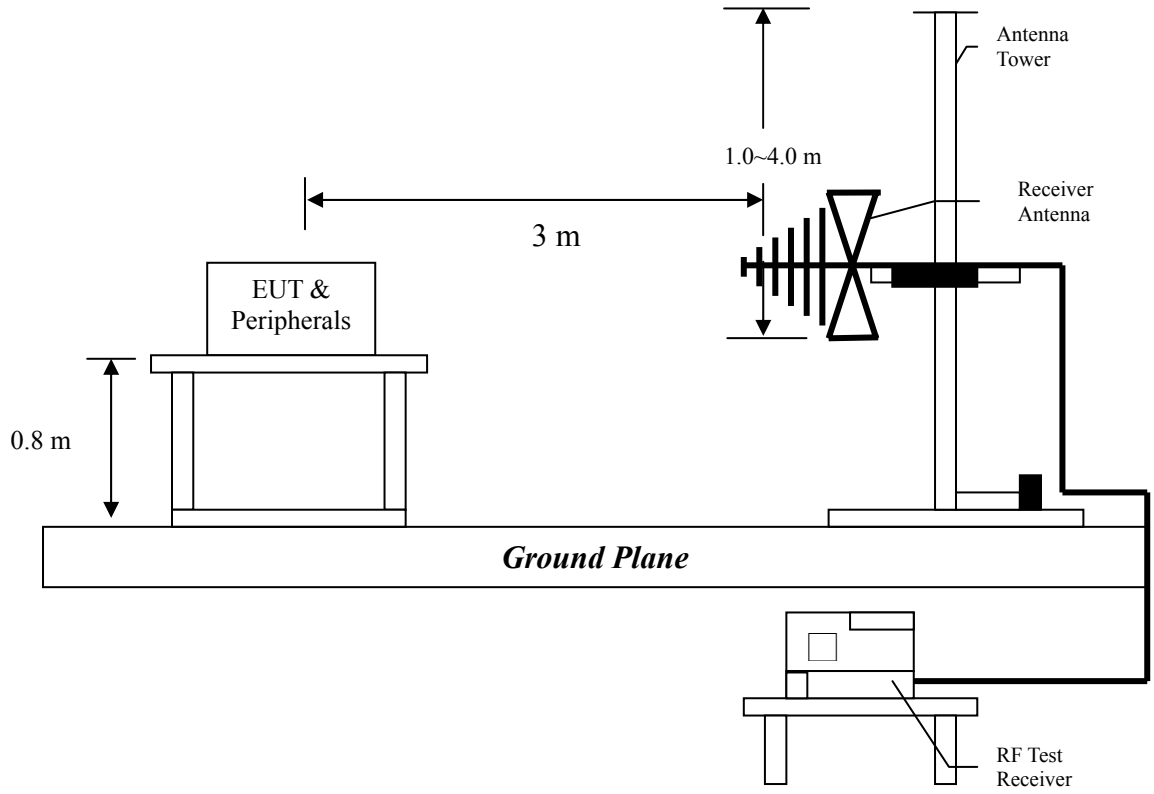
9.1 Operating environment

Temperature:	22	℃
Relative Humidity:	56	%
Atmospheric Pressure:	1023	hPa

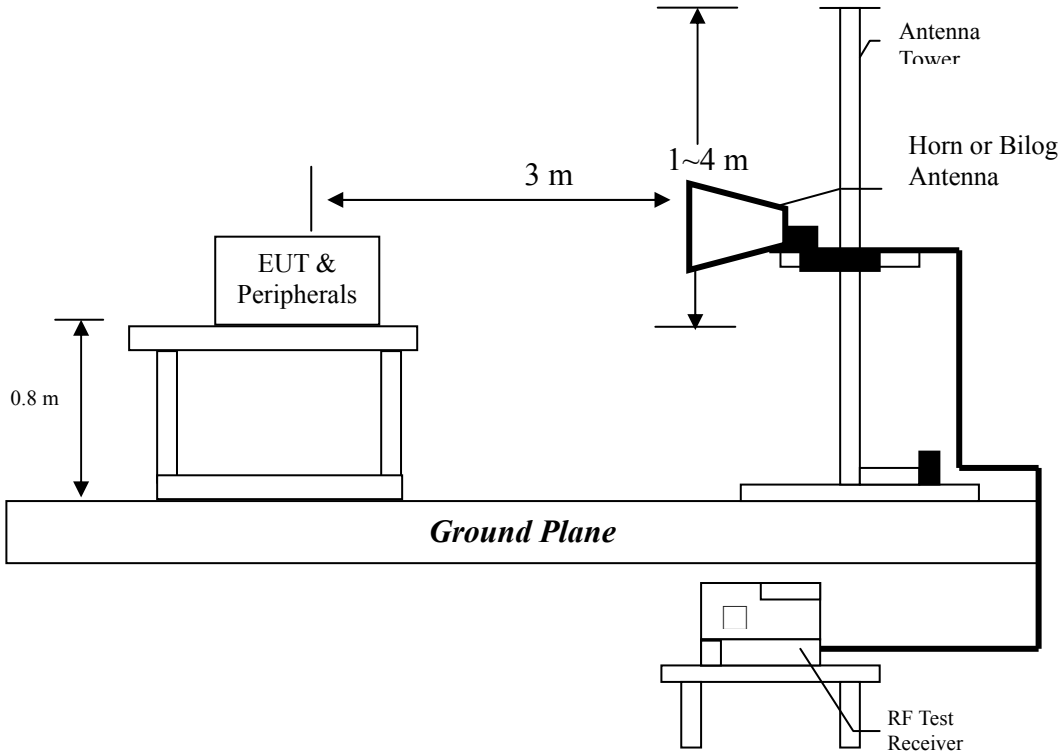
9.2 Test setup & procedure

The test procedure was according to FCC measurement guidelines DA 00-705 and ANSI C63.4/2003**.**
The Diagram below shows the test setup, which is utilized to make these measurements.

The frequency spectrum from 30MHz to 1000MHz was investigated.



The frequency spectrum from over 1GHz was investigated.



Radiated emission measurements were performed from 30MHz to 25GHz. Spectrum Analyzer Resolution Bandwidth is 100kHz or greater for frequencies 30MHz to 1GHz, 1MHz – for frequencies above 1GHz.
The EUT for testing is arranged on a wooden turntable. If some peripherals apply to the EUT, the peripherals will be connected to EUT and the whole system. During the test, all cables were arranged to produce worst-case emissions. The signal is maximized through rotation. The height of antenna and polarization is changing constantly for exploring for maximum signal level. The height of antenna can be up to 4 meters and down to 1 meter.

The measurement for radiated emission will be done at the distance of three meters unless the signal level is too low to measure at that distance. In the case of the reading under noise floor, a pre-amplifier is used and/or the test is conducted at a closer distance. And then all readings are extrapolated back to the equivalent 3 meter reading using inverse scaling with distance.

The EUT configuration please refer to the "Spurious set-up photo.pdf".

9.3 Emission limits

The spurious Emission shall test through the 10th harmonic. In addition, radiated 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).

Frequency (MHz)	Limits (dB μ V/m@3m)
30-88	40
88-216	43.5
216-960	46
Above 960	54

Remark:
1. In the above table, the tighter limit applies at the band edges.
2. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system

Uncertainty was calculated in accordance with NAMAS NIS 81.
Expanded uncertainty (k=2) of radiated emission measurement is 4.98 dB.

9.4 Radiated spurious emission test data

9.4.1 Measurement results: frequencies equal to or less than 1 GHz

The test was performed on EUT under 8DPSK, GFSK and π/4DQPSK continuously transmitting mode. 2042 MHz, 2441 MHz, 2480 MHz were verified. The worst case occurred TX at 2402 MHz (GFSK Modulation).

EUT : BT-3000
Worst Case : TX at 2402 MHz (GFSK Modulation)

Antenna Polariz. (V/H)	Freq. (MHz)	Receiver Detector	Corr. Factor (dB/m)	Reading (dBuV)	Corrected Level (dBuV/m)	Limit @ 3 m (dBuV/m)	Margin (dB)
V	49.400	QP	12.84	23.43	36.27	40.00	-3.73
V	110.510	QP	8.19	25.23	33.42	43.50	-10.08
V	266.680	QP	12.76	22.30	35.06	46.00	-10.94
V	398.600	QP	16.40	18.41	34.81	46.00	-11.19
V	731.310	QP	22.74	9.96	32.70	46.00	-13.30
V	801.150	QP	23.29	11.32	34.61	46.00	-11.39
H	132.820	QP	12.32	19.54	31.86	43.50	-11.64
H	159.980	QP	13.60	20.71	34.31	43.50	-9.19
H	339.430	QP	14.40	15.36	29.76	46.00	-16.25
H	355.920	QP	15.48	15.06	30.54	46.00	-15.47
H	398.600	QP	16.74	10.75	27.49	46.00	-18.51
H	801.150	QP	23.62	19.14	42.76	46.00	-3.24

Remark:
1. Corr. Factor = Antenna Factor + Cable Loss
2. Corrected Level = Reading + Corr. Factor

9.4.2 Measurement results: frequency above 1GHz

The test was performed on EUT under 8DPSK, GFSK and π/4DQPSK continuously transmitting mode. 2042 MHz, 2441 MHz, 2480 MHz were verified. The worst case occurred TX at 2402 MHz (GFSK Modulation).

EUT : BT-3000
Worst Case : Tx at 2402 MHz (GFSK Modulation)

Frequency (MHz)	Spectrum Analyzer Detector	Antenna Polariz. (H/V)	Preamp. Gain (dB)	Correction Factor (dB/m)	Reading (dBuV)	Corrected Level (dBuV/m)	Limit @ 3 m (dBuV/m)	Margin (dB)
3180.00	PK	V	35.54	34.62	45.68	44.76	54	-9.24
4804.00	PK	V	36.07	37.77	43.65	45.35	54	-8.65
7206.00	PK	V	36.18	43.97	42.19	49.98	54	-4.02
3180.00	PK	H	35.54	34.62	45.81	44.89	54	-9.11

Remark:

1. Correction Factor = Antenna Factor + Cable Loss
2. Corrected Level = Reading + Correction Factor – Preamp. Gain
3. The frequency measured ranges from 1GHz to 25GHz.The data value listed above which is higher than the noise floor, the others please refer to noise floor level.

EUT : BT-3000
Test Condition : Tx at 2441 MHz (GFSK Modulation)

Frequency (MHz)	Spectrum Analyzer Detector	Antenna Polariz. (H/V)	Preamp. Gain (dB)	Correction Factor (dB/m)	Reading (dBuV)	Corrected Level (dBuV/m)	Limit @ 3 m (dBuV/m)	Margin (dB)
3240.00	PK	V	35.54	34.62	46.27	45.35	54	-8.65
4882.00	PK	V	36.07	37.77	44.65	46.35	54	-7.65
7323.00	PK	V	36.18	43.97	43.75	51.54	54	-2.46

Remark:

1. Correction Factor = Antenna Factor + Cable Loss
2. Corrected Level = Reading + Correction Factor – Preamp. Gain
3. The frequency measured ranges from 1GHz to 25GHz.The data value listed above which is higher than the noise floor, the others please refer to noise floor level.

EUT : BT-3000
Test Condition : Tx at 2480 MHz(GFSK Modulation)

Frequency (MHz)	Spectrum Analyzer Detector	Antenna Polariz. (H/V)	Preamp. Gain (dB)	Correction Factor (dB/m)	Reading (dBuV)	Corrected Level (dBuV/m)	Limit @ 3 m (dBuV/m)	Margin (dB)
3300.00	PK	V	35.54	34.62	44.99	44.07	54	-9.93
4960.00	PK	V	36.07	37.77	43.88	45.58	54	-8.42

Remark:

1. Correction Factor = Antenna Factor + Cable Loss
2. Corrected Level = Reading + Correction Factor – Preamp. Gain
3. The frequency measured ranges from 1GHz to 25GHz.The data value listed above which is higher than the noise floor, the others please refer to noise floor level.

10. Emission on the band edge §FCC 15.247(d)

In any 100kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 KHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement.

10.1 Test setup & procedure

Please refer to the clause 9.2 of this report.

Please see the plot below.

10.2 Test Result

Test Mode: GFSK mode

Channel	Measurement Freq.Band (MHz)	Detector	The Max. Field Strength in Restrict Band (dBuV/m)	Limit @ 3 m (dBuV/m)	Margin (dB)
0 (lowest)	2310-2390	PK	58.95	74	-15.05
		AV	47.41	54	-6.59
78 (highest)	2483.5-2500	PK	60.94	74	-13.06
		AV	53.71	54	-0.29

Test Mode: π/4 DQPSK

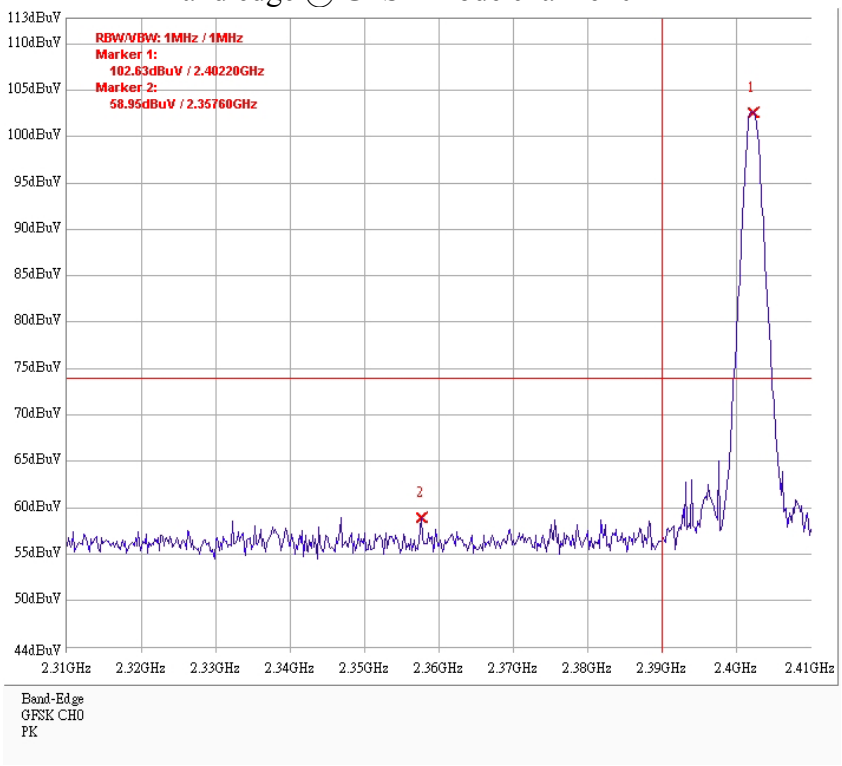
Channel	Measurement Freq.Band (MHz)	Detector	The Max. Field Strength in Restrict Band (dBuV/m)	Limit @ 3 m (dBuV/m)	Margin (dB)
0 (lowest)	2310-2390	PK	66.22	74	-7.78
		AV	48.12	54	-5.88
78 (highest)	2483.5-2500	PK	66.83	74	-7.17
		AV	53.44	54	-0.56

Test Mode: 8DPSK

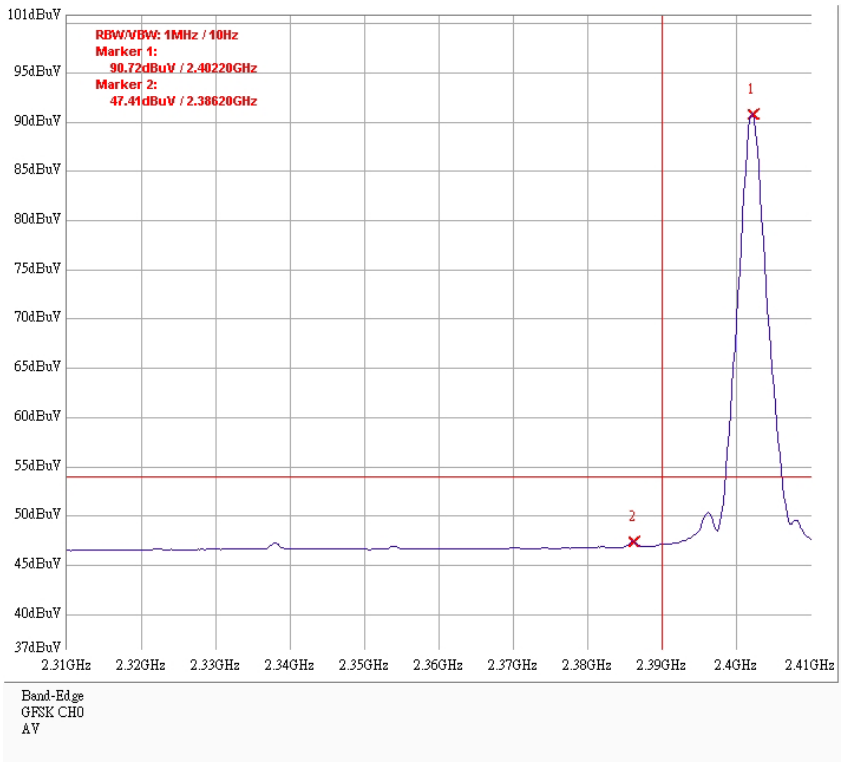
Channel	Measurement Freq.Band (MHz)	Detector	The Max. Field Strength in Restrict Band (dBuV/m)	Limit @ 3 m (dBuV/m)	Margin (dB)
0 (lowest)	2310-2390	PK	65.48	74	-8.52
		AV	48.11	54	-5.89
78 (highest)	2483.5-2500	PK	65.70	74	-8.3
		AV	53.50	54	-0.5

10.2.1 Band-edge

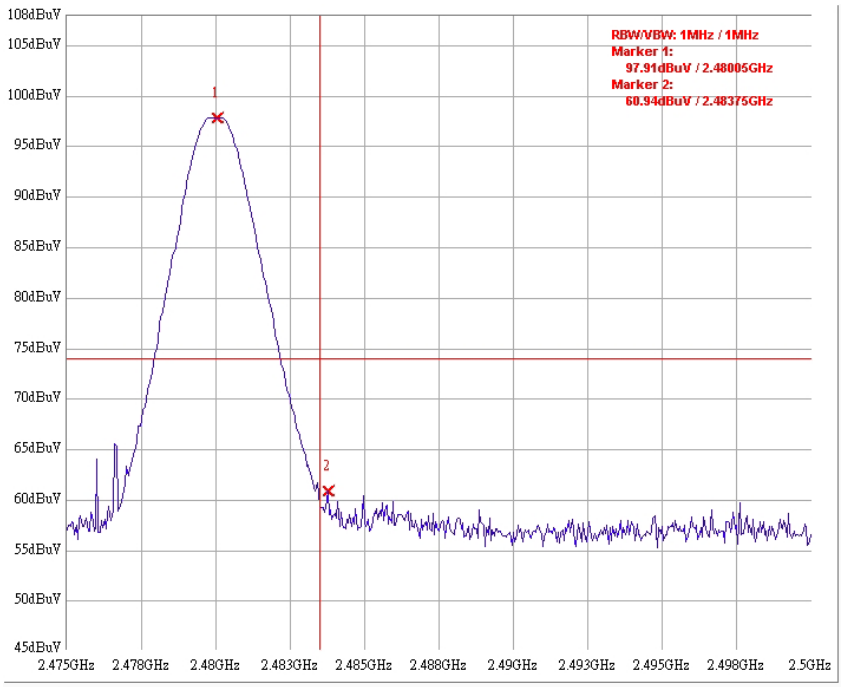
Band edge @ GFSK mode channel 0 PK



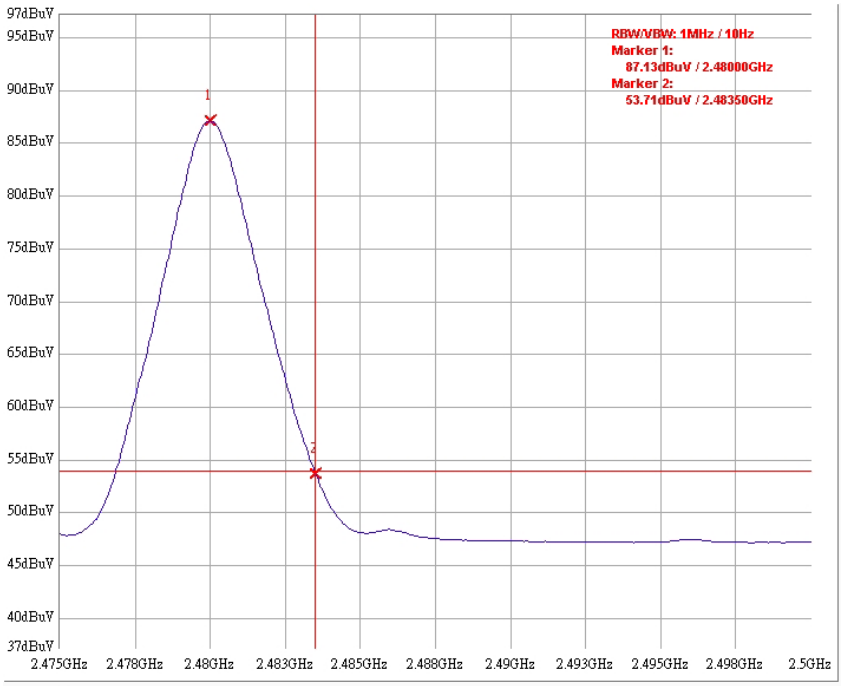
Band edge @ GFSK mode channel 0 AV



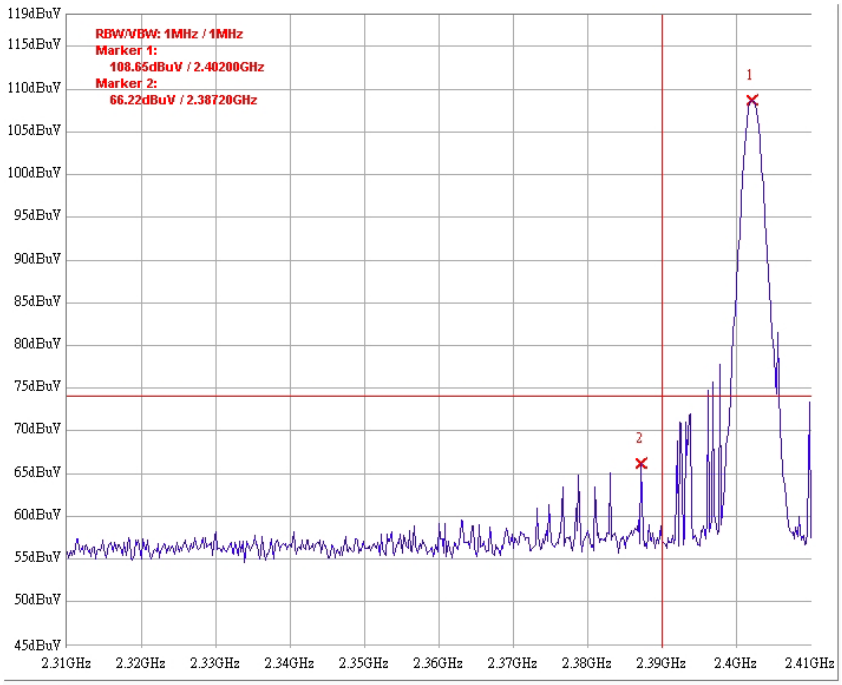
Band edge @ GFSK mode channel 78 PK



Band edge @ GFSK mode channel 78 AV

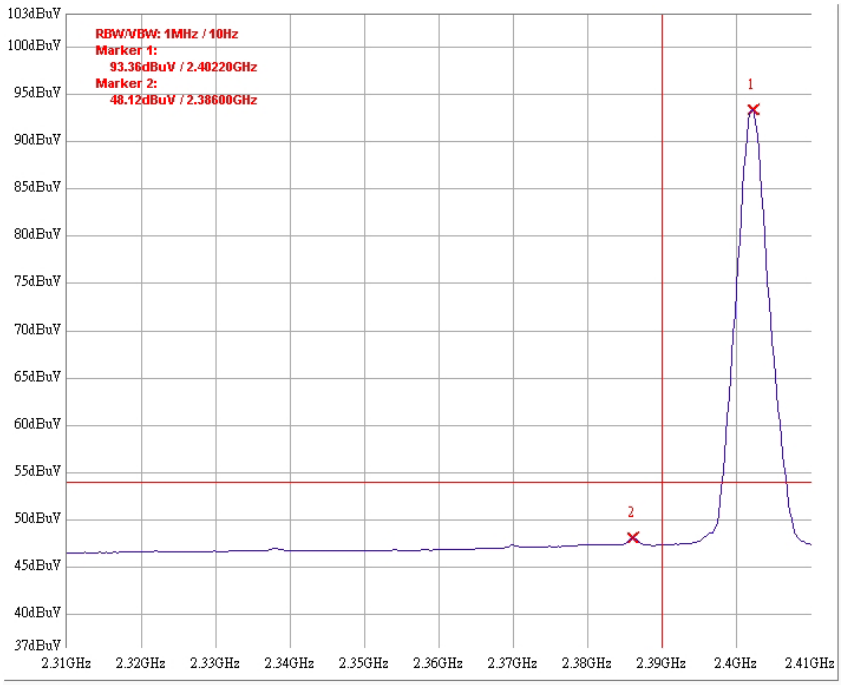


Band edge @ π /4 DPSK mode channel 0 PK



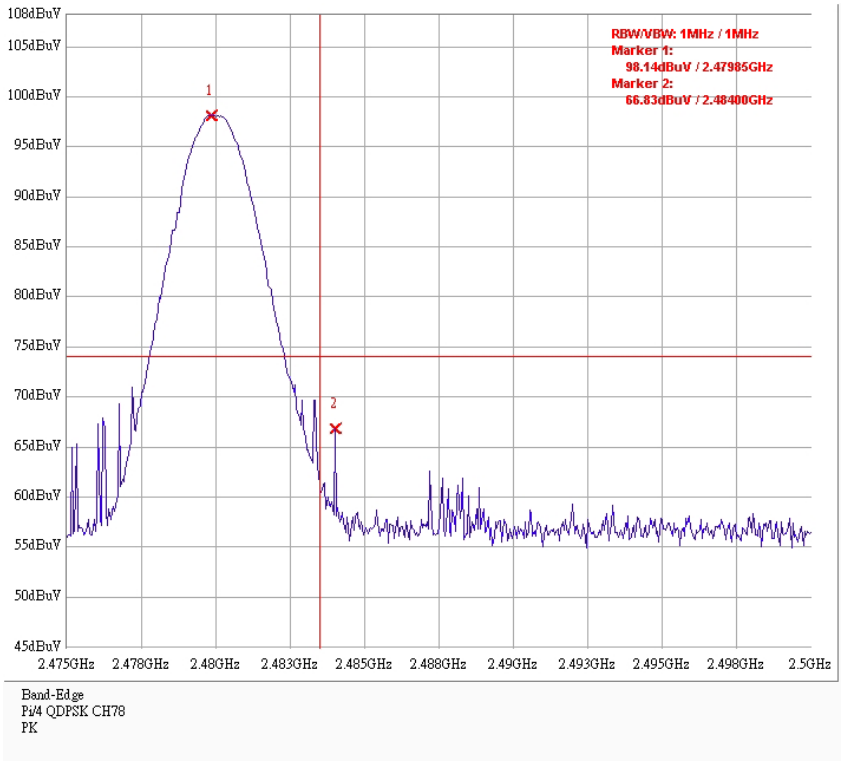
Band-Edge
Pi/4 QDPSK CH0
PK

Band edge @ π /4 DPSK mode channel 0 AV

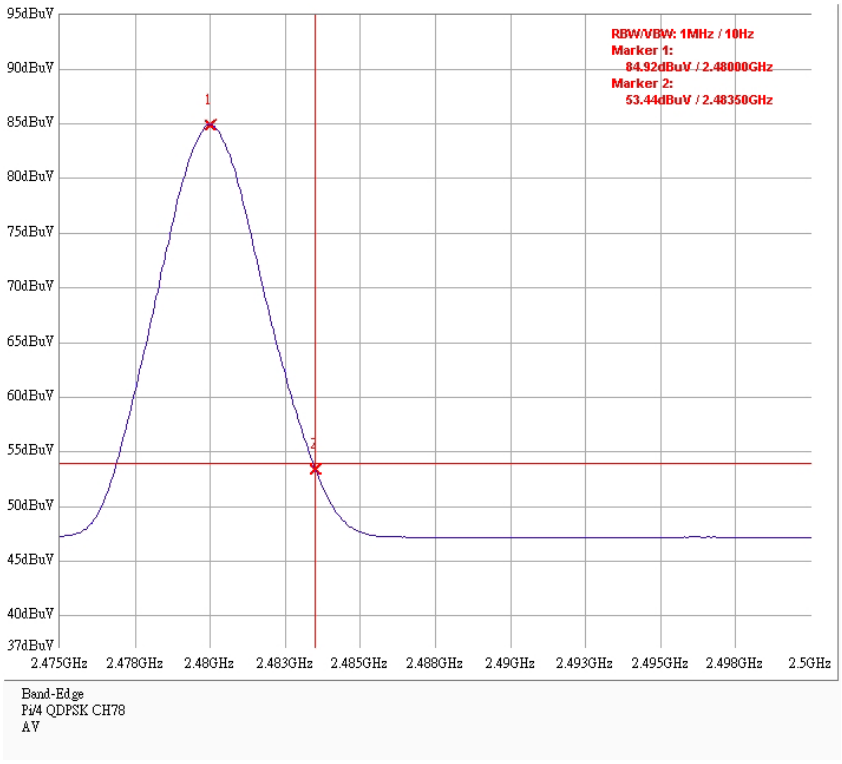


Band-Edge
Pi/4 QDPSK CH0
AV

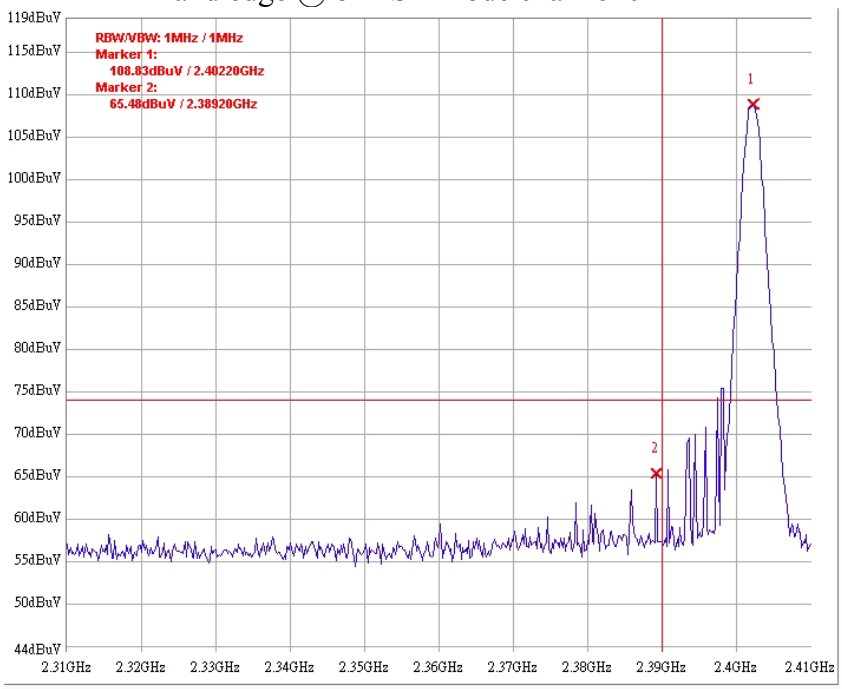
Band edge @ π /4 DPSK mode channel 78 PK



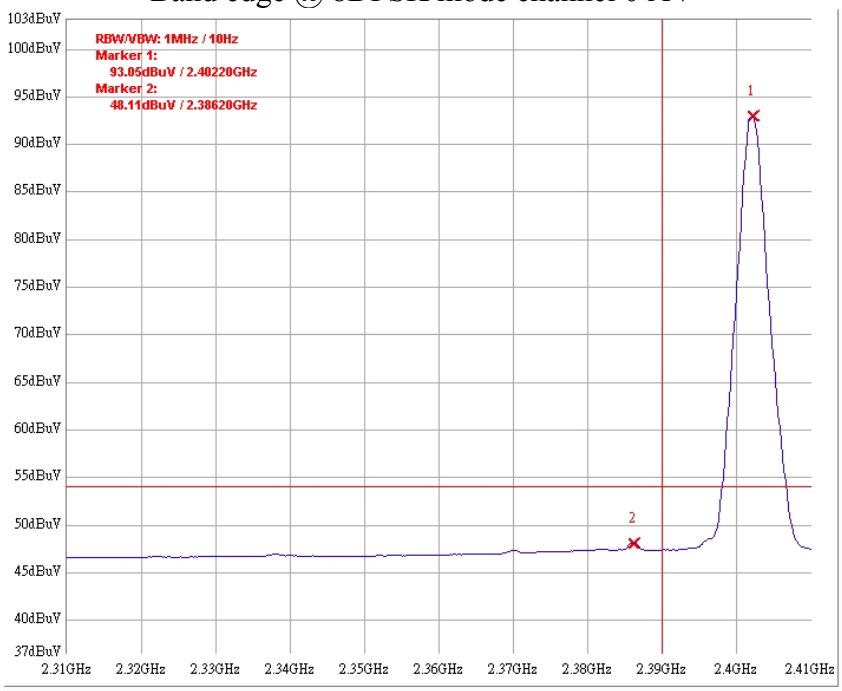
Band edge @ π /4 DPSK mode channel 78 AV



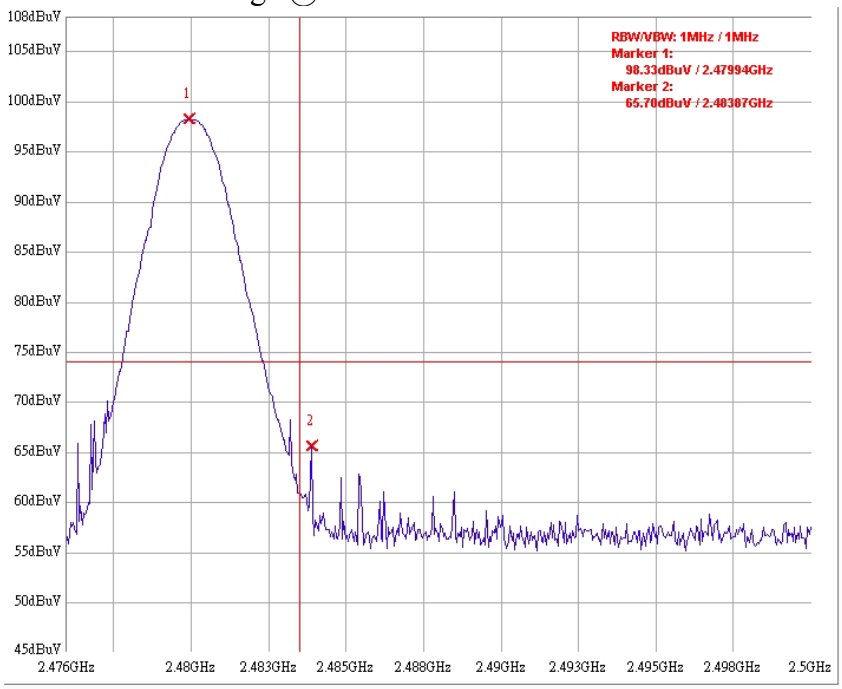
Band edge @ 8DPSK mode channel 0 PK



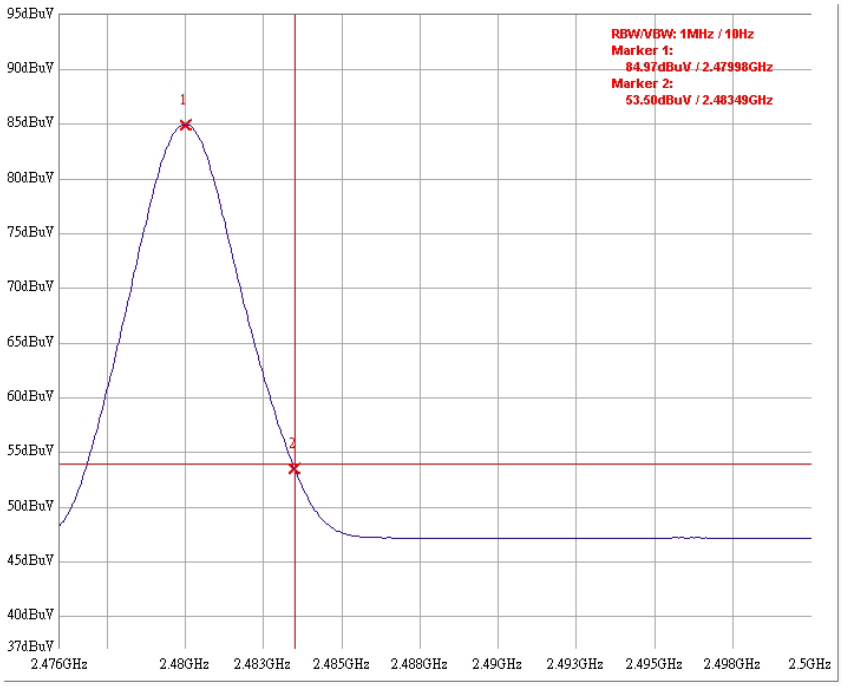
Band edge @ 8DPSK mode channel 0 AV



Band edge @ 8DPSK mode channel 78 PK



Band edge @ 8DPSK mode channel 78 AV

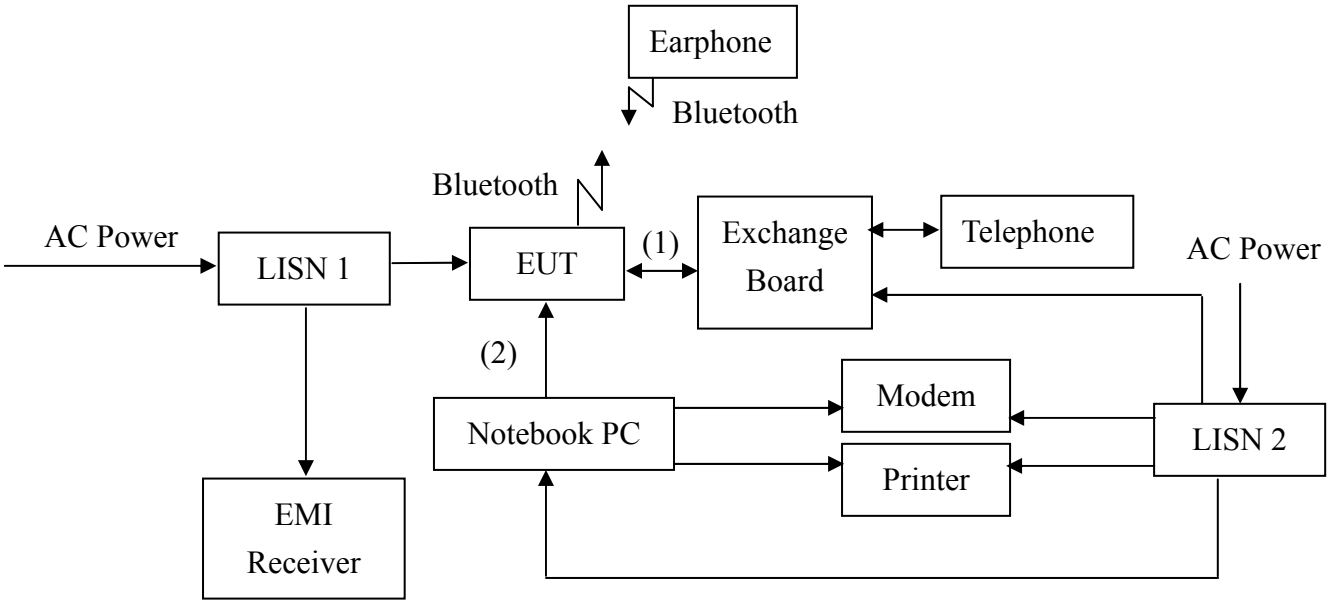


11. Power Line Conducted Emission test §FCC 15.207

11.1 Operating environment

Temperature:	25	℃
Relative Humidity:	60	%
Atmospheric Pressure	1023	hPa

11.2 Test setup & procedure



(1) RJ-11 unshielded cable 10 meter
(2) Audio Cable 1.8 meter

The test procedure was according to ANSI C63.4/2003**.**

The EUT are connected to the main power through a line impedance stabilization network (LISN). This provides a 50 ohm/50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination.
Both sides (Line and Neutral) of AC line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.4/2003 on conducted measurement.
The bandwidth of the field strength meter (R & S Test Receiver ESCS 30) is set at 9kHz.

The EUT configuration please refer to the “Conducted set-up photo.pdf”.

11.3 Emission limit

Freq. (MHz)	Conducted Limit (dBuV)	
	Q.P.	Ave.
0.15~0.50	66 – 56*	56 – 46*
0.50~5.00	56	46
5.00~30.0	60	50

*Decreases with the logarithm of the frequency.

11.4 Uncertainty of Conducted Emission

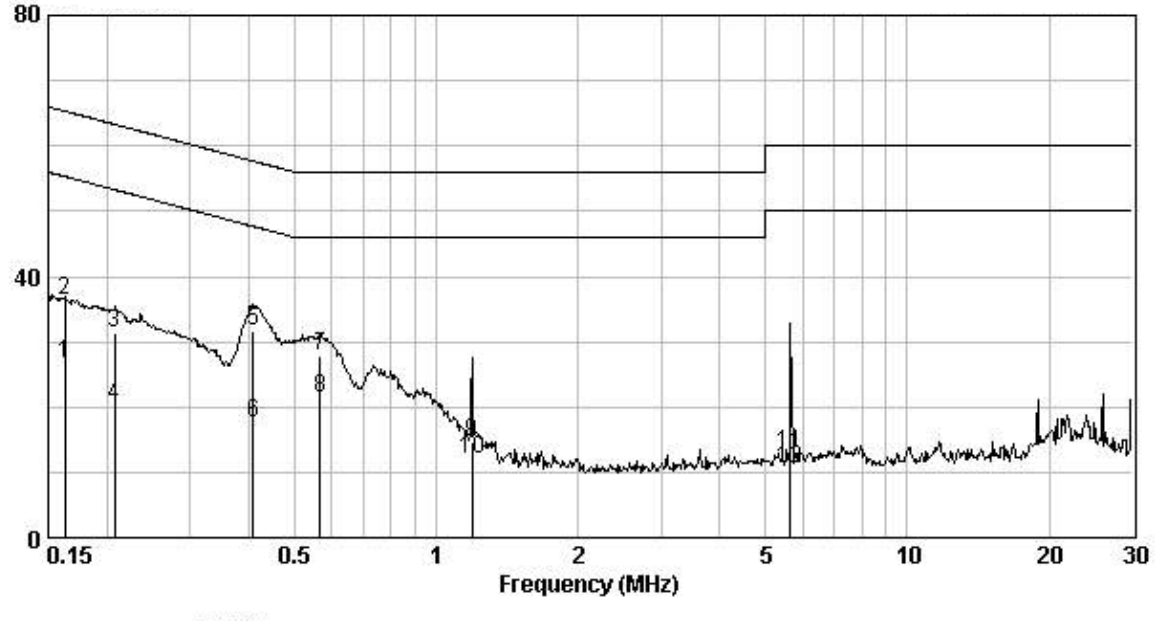
Expanded uncertainty (k=2) of conducted emission measurement is ±2.6 dB.

11.5 Power Line Conducted Emission test data

Phase : Line
EUT : BT-3000
Test Condition : Bluetooth Talking mode

Frequency (MHz)	Corr. Factor (dB)	Level Qp (dBuV)	Limit Qp (dBuV)	Level AV (dBuV)	Limit Av (dBuV)	Margin (dB) Qp	Margin (dB) Av
0.162	0.80	36.23	65.34	26.80	55.34	-29.11	-28.54
0.207	0.76	31.49	63.32	20.32	53.32	-31.83	-33.00
0.408	0.10	31.51	57.68	17.56	47.68	-26.17	-30.12
0.567	0.10	27.72	56.00	21.50	46.00	-28.28	-24.50
1.191	0.11	14.74	56.00	11.99	46.00	-41.26	-34.01
5.653	0.38	12.78	60.00	10.69	50.00	-47.22	-39.31

Remark:
1. Correction Factor (dB)= LISN Factor (dB) + Cable Loss (dB)
2. Margin (dB) = Level (dBuV) – Limit (dBuV)



Phase : Neutral
EUT : BT-3000
Test Condition : Bluetooth Talking mode

Frequency (MHz)	Corr. Factor (dB)	Level Qp (dBuV)	Limit Qp (dBuV)	Level AV (dBuV)	Limit Av (dBuV)	Margin (dB) Qp	Margin (dB) Av
0.161	0.10	30.21	65.43	19.14	55.43	-35.22	-36.29
0.197	0.10	28.98	63.76	16.24	53.76	-34.78	-37.52
0.238	0.10	25.90	62.17	13.64	52.17	-36.27	-38.53
0.421	0.10	31.57	57.42	19.25	47.42	-25.85	-28.17
0.604	0.10	26.29	56.00	17.91	46.00	-29.71	-28.09
0.775	0.10	20.98	56.00	12.38	46.00	-35.02	-33.62

Remark:
1. Correction Factor (dB)= LISN Factor (dB) + Cable Loss (dB)
2. Margin (dB) = Level (dBuV) – Limit (dBuV)