Lab Code: 200707-0

FCC PART 15.247
TEST REPORT

For

ITALCOM GROUP

1728 Coral Way, Coral Gables, Miami, Florida, United States

FCC ID: YPVITALCOMWATCH01

Report Type:	Product Type:
Original Report	Smart watch

Test Engineer:	Mick Yin
Report Number:	RSZ120504001-00B
Report Date:	2012-05-15
Reviewed By:	Sula Huang RF Engineer
Test Laboratory:	Bay Area Compliance Laboratories Corp. (Shenzhen) 6/F, the 3rd Phase of WanLi Industrial Building ShiHua Road, FuTian Free Trade Zone Shenzhen, Guangdong, China Tel: +86-755-33320018 Fax: +86-755-33320008 www.baclcorp.com.cn

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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The *ITALCOM GROUP*'s product, model number: *Smart watch (FCC ID: YPVITALCOMWATCH01)* or the "EUT" in this report was a *Smart watch,* which was measured approximately:
47.5 mm (L) x 47.5 mm (W) x 18 mm (H), rated input voltage: DC 3.7 V Li-ion battery or DC 5 V charging from adapter.

Adapter information: AC/DC Adapter
Input: 100-240VAC, 50/60Hz, 0.15A Max;
Output: 5.0V DC, 340mA

Frequency Range:

Cellular Band: 824-849 MHz (Tx), 869-894 MHz (Rx)
PCS Band: 1850-1910 MHz (Tx), 1930-1990 MHz (Rx)
Bluetooth: 2402-2480 MHz (Tx/ Rx)

Modulation Mode: GMSK (Cellular/PCS); GFSK, π/4-DQPSK, 8DPSK (Bluetooth)

Transmitter Output Power:

Cellular Band: 32.78 dBm (Conducted Power)
PCS Band: 29.38 dBm (Conducted Power)
Bluetooth: 7.66 dBm (Conducted power)

** All measurement and test data in this report was gathered from production sample serial number: 1205006 (Assigned by BACL, Shenzhen). The EUT was received on 2012-05-04.*

Objective

This test report is prepared on behalf of *ITALCOM GROUP* in accordance with Part 2-Subpart J, Part 15-Subparts A, B and C of the Federal Communication Commissions rules.

The tests were performed in order to determine compliance with FCC Part 15, Subpart C, section 15.203, 15.205, 15.207, 15.209 and 15.247 rules.

Related Submittal(s)/Grant(s)

FCC Part 22H/24E PCE and Part 15B JBP submissions with FCC ID: YPVITALCOMWATCH01

Test Methodology

All measurements contained in this report were conducted with ANSI C63.4-2009, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz.

All emissions measurement was performed and Bay Area Compliance Laboratories Corp. (Shenzhen). The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (Shenzhen) to collect test data is located on the 6/F, the 3rd Phase of WanLi Industrial Building, ShiHua Road, FuTian Free Trade Zone Shenzhen, Guangdong, China.

Test site at Bay Area Compliance Laboratories Corp. (Shenzhen) has been fully described in reports submitted to the Federal Communication Commission (FCC). The details of these reports have been found to be in compliance with the requirements of Section 2.948 of the FCC Rules on December 06, 2010. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2009.

The Federal Communications Commission has the reports on file and is listed under FCC Registration No.: 382179. The test site has been approved by the FCC for public use and is listed in the FCC Public Access Link (PAL) database.

Additionally, Bay Area Compliance Laboratories Corp. (Shenzhen) is an ISO/IEC 17025 accredited laboratory, and is accredited by National Voluntary Laboratory Accredited Program (Lab Code 200707-0).

The current scope of accreditations can be found at http://ts.nist.gov/Standards/scopes/2007070.htm

SYSTEM TEST CONFIGURATION

Description of Test Configuration

The system was configured for testing in a testing mode which was controlled by bluetooth tester.

Equipment Modifications

No modification was made to the EUT tested.

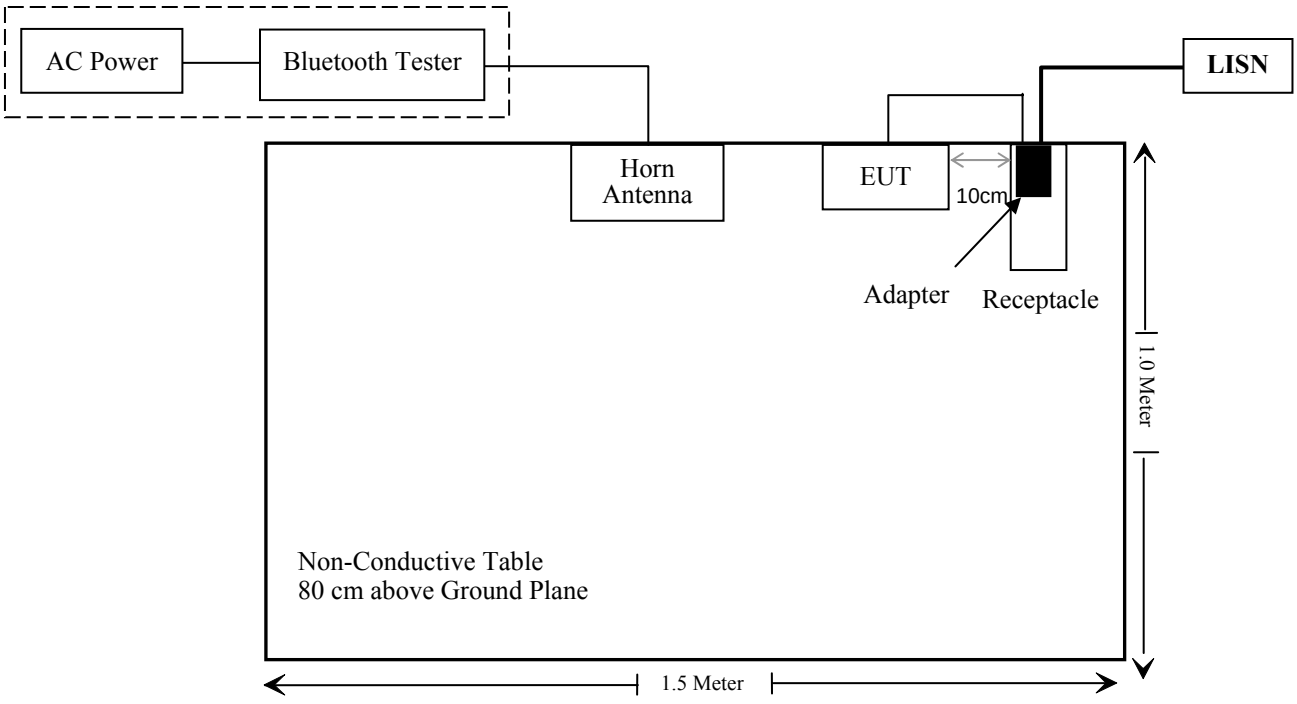
Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
TESCOM	Bluetooth Tester	TC-3000B	3000B650083

External I/O Cable

Cable Description	Length (m)	From Port	To
Unshielded Detachable DC Power Cable	0.8	EUT	Adapter

Block Diagram of Test Setup



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
§15.247 (i), §2.1093	RF Exposure	Compliance
§15.203	Antenna Requirement	Compliance
§15.207(a)	AC Line Conducted Emissions	Compliance
§15.205, §15.209 & §15.247(d)	Radiated Emissions	Compliance
§15.247(a)(1)	20 dB Emission Bandwidth	Compliance
§15.247(a)(1)	Channel Separation Test	Compliance
§15.247(a)(1)(iii)	Time of Occupancy (Dwell Time)	Compliance
§15.247(a)(1)(iii)	Quantity of hopping channel Test	Compliance
§15.247(b)(1)	Peak Output Power Measurement	Compliance
§15.247(d)	Band edges	Compliance

FCC §15.247 (i) & §2.1093 – RF EXPOSURE

Applicable Standard

According to §15.247 (i) and §1.1307(b)(1), systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines.

Table 2 – Summary of SAR Evaluation Requirements for a Cell Phone with Multiple Transmitters

	Individual Transmitter	Simultaneous Transmission
Licensed Transmitters	Routine evaluation required	SAR not required: Unlicensed only o when stand-alone 1-g SAR is not required and antenna is ≥ 5 cm from other antennas Licensed & Unlicensed o when the sum of the 1-g SAR is < 1.6 W/kg for all simultaneous transmitting antennas o when SAR to peak location separation ratio of simultaneous transmitting antenna pair is < 0.3 SAR required: Licensed & Unlicensed antenna pairs with SAR to peak location separation ratio ≥ 0.3; test is only required for the configuration that results in the highest SAR in stand-alone configuration for each wireless mode and exposure condition Note: simultaneous transmission exposure conditions for head and body can be different for different style phones; therefore, different test requirements may apply
Unlicensed Transmitters	When there is no simultaneous transmission – o output ≤ 60/f: SAR not required o output > 60/f: stand-alone SAR required When there is simultaneous transmission – Stand-alone SAR not required when o output ≤ 2·P_{Ref} and antenna is ≥ 5.0 cm from other antennas o output ≤ P_{Ref} and antenna is ≥ 2.5 cm from other antennas o output ≤ P_{Ref} and antenna is < 2.5 cm from other antennas, each with either output power ≤ P_{Ref} or 1-g SAR < 1.2 W/kg Otherwise stand-alone SAR is required When stand-alone SAR is required o test SAR on highest output channel for each wireless mode and exposure condition o if SAR for highest output channel is > 50% of SAR limit, evaluate all channels according to normal procedures	
Jaw, Mouth and Nose	Flat phantom SAR required o when measurement is required in tight regions of SAM and it is not feasible or the results can be questionable due to probe tilt, calibration, positioning and orientation issues o position rectangular and clam-shell phones according to flat phantom procedures and conduct SAR measurements for these specific locations	When simultaneous transmission SAR testing is required, contact the FCC Laboratory for interim guidance.

Routine SAR evaluation refers to that specifically required by § 2.1093, using measurements or computer simulation. When routine SAR evaluation is not required, portable transmitters with output power greater than the applicable low threshold require SAR evaluation to qualify for TCB approval.

1) GSM can transmit simultaneously with Bluetooth.
2) The distance between BT and GSM antenna is 5.0 cm ≥5.0 cm. The max output power of Bluetooth antenna is (7.66 dBm) 5.83 mW < $2P_{Ref}$(24 mW). According to KDB648474, stand-alone SAR is not required for BT antenna.
3) When the sum of the 1-g SAR is <1.6W/kg for GSM and Bluetooth, the simultaneous SAR is not required.
4) P_{Ref} is defined as the maximum conducted power available at the antenna according to source-based time-averaging requirements of Section 2.1093(d)(5).

Result:

The SAR measurement is exempt.

FCC §15.203 – ANTENNA REQUIREMENT

Applicable Standard

According to FCC § 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this Section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

Antenna Connector Construction

The EUT has an integrated antenna arranement for bluetooth, which was permanently attached and the gain was -2 dBi, fulfill the requirement of this section. Please refer to the internal photos.

Result: Compliance.

FCC §15.207 (a) – AC LINE CONDUCTED EMISSIONS

Applicable Standard

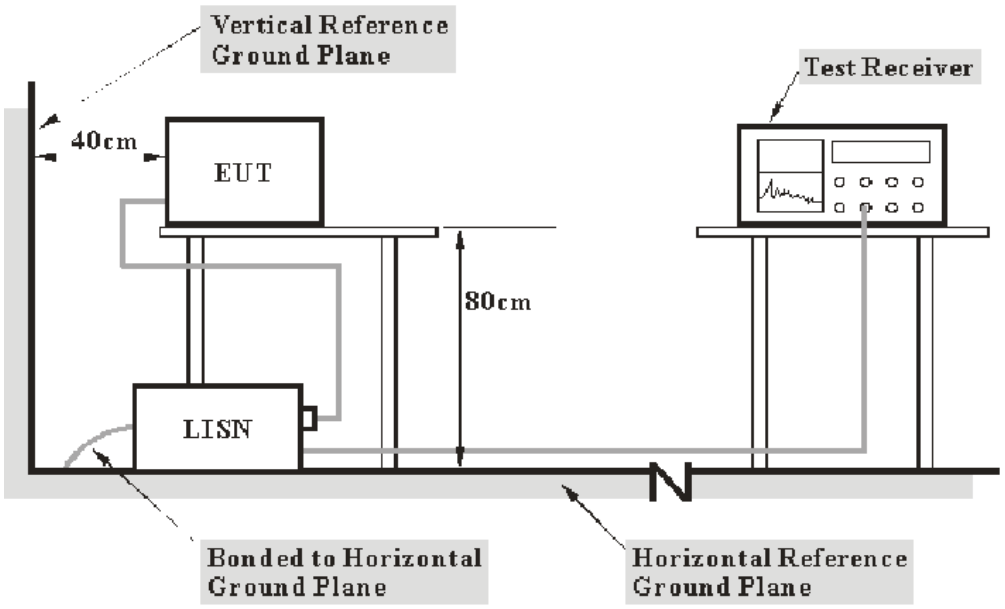
FCC §15.207

Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, and LISN.

Based on CISPR 16-4-4, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of any conducted emissions measurement at Bay Area Compliance Laboratory Corp. (Shenzhen) is 2.4 dB (k=2, 95% level of confidence).

EUT Setup



Note: 1. Support units were connected to second LISN.
2. Both of LISNs (AMN) 80 cm from EUT and at the least 80 cm from other units and other metal planes support units.

The setup of EUT is according with per ANSI C63.4-2009 measurement procedure. The specification used was with the FCC Part 15.207 limits.

The adapter was connected to a 120 VAC/60 Hz power source.

EMI Test Receiver Setup

The EMI test receiver was set to investigate the spectrum from 150 kHz to 30 MHz.

During the conducted emission test, the EMI test receiver was set with the following configurations:

Frequency Range	***IF B/W***
150 kHz – 30 MHz	9 kHz

Test Procedure

During the conducted emission test, the adapter was connected to the LISN.

Maximizing procedure was performed on the six (6) highest emissions of the EUT.

All data was recorded in the Quasi-peak and average detection mode.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	EMI Test Receiver	ESCS30	100176	2011-11-24	2012-11-23
Rohde & Schwarz	L.I.S.N.	ESH2-Z5	892107/021	2011-11-17	2012-11-16
Rohde & Schwarz	Pulse limiter	ESH3Z2	DE25985	2011-07-08	2012-07-07

*** Statement of Traceability:** Bay Area Compliance Laboratory Corp. (Shenzhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

Test Results Summary

According to the recorded data in following table, the EUT complied with the FCC Part 15.207, with the worst margin reading of:

15.84 dB at **0.410 MHz** in the **Neutral** conducted mode

Test Data

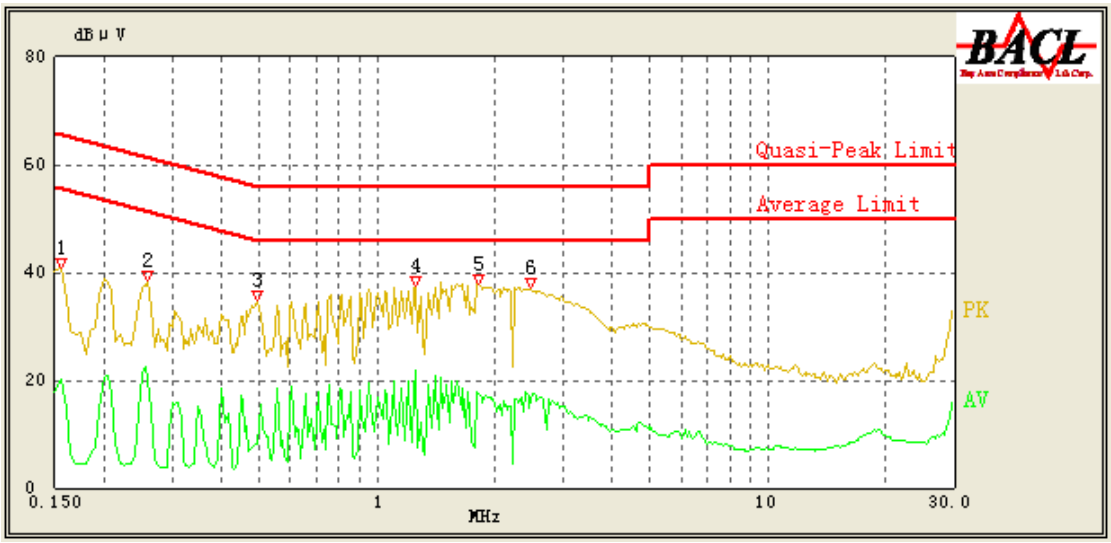
Environmental Conditions

Temperature:	25 °C
Relative Humidity:	48 %
ATM Pressure:	100.0 kPa

The testing was performed by Mick Yin on 2012-05-10.

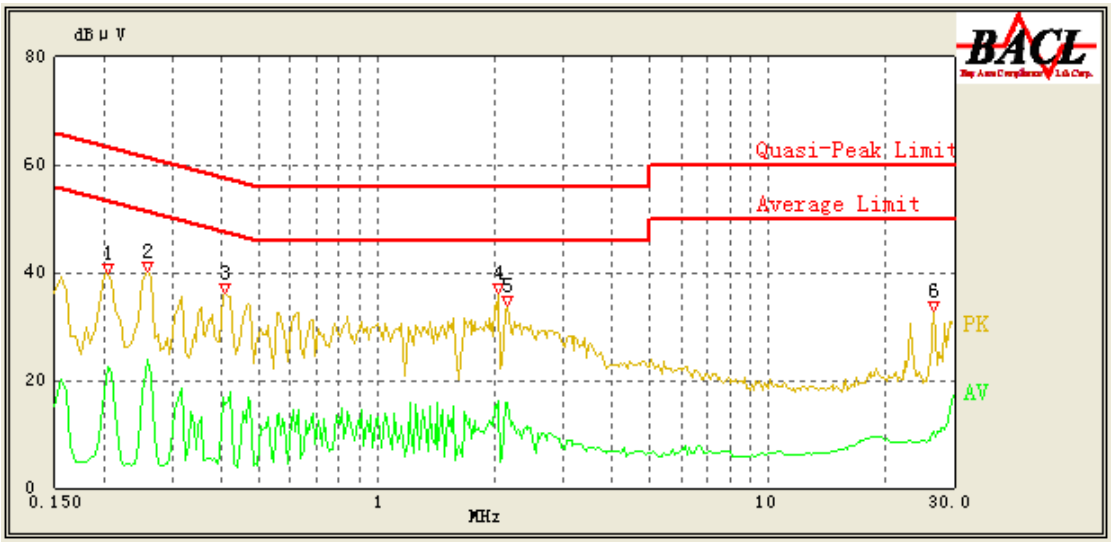
Test Mode: Charging & Transmitting

AC 120 V, 60 Hz, Line:



Conducted Emissions			FCC Part 15.207		
Frequency (MHz)	**Corrected Amplitude (dBμV)**	**Correction Factor (dB)**	**Limit (dBμV)**	**Margin (dB)**	**Detector (PK/Ave./QP)**
0.495	36.36	9.66	56.14	19.78	QP
2.465	32.89	9.80	56.00	23.11	QP
1.810	32.55	9.80	56.00	23.45	QP
0.495	22.02	9.66	46.14	24.12	Ave.
1.250	21.67	9.80	46.00	24.33	Ave.
1.255	31.28	9.80	56.00	24.72	QP
0.260	35.52	9.60	62.86	25.34	QP
1.810	17.47	9.80	46.00	28.53	Ave.
0.155	34.64	9.60	65.86	29.02	QP
2.455	14.98	9.80	46.00	31.02	Ave.
0.260	20.23	9.60	52.86	32.63	Ave.
0.155	20.31	9.60	55.86	35.55	Ave.

AC 120V, 60 Hz, Neutral:



Conducted Emissions			FCC Part 15.207		
Frequency (MHz)	**Corrected Amplitude (dBµV)**	**Correction Factor (dB)**	**Limit (dBµV)**	**Margin (dB)**	**Detector (PK/Ave./QP)**
0.410	22.73	9.63	58.57	15.84	QP
2.050	35.43	9.80	56.00	20.57	QP
0.260	38.16	9.60	62.86	20.70	QP
2.155	34.34	9.80	56.00	21.76	QP
0.260	23.83	9.60	52.86	29.03	Ave.
2.050	16.09	9.80	46.00	29.91	Ave.
2.155	15.99	9.80	46.00	30.01	Ave.
0.205	22.55	9.60	54.43	31.68	Ave.
0.410	15.56	9.63	48.57	33.01	Ave.
0.205	30.36	9.60	64.43	34.07	QP
26.825	12.50	11.61	50.00	37.30	Ave.
26.675	22.41	11.63	60.00	37.59	QP

FCC §15.205, §15.209 & §15.247(d) – RADIATED EMISSIONS

Applicable Standard

FCC §15.205; §15.209; §15.247(d)

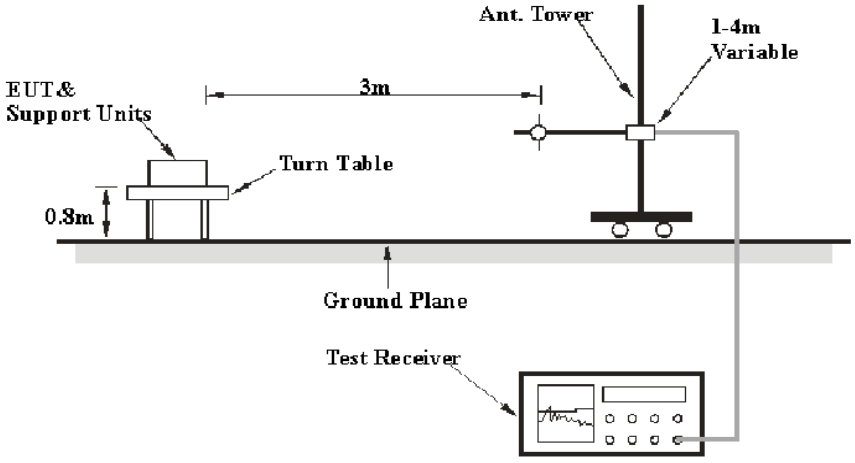
Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, antenna factor calibration, antenna directivity, antenna factor variation with height, antenna phase center variation, antenna factor frequency interpolation, measurement distance variation, site imperfections, mismatch (average), and system repeatability.

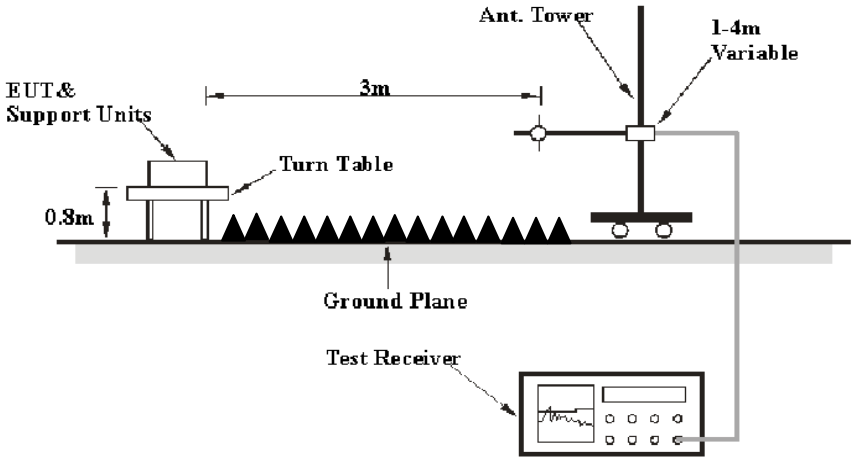
Based on CISPR 16-4-4, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of a radiation emissions measurement at Bay Area Compliance Laboratories Corp. (Shenzhen) is 4.0 dB. (k=2, 95% level of confidence).

EUT Setup

Below 1 GHz:



Above 1 GHz:



The radiated emission tests were performed in the 3 meters, using the setup accordance with the ANSI C63.4-2009. The specification used was the FCC 15.209 and FCC 15.247 limits.

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.

The adapter was connected to a 120 VAC/60 Hz power source.

EMI Test Receiver & Spectrum Analyzer Setup

The system was investigated from 30 MHz to 25 GHz.

During the radiated emission test, the EMI test receiver & Spectrum Analyzer Setup were set with the following configurations:

Frequency Range	***RBW***	***Video B/W***	***Detector***
30 MHz – 1000 MHz	120 kHz	300 kHz	QP
1000 MHz – 25 GHz	1 MHz	3 MHz	PK
1000 MHz – 25 GHz	1 MHz	10 Hz	Ave.

Test Procedure

For radiated emissions, the adapter was connected to the AC floor outlet.

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

Data was recorded in Quasi-peak detection mode for frequency range of 30 MHz -1 GHz, peak and Average detection modes for frequencies above 1 GHz.

Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and Cable Loss, and subtracting the Amplifier Gain from the Meter Reading. The basic equation is as follows:

Corrected Amplitude = Meter Reading + Antenna Factor + Cable Loss- Amplifier Gain

The "**Margin**" column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of 7 dB means the emission is 7 dB below the maximum limit. The equation for margin calculation is as follows:

Margin = Limit - Corrected Amplitude

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
HP	Amplifier	HP8447D	2944A09795	2011-11-24	2012-11-23
Rohde & Schwarz	EMI Test Receiver	ESCI	101122	2011-11-17	2012-11-16
Sunol Sciences	Broadband Antenna	JB1	A040904-1	2012-03-17	2013-03-16
Mini-Circuits	Amplifier	ZVA-213+	T-E27H	2012-03-08	2013-03-08
Sunol Sciences	Horn Antenna	DRH-118	A052304	2011-12-01	2012-11-30
Rohde & Schwarz	Signal Analyzer	FSIQ26	8386001028	2011-11-24	2012-11-23
Agilent	Spectrum Analyzer	8564E	3943A01781	2012-04-12	2013-04-11
the electro-Mechanics Co.	Horn Antenna	3116	9510-2270	2011-10-14	2012-10-13

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

Test Results Summary

According to the recorded data in following table, the EUT complied with the FCC Title 47, Part 15, Subpart C, section 15.205, 15.209 and 15.247, with the worst margin reading of:

7.00 dB at **2483.6 MHz** in the **Vertical** polarization

Test Data

Environmental Conditions

Temperature:	25 °C
Relative Humidity:	56 %
ATM Pressure:	100 kPa

The testing was performed by Mick Yin on 2012-05-10.

Test mode: Transmitting

(Scan with GFSK, π/4-DQPSK, 8-DPSK, and Worst case: BDR Mode (GFSK))

30 MHz ~25 GHz:

Frequency (MHz)	Receiver Reading (dBμV)	Detector (PK/QP/Ave)	Direction (Degree)	Test Antenna			Cable Loss (dB)	Pre-Amp. Gain (dB)	Cord. Amp. (dBμV/m)	FCC Part 15.247/205/209		
				Height (m)	Polar (H/V)	Factor (dB/m)				Limit (dBμV/m)	Margin (dB)	Comment
Low Channel (2402 MHz)												
2402	92.52	PK	20	1.4	V	28.90	3.03	26.50	97.95	/	/	Fund.
2402	67.55	Ave.	20	1.4	V	28.90	3.03	26.50	72.98	/	/	Fund.
2402	88.15	PK	182	1.2	H	28.90	3.03	26.50	82.72	/	/	Fund.
2402	63.42	Ave.	182	1.2	H	28.90	3.03	26.50	57.99	/	/	Fund.
1049.9	44.91	Ave.	120	1.2	H	23.50	1.94	26.50	43.85	54.00	10.15	Spurious
7206	20.87	Ave.	160	1.0	V	36.80	5.16	26.50	36.33	52.98	16.65	Harmonic
4804	24.59	Ave.	170	1.1	H	34.50	4.30	26.50	36.89	54.00	17.11	Harmonic
4804	40.36	PK	170	1.1	H	34.50	4.30	26.50	52.66	74.00	21.34	Harmonic
2388.1	42.58	PK	230	1.1	V	28.90	3.03	26.50	48.01	74.00	25.99	Spurious
2388.1	22.47	Ave.	230	1.1	V	28.90	3.03	26.50	27.90	54.00	26.10	Spurious
2390.2	41.81	PK	330	1.2	H	28.90	3.03	26.50	47.24	74.00	26.76	Spurious
7206	35.71	PK	160	1.0	V	36.80	5.16	26.50	51.17	77.95	26.78	Harmonic
2390.2	21.04	Ave.	330	1.2	H	28.90	3.03	26.50	26.47	54.00	27.53	Spurious
1049.9	47.05	PK	120	1.2	H	23.50	1.94	26.50	45.99	74.00	28.01	Spurious
2485.7	20.17	Ave.	310	1.4	V	28.90	3.11	26.50	25.68	54.00	28.32	Spurious
2485.7	35.24	PK	310	1.4	V	28.90	3.11	26.50	40.75	74.00	33.25	Spurious
Middle Channel (2441 MHz)												
2441	91.43	PK	240	1.2	V	28.90	3.11	26.50	96.94	/	/	Fund.
2441	63.02	Ave.	240	1.2	V	28.90	3.11	26.50	68.53	/	/	Fund.
2441	87.24	PK	360	1.2	H	28.90	3.11	26.50	81.73	/	/	Fund.
2441	60.84	Ave.	360	1.2	H	28.90	3.11	26.50	55.33	/	/	Fund.
1049.8	44.85	Ave.	230	1.6	H	23.50	1.94	26.50	43.79	54.00	10.21	Spurious
7323	20.32	Ave.	270	1.1	V	36.80	5.09	26.50	35.71	54.00	18.29	Harmonic
4882	21.41	Ave.	80	1.6	V	35.00	4.36	26.50	34.27	54.00	19.73	Harmonic
4882	36.01	PK	80	1.6	V	35.00	4.36	26.50	48.87	74.00	25.13	Harmonic
7323	32.10	PK	270	1.1	V	36.80	5.09	26.50	47.49	74.00	26.51	Harmonic
2497.4	21.32	Ave.	60	1.8	V	28.90	3.11	26.50	26.83	54.00	27.17	Spurious
2338.1	21.49	Ave.	30	1.5	V	28.80	2.98	26.50	26.77	54.00	27.23	Spurious
1049.8	47.02	PK	230	1.6	H	23.50	1.94	26.50	45.96	74.00	28.04	Spurious
2324.7	20.58	Ave.	310	1.3	H	28.80	2.98	26.50	25.86	54.00	28.14	Spurious
2338.1	36.77	PK	30	1.5	V	28.80	2.98	26.50	42.05	74.00	31.95	Spurious
2497.4	35.66	PK	60	1.8	V	28.90	3.11	26.50	41.17	74.00	32.83	Spurious
2324.7	32.43	PK	310	1.3	H	28.80	2.98	26.50	37.71	74.00	36.29	Spurious
High Channel (2480 MHz)												
2480	91.24	PK	150	1.0	V	28.90	3.11	26.50	96.75	/	/	Fund.
2480	63.60	Ave.	150	1.0	V	28.90	3.11	26.50	69.11	/	/	Fund.
2480	87.62	PK	181	1.1	H	28.90	3.11	26.50	82.11	/	/	Fund.
2480	60.37	Ave.	181	1.1	H	28.90	3.11	26.50	54.86	/	/	Fund.
2483.6	61.49	PK	330	1.6	V	28.90	3.11	26.50	67.00	74.00	7.00	Spurious
1050	44.12	Ave.	160	1.2	H	23.50	1.94	26.50	43.06	54.00	10.94	Spurious
7440	20.76	Ave.	230	1.6	V	36.80	5.20	26.50	36.26	54.00	17.74	Harmonic
4960	21.59	Ave.	340	1.5	V	35.00	4.40	26.50	34.49	54.00	19.51	Harmonic
2483.6	25.53	Ave.	330	1.6	V	28.90	3.11	26.50	31.04	54.00	22.96	Spurious
2490.7	24.42	Ave.	350	1.3	V	28.90	3.11	26.50	29.93	54.00	24.07	Spurious

4960	35.87	PK	340	1.5	V	35.00	4.40	26.50	48.77	74.00	25.23	Harmonic
7440	33.25	PK	230	1.6	V	36.80	5.20	26.50	48.75	74.00	25.25	Harmonic
2490.7	42.78	PK	350	1.3	V	28.90	3.11	26.50	48.29	74.00	25.71	Spurious
1050	46.85	PK	160	1.2	H	23.50	1.94	26.50	45.79	74.00	28.21	Spurious
2346.3	20.33	Ave.	290	1.4	V	28.80	2.98	26.50	25.61	54.00	28.39	Spurious
2346.3	36.24	PK	290	1.4	V	28.80	2.98	26.50	41.52	74.00	32.48	Spurious

Note: The data for frequency from 30 to 1000 MHz was below the limit 20 dB, so it was not recorded.

FCC §15.247(a) (1)-CHANNEL SEPARATION TEST

Applicable Standard

Frequency hopping systems shall have hoping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater. Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater provided the systems operate with an output power no greater than 125 mW.

Test Procedure

1. Set the EUT in transmitting mode, RBW of spectrum was set at 30 kHz, maxhold the channel.
2. Set the adjacent channel of the EUT maxhold another trace
3. Measure the channel separation.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	EMI Test Receiver	ESCI	101122	2011-11-17	2012-11-16
TESCOM	Bluetooth Tester	TC-3000B	3000B650083	2011-12-07	2012-12-06

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

Test Data

Environmental Conditions

Temperature:	25 °C
Relative Humidity:	56 %
ATM Pressure:	100 kPa

** The testing was performed by Mick Yin form 2012-05-08 to 2012-05-09.*

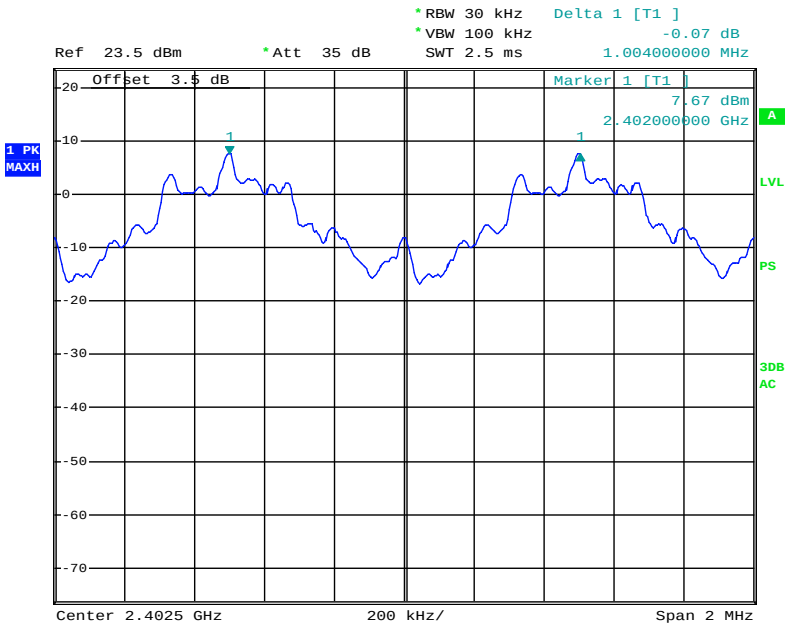
Test Mode: Transmitting

Test Result: Compliance. Please refer to following tables and plots

Mode	Channel	Frequency (MHz)	Channel Separation (MHz)	≥Limit (MHz)	Result
BDR (GFSK)	Low	2402	1.004	0.683	Pass
	Adjacent	2403			
	Middle	2441	1.004	0.680	Pass
	Adjacent	2442			
	High	2480	1.004	0.680	Pass
	Adjacent	2479			
EDR (π/4-DQPSK)	Low	2402	1.004	0.747	Pass
	Adjacent	2403			
	Middle	2441	1.004	0.747	Pass
	Adjacent	2442			
	High	2480	1.004	0.747	Pass
	Adjacent	2479			
EDR (8DPSK)	Low	2402	1.008	0.811	Pass
	Adjacent	2403			
	Middle	2441	1.004	0.811	Pass
	Adjacent	2442			
	High	2480	1.004	0.808	Pass
	Adjacent	2479			

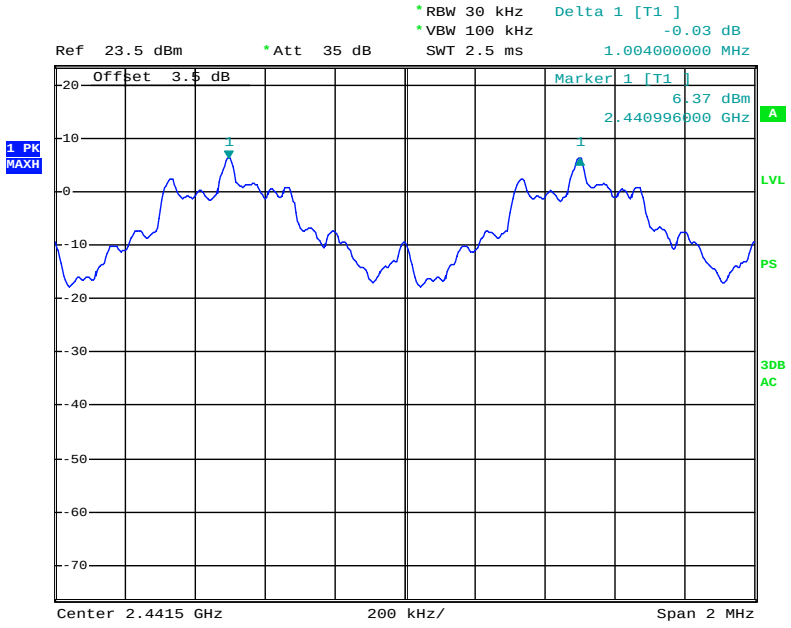
Note: Limit = 20 dB bandwidth *2/3

BDR (GFSK): Low Channel



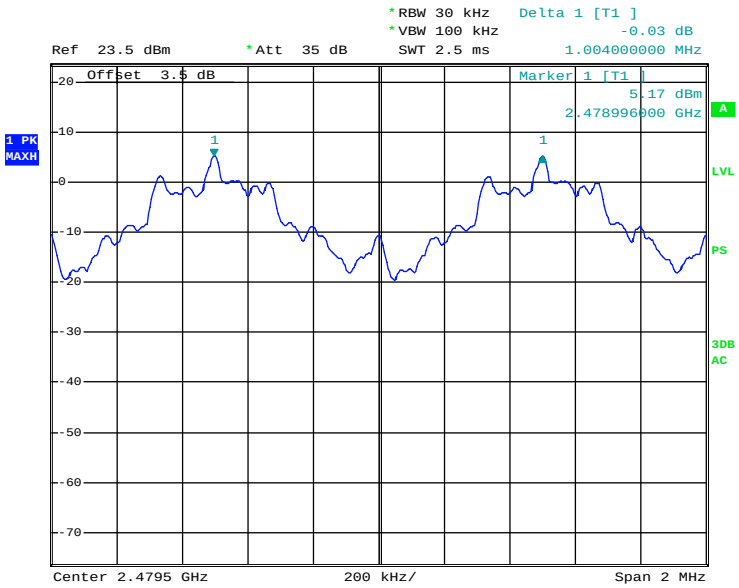
Date: 9.MAY.2012 17:36:46

BDR (GFSK): Middle Channel



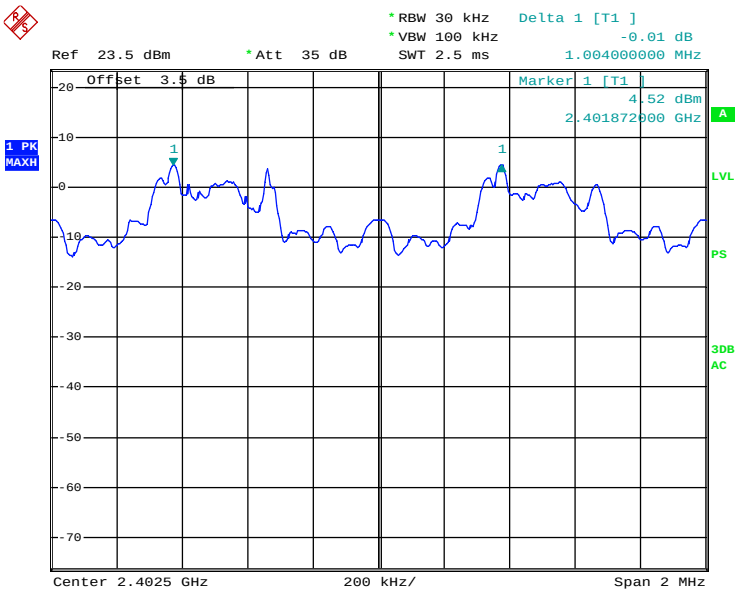
Date: 9.MAY.2012 17:35:48

BDR (GFSK): High Channel



Date: 9.MAY.2012 17:37:38

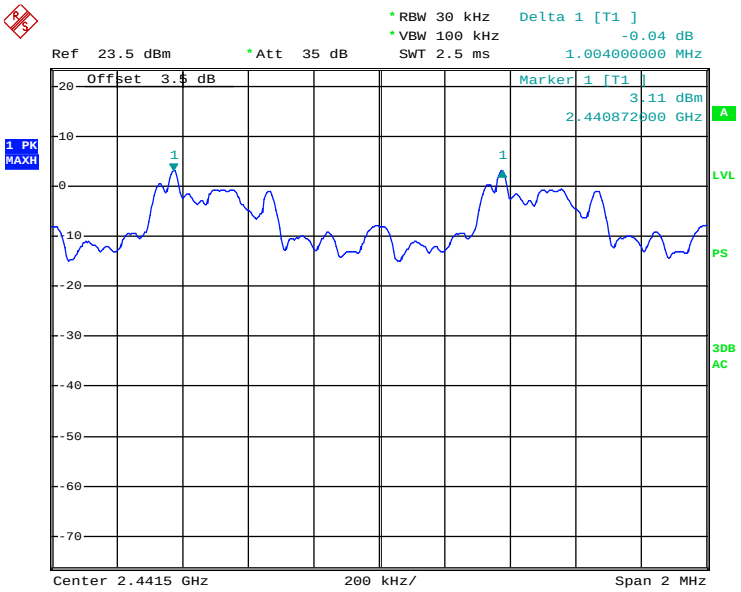
EDR (π/4-DQPSK): Low Channel



EUT

Date: 8.MAY.2012 20:52:21

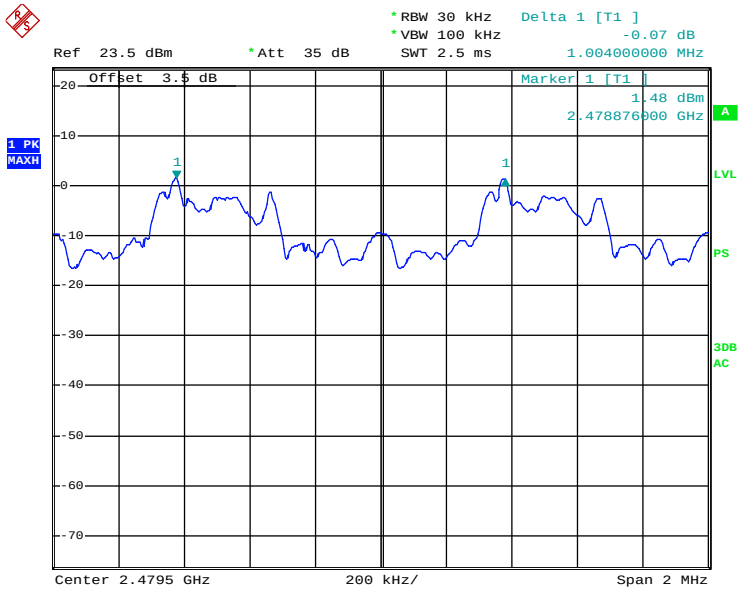
EDR (π/4-DQPSK): Middle Channel



EUT

Date: 8.MAY.2012 20:53:26

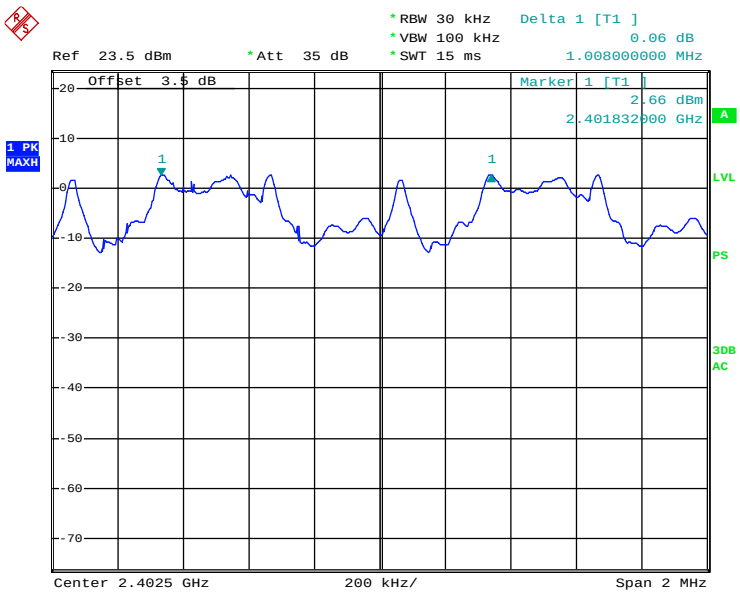
EDR (π/4-DQPSK): High Channel



EUT

Date: 8.MAY.2012 20:54:20

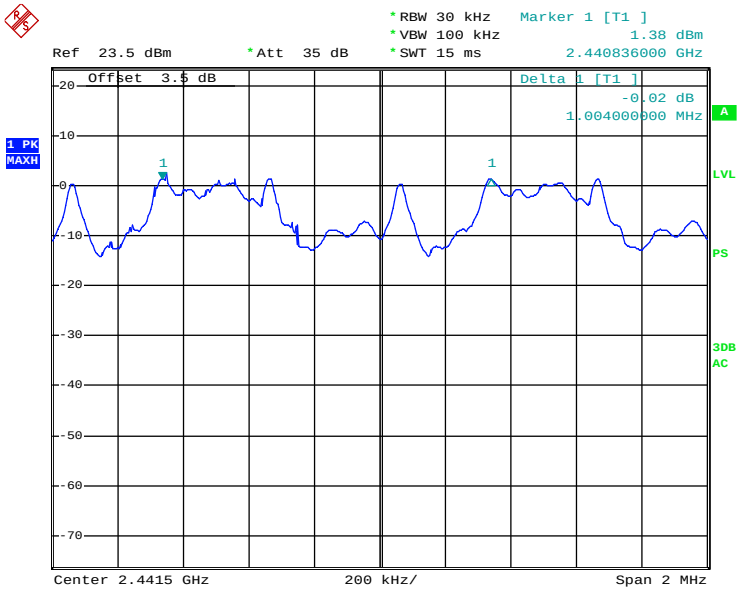
EDR (8DPSK): Low Channel



EUT

Date: 8.MAY.2012 21:21:59

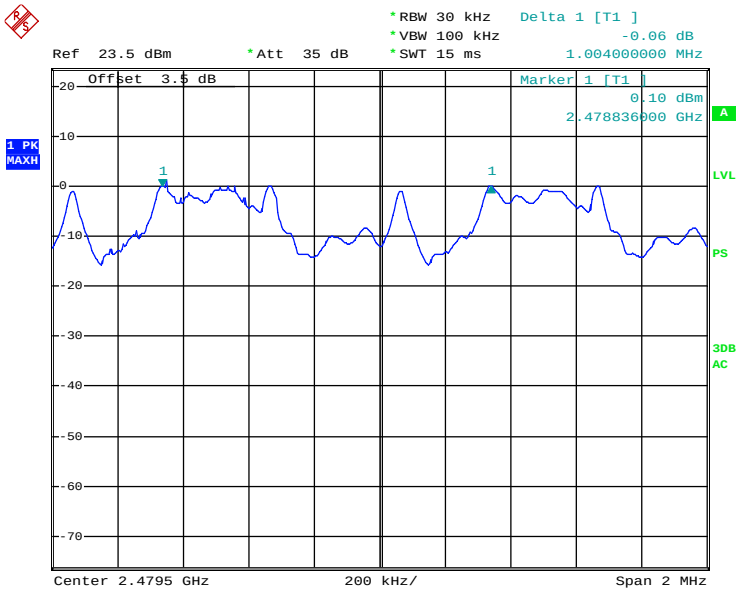
EDR (8DPSK): Middle Channel



EUT

Date: 8.MAY.2012 21:23:41

EDR (8DPSK): High Channel



EUT

Date: 8.MAY.2012 21:24:43

FCC §15.247(a) (1) – 20 dB EMISSION BANDWIDTH TESTING

Applicable Standard

Alternatively, frequency hopping systems operating in the 2400–2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW.

Test Procedure

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT without connection to measurement instrument. Turn on the EUT and connect it to measurement instrument. Then set it to any one convenient frequency within its operating range. Set a reference level on the measuring instrument equal to the highest peak value.
3. Measure the frequency difference of two frequencies that were attenuated 20 dB from the reference level. Record the frequency difference as the emission bandwidth.
4. Repeat above procedures until all frequencies measured were complete.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	EMI Test Receiver	ESCI	101122	2011-11-17	2012-11-16
TESCOM	Bluetooth Tester	TC-3000B	3000B650083	2011-12-07	2012-12-06

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

Test Data

Environmental Conditions

Temperature:	25 °C
Relative Humidity:	56 %
ATM Pressure:	100 kPa

** The testing was performed by Mick Yin from 2012-05-08 to 2012-05-09.*

Test Mode: Transmitting

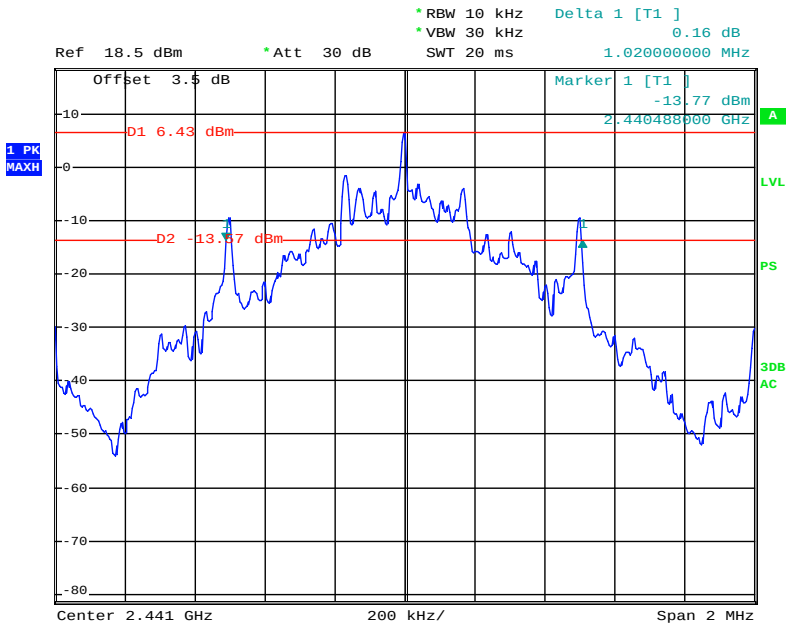
Test Result: Compliance. Please refer to following tables and plots

Mode	Channel	Frequency (MHz)	20 dB Bandwidth (MHz)
BDR (GFSK)	Low	2402	1.024
	Middle	2441	1.020
	High	2480	1.020
EDR (π/4-DQPSK)	Low	2402	1.120
	Middle	2441	1.120
	High	2480	1.120
EDR (8DPSK)	Low	2402	1.216
	Middle	2441	1.216
	High	2480	1.212

BDR (GFSK): Low Channel

Date: 9.MAY.2012 16:41:24

BDR (GFSK): Middle Channel

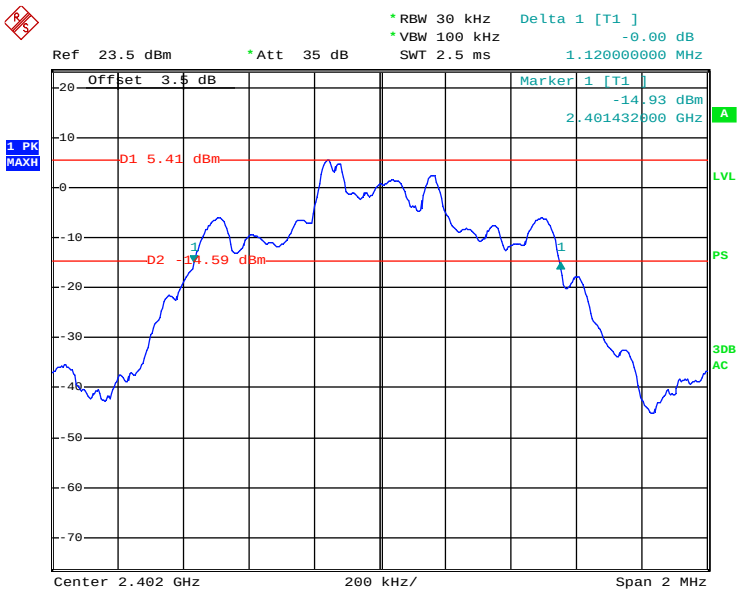


Date: 9.MAY.2012 16:44:25

BDR (GFSK): High Channel

Date: 9.MAY.2012 16:46:09

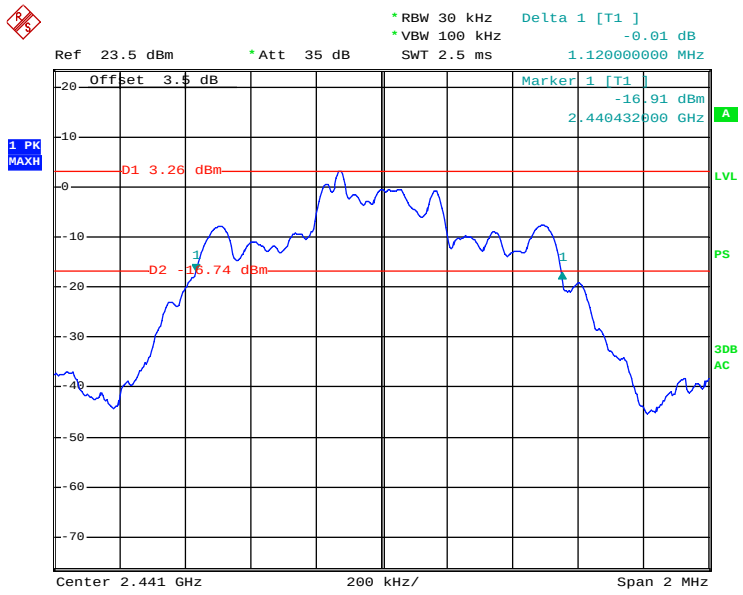
EDR (π/4-DQPSK): Low Channel



EUT

Date: 8.MAY.2012 20:37:36

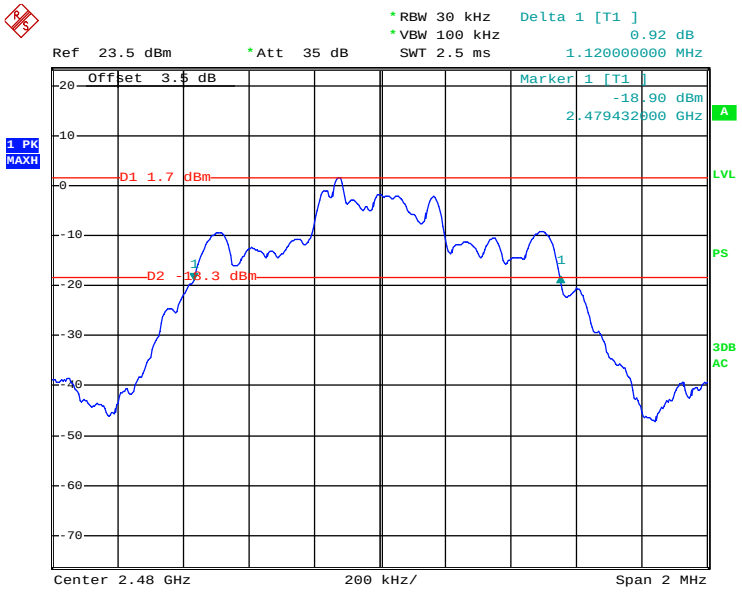
EDR (π/4-DQPSK): Middle Channel



EUT

Date: 8.MAY.2012 20:40:50

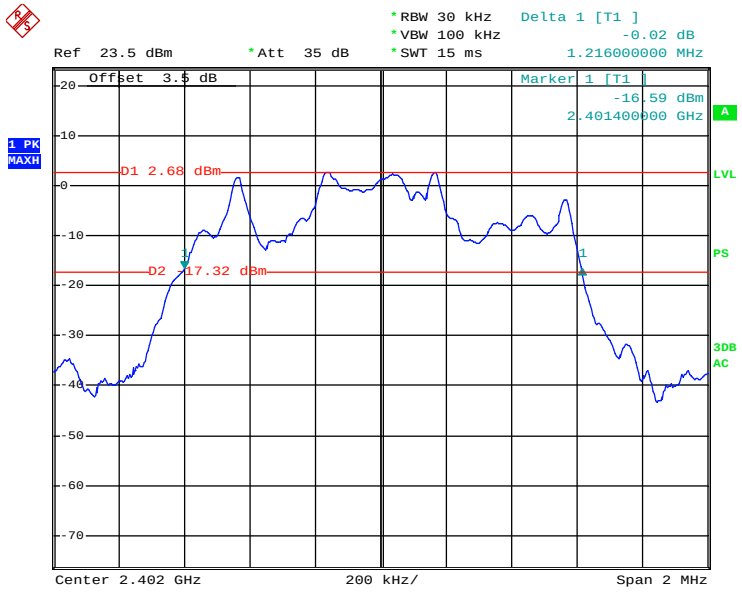
EDR (π/4-DQPSK): High Channel



EUT

Date: 8.MAY.2012 20:42:07

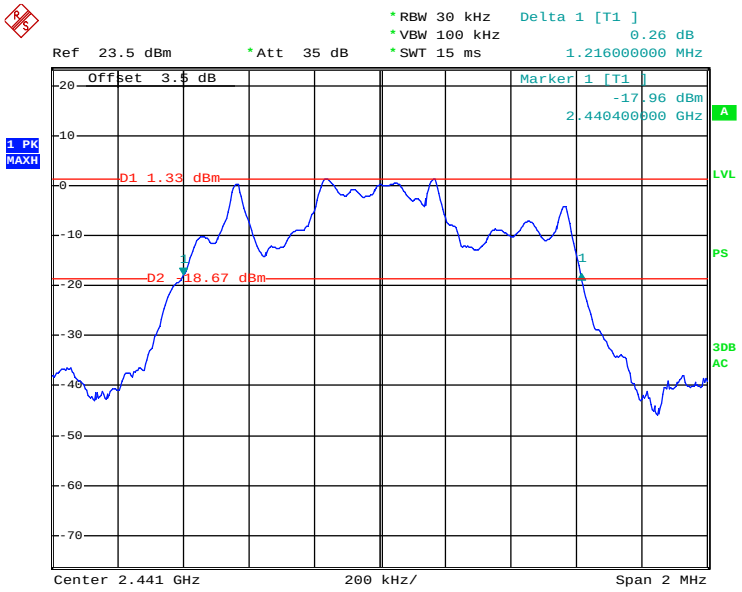
EDR (8DPSK): Low Channel



EUT

Date: 8.MAY.2012 21:11:53

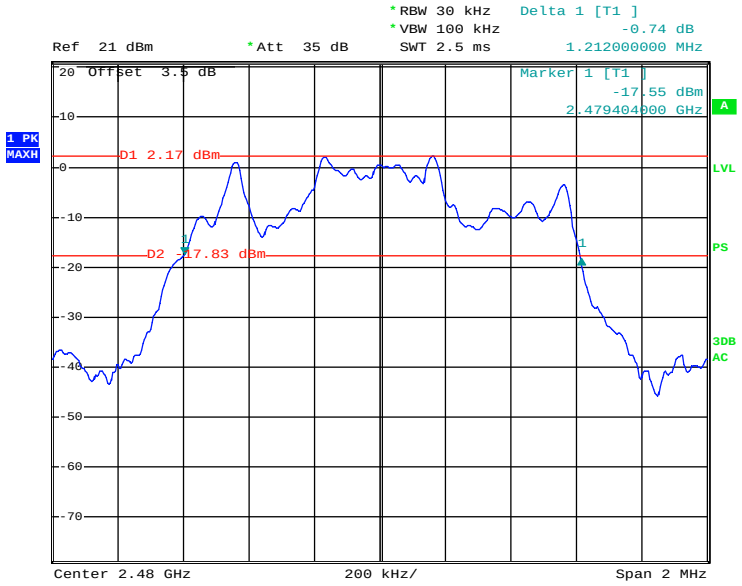
EDR (8DPSK): Middle Channel



EUT

Date: 8.MAY.2012 21:12:58

EDR (8DPSK): High Channel



EUT

Date: 9.MAY.2012 22:34:29

FCC §15.247(a) (1) (iii)-QUANTITY OF HOPPING CHANNEL TEST

Applicable Standard

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. Frequency hopping systems may avoid or suppress transmissions on a particular hopping frequency provided that a minimum of 15 channels are used.

Test Procedure

1. Check the calibration of the measuring instrument (SA) using either an internal calibrator or a known signal from an external generator.

2. Set the EUT in hopping mode from first channel to last.

3. By using the Max-Hold function record the Quantity of the channel.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	Signal Analyzer	FSIQ26	8386001028	2011-11-24	2012-11-23
TESCOM	Bluetooth Tester	TC-3000B	3000B650083	2011-12-07	2012-12-06

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

Test Data

Environmental Conditions

Temperature:	25 °C
Relative Humidity:	56 %
ATM Pressure:	100 kPa

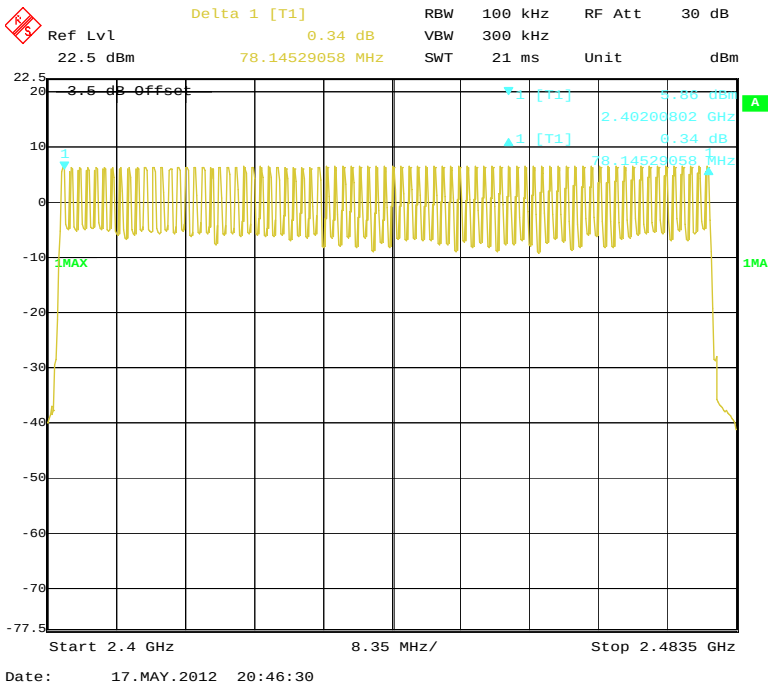
The testing was performed by Mick Yin from 2012-05-08 to 2012-05-09.

Test Mode: Transmitting

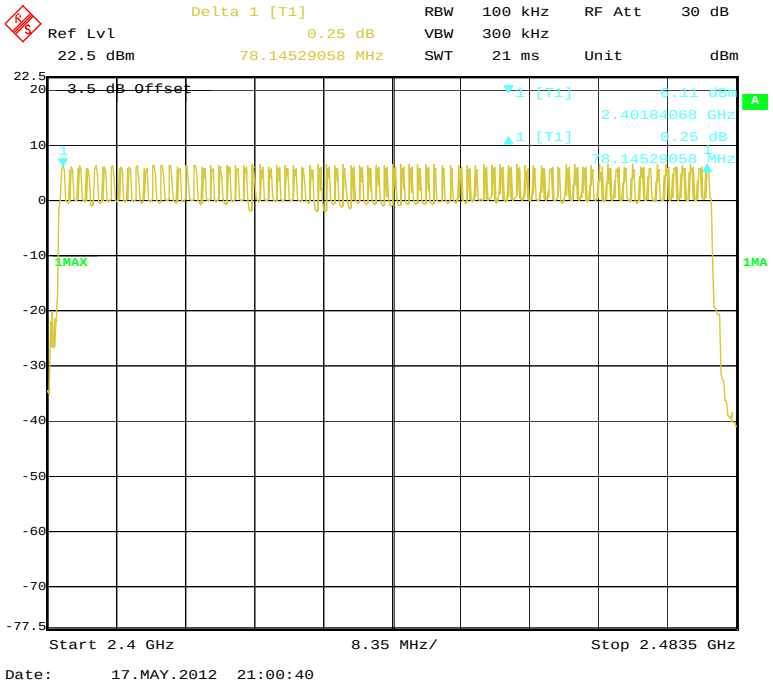
Test Result: Compliance. Please refer to following tables and plots

Mode	Frequency Range (MHz)	Number of Hopping Channel (CH)	Limit (CH)
BDR (GFSK)	2400-2483.50	79	≥15
EDR (π/4-DQPSK)	2400-2483.50	79	≥15
EDR (8DPSK)	2400-2483.50	79	≥15

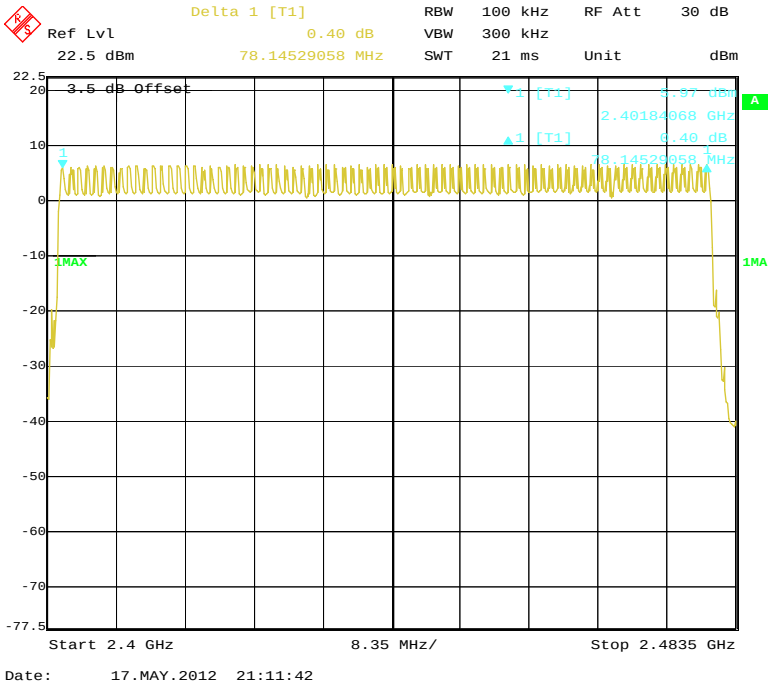
BDR (GFSK): Number of Hopping Channels



EDR (π/4-DQPSK): Number of Hopping Channels



EDR (8DPSK): Number of Hopping Channels



FCC §15.247(a) (1) (iii) -TIME OF OCCUPANCY (DWELL TIME)

Applicable Standard

Frequency hopping systems in the 2400-2483.5 MHz 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. Frequency hopping systems may avoid or suppress transmissions on a particular hopping frequency provided that a minimum of 15 channels are used.

Test Procedure

The EUT was worked in channel hopping; Spectrum SPAN was set as 0. Sweep was set as 0.4 X channel no. (s), the quantity of pulse was get from single sweep. In addition, the time of single pulses was tested.

Dwell time = Pulse time*hope rate/number of hopping channels*31.6S
Hop rate=1600/S

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	EMI Test Receiver	ESCI	101122	2011-11-17	2012-11-16
TESCOM	Bluetooth Tester	TC-3000B	3000B650083	2011-12-07	2012-12-06

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

Test Data

Environmental Conditions

Temperature:	25 °C
Relative Humidity:	56 %
ATM Pressure:	100 kPa

The testing was performed by Mick Yin from 2012-05-08 to 2012-05-09.

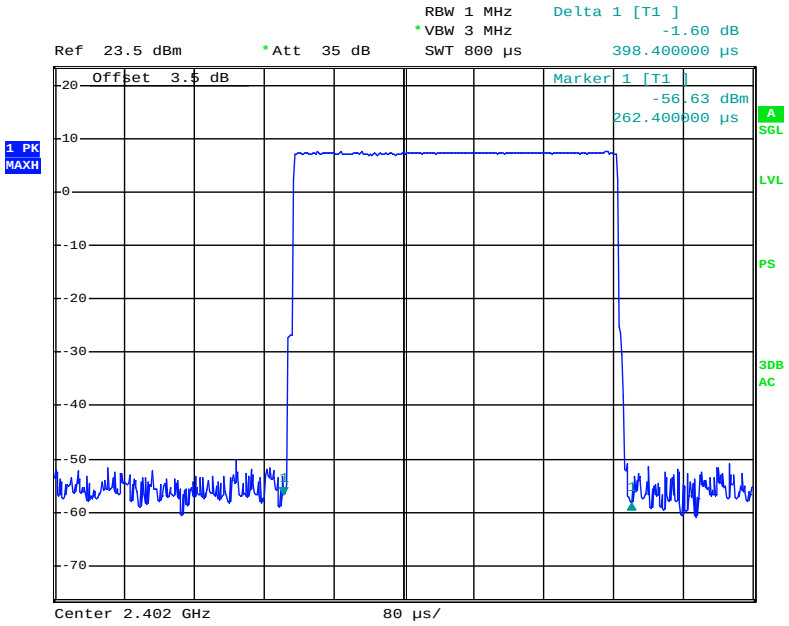
Test Mode: Transmitting

Test Result: Compliance. Please refer to following tables and plots

Mode		Channel	Pulse Width (ms)	Dwell Time (S)	Limit (S)	Result
BDR (GFSK)	DH 1	Low	0.398	0.127	0.4	Pass
		Middle	0.390	0.125	0.4	Pass
		High	0.388	0.124	0.4	Pass
		Note: DH1:Dwell time = Pulse time*(1600/2/79)*31.6S				
	DH 3	Low	1.660	0.266	0.4	Pass
		Middle	1.672	0.267	0.4	Pass
		High	1.678	0.268	0.4	Pass
		Note: DH3:Dwell time = Pulse time*(1600/4/79)*31.6S				
	DH 5	Low	2.932	0.313	0.4	Pass
		Middle	2.924	0.312	0.4	Pass
		High	2.924	0.312	0.4	Pass
		Note: DH5:Dwell time = Pulse time*(1600/6/79)*31.6S				
EDR (π/4-DQPSK)	DH 1	Low	0.395	0.126	0.4	Pass
		Middle	0.403	0.129	0.4	Pass
		High	0.401	0.128	0.4	Pass
		Note: DH1:Dwell time = Pulse time*(1600/2/79)*31.6S				
	DH 3	Low	1.673	0.268	0.4	Pass
		Middle	1.661	0.266	0.4	Pass
		High	1.679	0.269	0.4	Pass
		Note: DH3:Dwell time = Pulse time*(1600/4/79)*31.6S				
	DH 5	Low	2.948	0.314	0.4	Pass
		Middle	2.932	0.313	0.4	Pass
		High	2.956	0.315	0.4	Pass
		Note: DH5:Dwell time = Pulse time*(1600/6/79)*31.6S				
EDR (8DPSK)	DH 1	Low	0.398	0.127	0.4	Pass
		Middle	0.396	0.127	0.4	Pass
		High	0.396	0.127	0.4	Pass
		Note: DH1:Dwell time = Pulse time*(1600/2/79)*31.6S				
	DH 3	Low	1.686	0.270	0.4	Pass
		Middle	1.668	0.267	0.4	Pass
		High	1.674	0.268	0.4	Pass
		Note: DH3:Dwell time = Pulse time*(1600/4/79)*31.6S				
	DH 5	Low	2.950	0.315	0.4	Pass
		Middle	2.942	0.314	0.4	Pass
		High	2.926	0.312	0.4	Pass
		Note: DH5:Dwell time = Pulse time*(1600/6/79)*31.6S				

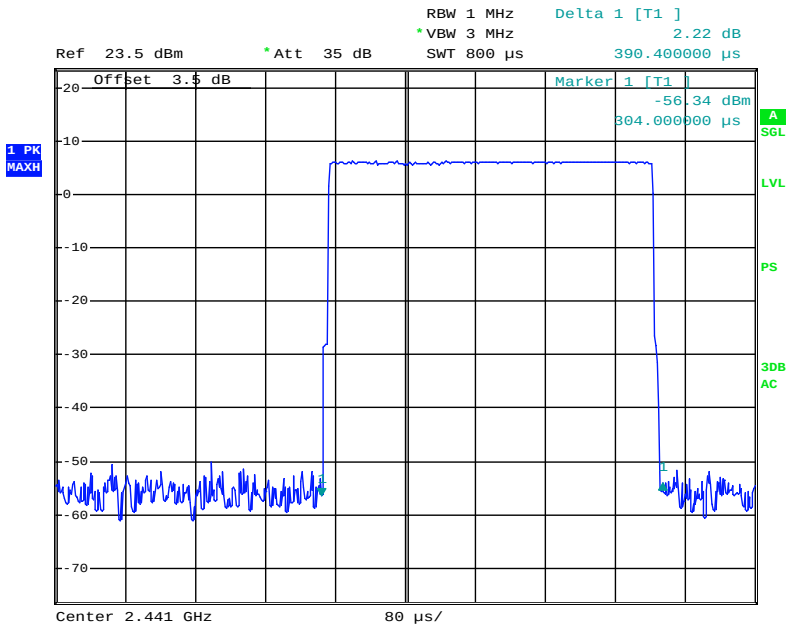
BDR (GFSK):

Pulse time, Low Channel, DH1



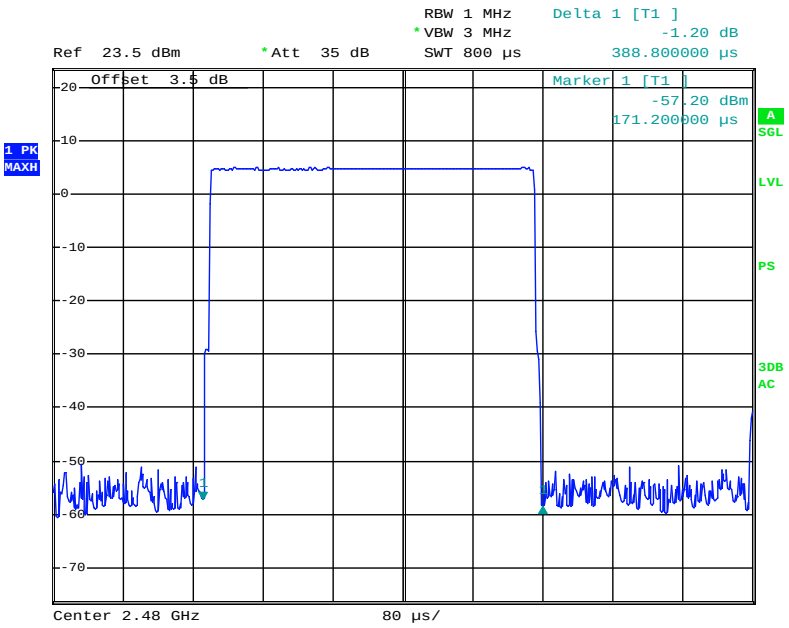
Date: 9.MAY.2012 17:45:55

Pulse time, Middle Channel, DH1



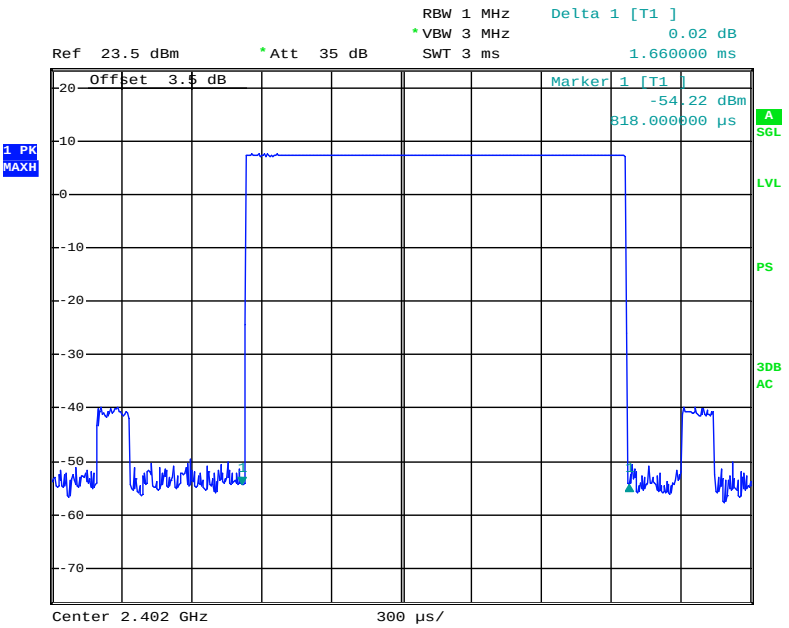
Date: 9.MAY.2012 17:46:46

Pulse time, High Channel, DH1



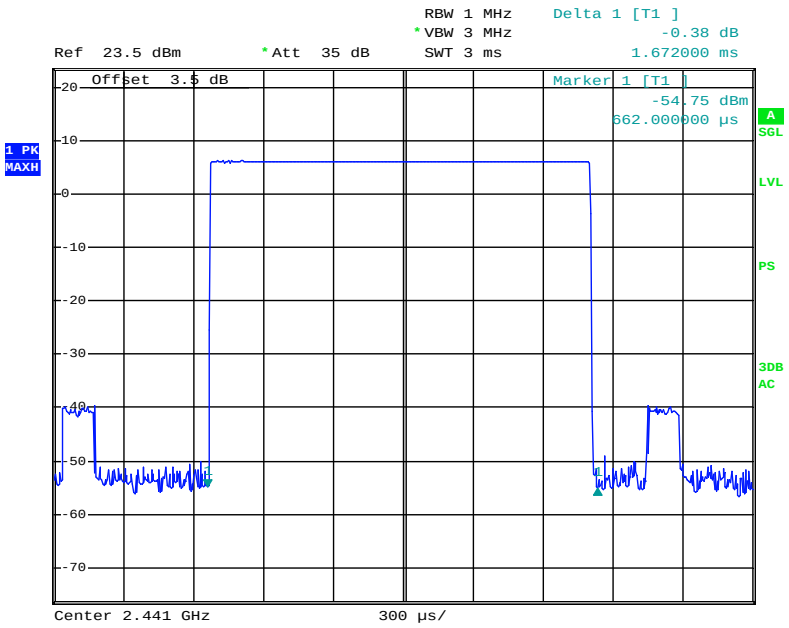
Date: 9.MAY.2012 17:47:12

Pulse time, Low Channel, DH3



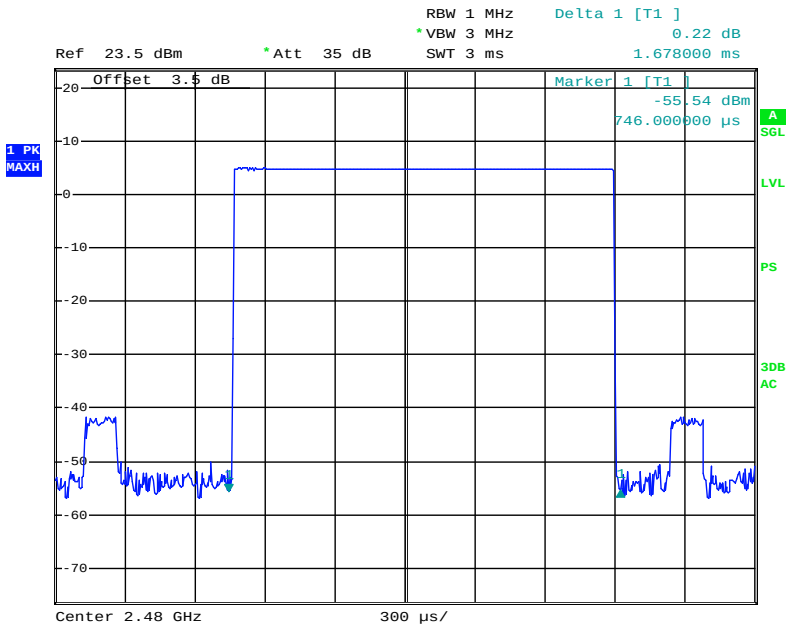
Date: 9.MAY.2012 17:24:01

Pulse time, Middle Channel, DH3



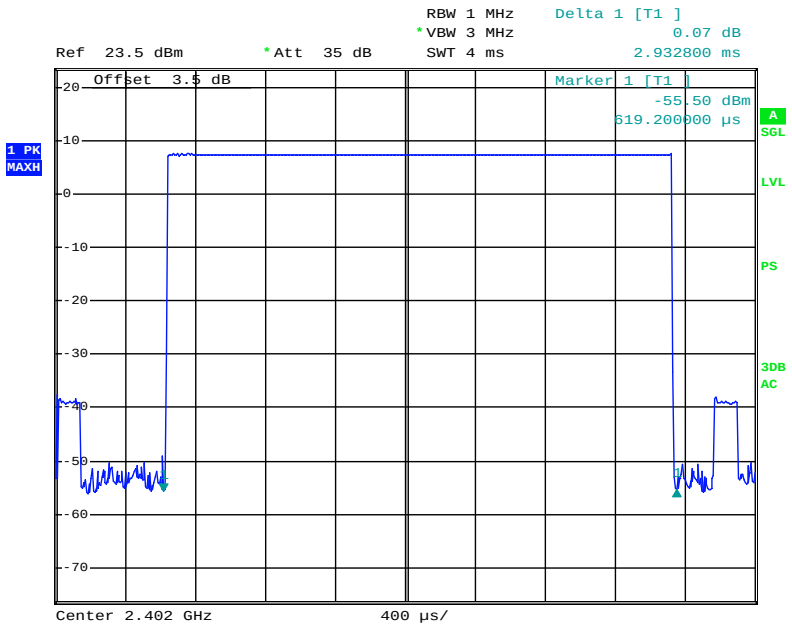
Date: 9.MAY.2012 17:23:06

Pulse time, High Channel, DH3



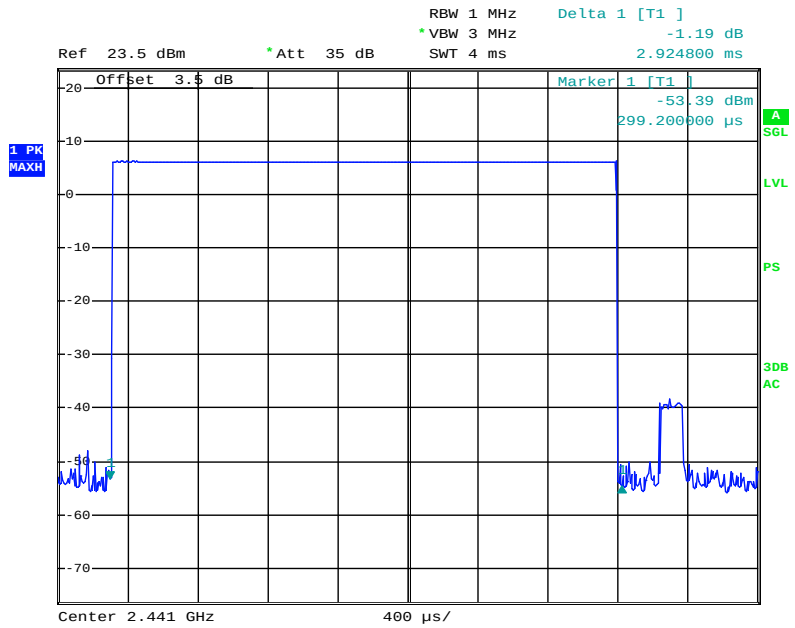
Date: 9.MAY.2012 17:25:11

Pulse time, Low Channel, DH5



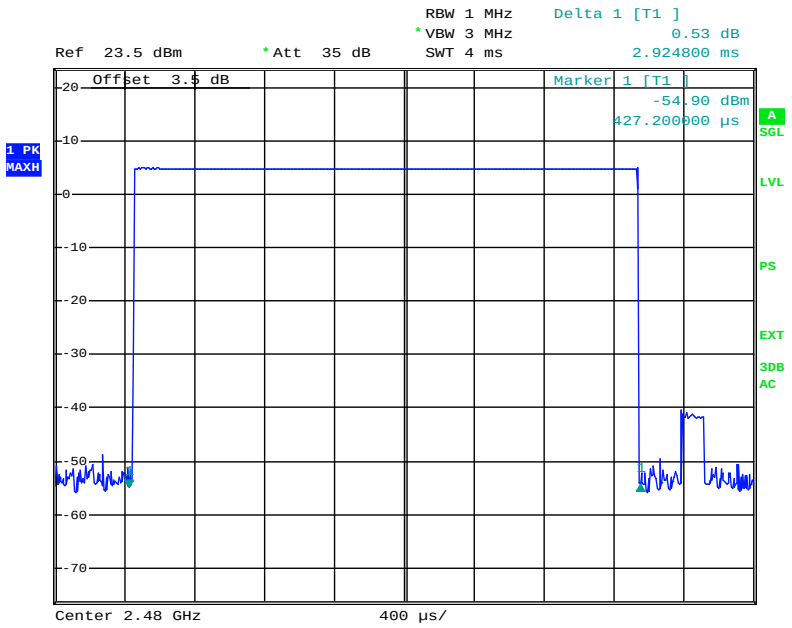
Date: 9.MAY.2012 17:49:31

Pulse time, Middle Channel, DH5



Date: 9.MAY.2012 17:48:52

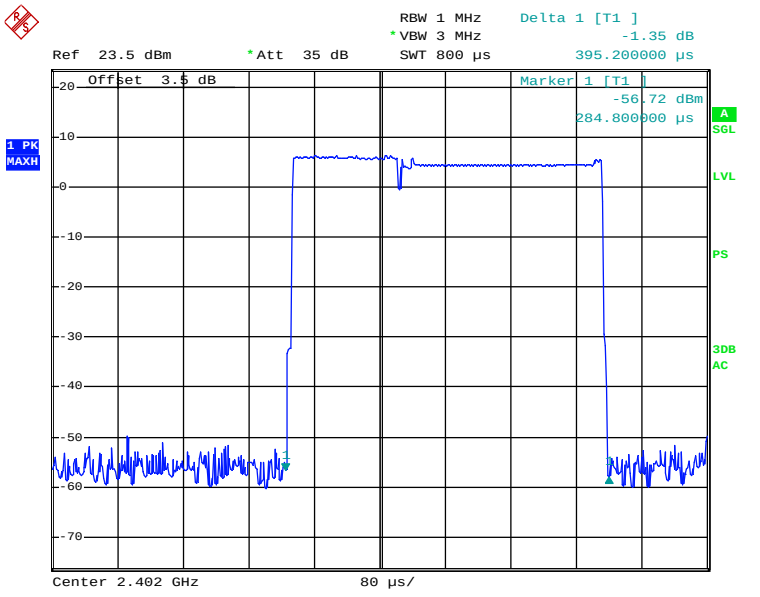
Pulse time, High Channel, DH5



Date: 9.MAY.2012 17:51:33

EDR (π/4-DQPSK):

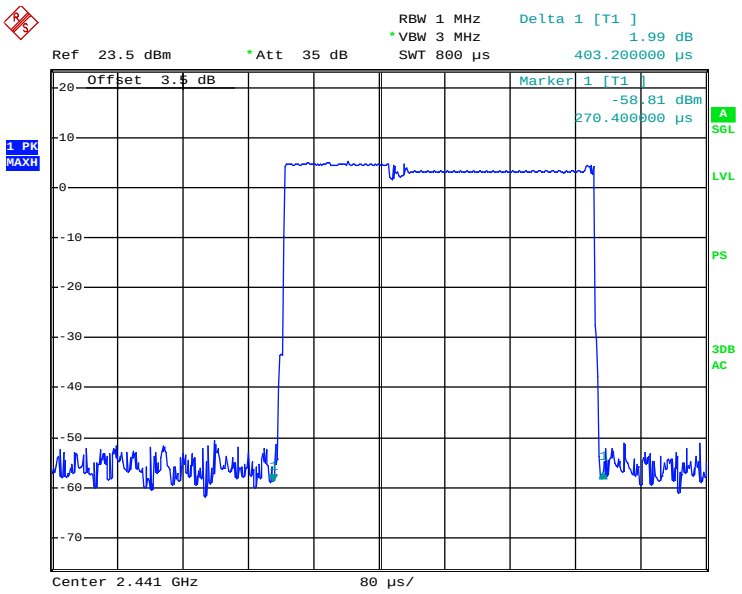
Pulse time, Low Channel, DH1



EUT

Date: 8.MAY.2012 21:03:59

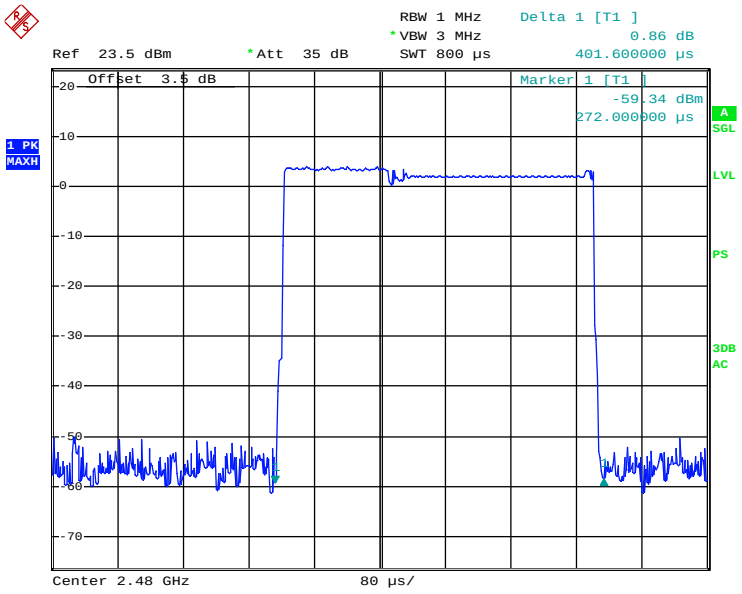
Pulse time, Middle Channel, DH1



EUT

Date: 8.MAY.2012 21:04:32

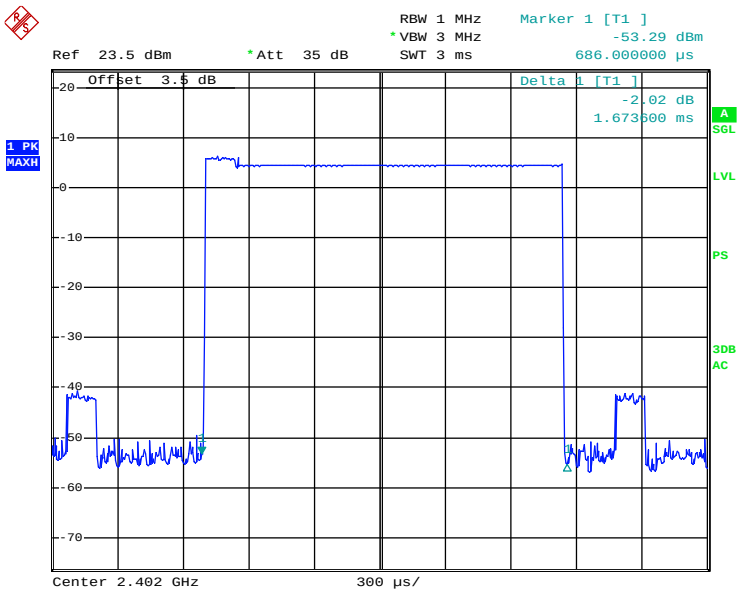
Pulse time, High Channel, DH1



EUT

Date: 8.MAY.2012 21:05:05

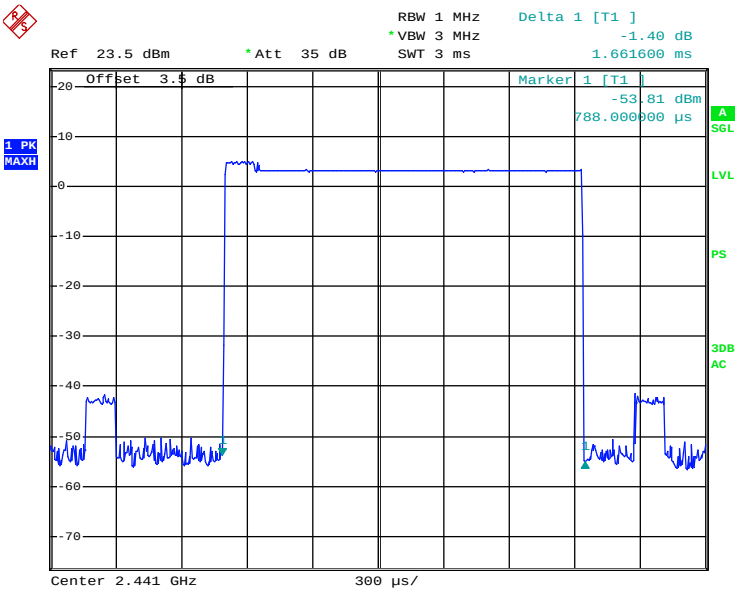
Pulse time, Low Channel, DH3



EUT

Date: 8.MAY.2012 21:06:10

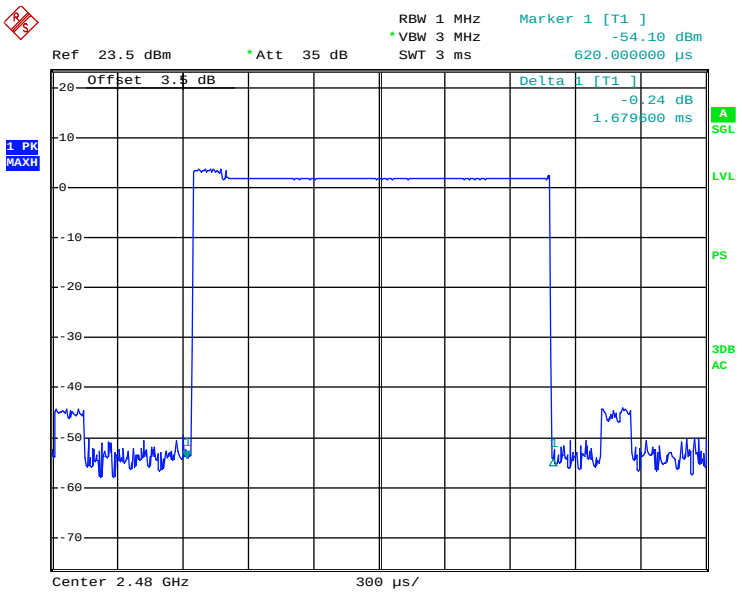
Pulse time, Middle Channel, DH3



EUT

Date: 8.MAY.2012 21:06:35

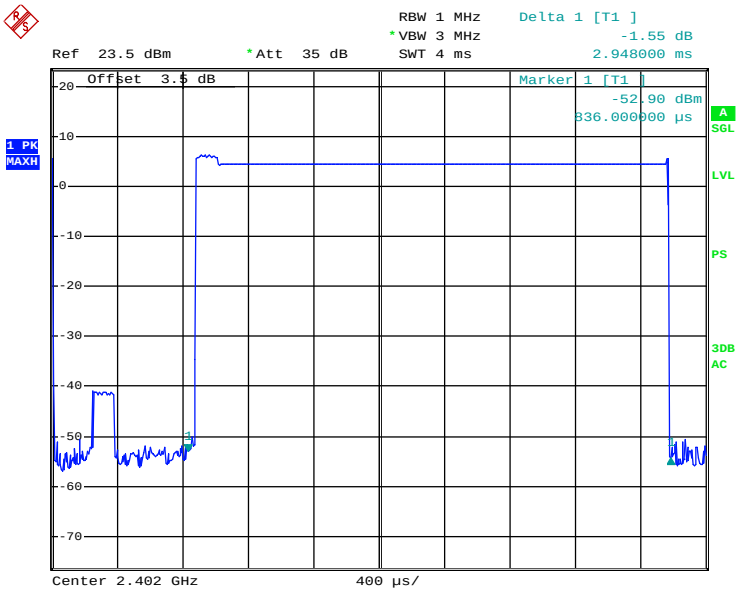
Pulse time, High Channel, DH3



EUT

Date: 8.MAY.2012 21:07:07

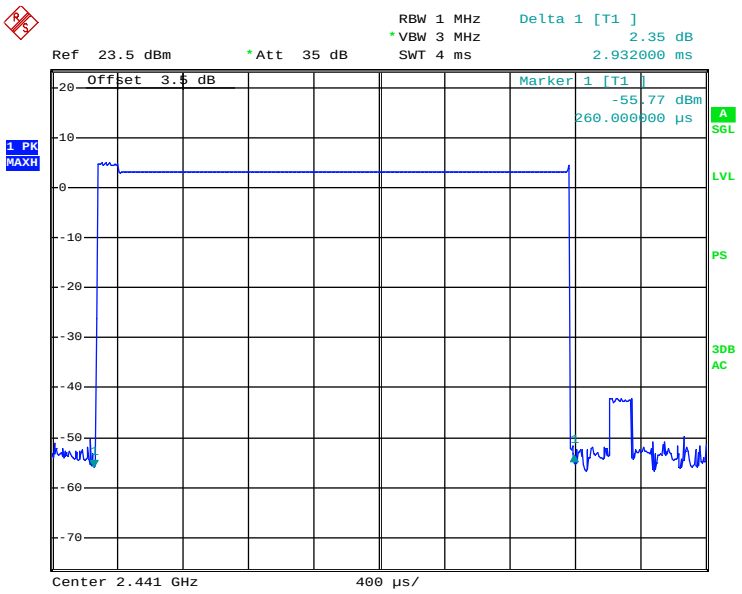
Pulse time, Low Channel, DH5



EUT

Date: 8.MAY.2012 21:08:02

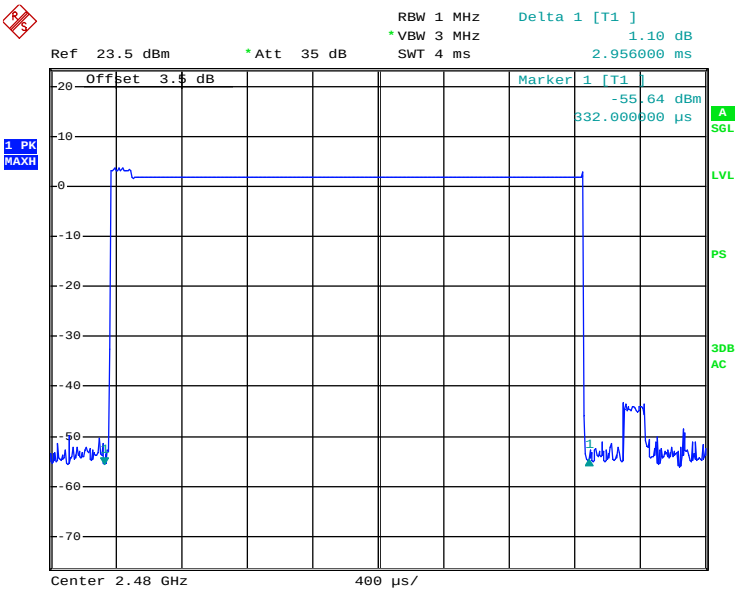
Pulse time, Middle Channel, DH5



EUT

Date: 8.MAY.2012 21:08:52

Pulse time, High Channel, DH5

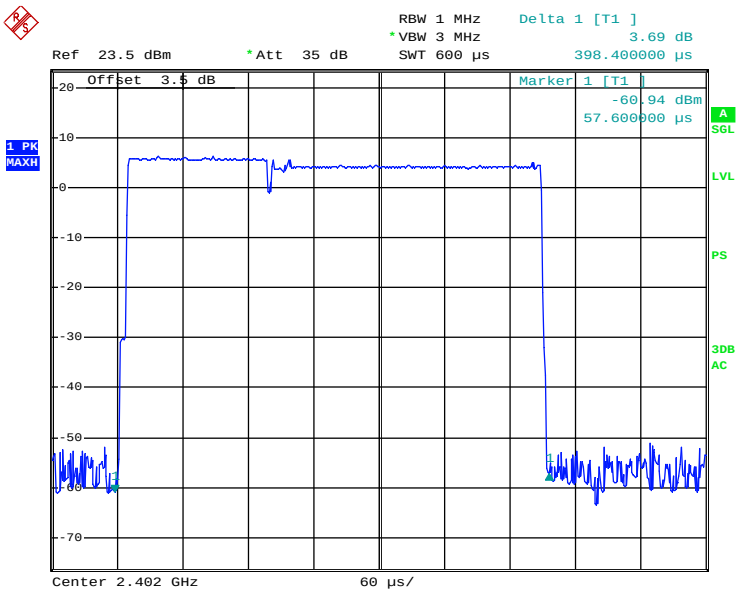


EUT

Date: 8.MAY.2012 21:09:19

EDR (8DPSK):

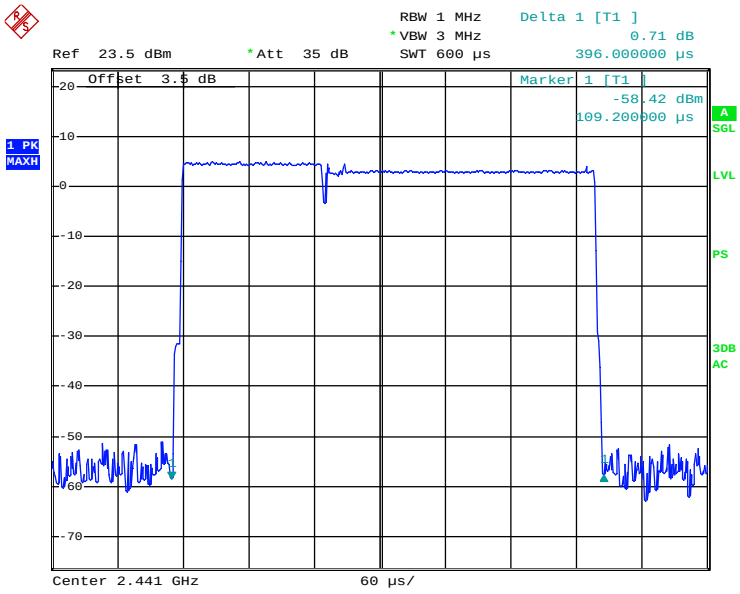
Pulse time, Low Channel, DH1



EUT

Date: 8.MAY.2012 21:33:26

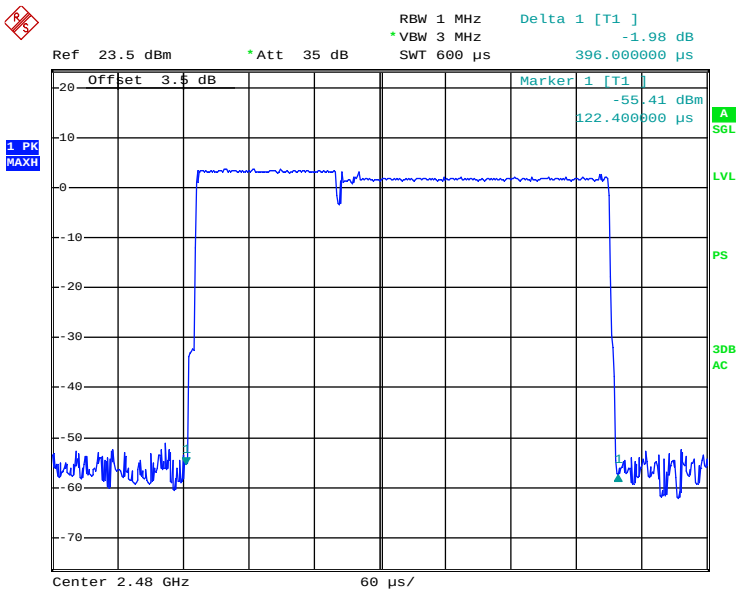
Pulse time, Middle Channel, DH1



EUT

Date: 8.MAY.2012 21:33:55

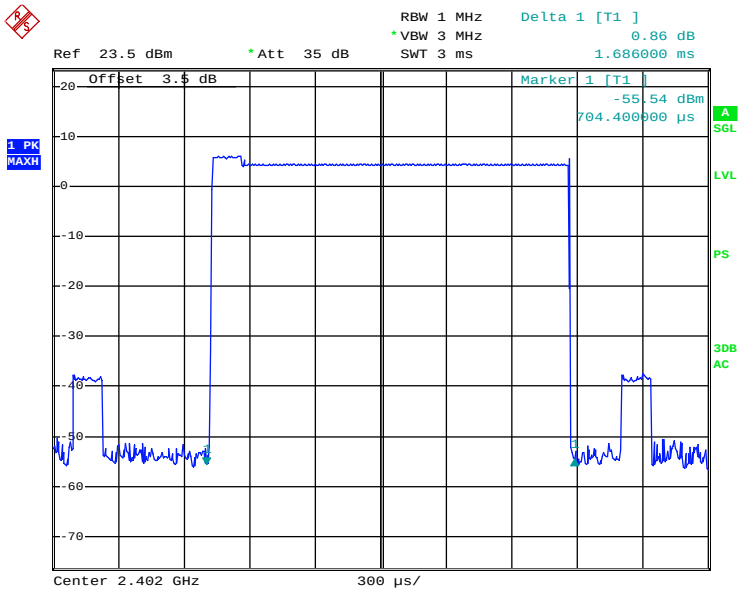
Pulse time, High Channel, DH1



EUT

Date: 8.MAY.2012 21:34:24

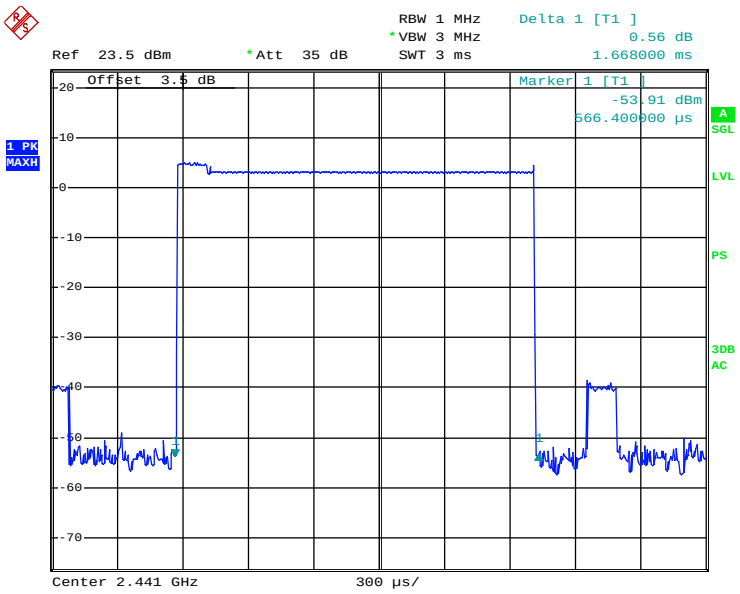
Pulse time, Low Channel, DH3



EUT

Date: 8.MAY.2012 21:36:03

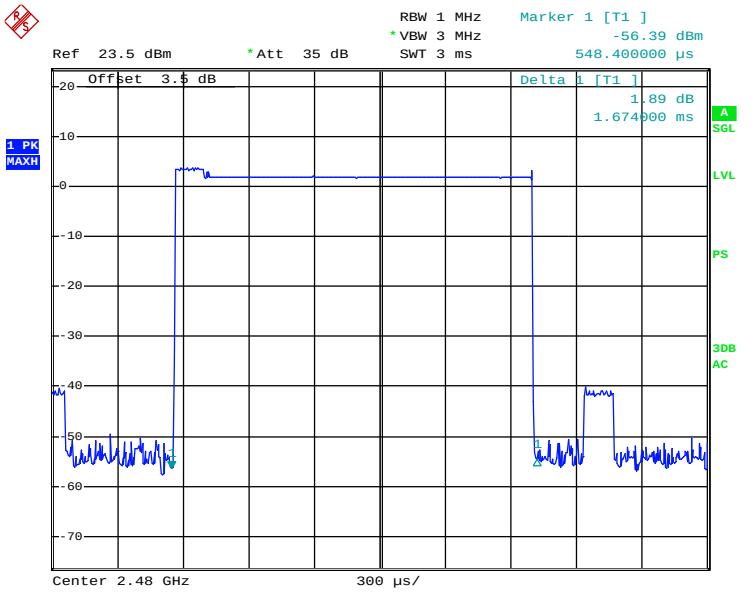
Pulse time, Middle Channel, DH3



EUT

Date: 8.MAY.2012 21:35:36

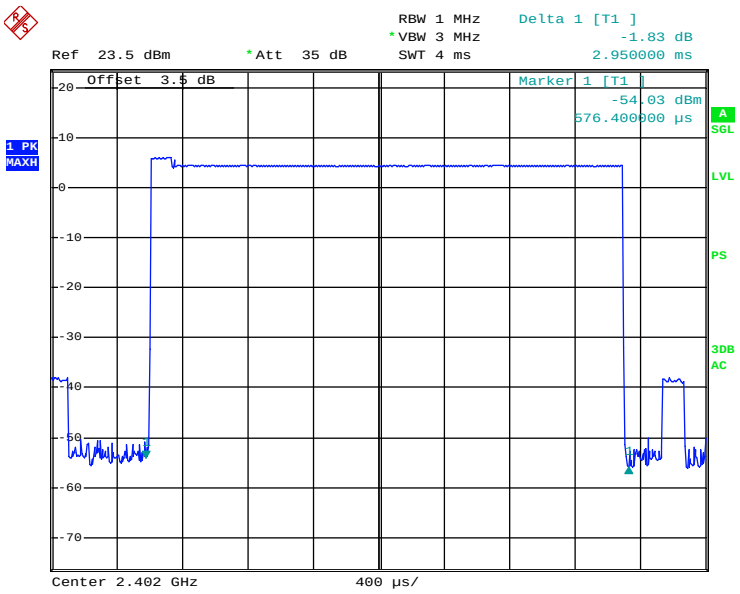
Pulse time, High Channel, DH3



EUT

Date: 8.MAY.2012 21:35:05

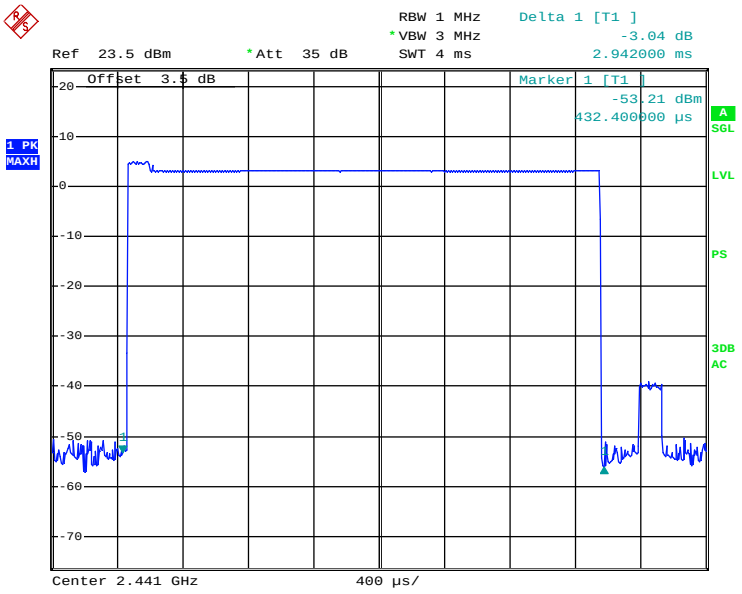
Pulse time, Low Channel, DH5



EUT

Date: 8.MAY.2012 21:36:41

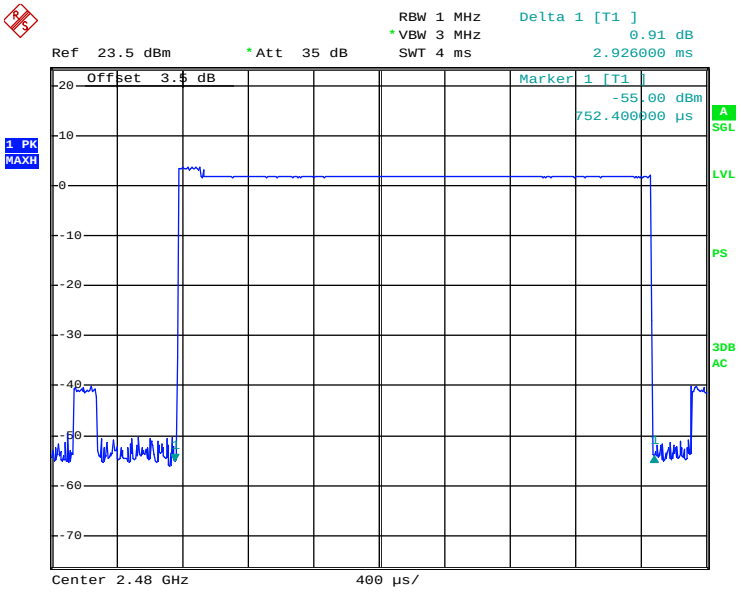
Pulse time, Middle Channel, DH5



EUT

Date: 8.MAY.2012 21:37:11

Pulse time, High Channel, DH5



EUT

Date: 8.MAY.2012 21:37:50

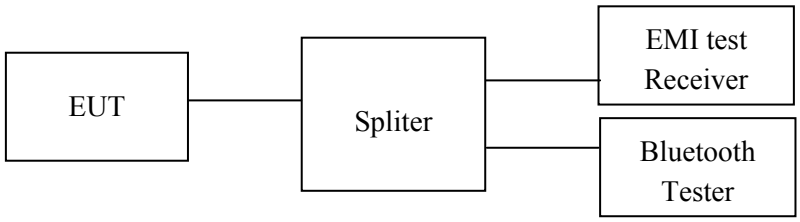
FCC §15.247(b) (1) - PEAK OUTPUT POWER MEASUREMENT

Applicable Standard

According to §15.247(b) (1), for frequency hopping systems operating in the 2400–2483.5 MHz band employing at least 75 non-overlapping hopping channels, and all frequency hopping systems in the 5725-5850 MHz band: 1 watt. And for all other frequency hopping systems in the 2400–2483.5 MHz band: 0.125 watts.

Test Procedure

1. Place the EUT on a bench and set in transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to an EMI test receiver.
3. Add a correction factor to the display.



Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	EMI Test Receiver	ESCI	101122	2011-11-17	2012-11-16
TESCOM	Bluetooth Tester	TC-3000B	3000B650083	2011-12-07	2012-12-06

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

Test Data

Environmental Conditions

Temperature:	25 °C
Relative Humidity:	56 %
ATM Pressure:	100 kPa

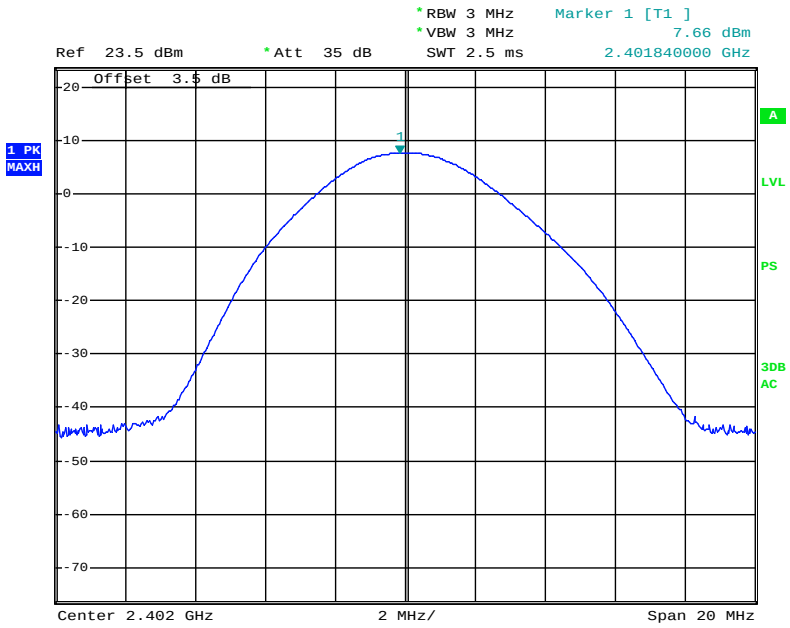
The testing was performed by Mick Yin from 2012-05-08 to 2012-05-09.

Test Mode: Transmitting

Test Result: Compliance. Please refer to following tables and plots

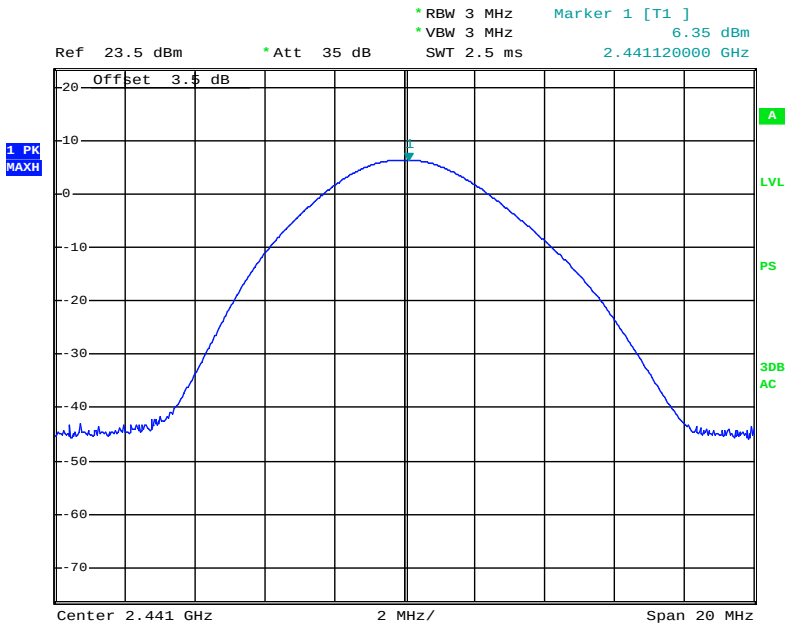
Mode	Channel	Frequency (MHz)	Conducted Output Power		Limit (mW)
			(dBm)	(mW)	
BDR (GFSK)	Low	2402	7.66	5.834	1000
	Middle	2441	6.35	4.315	1000
	High	2480	5.13	3.258	1000
EDR (π/4-DQPSK)	Low	2402	6.61	4.581	1000
	Middle	2441	5.43	3.491	1000
	High	2480	5.77	3.776	1000
EDR (8DPSK)	Low	2402	6.39	4.355	1000
	Middle	2441	5.22	3.327	1000
	High	2480	3.95	2.483	1000

BDR (GFSK): Low Channel



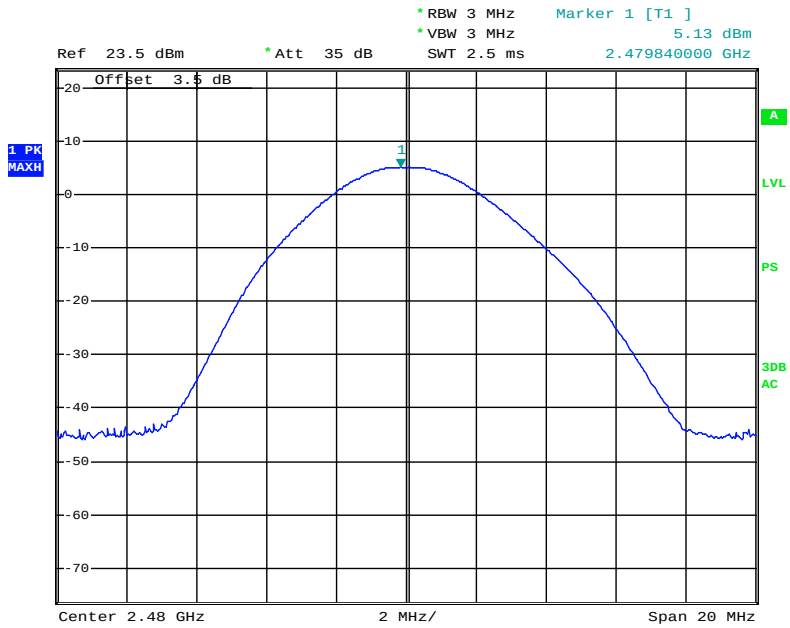
Date: 9.MAY.2012 17:44:03

BDR (GFSK): Middle Channel



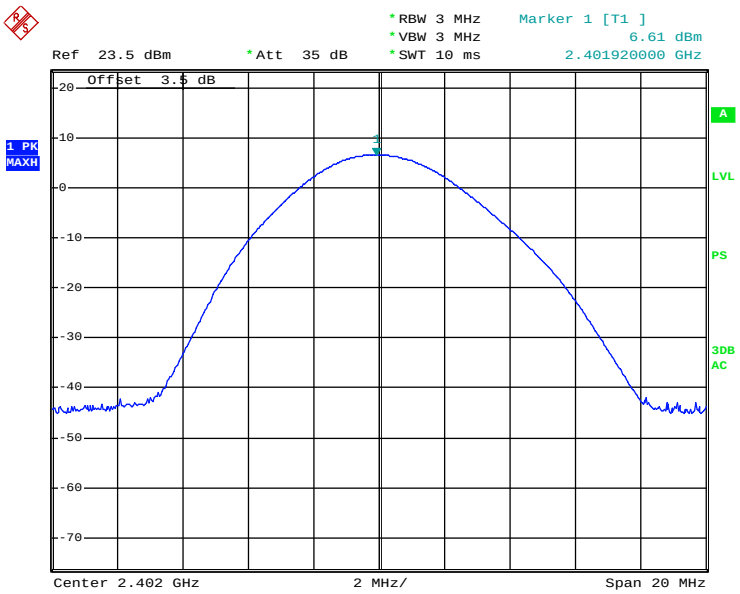
Date: 9.MAY.2012 17:44:18

BDR (GFSK): High Chanel



Date: 9.MAY.2012 17:44:34

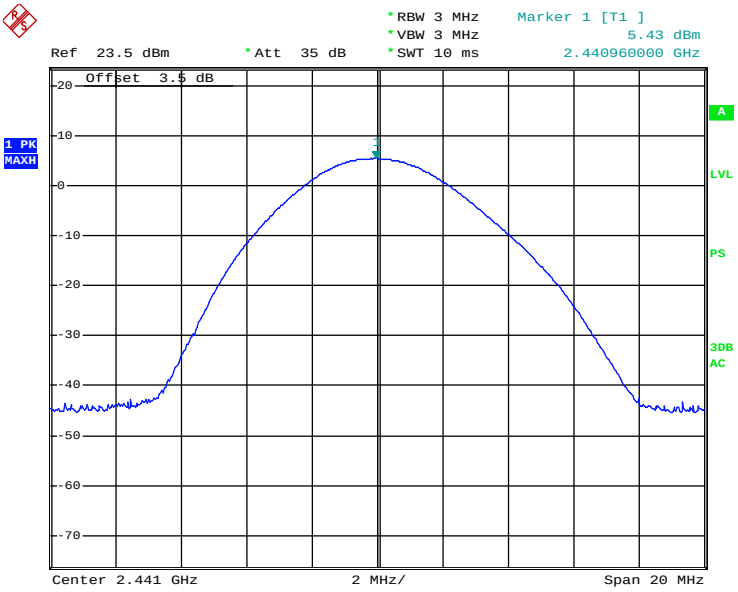
EDR(π/4-DQPSK): Low Channel



EUT

Date: 8.MAY.2012 21:01:57

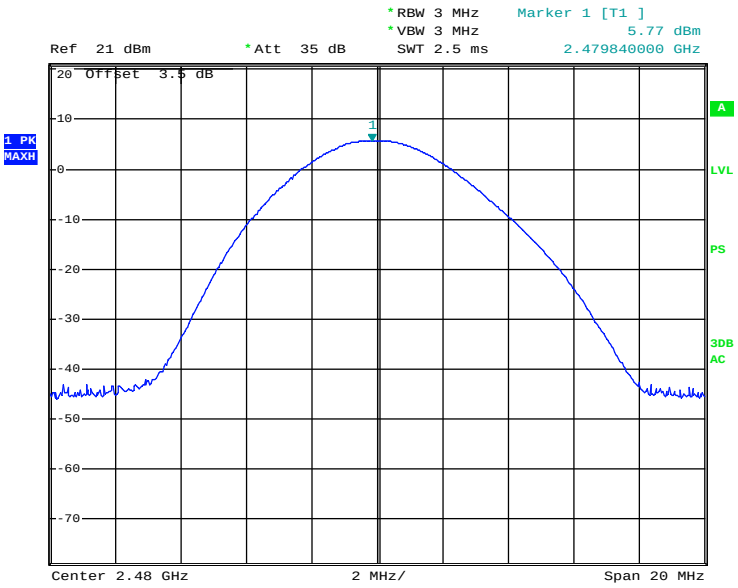
EDR(π/4-DQPSK): Middle Channel



EUT

Date: 8.MAY.2012 21:02:13

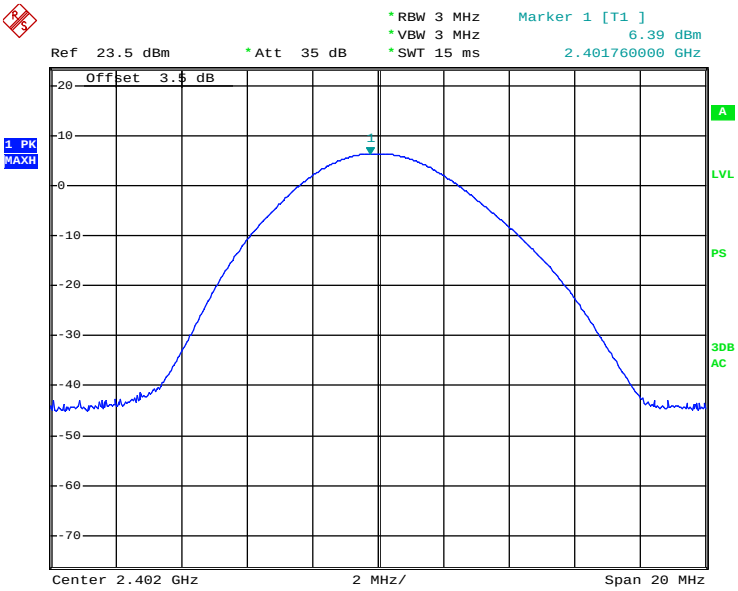
EDR(π/4-DQPSK): High Chanel



EUT

Date: 9.MAY.2012 22:32:59

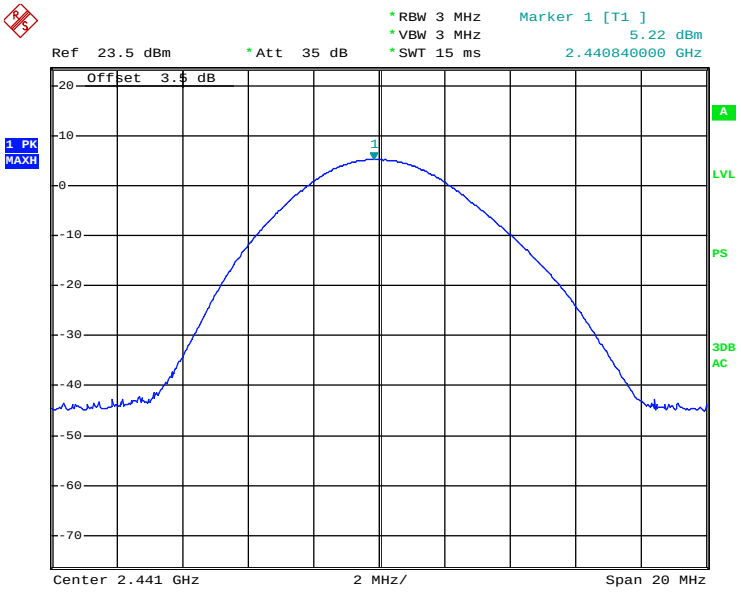
EDR(8DPSK): Low Channel



EUT

Date: 8.MAY.2012 21:30:30

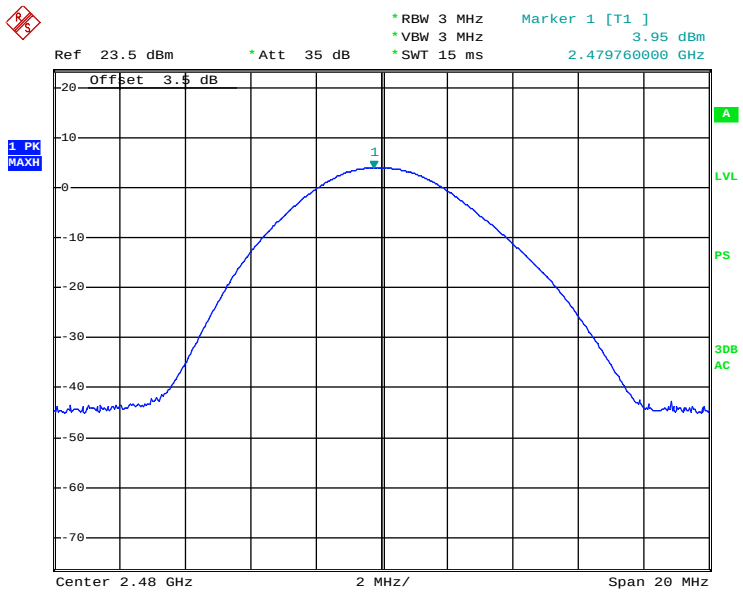
EDR(8DPSK): Middle Channel



EUT

Date: 8.MAY.2012 21:30:51

EDR(8DPSK): High Chanel



EUT

Date: 8.MAY.2012 21:31:32

FCC §15.247(d) - BAND EDGES TESTING

Applicable Standard

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated 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, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. 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) (see §15.205(c)).

Test Procedure

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Remove the antenna from the EUT and then connect to a low loss RF cable from the antenna port to a EMI test receiver, then turn on the EUT and make it operate in transmitting mode. Then set it to Low Channel and High Channel within its operating range, and make sure the instrument is operated in its linear range.
3. Set RBW of spectrum analyzer to 100 kHz with a convenient frequency span including 100 kHz bandwidth from band edge, for Radiated emissions restricted band RBW=1 MHz, VBW=3 MHz.
4. Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency.
5. Repeat above procedures until all measured frequencies were complete.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	EMI Test Receiver	ESCI	101122	2011-11-17	2012-11-16
TESCOM	Bluetooth Tester	TC-3000B	3000B650083	2011-12-07	2012-12-06

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

Test Data

Environmental Conditions

Temperature:	25 °C
Relative Humidity:	56 %
ATM Pressure:	100 kPa

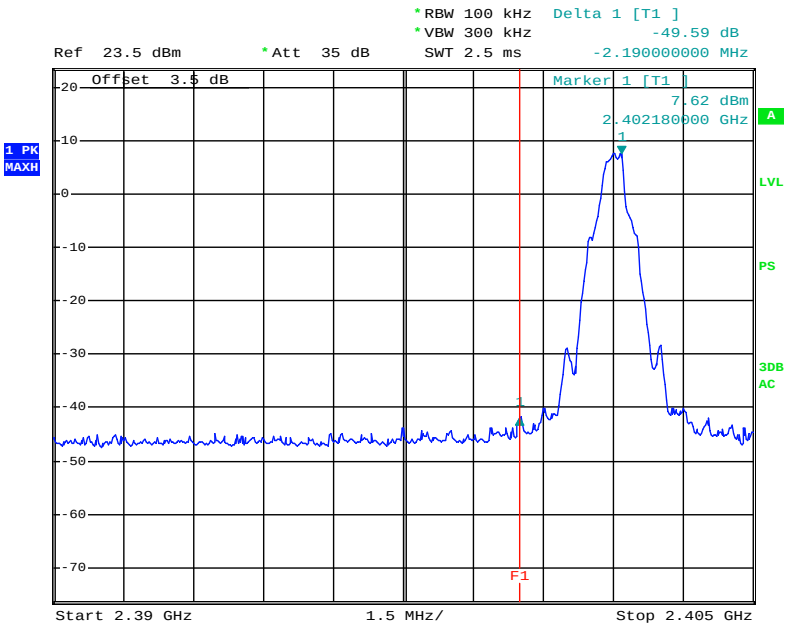
The testing was performed by Mick Yin from 2012-05-08 to 2012-05-09.

Test Mode: Transmitting

Test Result: Compliance. Please refer to following tables and plots

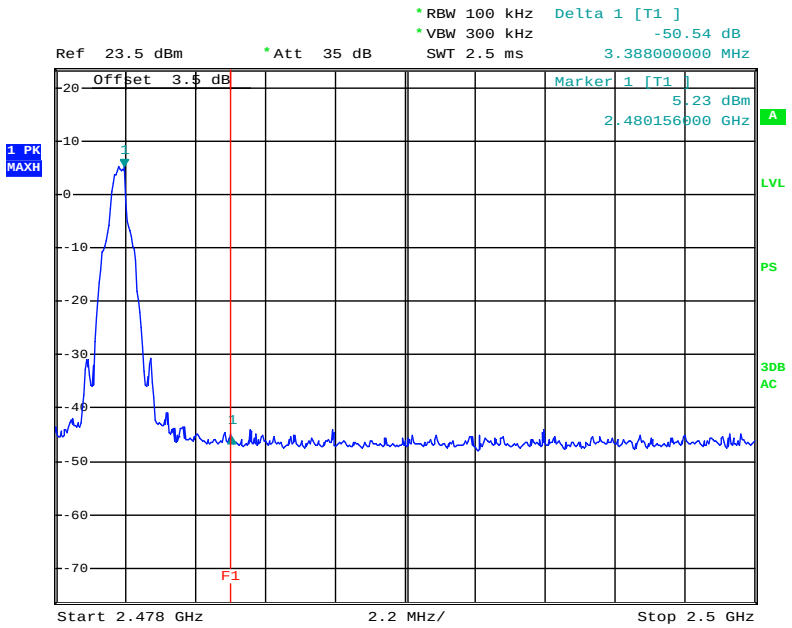
Mode	Frequency (MHz)	Delta Peak to Band Emission (dBc)	Limit (dBc)
BDR (GFSK)	2399.990	49.59	≥20
	2483.544	50.54	≥20
EDR (π/4-DQPSK)	2399.930	50.62	≥20
	2483.808	48.62	≥20
EDR (8DPSK)	2399.930	50.21	≥20
	2484.248	48.75	≥20

BDR (GFSK): Band Edge-Left Side



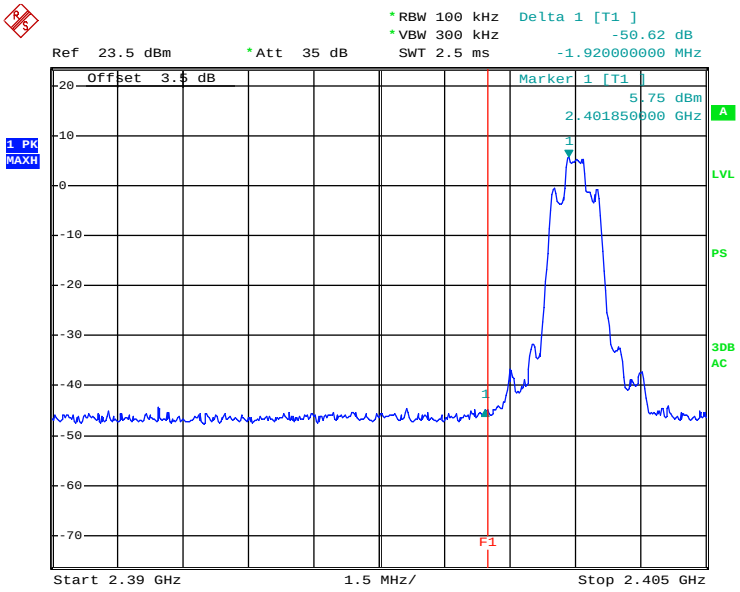
Date: 9.MAY.2012 17:27:15

BDR (GFSK): Band Edge-Right Side



Date: 9.MAY.2012 17:29:38

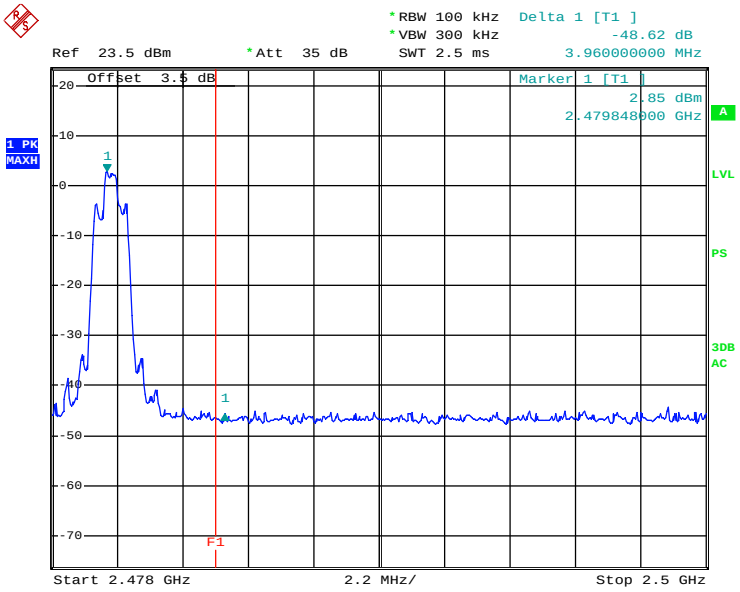
EDR (π/4-DQPSK): Band Edge-Left Side



EUT

Date: 8.MAY.2012 20:44:38

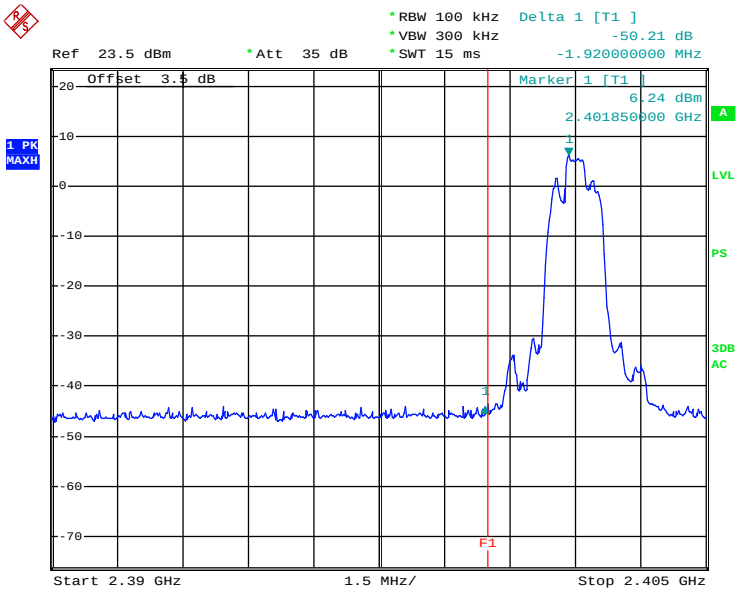
EDR (π/4-DQPSK): Band Edge-Right Side



EUT

Date: 8.MAY.2012 20:50:46

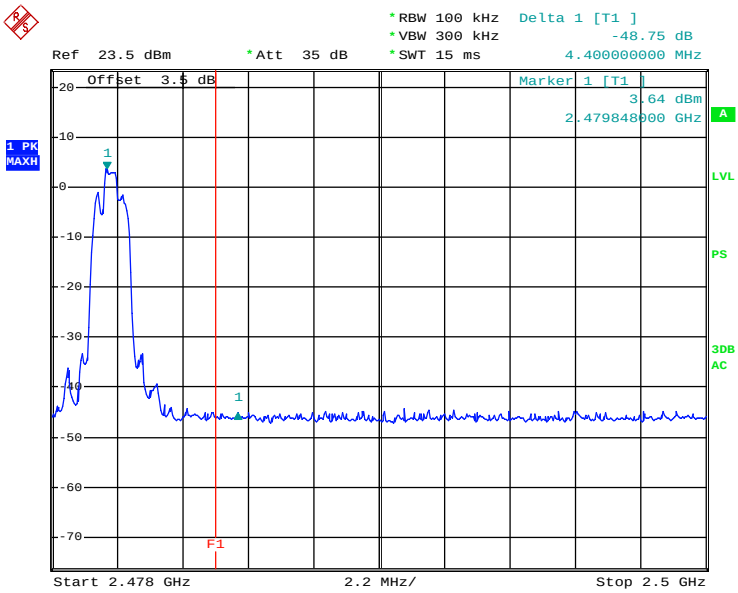
EDR (8DPSK): Band Edge-Left Side



EUT

Date: 8.MAY.2012 21:16:52

BDR (8DPSK): Band Edge-Right Side



EUT

Date: 8.MAY.2012 21:18:15

******* END OF REPORT *******