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Report On

Application for Grant of Equipment Authorization of the
CalAmp Wireless Networks Corp.
LMU-3030 Tracking Unit with OBD-II Interface

FCC Part 15 Subpart C §15.247
IC RSS-210 Issue 8 December 2010

Report No. SC1406705B August 2014

REPORT ON	Radio Testing of the CalAmp Wireless Networks Corp. Tracking Unit with OBD-II Interface
TEST REPORT NUMBER	SC1406705B
PREPARED FOR	CalAmp Wireless Networks Corp. 1401 N Rice Ave. Oxnard, CA 93030
CONTACT PERSON	Imad Rizk Carrier & Product Certifications Manager (805) 987-9000 IRizk@CalAmp.com
PREPARED BY	Ferdinand S. Custodio **Name** Authorized Signatory Title: EMC/Wireless Test Engineer
APPROVED BY	Chip R. Fleury **Name** Authorized Signatory
DATED	August 14, 2014

TÜV SÜD AMERICA INC 10040 Mesa Rim Road San Diego, CA 92121-2912 Phone: 858 678 1400 FAX: 858 546 0364

Revision History

SC1406705B CalAmp Wireless Networks Corp. LMU-3030 Tracking Unit with OBD-II Interface					
DATE	OLD REVISION	NEW REVISION	REASON	PAGES AFFECTED	APPROVED BY
08/14/2014	Initial Release				Chip R. Fleury

CONTENTS

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SECTION 1

REPORT SUMMARY

Radio Testing of the
CalAmp Wireless Networks Corp.
Tracking Unit with OBD-II Interface

1.1 INTRODUCTION

The information contained in this report is intended to show verification of the CalAmp Wireless Networks Corp. LMU-3030 Tracking Unit with OBD-II Interface to the requirements of FCC Part 15 Subpart C §15.247 and IC RSS-210 Issue 8 December 2010.

Objective	To perform Radio Testing to determine the Equipment Under Test's (EUT's) compliance with the Test Specification, for the series of tests carried out.
Manufacturer	CalAmp Wireless Networks Corp.
Model Number(s)	LMU30G60BT
FCC ID Number	APV-3030GBT
IC Number	5843C-3030GBT
Serial Number(s)	4632081643
Number of Samples Tested	1
Test Specification/Issue/Date	• FCC Part 15 Subpart C §15.247 (October 1, 2013). • RSS-210 - Licence-exempt Radio Apparatus (All Frequency Bands): Category I Equipment (Issue 8, December 2010). • RSS-Gen - General Requirements and Information for the Certification of Radio Apparatus (Issue 3, December 2010). • Public Notice (DA 00-705 Released March 30, 2000) Filing and Measurement Guidelines for Frequency Hopping Spread Spectrum Systems
Start of Test	July 03, 2014
Finish of Test	August 08, 2014
Name of Engineer(s)	Ferdinand Custodio
Related Document(s)	• Supporting documents for EUT certification are separate exhibits. • Bluetooth Daughterboard Test Mode Setup.docx

1.2 BRIEF SUMMARY OF RESULTS

A brief summary of the tests carried out in accordance with FCC Part 15 Subpart C §15.247 with cross-reference to the corresponding IC RSS standard is shown below.

Section	§15.247 Spec Clause	RSS	Test Description	Result	Comments/ Base Standard
2.1	§15.207 (a)	RSS-Gen 7.2.4	Conducted Emissions	N/A[1]	
2.2	§15.247(a)(1)	RSS-210 A8.1(b)	Carrier Frequency Separation	Compliant	
2.3	§15.247(a)(1)(iii)	RSS-210 A8.1(d)	Number of Hopping Frequencies	Compliant	
2.4	§15.247(a)(1)(iii)	RSS-210 A8.1(d)	Time of Occupancy (Dwell Time)	Compliant	
2.5	§15.215(c)	RSS-210 A8.1(a)	20 dB Bandwidth	Compliant	
2.6		RSS-Gen 4.6.1	99% Emission Bandwidth	Compliant	
2.7	§15.247(b)(1)	RSS-210 A8.4(2)	Peak Output Power	Compliant	
2.8	§15.247(d)	RSS-210 A8.5	Band-edge Compliance of RF Conducted Emissions	Compliant	
2.9	§15.247(d)	RSS-210 A8.5	Spurious RF Conducted Emissions	N/A[2]	
2.10	§15.247(d)	RSS-210 2.2	Spurious Radiated Emissions	Compliant	
2.11	§15.247(d)	RSS-210 2.2	Radiated Immediate Restricted Bands	Compliant	
2.12		RSS-Gen 6.0	Receiver Spurious Emissions	Compliant	

N/A[1] Not applicable. EUT is battery operated only and designed for vehicular use.
N/A[2] Not applicable. EUT has an integral antenna. Spurios Emissions is covered under Section 2.10 of this test report.

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1.3 PRODUCT INFORMATION

1.3.1 Technical Description

The Equipment Under Test (EUT) was a CalAmp Wireless Networks Corp. LMU-3030 Tracking Unit with OBD-II Interface as shown in the photograph below. The EUT is a tracking unit with GPS, Bluetooth, OBD-II interface, backup battery, and a 3-axis accelerometer. The EUT can access vehicle diagnostic interface data, track vehicle speed and location, detect hard braking, cornering, acceleration and capture pre and post-impact data. Messages are transported across the cellular network using enhanced SMS or UDP messaging providing communications link between the EUT and application servers. The EUT is designed to reduce cost, power and size while improving field reliability in 12 volt passenger or light-duty vehicles. This test report covers verification of the Bluetooth module.

Equipment Under Test

1.3.2 EUT General Description

EUT Description	Tracking Unit with OBD-II Interface
Model Name	LMU-3030
Model Number(s)	LMU30G60BT
Rated Voltage	9-16VDC Vehicle Systems with internal 3.7VDC Li-Ion Polymer Battery 200 mAh
Mode Verified	Bluetooth Classic
Capability	GSM/GPRS, CDMA/1XRTT, HSPA/UMTS and Bluetooth 4.0 Dual Mode
Primary Unit (EUT)	☒ Production
	☐ Pre-Production
	☐ Engineering
Antenna Type	2.4GHz Antenna (Johanson Technology P/N 2450AT42A100)
Antenna Gain	0 dBi

1.3.3 Maximum Peak Output Power (EIRP)

Modulation	Frequency Range (MHz)	Field Strength (Peak - dBµV/m @ 3 meters)	Peak Output Power EIRP (dBm)	Peak Output Power EIRP (mW)
GFSK	2402-2480	99.0	3.703	2.346
π/4-DQPSK	2402-2480	99.9	4.803	3.022
8DPSK	2402-2480	100.4	5.803	3.805

1.4 EUT TEST CONFIGURATION

1.4.1 Test Configuration Description

Test Configuration	Description
Default	Radiated emissions test configuration. The EUT is connected with a support call box. All RF parameters of the EUT are configured within the call box in Master/Slave mode.

1.4.2 EUT Exercise Software

None. No special software was used to exercise the EUT. The firmware however was modified to allow test mode thus permitting connection with a call box (CMW500).

1.4.3 Support Equipment and I/O cables

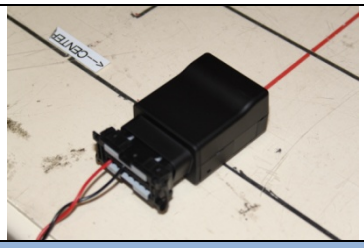
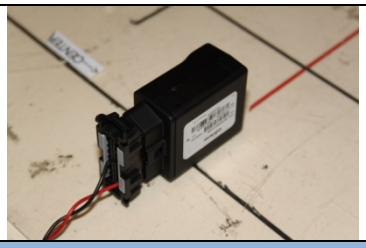
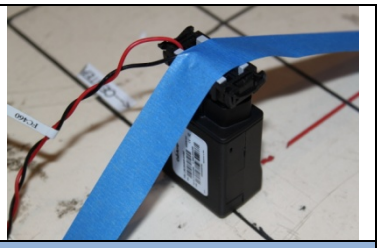
Manufacturer	Equipment/Cable	Description
Protek	Laboratory DC Power Supply	M/N 35010M S/N D102007S
GM	Wiring Harness Connector	OBD2 OBDII ALDL (4.5m power cable only)
Duralast	Marine Battery	12VDC P/N 24MD-DL, 685 MCA, 550 CCA, 85Ah
Rhode & Schwarz	Wideband Radio Communication Tester	M/N CMW 500 S/N 1201.0002k50/103829

1.4.4 Worst Case Configuration

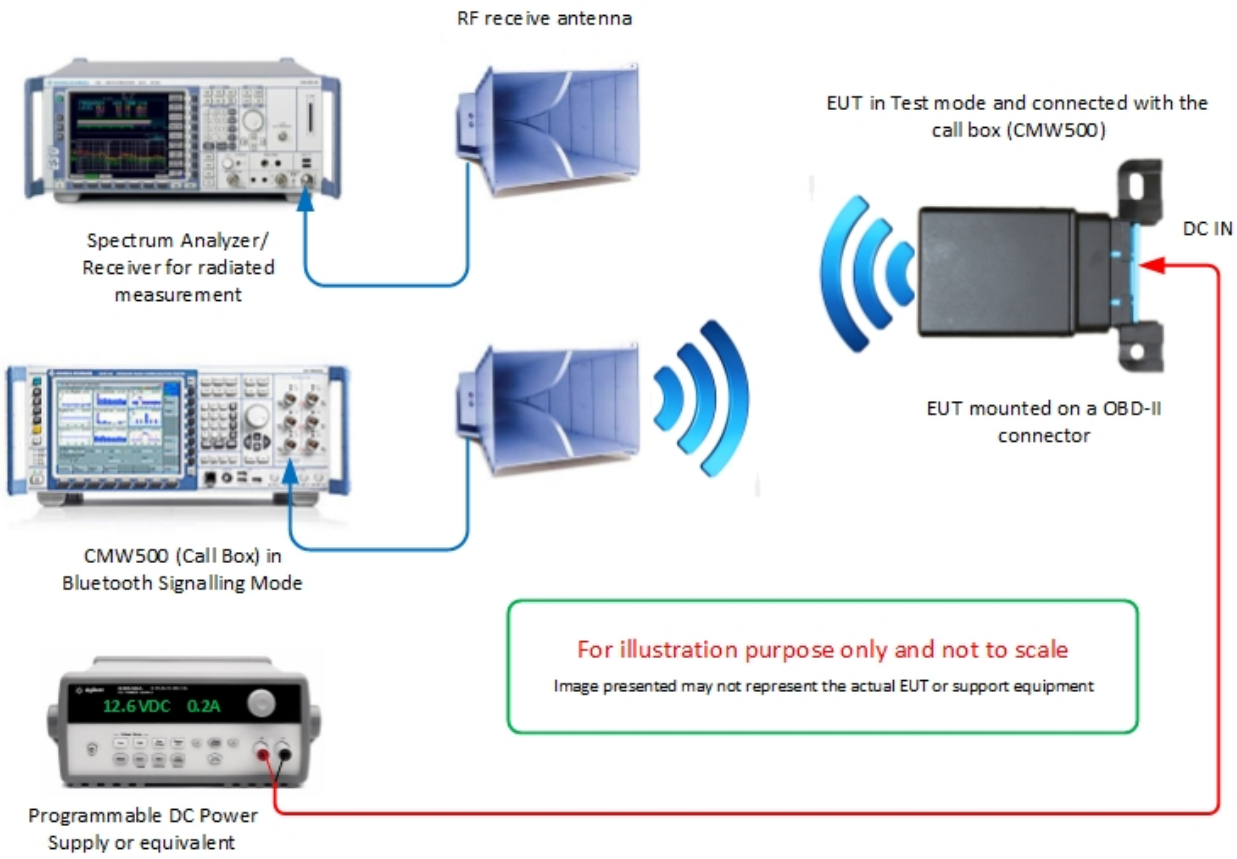
Worst-case configuration used in this test report as per maximum peak EIRP output power measurements:

Modulation	Channel/Packet Type	Mode
8DPSK	38 (Mid Channel)	Non-hopping
8DPSK	-	Hopping

EUT is a mobile device. For radiated measurements X, Y and Z orientations were verified. Worst case position are “X” and “Z”. Verification performed using “X” configuration.

		
“X” Configuration	***“Y” Configuration***	***“Z” Configuration***

1.4.5 Simplified Test Configuration Diagram



1.5 DEVIATIONS FROM THE STANDARD

No deviations from the applicable test standards or test plan were made during testing.

1.6 MODIFICATION RECORD

Description of Modification	Modification Fitted By	Date Modification Fitted
Serial Number 4632081643		
N/A		

The table above details modifications made to the EUT during the test programme. The modifications incorporated during each test (if relevant) are recorded on the appropriate test pages.

1.7 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.
For conducted and radiated emissions the equipment under test (EUT) was configured to measure its highest possible emission level. This level was based on the maximized cable configuration from exploratory testing per ANSI C63.4-2009. The test modes were adapted according to the Operating Instructions provided by the manufacturer/client.

1.8 TEST FACILITY LOCATION

1.8.1 TÜV SÜD America Inc. (Mira Mesa)

10040 Mesa Rim Road, San Diego, CA 92121-2912 (32.901268,-117.177681). Phone: 858 678 1400 FAX: 858-546 0364

1.8.2 TÜV SÜD America Inc. (Rancho Bernardo)

Sony Electronics Inc., Building #8 16530 Via Esprillo, San Diego, CA 92127-1708 (33.018644,-117.092409). Phone: 858 942 5542 FAX: 858-546 0364

1.9 TEST FACILITY REGISTRATION

1.9.1 FCC – Registration No.: US1146

TUV SUD America Inc. (San Diego), is an accredited test facility with the site description report on file and has met all the requirements specified in §2.948 of the FCC rules. The acceptance letter from the FCC is maintained in our files and the Registration is US1146.

1.9.2 Industry Canada (IC) Registration No.: 3067A

The 10m Semi-anechoic chamber of TUV SUD America Inc. (San Diego) has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No. 3067A.

SECTION 2

TEST DETAILS

Radio Testing of the
CalAmp Wireless Networks Corp.
Tracking Unit with OBD-II Interface

2.1 CONDUCTED EMISSIONS

2.1.1 Specification Reference

Part 15 Subpart C §15.207(a)

2.1.2 Standard Applicable

An intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30 MHz, shall not exceed the limits in the following table, as measured using a 50 µH/50 ohms line impedance stabilization network (LISN).

Frequency of emission (MHz)	Conducted limit (dBµV)	
	Quasi-peak	Average
0.15–0.5	66 to 56*	56 to 46*
0.5–5	56	46
5–30	60	50

**Decreases with the logarithm of the frequency.*

2.1.3 Equipment Under Test and Modification State

Not performed. EUT is battery operated only and designed for vehicular use.

2.2 CARRIER FREQUENCY SEPARATION

2.2.1 Specification Reference

Part 15 Subpart C §15.247(a)(1)

2.2.2 Standard Applicable

(1) Frequency hopping systems shall have hopping 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. The system shall hop to channel frequencies that are selected at the system hopping rate from a pseudo randomly ordered list of hopping frequencies. Each frequency must be used equally on the average by each transmitter. The system receivers shall have input bandwidths that match the hopping channel bandwidths of their corresponding transmitters and shall shift frequencies in synchronization with the transmitted signals.

2.2.3 Equipment Under Test and Modification State

Serial No: 4632081643 / Default Test Configuration

2.2.4 Date of Test/Initial of test personnel who performed the test

July 16, 2014/FSC

2.2.5 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.2.6 Environmental Conditions

Test performed at TÜV SÜD America Inc. Rancho Bernardo facility

Ambient Temperature	26.1°C
Relative Humidity	52.3%
ATM Pressure	99.2 kPa

2.2.7 Additional Observations

- This is a radiated test.
- Hopping function enabled.
- Span is wide enough to capture the peaks of two adjacent channels.
- RBW is 1% of the span.
- VBW is 3x RBW
- Sweep is auto

- Detector is peak.
- Trace is max hold.
- Marker-delta function is used between the peaks of the adjacent channels.
- Limit used is >960.0 kHz (2/3 of worst case 20dB BW).

2.2.8 Test Results

Date: 16.JUL.2014 11:49:47

Observed carrier frequency separation between Channel 0 and Channel 1 = 1.0 MHz (**Complies**. Greater than 960.0 kHz, this is 2/3 of 1.44MHz 20 dB BW)

2.3 NUMBER OF HOPPING FREQUENCIES

2.3.1 Specification Reference

Part 15 Subpart C §15.247(a)(1)(iii)

2.3.2 Standard Applicable

(iii) 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.

2.3.3 Equipment Under Test and Modification State

Serial No: 4632081643 / Default Test Configuration

2.3.4 Date of Test/Initial of test personnel who performed the test

July 16 and 17, 2014/FSC

2.3.5 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.3.6 Environmental Conditions

Test performed at TÜV SÜD America Inc. Rancho Bernardo facility

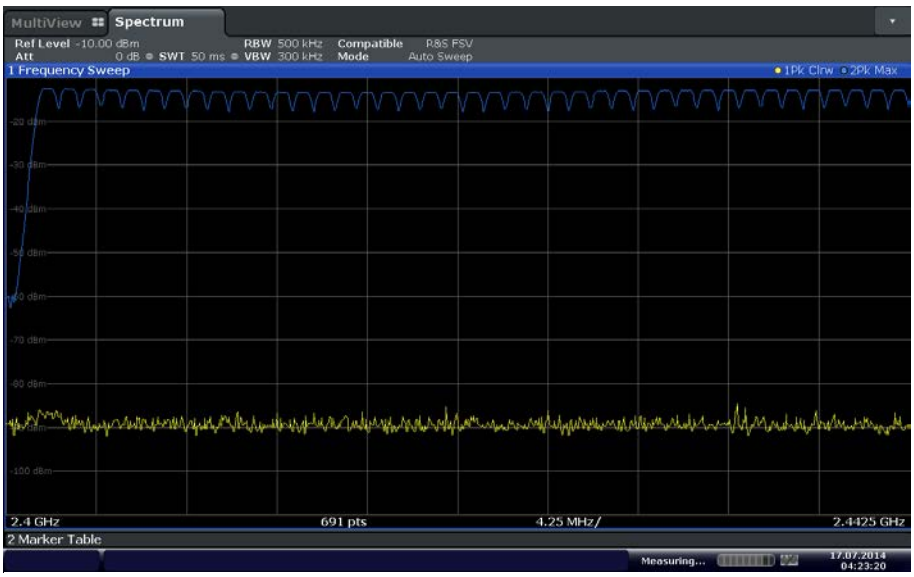
Ambient Temperature	26.1°C
Relative Humidity	52.3%
ATM Pressure	99.2 kPa

2.3.7 Additional Observations

- This is a radiated test.
- Hopping function enabled.
- Span is wide enough to capture the channels of interests.
- The span was broken up to two sections in order to clearly show all of the hopping frequencies.
- Detector is peak, trace is max hold.
- Trace in max hold was allowed to stabilize until all hopping frequencies were discernible.

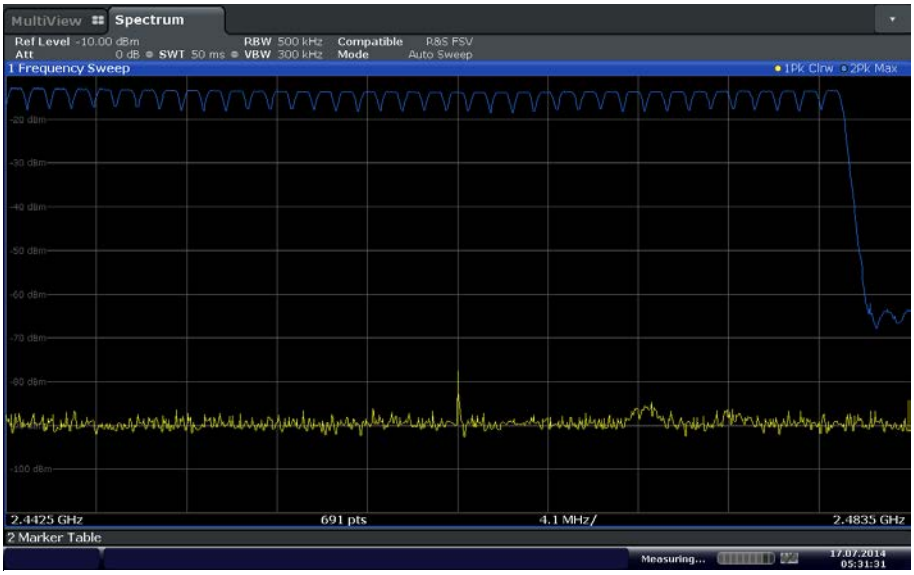
2.3.8 Test Results

Observed Number of Hopping Frequencies is = **79 (Complies)**
= Plot #1 + Plot #2
= 41 + 38



Date: 17.JUL.2014 04:23:20

Plot #1



Date: 17.JUL.2014 05:31:31

Plot #2

2.4 TIME OF OCCUPANCY (DWELL TIME)

2.4.1 Specification Reference

Part 15 Subpart C §15.247(a)(1)(iii)

2.4.2 Standard Applicable

(iii) 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.

2.4.3 Equipment Under Test and Modification State

Serial No: 4632081643 / Default Test Configuration

2.4.4 Date of Test/Initial of test personnel who performed the test

August 08, 2014/FSC

2.4.5 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.4.6 Environmental Conditions

Test performed at TÜV SÜD America Inc. Rancho Bernardo facility

Ambient Temperature	24.3°C
Relative Humidity	52.1%
ATM Pressure	98.9 kPa

2.4.7 Additional Observations

- Hopping function enabled.
- Span = zero span, centered on a hopping channel.
- Detector is peak.
- A single pulse is first measured. This measurement is then used to compute the average time of occupancy in the required period (no. of channels x 0.4 second).
- All packet types verified.
- Spectrum analyzer used is limited to 3.2 seconds sweep time instead of the required 3.16 seconds, therefore computation of average time of occupancy was modified from # of pulses in 3.16 seconds multiplied by 10 to # of pulses in 3.20 seconds multiplied by 9.875. The result is then multiplied to the pulse width.

2.4.8 Test Results

Modulation	Packet Type	Measured time of occupancy	Requirement
GFSK	DH1	126.4 ms	<400 ms (EUT Complies)
	DH3	262.3 ms	
	DH5	286.4 ms	
π/4-DQPSK	2DH1	126.4 ms	
	2DH3	196.7 ms	
	2DH5	229.1 ms	
8DPSK	3DH1	126.4 ms	
	3DH3	180.3 ms	
	3DH5	286.4 ms	

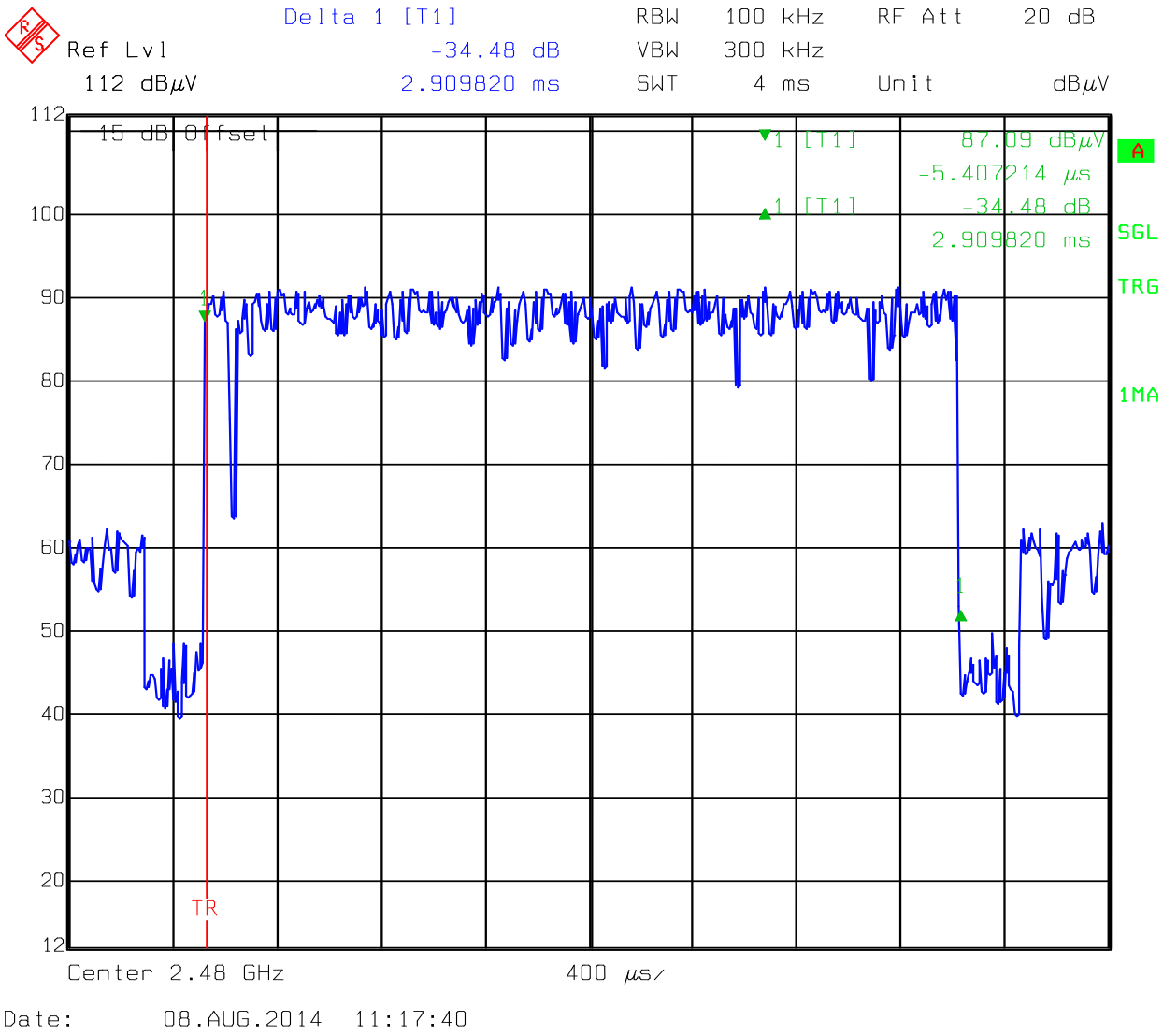
2.4.9 Sample Computation (GFSK DH5)

Width of single pulse = 0.0029 second
Observed occurrence = 10 pulses/3.20seconds
Required period = 79 channels x 0.4 second
= 31.6 seconds

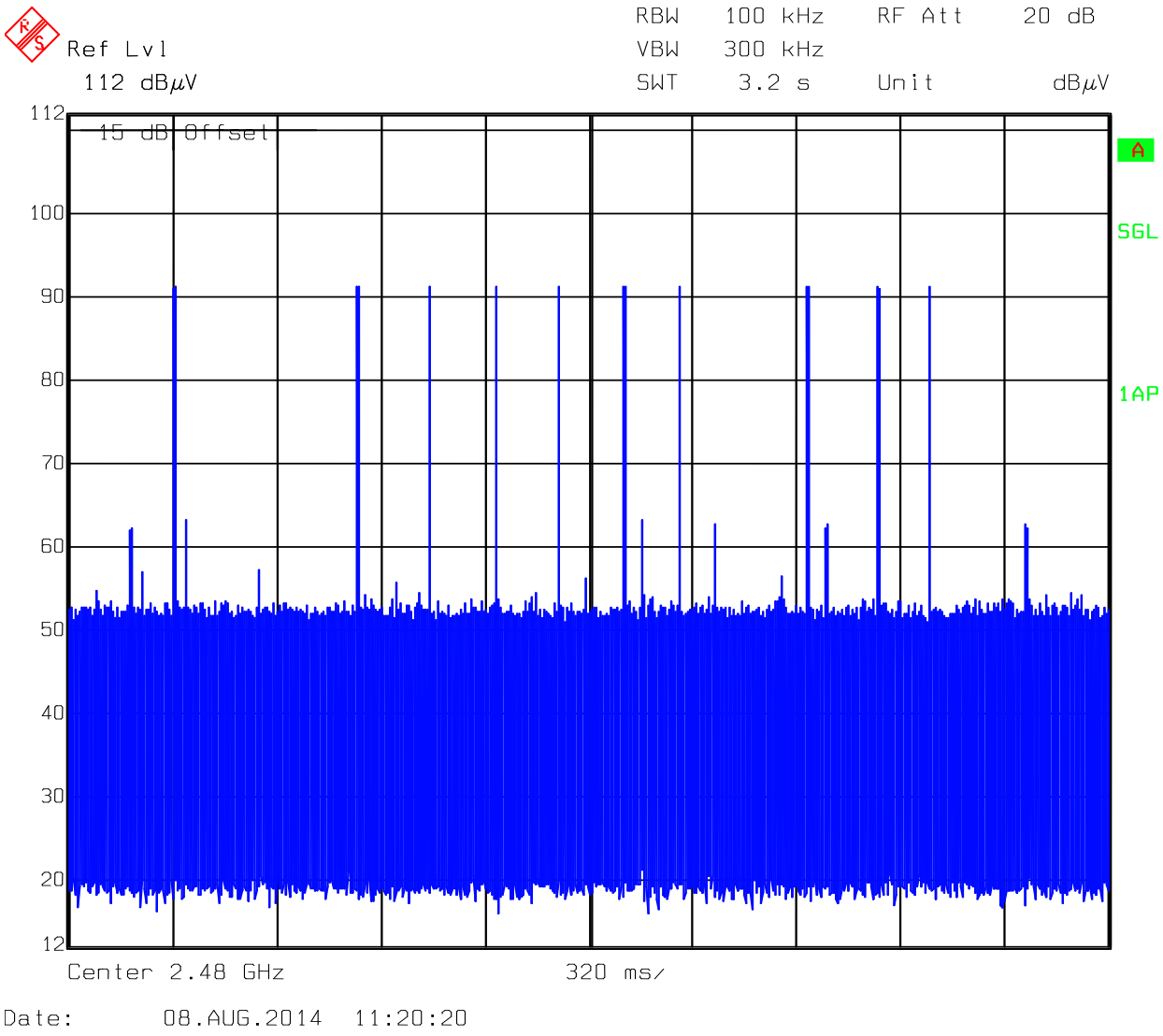
Average time of occupancy = Pulse width x #pulses in 3.2seconds x 9.875
= 0.0029 second x 10 x 9.875
= 0.28637 second

Compliance = **Complies.** 0.28637 second < 0.4 second

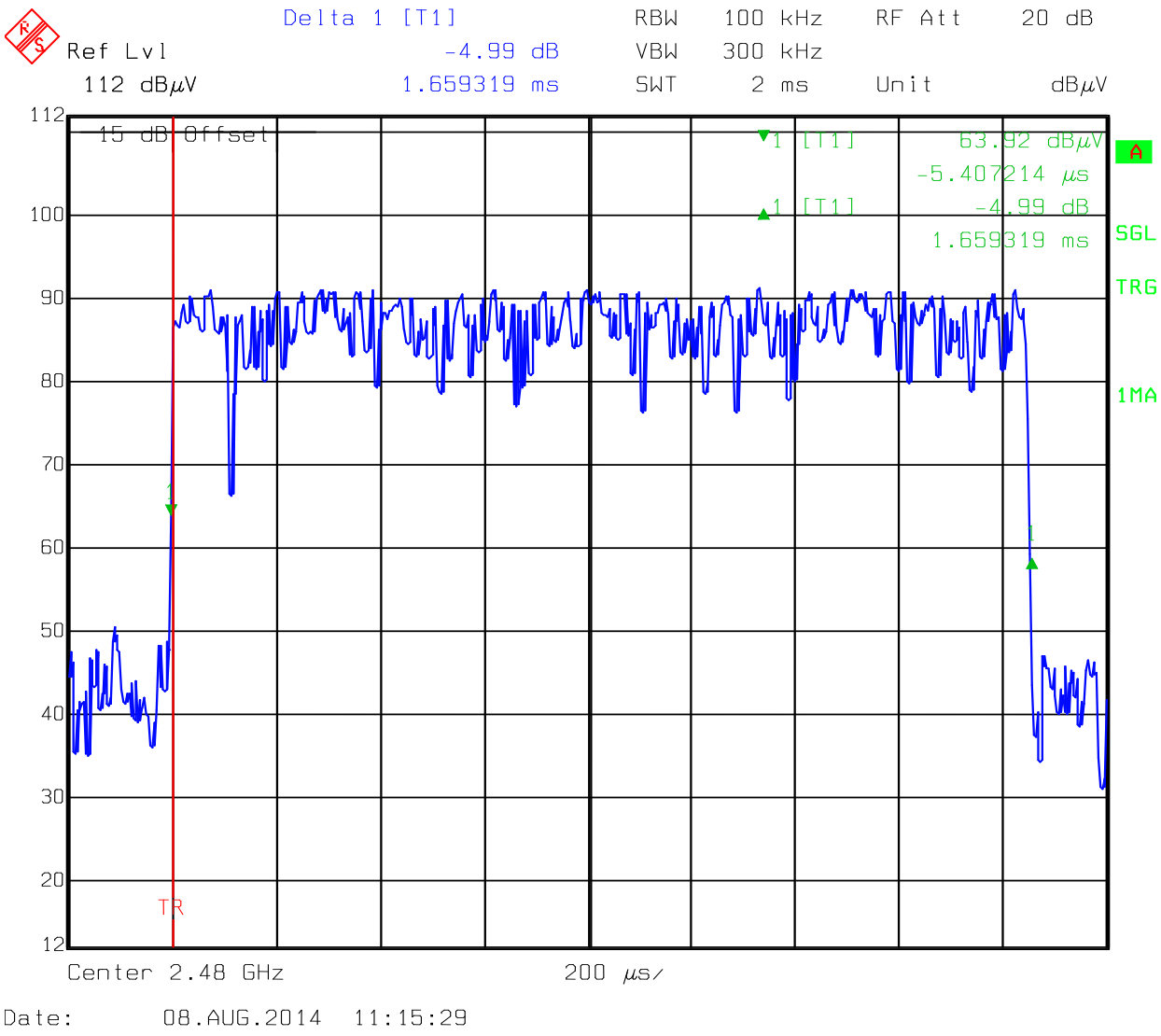
2.4.10 Sample Test Results Plots



GFSK DH5 width of single pulse (2.9ms)



10 pulses/3.2 seconds (DH5)



GFSK DH3 width of single pulse (1.66ms)

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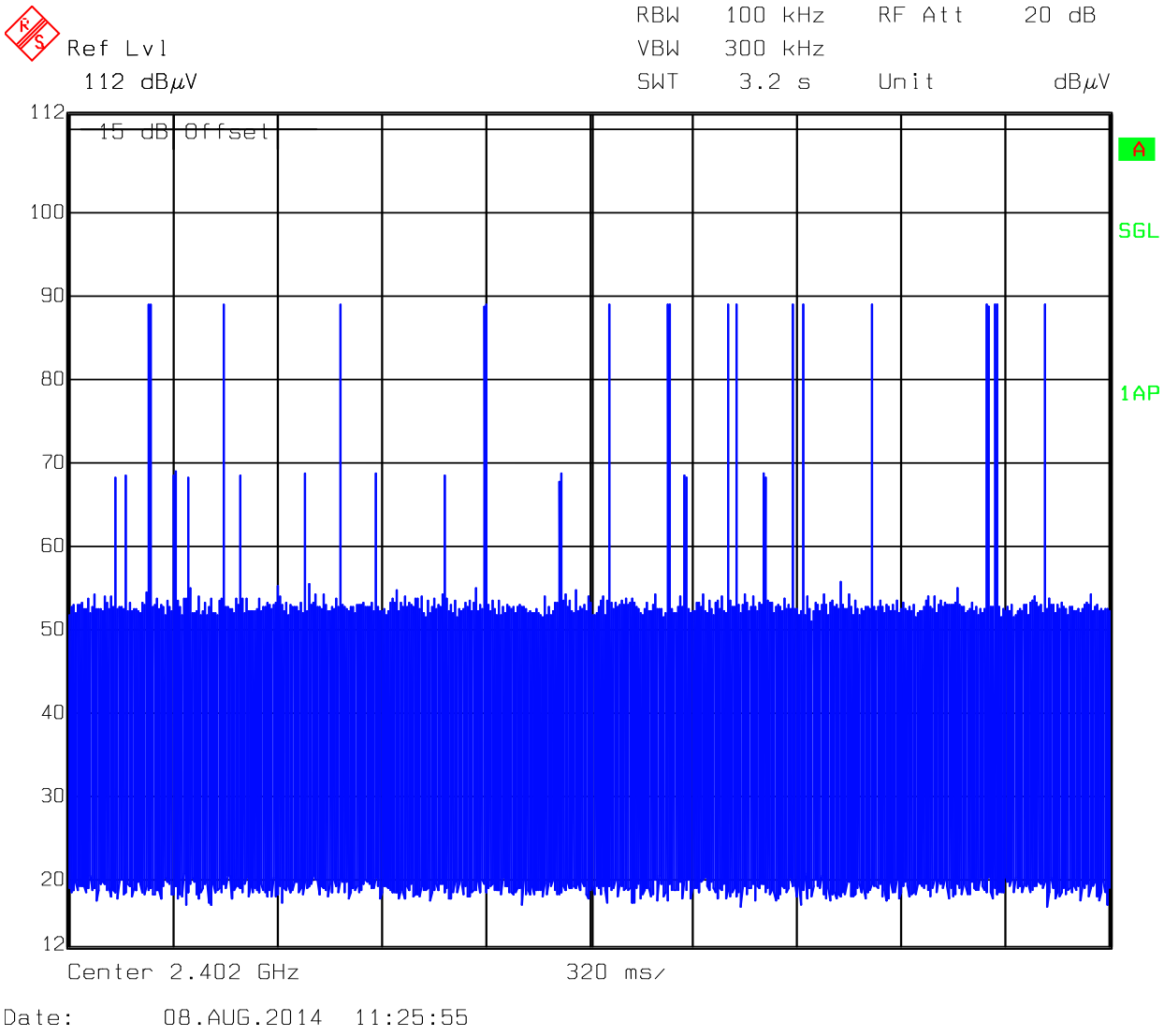
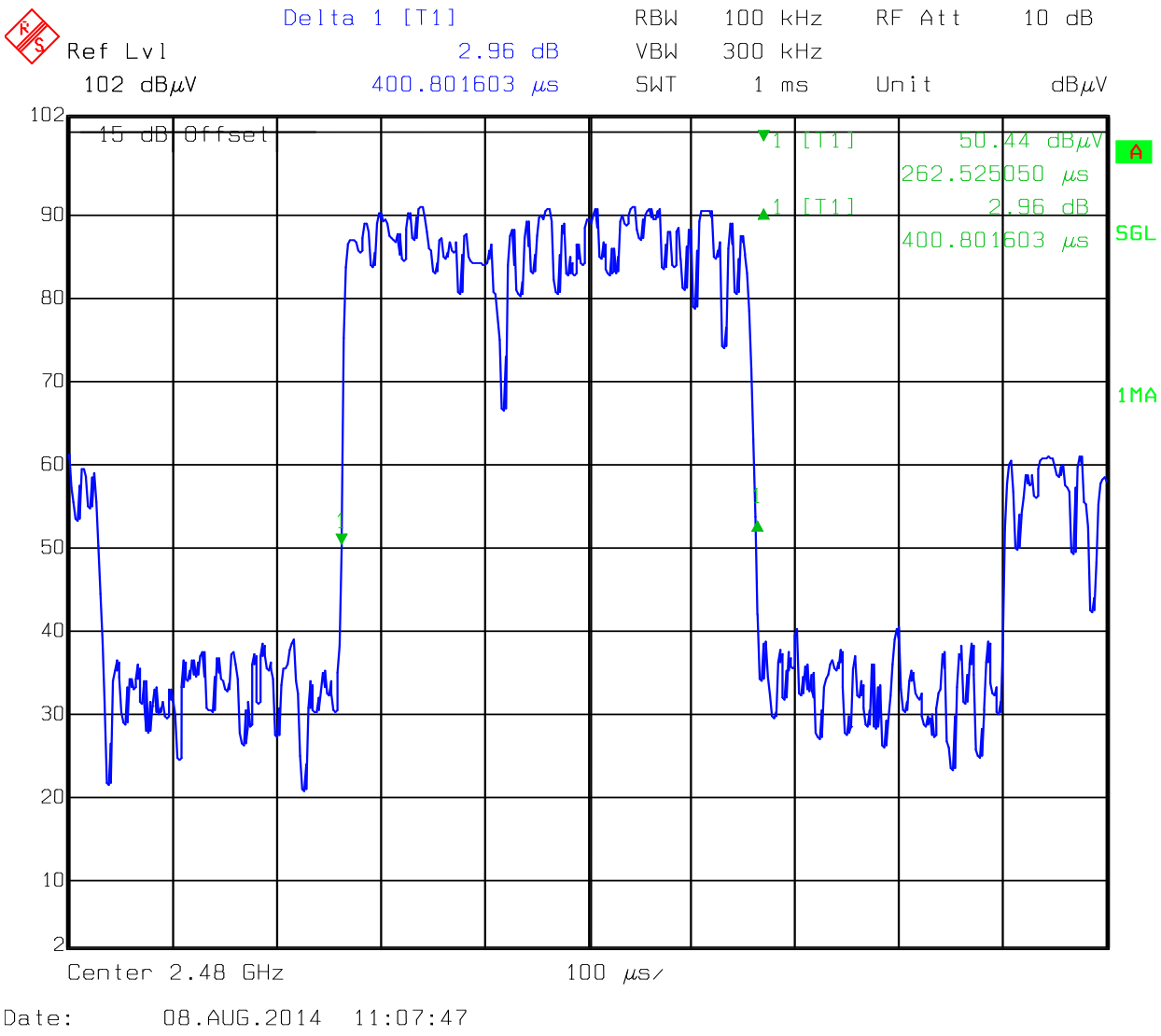
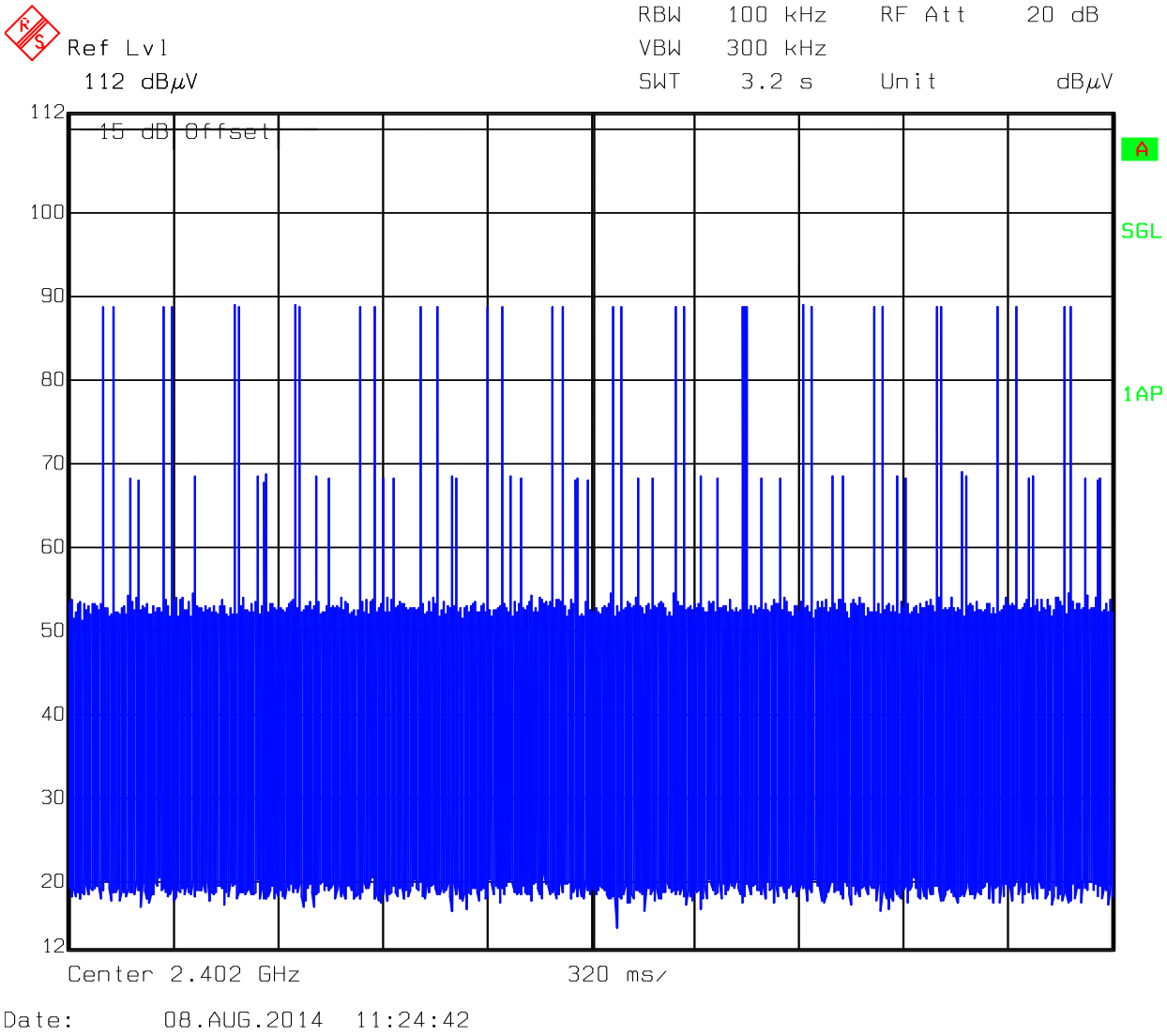


16 pulses/3.2 seconds (DH3)



GFSK DH1 width of single pulse (0.4ms)



32 pulses/3.2 seconds (DH1)

2.5 20 dB BANDWIDTH

2.5.1 Specification Reference

Part 15 Subpart C §15.215(c)

2.5.2 Standard Applicable

(c) Intentional radiators operating under the alternative provisions to the general emission limits, as contained in §§15.217 through 15.257 and in Subpart E of this part, must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated. The requirement to contain the designated bandwidth of the emission within the specified frequency band includes the effects from frequency sweeping, frequency hopping and other modulation techniques that may be employed as well as the frequency stability of the transmitter over expected variations in temperature and supply voltage. If a frequency stability is not specified in the regulations, it is recommended that the fundamental emission be kept within at least the central 80% of the permitted band in order to minimize the possibility of out-of-band operation.

2.5.3 Equipment Under Test and Modification State

Serial No: 4632081643 / Default Test Configuration

2.5.4 Date of Test/Initial of test personnel who performed the test

August 08, 2014/FSC

2.5.5 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.5.6 Environmental Conditions

Test performed at TÜV SÜD America Inc. Rancho Bernardo facility

Ambient Temperature	24.3°C
Relative Humidity	52.1%
ATM Pressure	98.9 kPa

2.5.7 Additional Observations

- This is a radiated test.
- An offset was added to compensate for the receiving antenna factor, preamp gain and cable loss.
- Span is approximately 2 to 3 times the expected 20dB bandwidth.
- RBW is ≥ 1% of the expected 20dB bandwidth while VBW is ≥ RBW.
- Sweep is auto.
- Detector is peak.

- Max hold function activated.
- "n dB down" marker function (20dB) of the spectrum analyzer was used for this test.

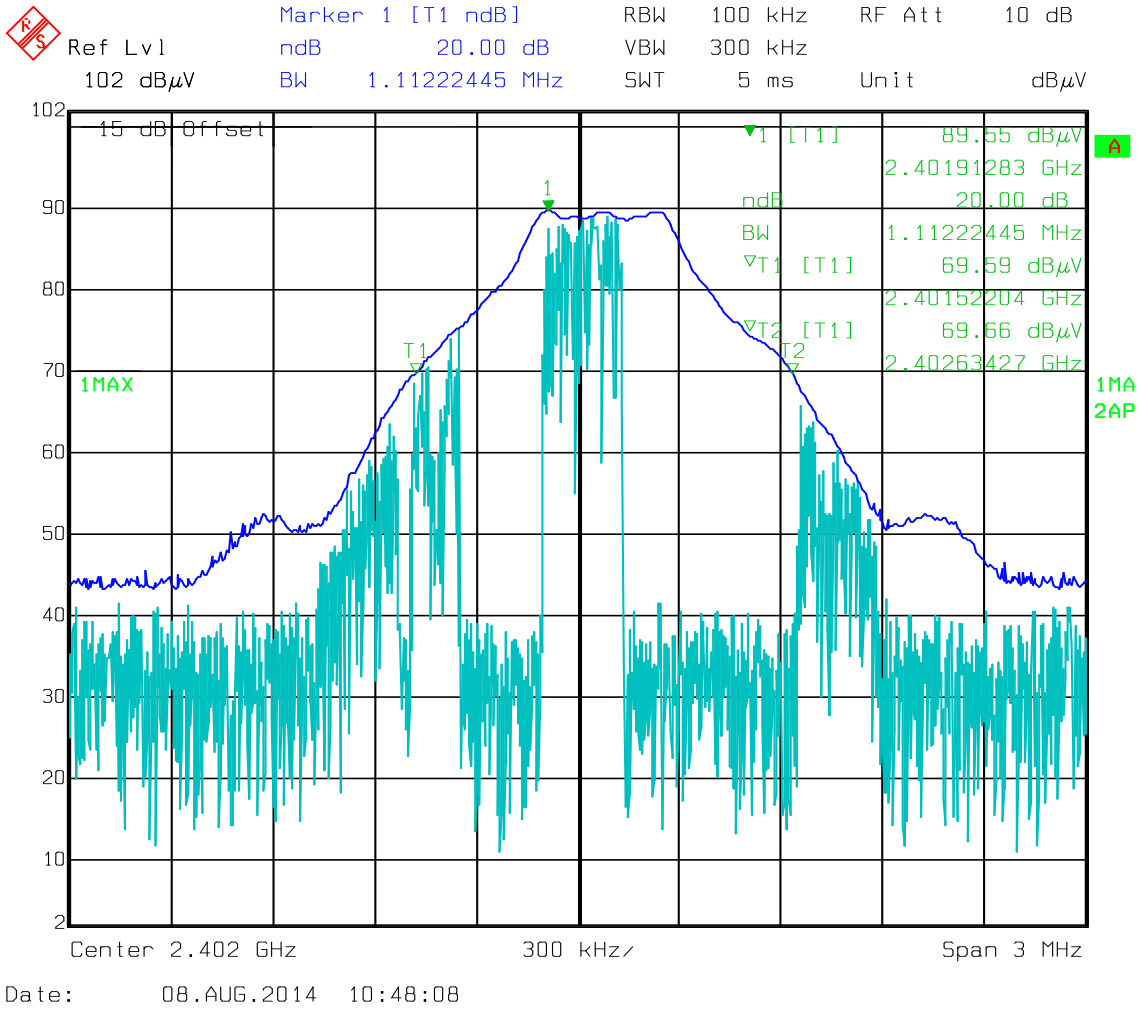
2.5.8 Test Results

Modulation	Channel	Frequency (MHz)	Measured 20dB Bandwidth (MHz)
GFSK	0	2402	1.11
	38	2440	1.11
	78	2480	1.10
π/4-DQPSK	0	2402	1.43
	38	2440	1.44
	78	2480	1.43
8DPSK	0	2402	1.41
	38	2440	1.36
	78	2480	1.37

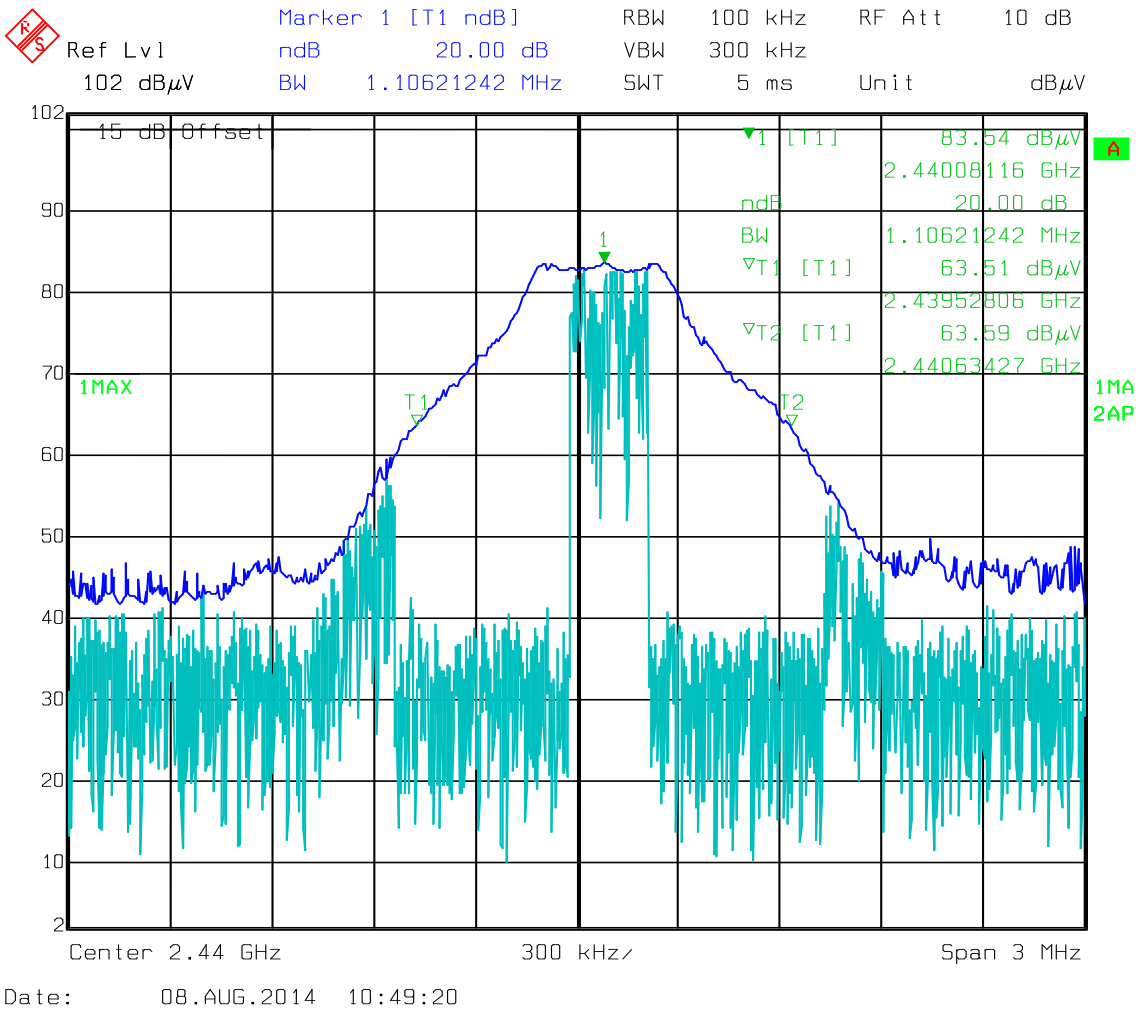
Worst case configuration (Low Channel π/4-DQPSK)
2402 MHz – (20dB BW/2) = 2401.285 MHz (within the frequency band - **Compliant**)

Worst case configuration (High Channel π/4-DQPSK)
2480 MHz + (20dB BW/2) = 2480.715 MHz (within the frequency band - **Compliant**)

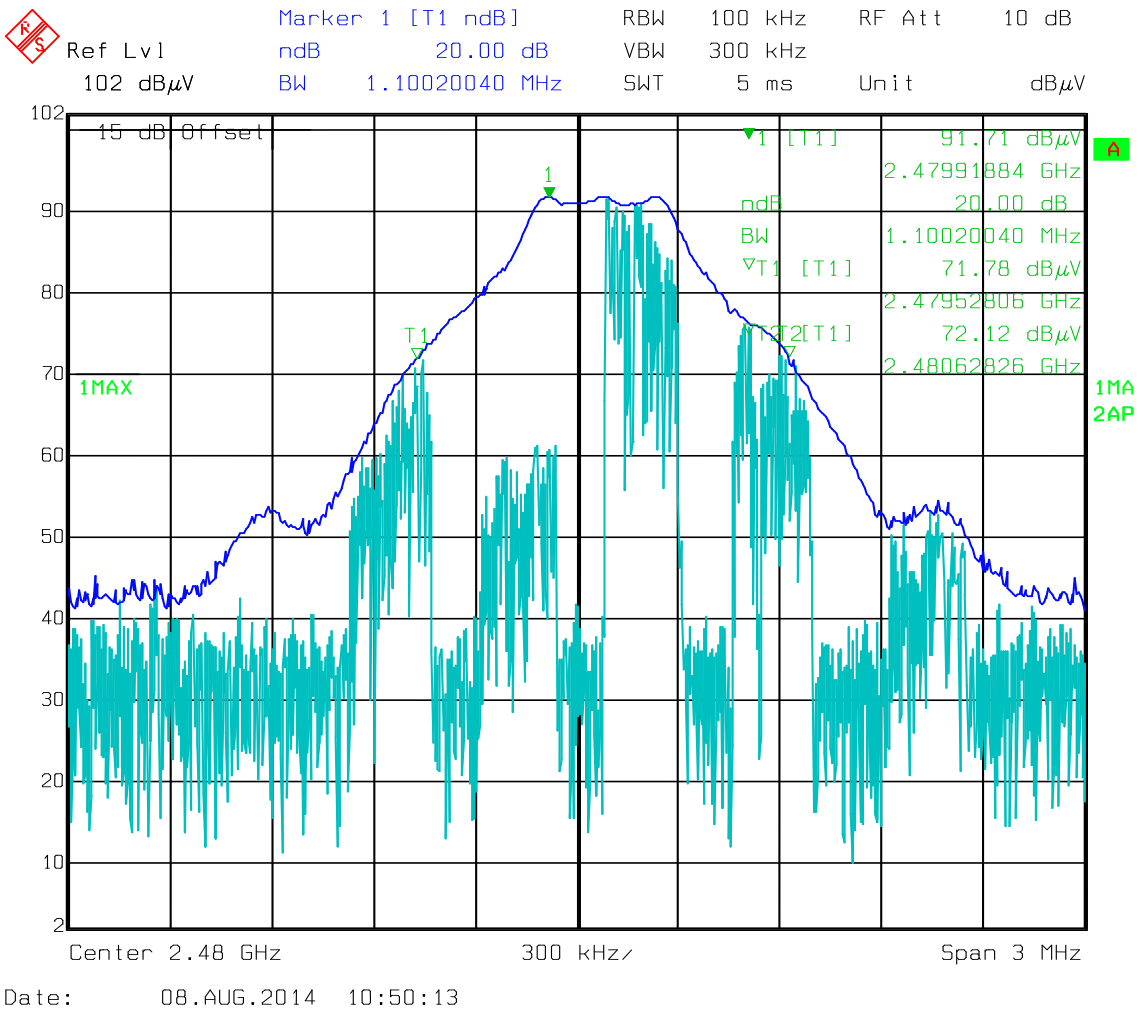
2.5.9 Test Results Plots



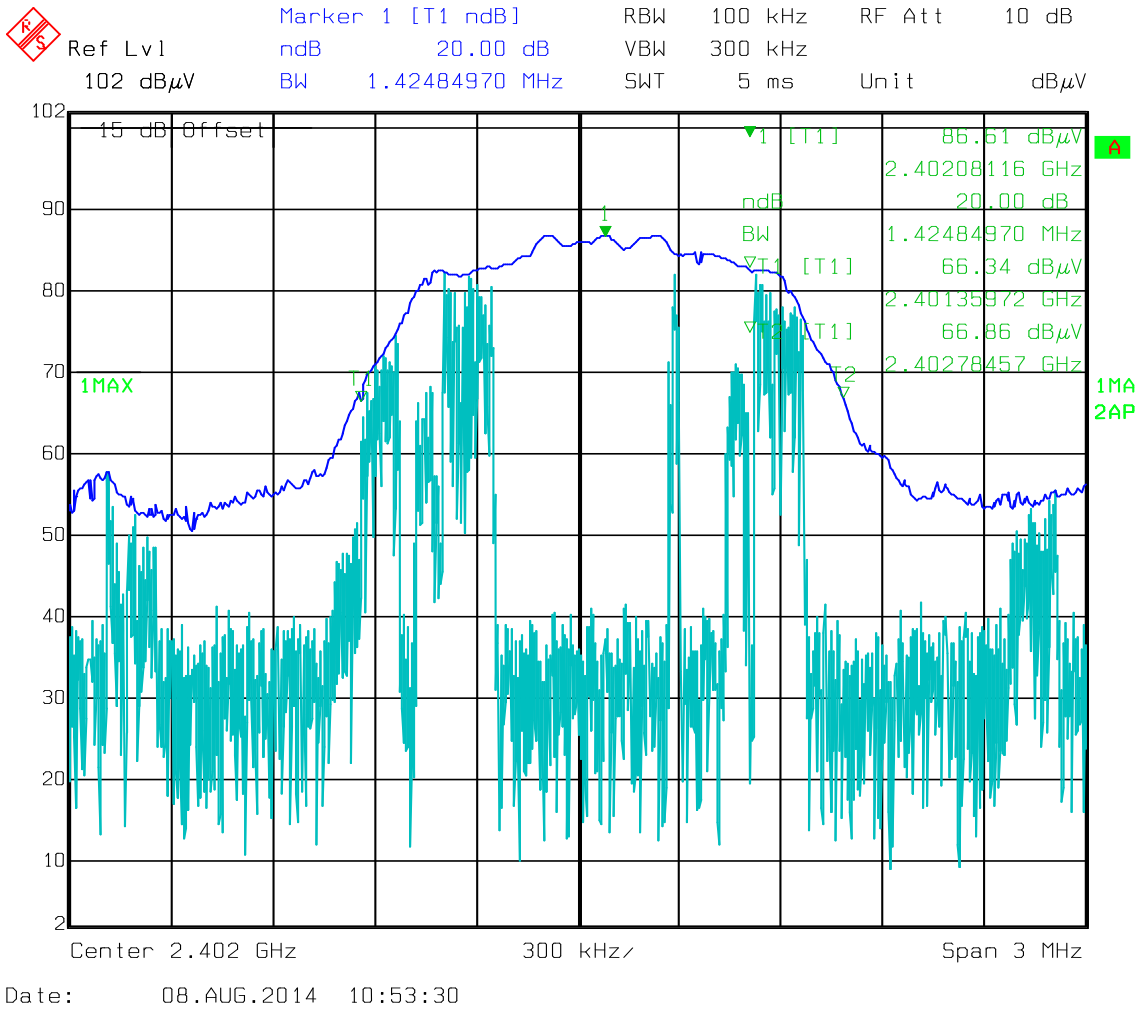
GFSK Low Channel



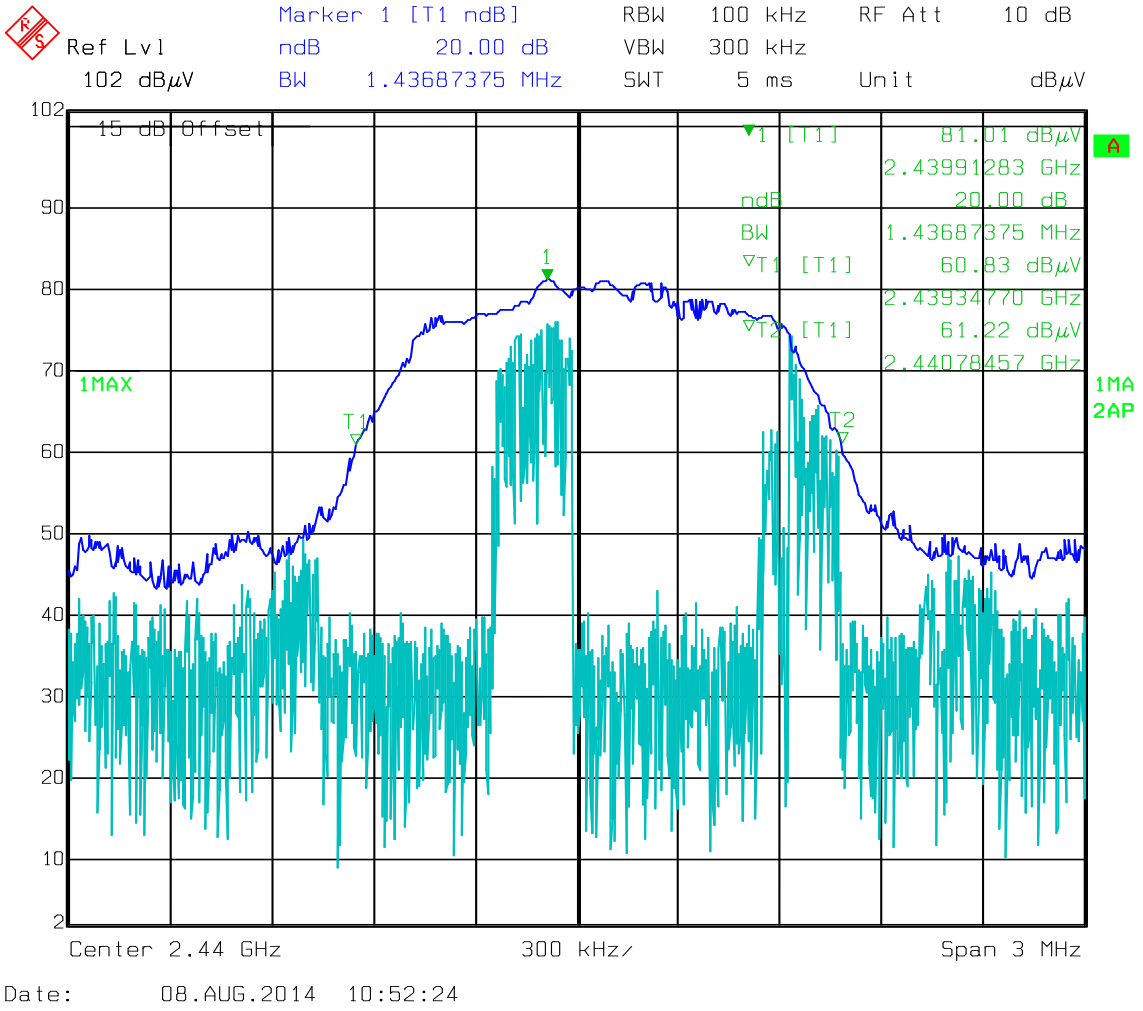
GFSK Mid Channel



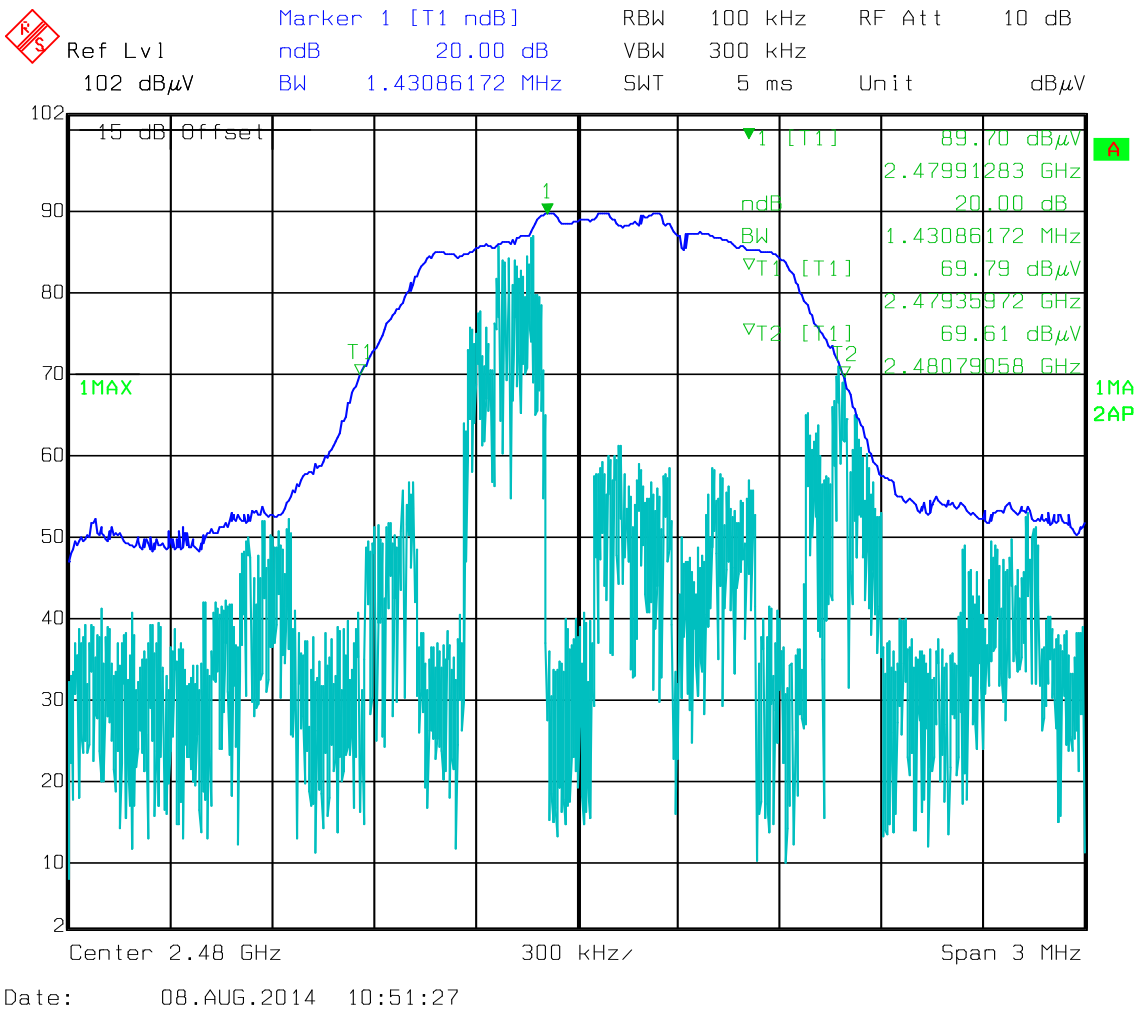
GFSK High Channel



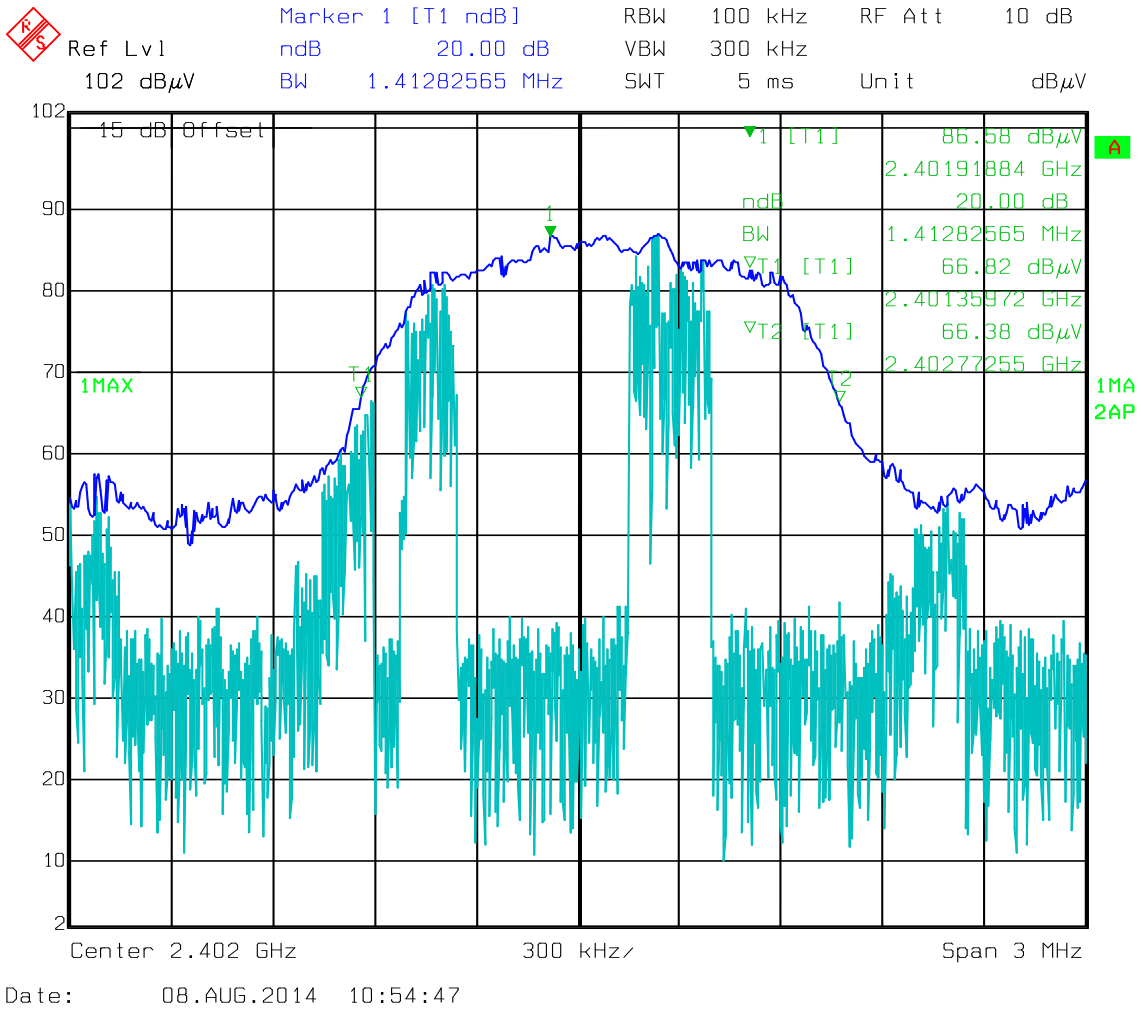
π/4-DQPSK Low Channel



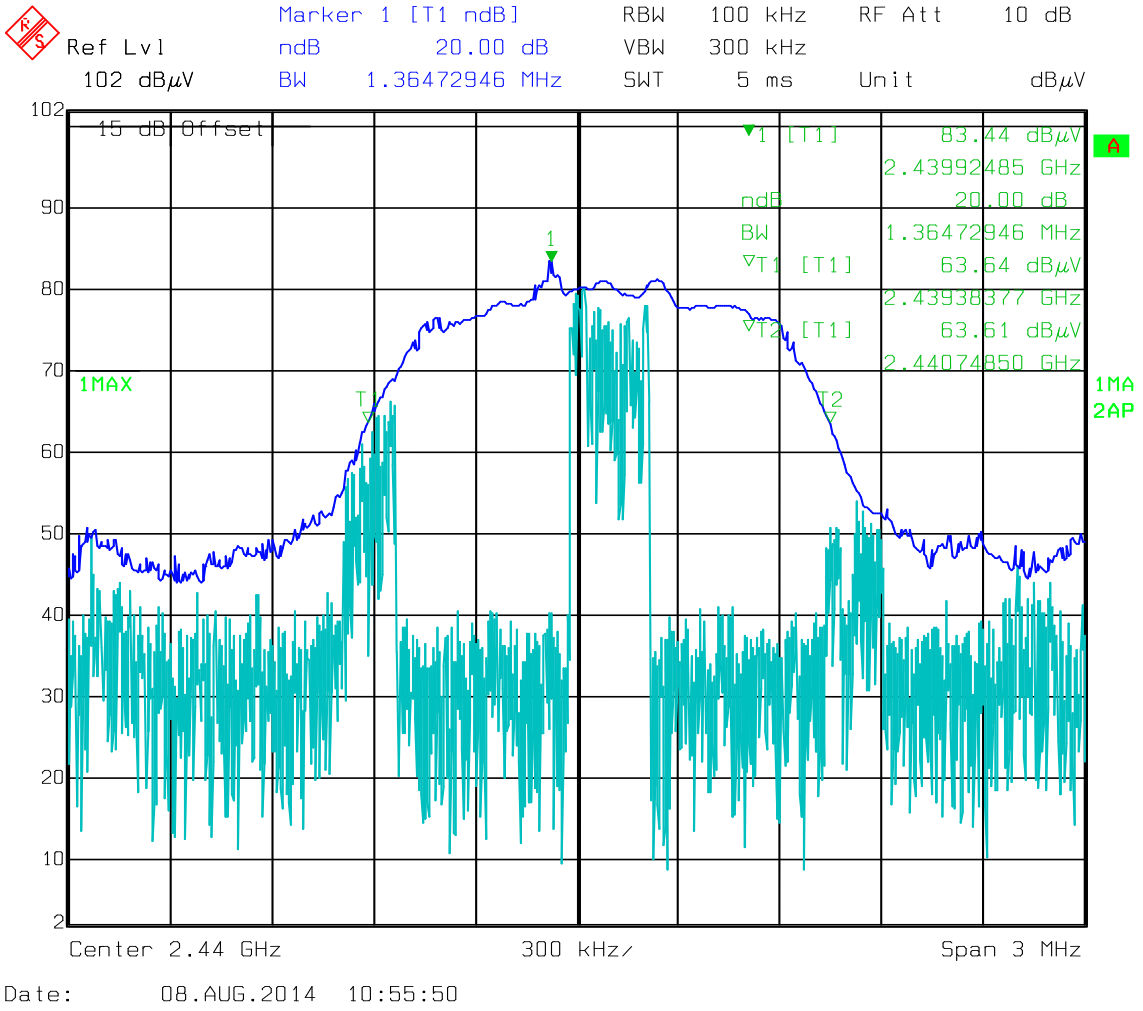
π/4-DQPSK Mid Channel



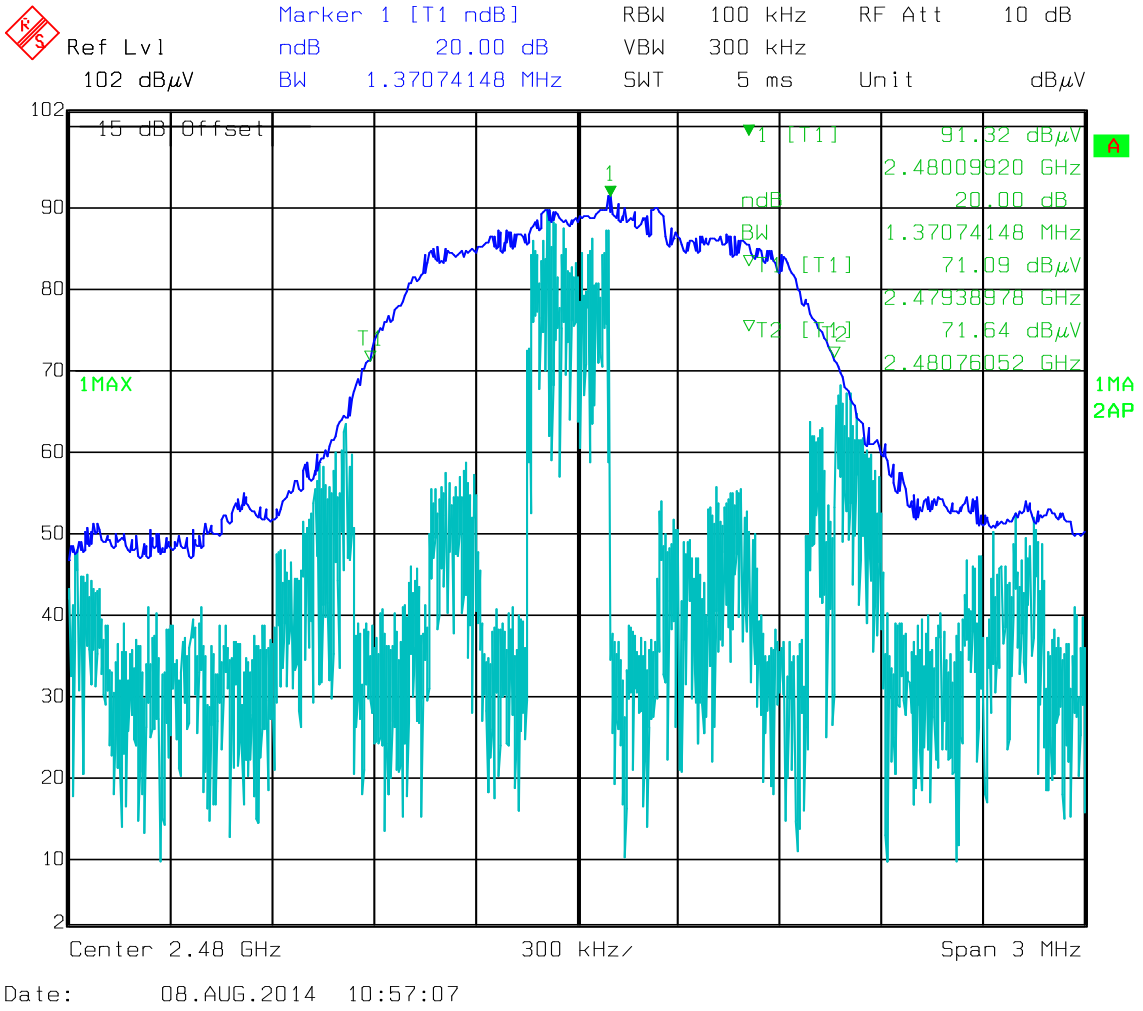
π/4-DQPSK High Channel



8DPSK Low Channel



8DPSK Mid Channel



8DPSK High Channel

2.6 99% EMISSION BANDWIDTH

2.6.1 Specification Reference

RSS-Gen Clause 4.6.1

2.6.2 Standard Applicable

When an occupied bandwidth value is not specified in the applicable RSS, the transmitted signal bandwidth to be reported is to be its 99% emission bandwidth, as calculated or measured.
The transmitter shall be operated at its maximum carrier power measured under normal test conditions. The span of the analyzer shall be set to capture all products of the modulation process, including the emission skirts. The resolution bandwidth shall be set to as close to 1% of the selected span as is possible without being below 1%. The video bandwidth shall be set to 3 times the resolution bandwidth. Video averaging is not permitted. Where practical, a sampling detector shall be used given that a peak or peak hold may produce a wider bandwidth than actual.
The trace data points are recovered and directly summed in linear terms. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5% of the total is reached and that frequency recorded. The process is repeated for the highest frequency data points. This frequency is recorded. The span between the two recorded frequencies is the occupied bandwidth.

2.6.3 Equipment Under Test and Modification State

Serial No: 4632081643 / Default Test Configuration

2.6.4 Date of Test/Initial of test personnel who performed the test

August 08, 2014/FSC

2.6.5 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.6.6 Environmental Conditions

Test performed at TÜV SÜD America Inc. Rancho Bernardo facility

Ambient Temperature	24.3°C
Relative Humidity	52.1%
ATM Pressure	98.9 kPa

2.6.7 Additional Observations

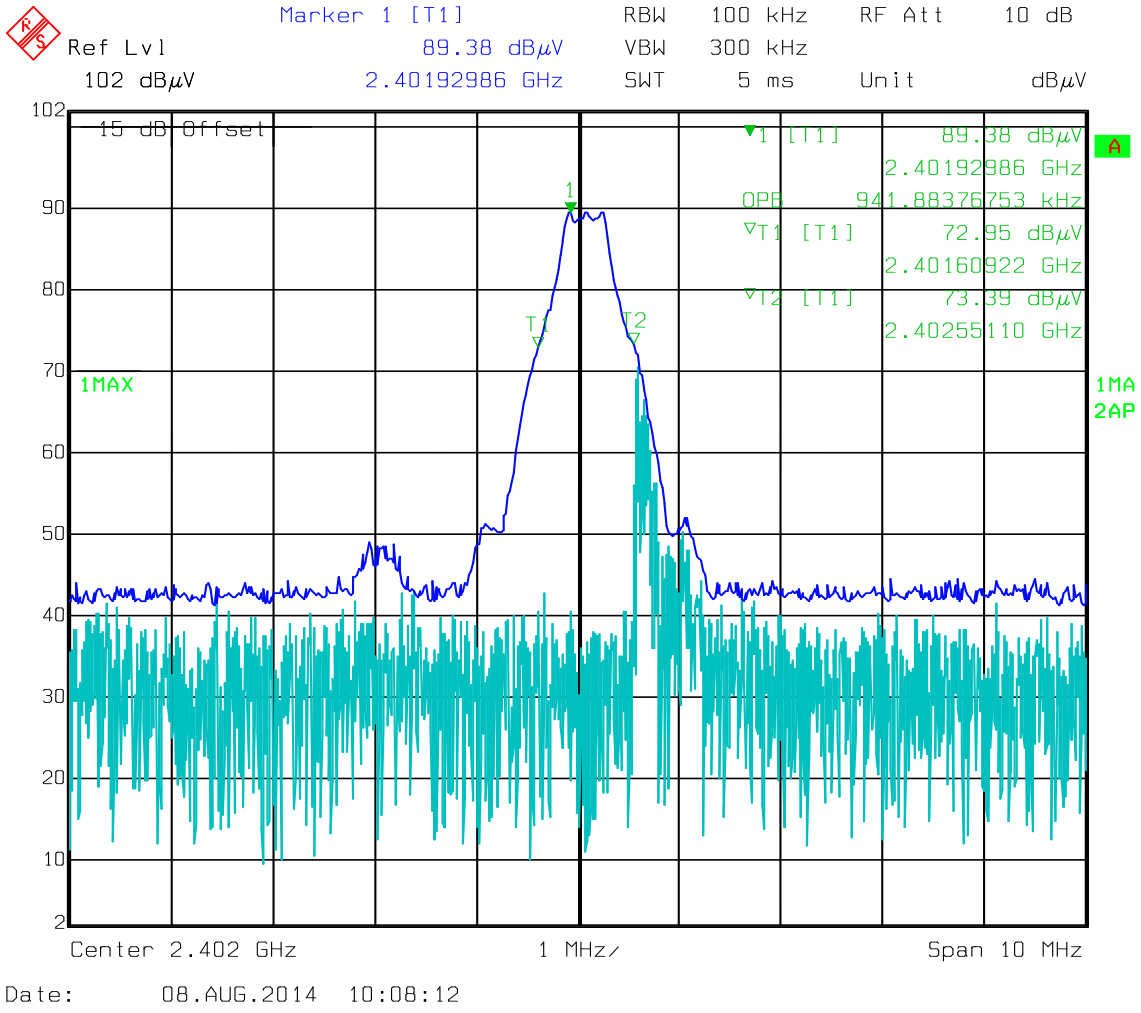
- This is a radiated test.
- An offset was added to compensate for the receiving antenna factor, preamp gain and cable loss.
- Span is wide enough to capture the channel transmission.
- RBW is 1% of the span.
- VBW is 3X RBW.

- Sweep is auto.
- Detector is peak.
- The % Power Bandwidth setting in the spectrum analyzer was set to 99% (default).
- The OBW power measurement function of the spectrum analyzer was used for this test.

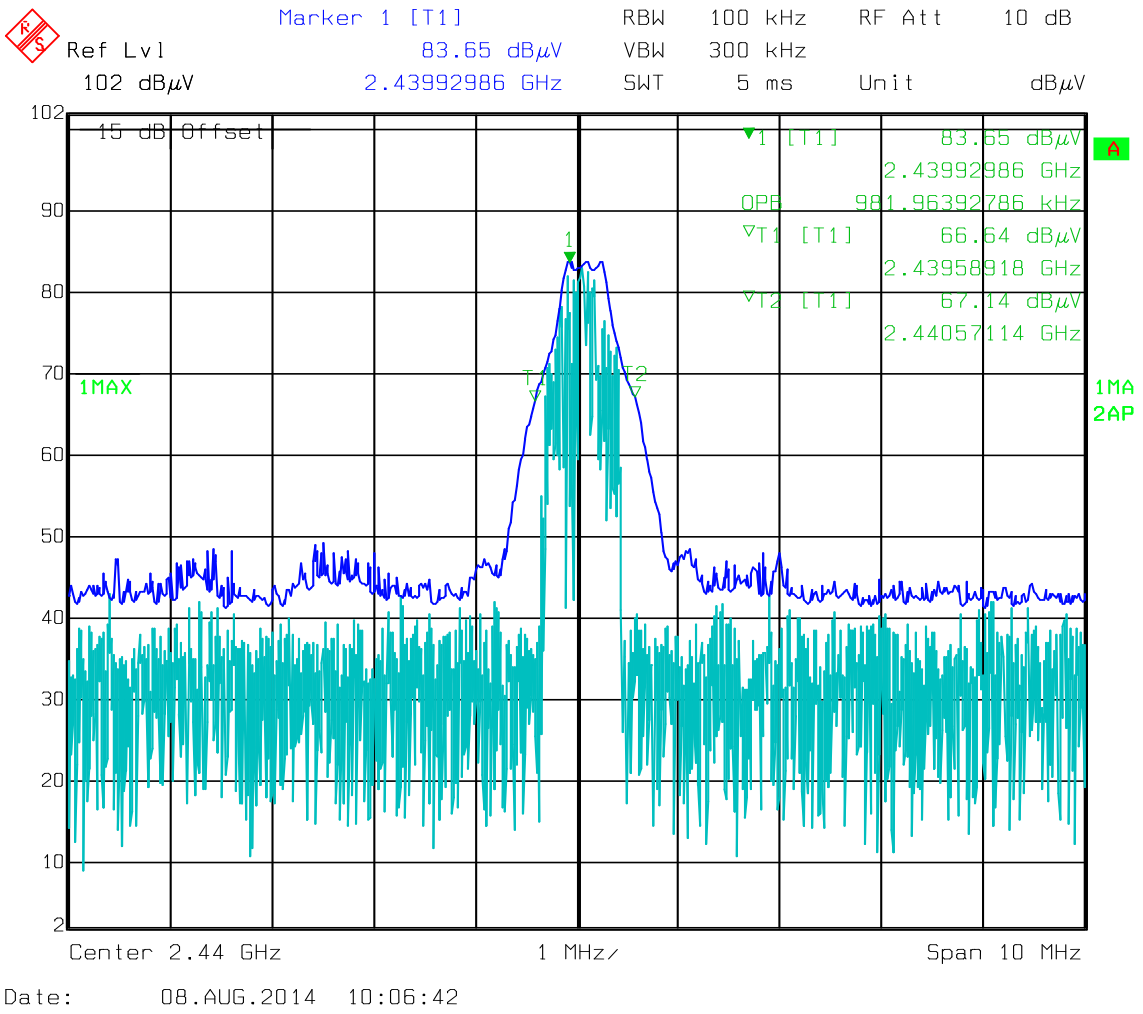
2.6.8 Test Results (For reporting purposes only)

Modulation	Channel	Frequency (MHz)	Measured 99% OBW (MHz)
GFSK	0	2402	0.942
	38	2440	0.982
	78	2480	0.962
π/4-DQPSK	0	2402	1.263
	38	2440	1.283
	78	2480	1.242
8DPSK	0	2402	1.263
	38	2440	1.263
	78	2480	1.242

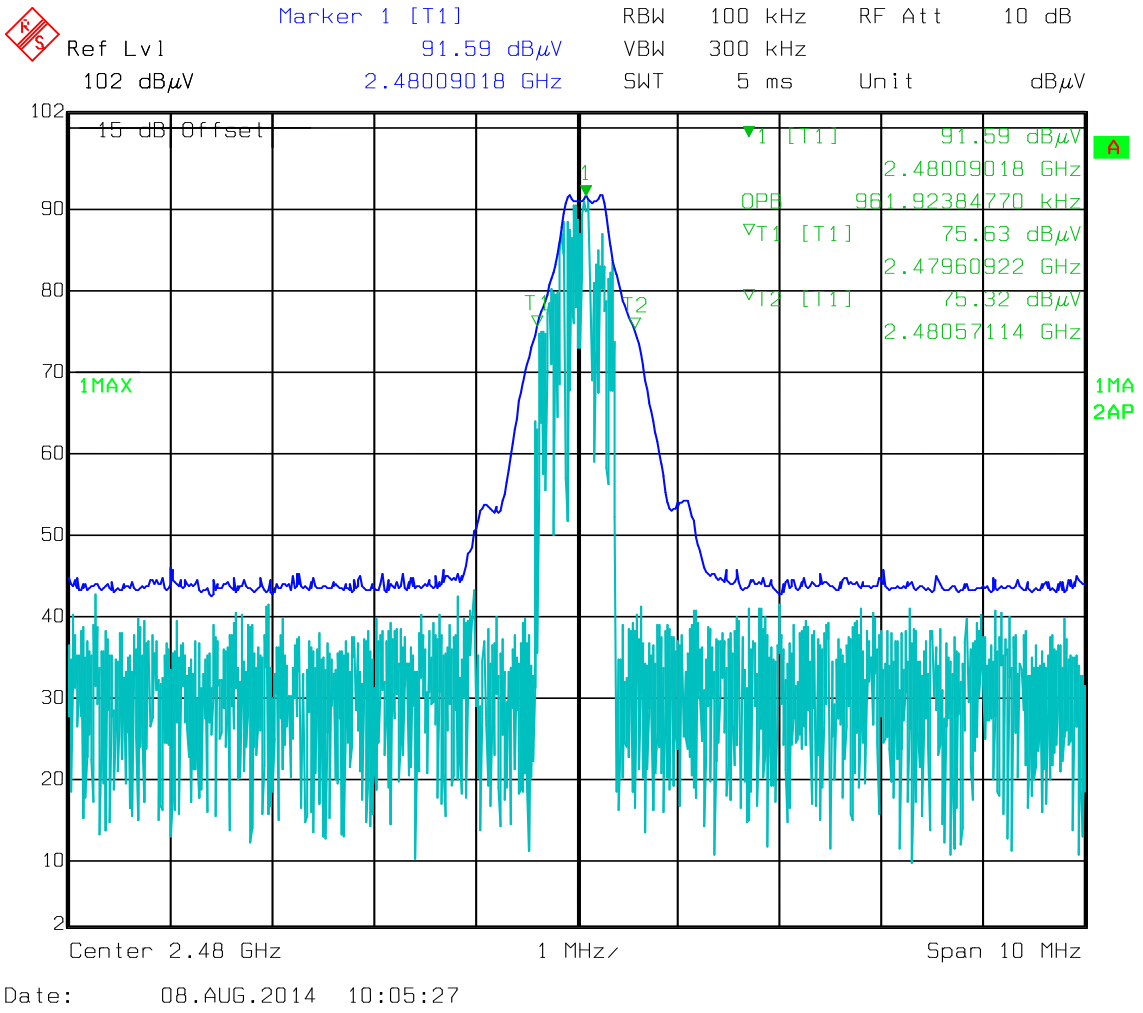
2.6.9 Test Results Plots



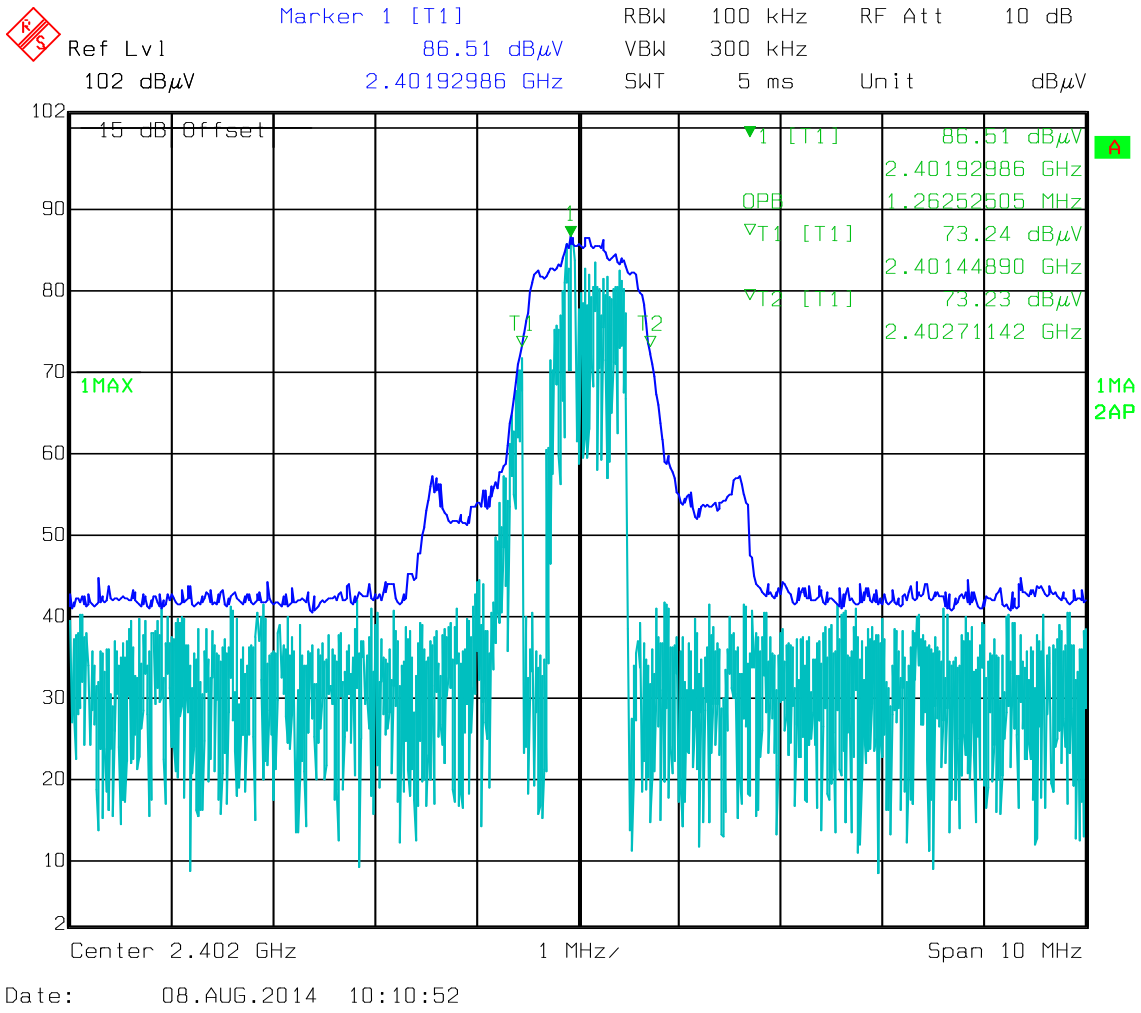
GFSK Low Channel



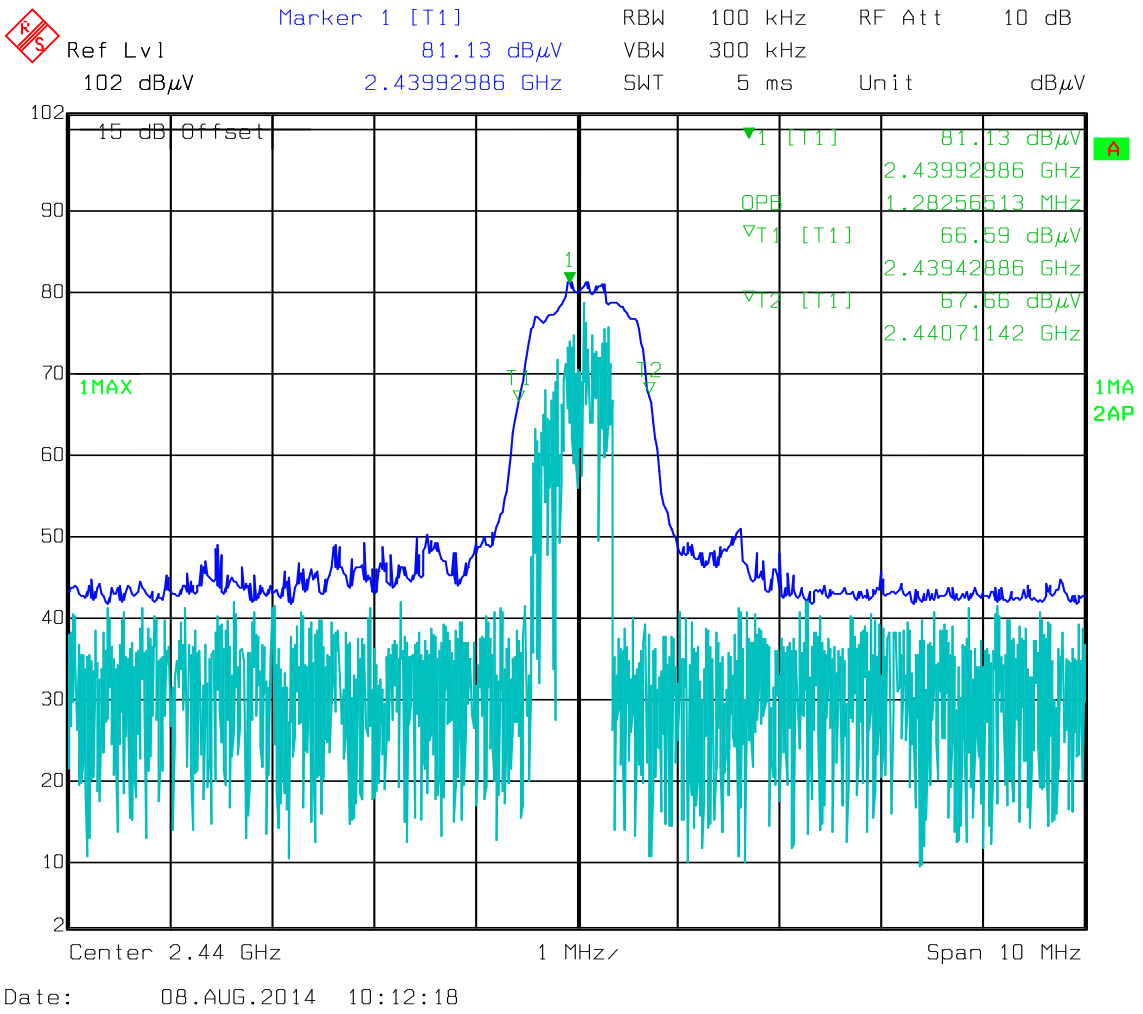
GFSK Mid Channel



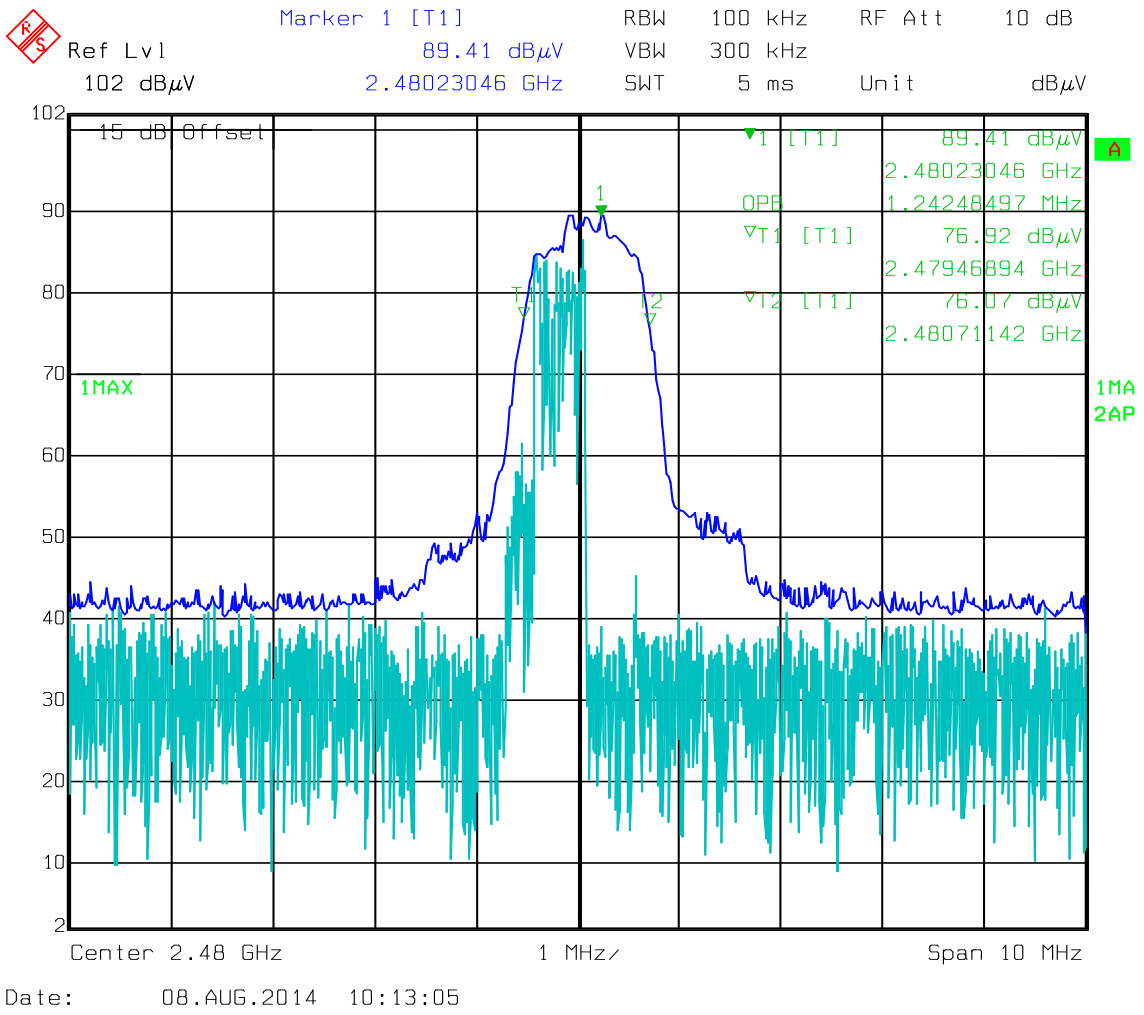
GFSK High Channel



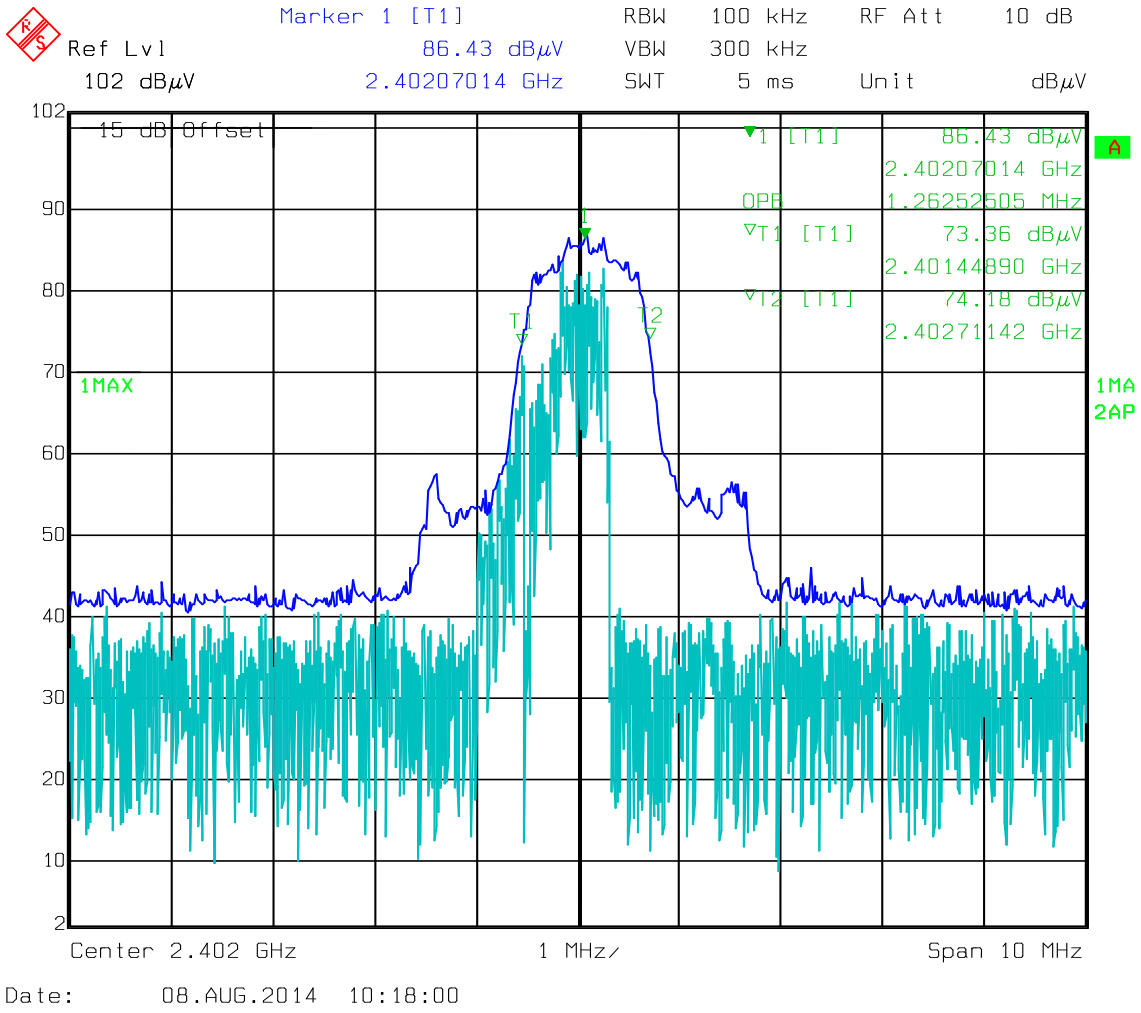
π/4-DQPSK Low Channel



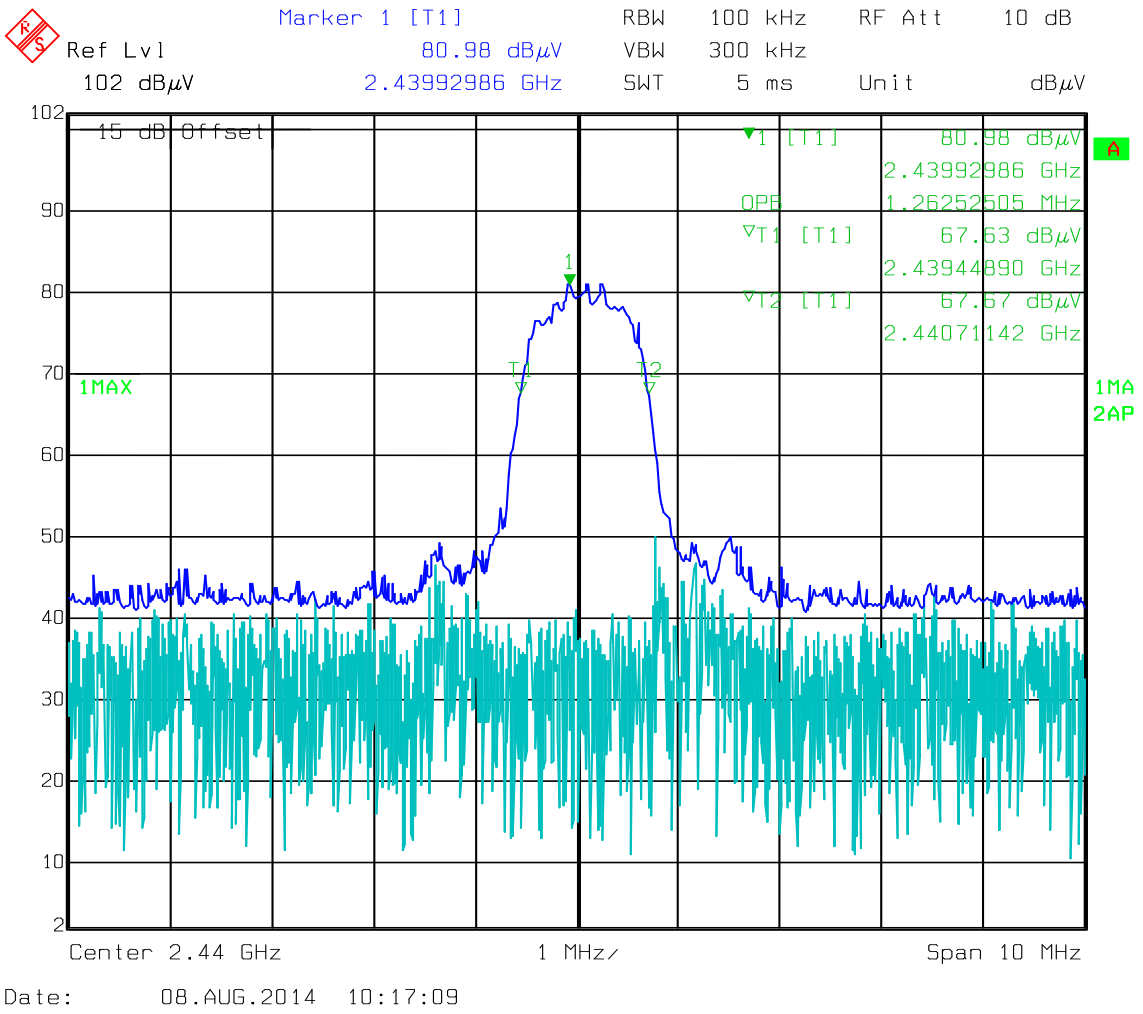
π/4-DQPSK Mid Channel



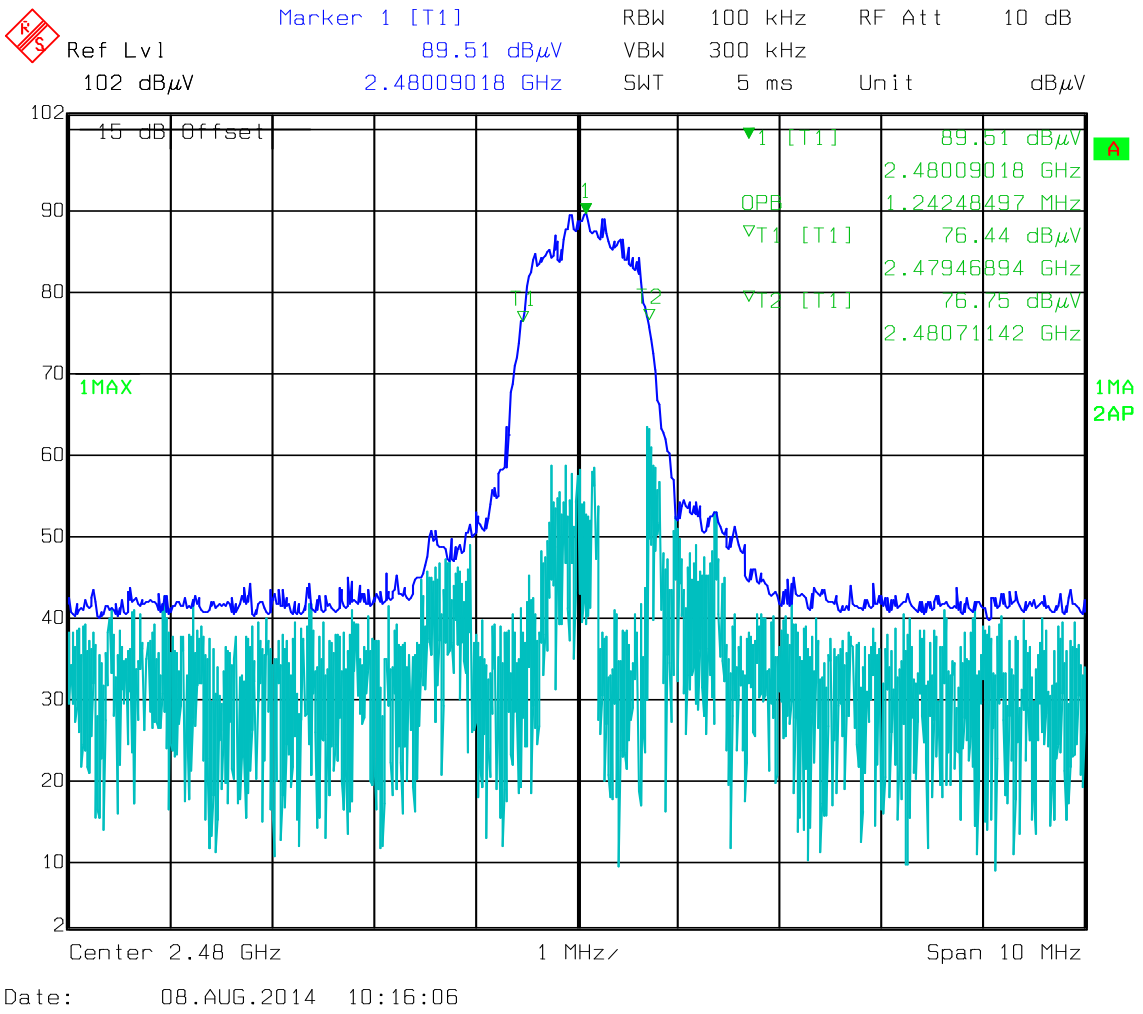
π/4-DQPSK High Channel



8DPSK Low Channel



8DPSK Mid Channel



8DPSK High Channel

2.7 PEAK OUTPUT POWER

2.7.1 Specification Reference

Part 15 Subpart C §15.247(b)(1)

2.7.2 Standard Applicable

(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. For all other frequency hopping systems in the 2400–2483.5 MHz band: 0.125 watts.

2.7.3 Equipment Under Test and Modification State

Serial No: 4632081643 / Default Test Configuration

2.7.4 Date of Test/Initial of test personnel who performed the test

August 06, 2014/FSC

2.7.5 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.7.6 Environmental Conditions

Test performed at TÜV SÜD America Inc. Rancho Bernardo facility

Ambient Temperature	24.8°C
Relative Humidity	50.8%
ATM Pressure	99.2 kPa

2.7.7 Additional Observations

- This is a radiated test. The spectrum was searched from 2390MHz to 2500MHz to cover immediate restricted bands (masked by the notch filter during Radiated Spurious Emissions test), upper band edges and the fundamental frequency.
- All packet types verified, only worst case presented.
- Fundamental measurements will be proven by Substitution Method.
- Measurement was done using EMC32 automated software. Reported level is the actual level with all the correction factors factored in. Correction Factor column is for informational purposes only. See Section 2.7.8 for sample computation.

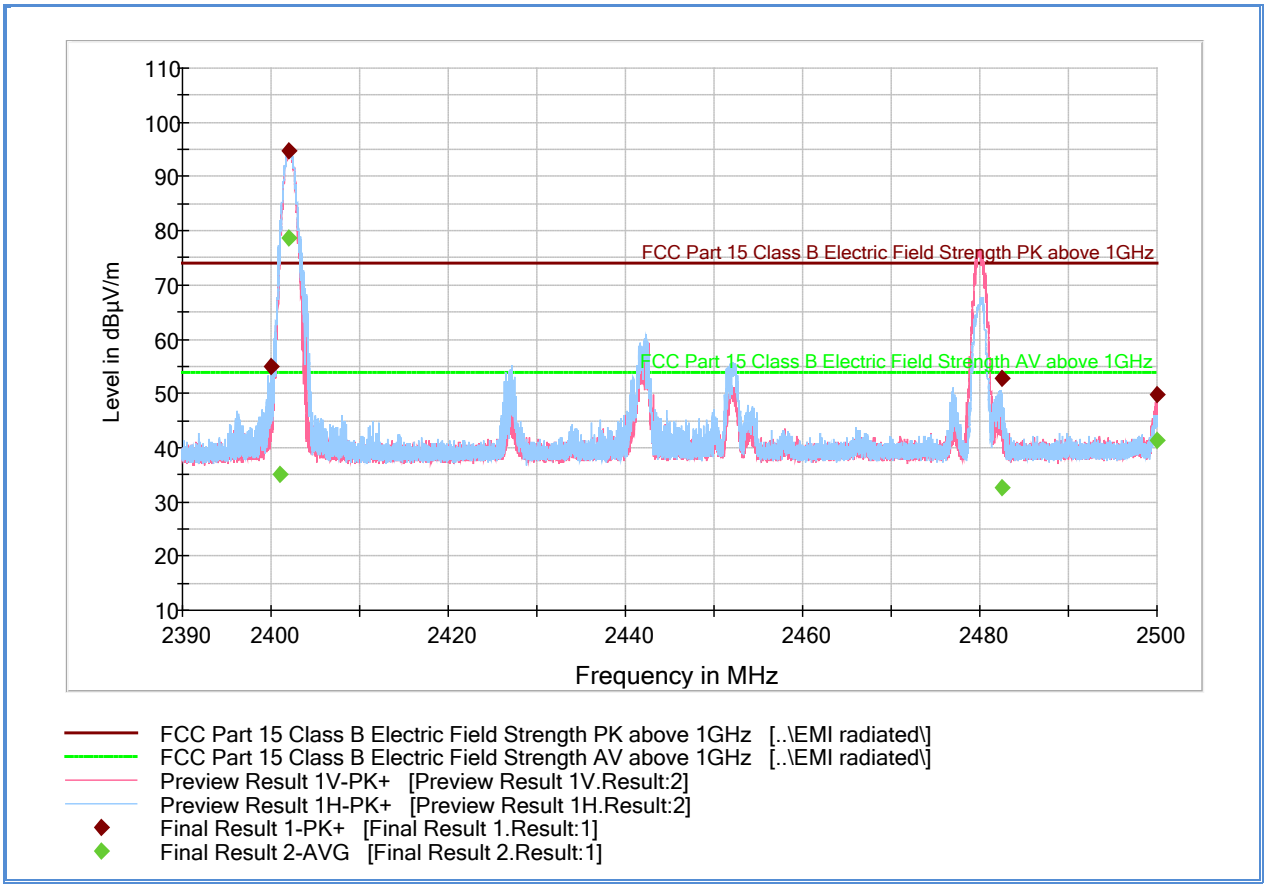
2.7.8 Sample Computation (Radiated Emission)

Measuring equipment raw measurement (dbµV) @ 2400 MHz			53.9
Correction Factor (dB)	Asset# 1153 (cable)	3.4	-0.4
	Asset# 8628(preamplifier)	-36.5	
	Asset#7575 (antenna)	32.7	
Reported Max Peak Final Measurement (dbµV/m) @ 2400 MHz			**53.5**

2.7.9 Test Results (EIRP Limit)

Modulation	Channel	Frequency (MHz)	Measured Field Strength (dBµV/m @ 3 meters)	Substitution Peak Output Power (dBm)	Substitution Peak Output Power (mW)	Limit (mW)
GFSK	0	2402	94.8	-0.197	0.956	1000.0
	38	2440	98.6	3.803	2.400	1000.0
	78	***2480***	***99.0***	***3.703***	***2.346***	***1000.0***
π/4-DQPSK	***0***	***2402***	***99.9***	***4.803***	***3.022***	***1000.0***
	38	2440	96.6	1.803	1.515	1000.0
	78	2480	99.7	4.703	2.953	1000.0
8DPSK	0	2402	95.1	-0.197	0.956	1000.0
	38	***2440***	***100.4***	***5.803***	***3.805***	***1000.0***
	78	2480	99.5	4.703	2.953	1000.0

2.7.10 Test Results GFSK Low Channel



Peak Data

Frequency (MHz)	Max Peak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
2400.000000	55.0	1000.0	1000.000	100.8	H	142.0	-0.2	18.9	73.9
2402.000000	94.8	1000.0	1000.000	101.7	H	143.0	-0.2	Fundamental	
2483.500000	52.8	1000.0	1000.000	136.7	H	138.0	0.1	21.1	73.9
2500.000000	49.8	1000.0	1000.000	99.7	V	47.0	0.2	24.1	73.9

Average Data

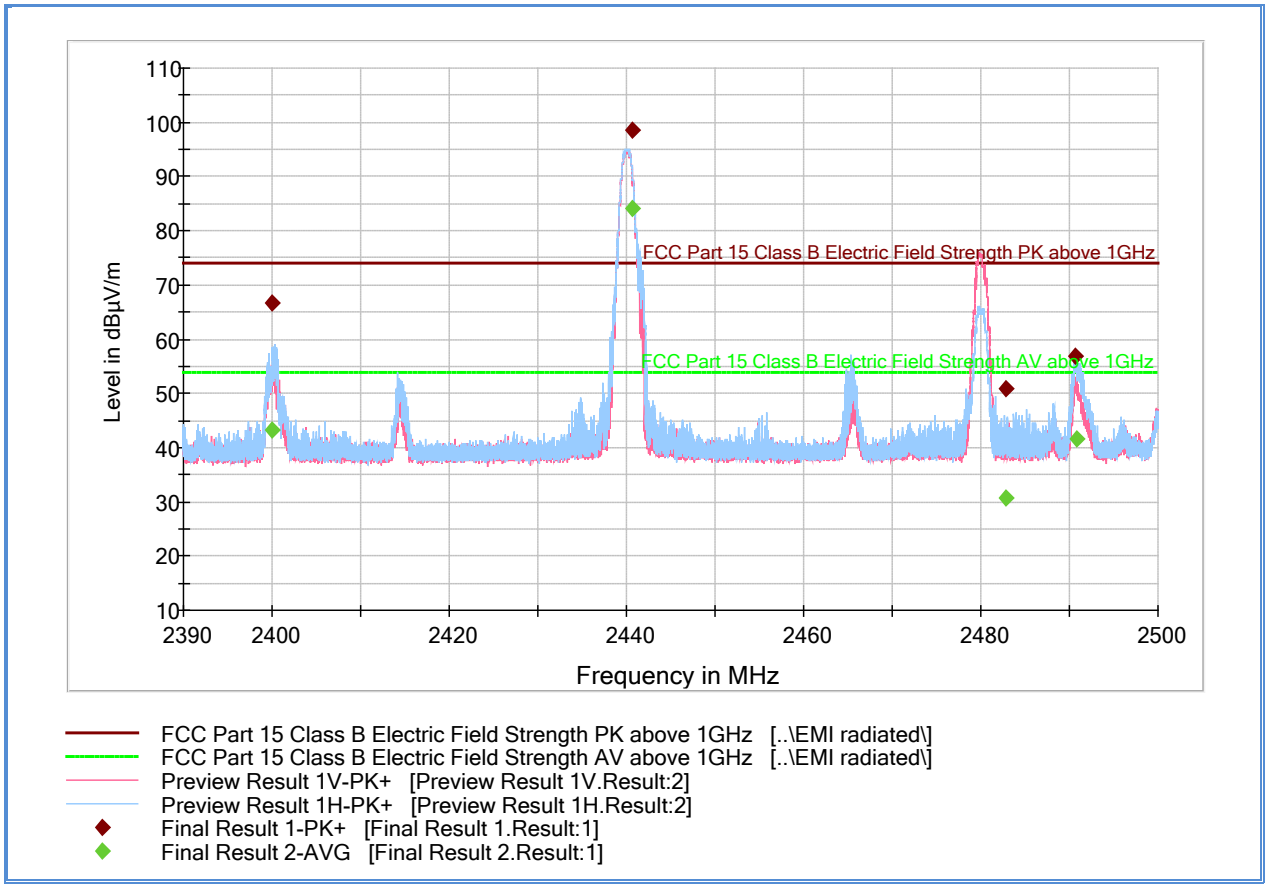
Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
2400.000000	35.1	1000.0	1000.000	100.8	H	142.0	-0.2	18.6	53.9
2402.000000	78.8	1000.0	1000.000	101.7	H	143.0	-0.2	Fundamental	
2483.500000	32.7	1000.0	1000.000	136.7	H	138.0	0.1	21.2	53.9
2500.000000	41.4	1000.0	1000.000	99.7	V	47.0	0.2	12.5	53.9

Substitution Data

Frequency (MHz)	Max Peak (dBµV/m)	Substitution Antenna Gain (dBi)	Cable Loss (dB)	Signal Generator Level (dBm)	Substitution Level (dBm)	Limit (dBm)	Margin (dB)
2402.000000	94.8	9.503	-3.7	-6.0	-0.197	30	30.197

Test Notes: Peak data used for Substitution since EUT is not transmitting @ 100% duty cycle. Average will be ≤ Peak if duty cycle correction is applied. Downlink from the call box is ignored.

2.7.11 Test Results GFSK Mid Channel



Peak Data

Frequency (MHz)	Max Peak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
2400.000000	66.6	1000.0	1000.000	101.7	H	144.0	-0.2	7.3	73.9
2440.000000	98.6	1000.0	1000.000	99.7	H	143.0	0.0	Fundamental	
2483.500000	50.7	1000.0	1000.000	100.7	H	146.0	0.1	23.2	73.9
2490.585333	56.7	1000.0	1000.000	100.7	H	146.0	0.1	17.2	73.9

Average Data

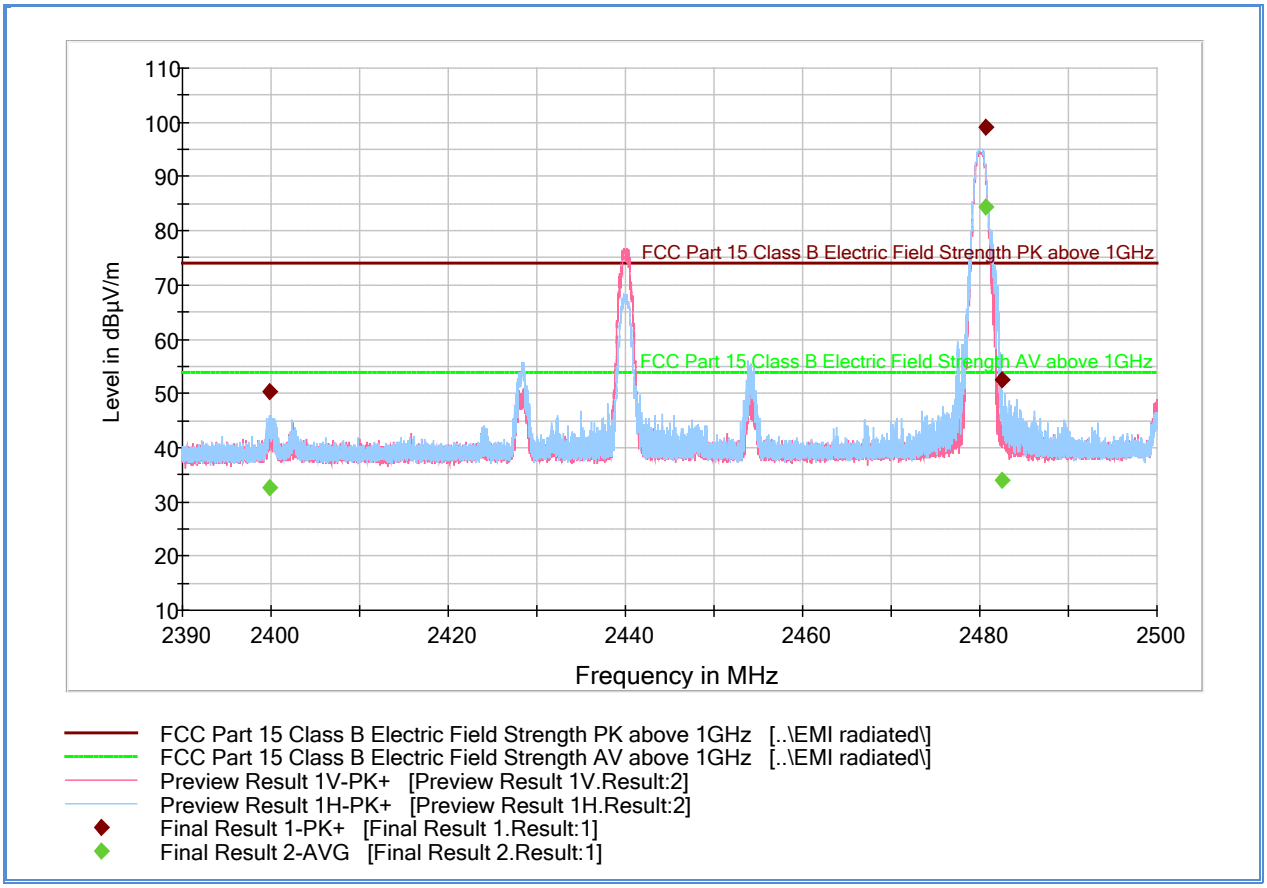
Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
2400.000000	43.2	1000.0	1000.000	101.7	H	144.0	-0.2	10.7	53.9
2440.000000	84.2	1000.0	1000.000	99.7	H	143.0	0.0	Fundamental	
2483.500000	30.7	1000.0	1000.000	100.7	H	146.0	0.1	23.2	53.9
2490.885333	41.7	1000.0	1000.000	100.7	H	146.0	0.1	12.2	53.9

Substitution Data

Frequency (MHz)	Max Peak (dBµV/m)	Substitution Antenna Gain (dBi)	Cable Loss (dB)	Signal Generator Level (dBm)	Substitution Level (dBm)	Limit (dBm)	Margin (dB)
2440.000000	98.6	9.503	-3.7	-2.0	3.803	30	26.197

Test Notes: Peak data used for Substitution since EUT is not transmitting @ 100% duty cycle. Average will be ≤ Peak if duty cycle correction is applied. Downlink from the call box is ignored.

2.7.12 Test Results GFSK High Channel



Peak Data

Frequency (MHz)	Max Peak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
2400.00000	50.4	1000.0	1000.000	100.7	V	69.0	-0.2	23.5	73.9
2480.00000	99.0	1000.0	1000.000	99.7	H	145.0	0.1	Fundamental	
2483.50000	52.6	1000.0	1000.000	101.7	H	144.0	0.1	21.3	73.9

Average Data

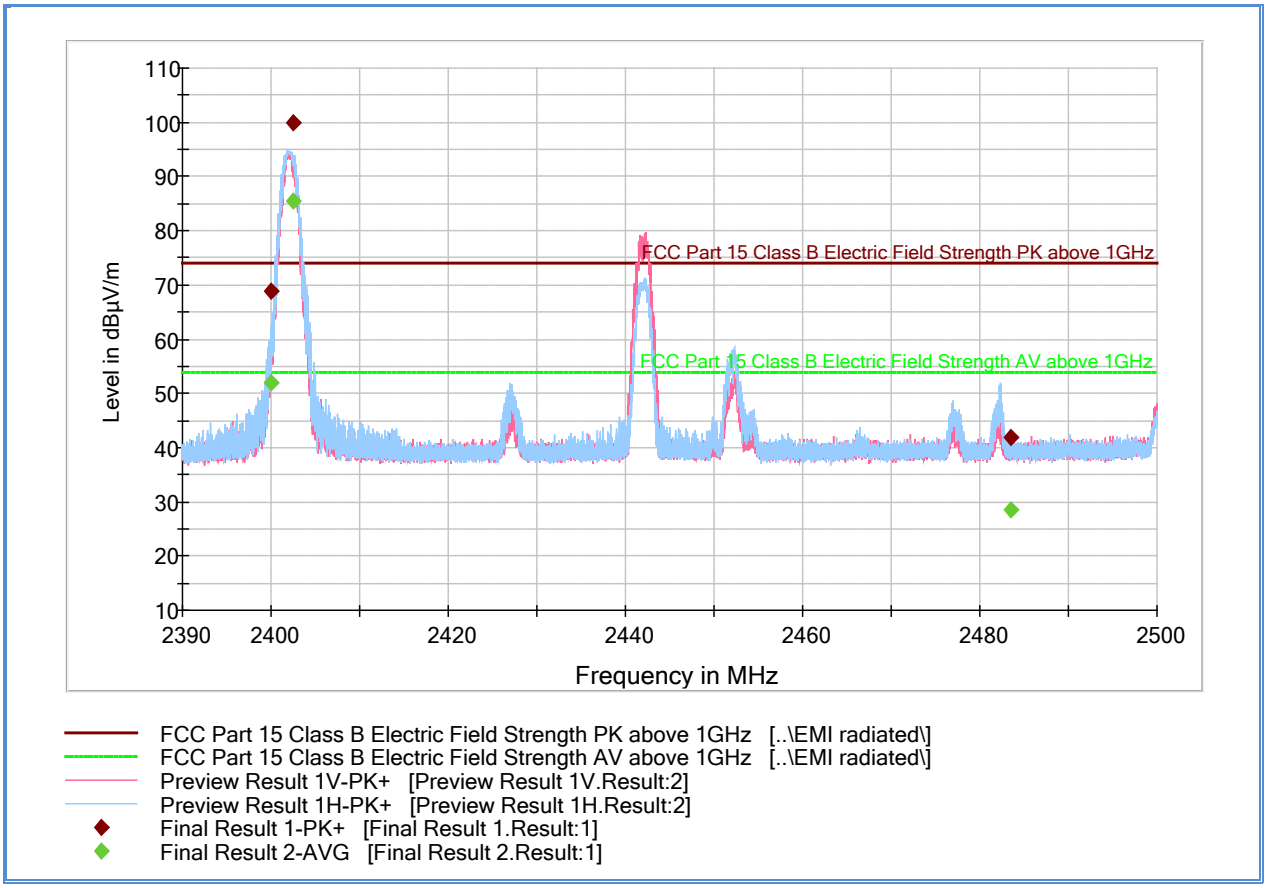
Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
2400.00000	32.5	1000.0	1000.000	100.7	V	69.0	-0.2	21.4	53.9
2480.00000	84.4	1000.0	1000.000	99.7	H	145.0	0.1	Fundamental	
2483.50000	33.9	1000.0	1000.000	101.7	H	144.0	0.1	20.0	53.9

Substitution Data

Frequency (MHz)	Max Peak (dBµV/m)	Substitution Antenna Gain (dBi)	Cable Loss (dB)	Signal Generator Level (dBm)	Substitution Level (dBm)	Limit (dBm)	Margin (dB)
2480.00000	99.0	9.503	-3.8	-2.0	3.703	30	26.297

Test Notes: Peak data used for Substitution since EUT is not transmitting @ 100% duty cycle. Average will be ≤ Peak if duty cycle correction is applied. Downlink from the call box is ignored.

2.7.13 Test Results π/4-DQPSK Low Channel



Peak Data

Frequency (MHz)	Max Peak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
2400.00000	68.8	1000.0	1000.000	104.7	H	142.0	-0.2	5.9	73.9
2402.000000	99.9	1000.0	1000.000	103.7	H	141.0	-0.2	Fundamental	
2483.500000	41.8	1000.0	1000.000	404.9	H	94.0	0.1	32.1	73.9

Average Data

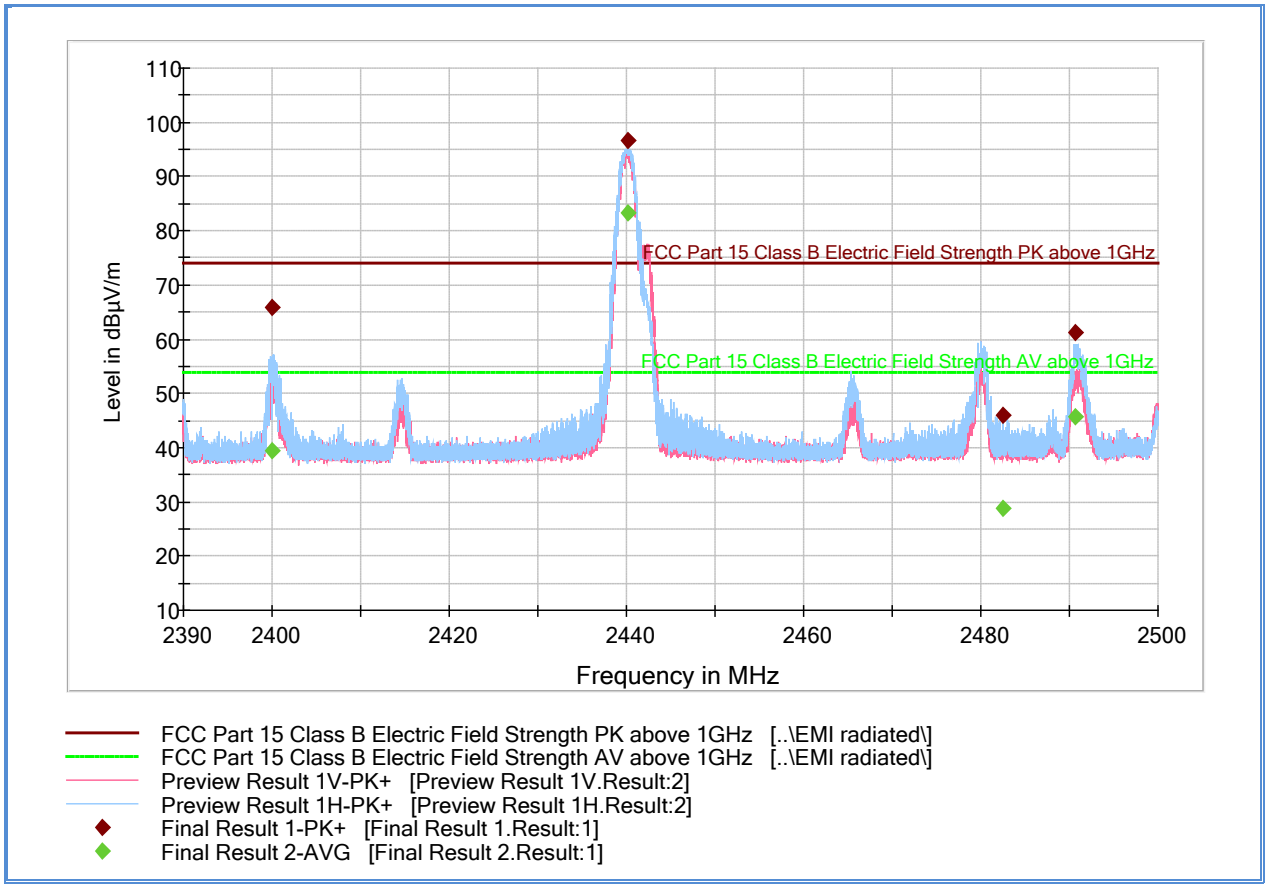
Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
2400.00000	52.0	1000.0	1000.000	104.7	H	142.0	-0.2	1.9	53.9
2402.000000	85.5	1000.0	1000.000	103.7	H	141.0	-0.2	Fundamental	
2483.500000	28.6	1000.0	1000.000	404.9	H	94.0	0.1	25.3	53.9

Substitution Data

Frequency (MHz)	Max Peak (dBµV/m)	Substitution Antenna Gain (dBi)	Cable Loss (dB)	Signal Generator Level (dBm)	Substitution Level (dBm)	Limit (dBm)	Margin (dB)
2402.000000	99.9	9.503	-3.7	-1.0	4.803	30	25.197

Test Notes: Peak data used for Substitution since EUT is not transmitting @ 100% duty cycle. Average will be ≤ Peak if duty cycle correction is applied. Downlink from the call box is ignored.

2.7.14 Test Results π/4-DQPSK Mid Channel



Peak Data

Frequency (MHz)	Max Peak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
2400.000000	65.8	1000.0	1000.000	99.7	H	140.0	-0.2	8.1	73.9
2440.000000	96.6	1000.0	1000.000	112.7	H	93.0	0.0	Fundamental	
2483.500000	46.0	1000.0	1000.000	332.1	H	142.0	0.1	27.9	73.9
2490.717667	61.1	1000.0	1000.000	100.7	H	145.0	0.2	12.8	73.9

Average Data

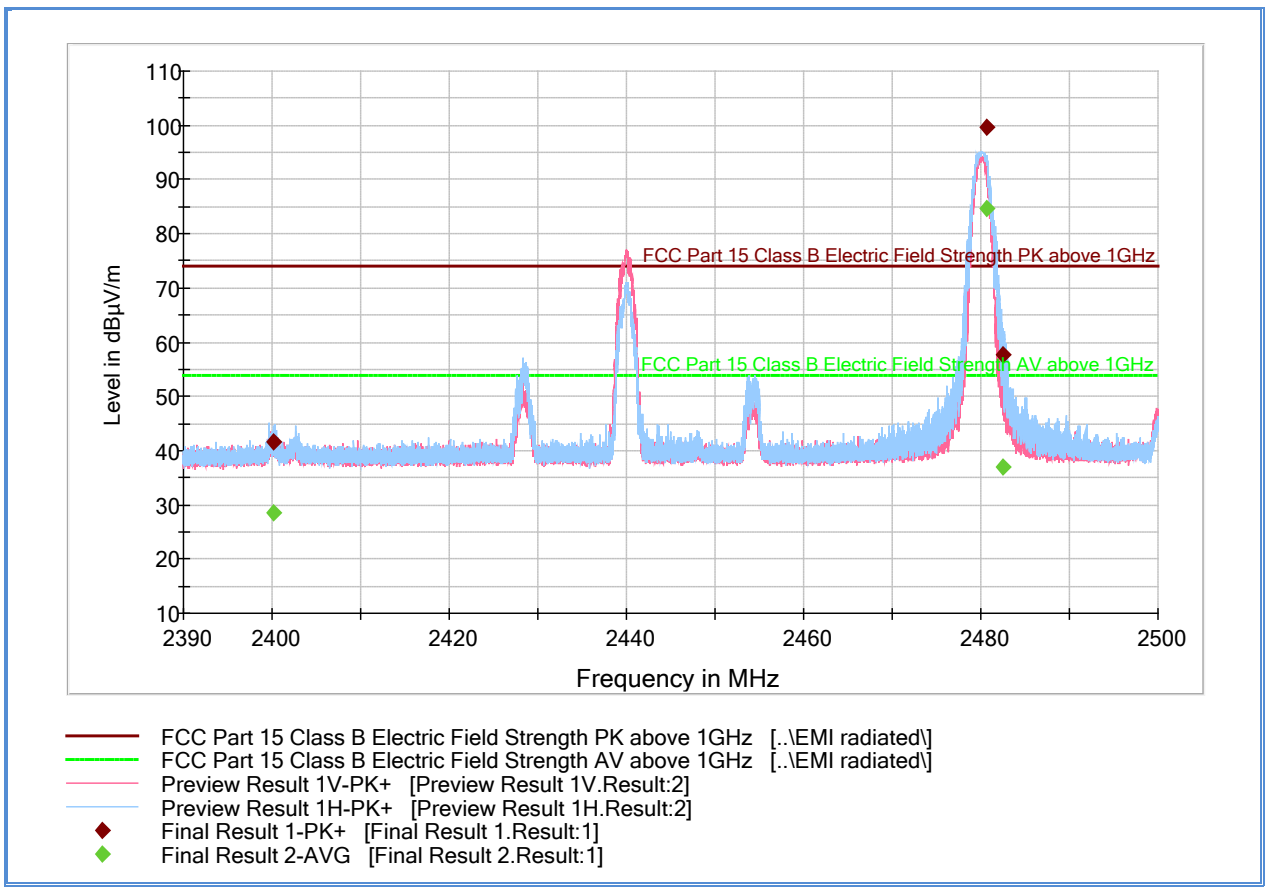
Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
2400.000000	39.4	1000.0	1000.000	99.7	H	140.0	-0.2	14.5	53.9
2440.000000	83.3	1000.0	1000.000	112.7	H	93.0	0.0	Fundamental	
2483.500000	28.9	1000.0	1000.000	332.1	H	142.0	0.1	25.0	53.9
2490.717667	45.6	1000.0	1000.000	100.7	H	145.0	0.2	8.3	53.9

Substitution Data

Frequency (MHz)	Max Peak (dBµV/m)	Substitution Antenna Gain (dBi)	Cable Loss (dB)	Signal Generator Level (dBm)	Substitution Level (dBm)	Limit (dBm)	Margin (dB)
2440.000000	96.6	9.503	-3.7	-4.0	1.803	30	28.197

Test Notes: Peak data used for Substitution since EUT is not transmitting @ 100% duty cycle. Average will be ≤ Peak if duty cycle correction is applied. Downlink from the call box is ignored.

2.7.15 Test Results π/4-DQPSK High Channel



Peak Data

Frequency (MHz)	Max Peak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
2400.000000	41.5	1000.0	1000.000	129.7	V	29.0	-0.2	32.4	73.9
2480.000000	99.7	1000.0	1000.000	99.7	H	149.0	0.1	Fundamental	
2483.500000	57.7	1000.0	1000.000	101.7	H	94.0	0.1	16.2	73.9

Average Data

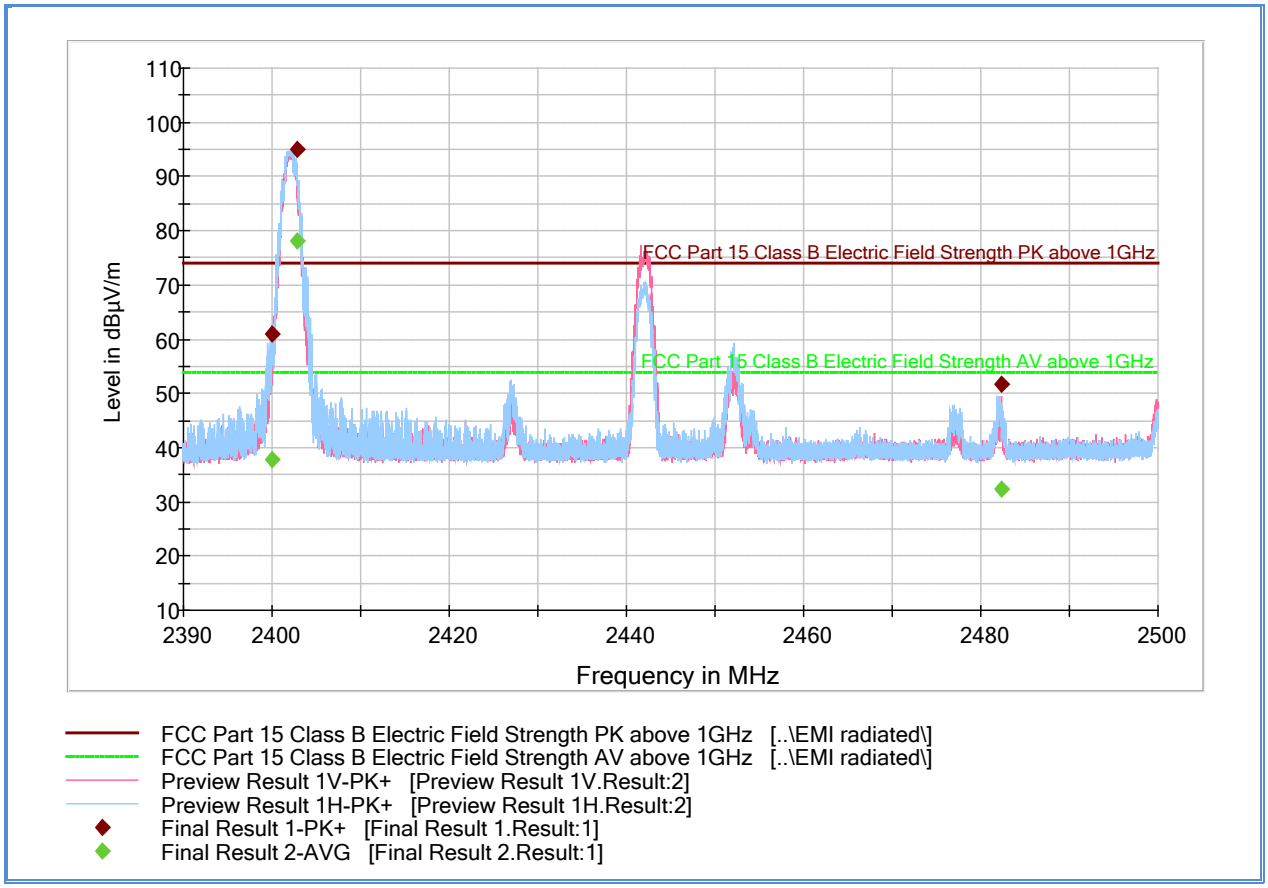
Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
2400.000000	28.6	1000.0	1000.000	129.7	V	29.0	-0.2	25.3	53.9
2480.000000	84.7	1000.0	1000.000	99.7	H	149.0	0.1	Fundamental	
2483.500000	37.1	1000.0	1000.000	101.7	H	94.0	0.1	16.8	53.9

Substitution Data

Frequency (MHz)	Max Peak (dBµV/m)	Substitution Antenna Gain (dBi)	Cable Loss (dB)	Signal Generator Level (dBm)	Substitution Level (dBm)	Limit (dBm)	Margin (dB)
2480.000000	99.7	9.503	-3.8	-1.0	4.703	30	25.297

Test Notes: Peak data used for Substitution since EUT is not transmitting @ 100% duty cycle. Average will be ≤ Peak if duty cycle correction is applied. Downlink from the call box is ignored.

2.7.16 Test Results 8DPSK Low Channel



Peak Data

Frequency (MHz)	Max Peak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
2400.000000	60.8	1000.0	1000.000	165.6	V	77.0	-0.2	13.1	73.9
2402.000000	95.1	1000.0	1000.000	102.7	H	142.0	-0.2	Fundamental	
2483.500000	51.7	1000.0	1000.000	302.2	V	87.0	0.1	22.2	73.9

Average Data

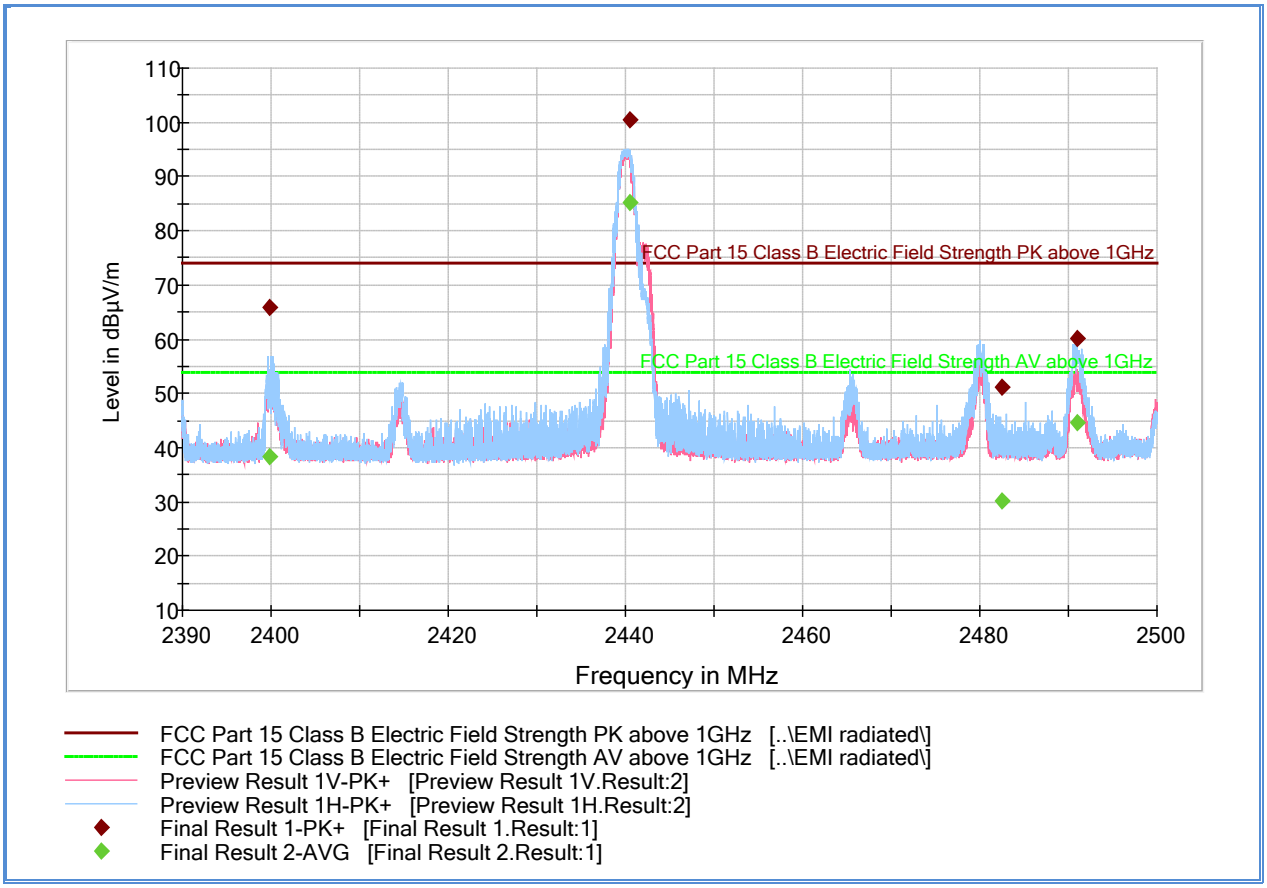
Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
2400.000000	37.9	1000.0	1000.000	165.6	V	77.0	-0.2	16.0	53.9
2402.000000	78.0	1000.0	1000.000	102.7	H	142.0	-0.2	Fundamental	
2483.500000	32.2	1000.0	1000.000	302.2	V	87.0	0.1	21.7	53.9

Substitution Data

Frequency (MHz)	Max Peak (dBµV/m)	Substitution Antenna Gain (dBi)	Cable Loss (dB)	Signal Generator Level (dBm)	Substitution Level (dBm)	Limit (dBm)	Margin (dB)
2402.000000	95.1	9.503	-3.7	-6.0	-0.197	30	30.197

Test Notes: Peak data used for Substitution since EUT is not transmitting @ 100% duty cycle. Average will be ≤ Peak if duty cycle correction is applied. Downlink from the call box is ignored.

2.7.17 Test Results 8DPSK Mid Channel



Peak Data

Frequency (MHz)	Max Peak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
2400.000000	65.7	1000.0	1000.000	101.7	H	144.0	-0.2	8.2	73.9
2440.000000	100.4	1000.0	1000.000	100.7	H	140.0	0.0	Fundamental	
2483.500000	51.2	1000.0	1000.000	99.7	H	150.0	0.1	22.7	73.9
2491.037000	60.0	1000.0	1000.000	101.7	H	149.0	0.2	13.9	73.9

Average Data

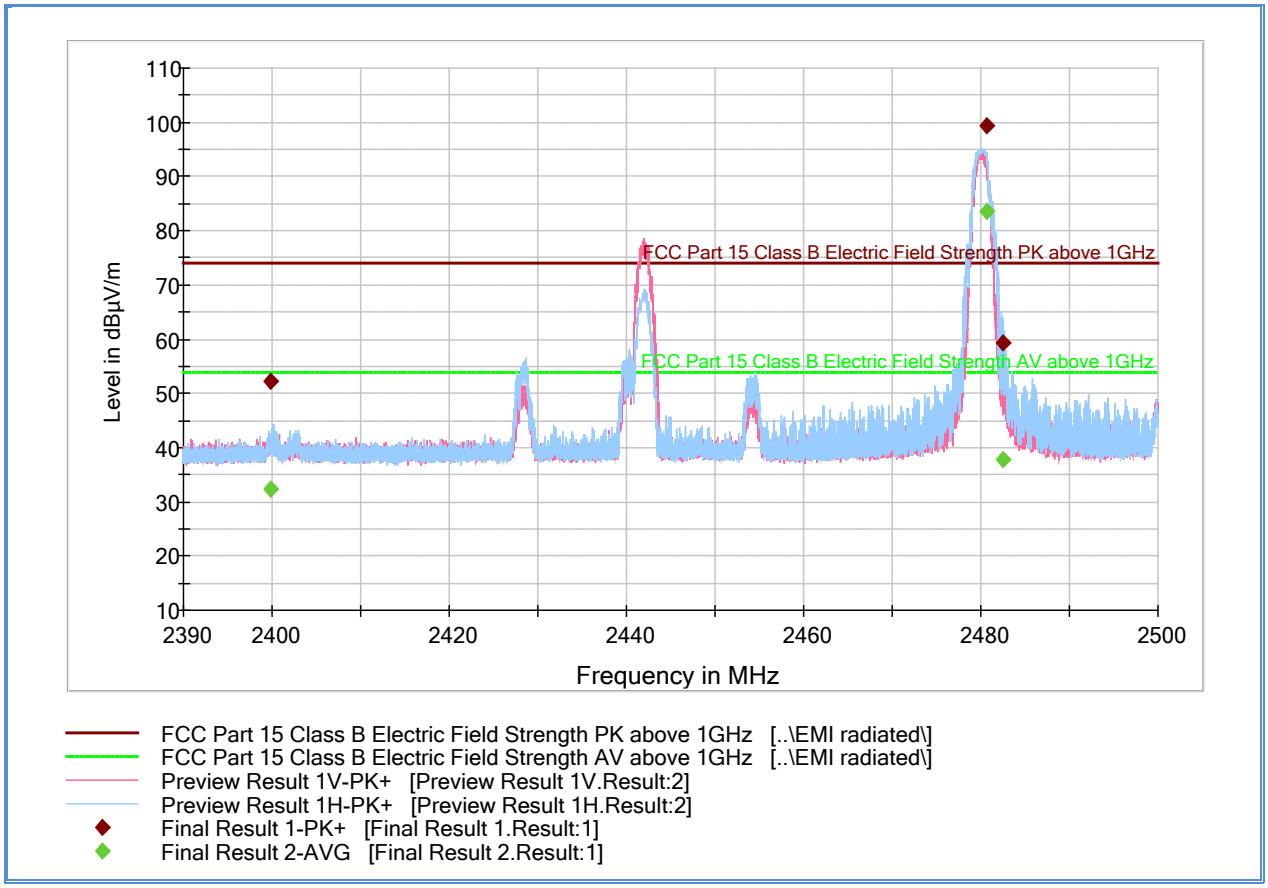
Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
2400.000000	38.4	1000.0	1000.000	101.7	H	144.0	-0.2	15.5	53.9
2440.000000	85.1	1000.0	1000.000	100.7	H	140.0	0.0	Fundamental	
2483.500000	30.3	1000.0	1000.000	99.7	H	150.0	0.1	23.6	53.9
2500.000000	44.7	1000.0	1000.000	101.7	H	149.0	0.2	9.2	53.9

Substitution Data

Frequency (MHz)	Max Peak (dBµV/m)	Substitution Antenna Gain (dBi)	Cable Loss (dB)	Signal Generator Level (dBm)	Substitution Level (dBm)	Limit (dBm)	Margin (dB)
2402.000000	100.4	9.503	-3.7	0.0	5.803	30	24.197

Test Notes: Peak data used for Substitution since EUT is not transmitting @ 100% duty cycle. Average will be ≤ Peak if duty cycle correction is applied. Downlink from the call box is ignored.

2.7.18 Test Results 8DPSK High Channel



Peak Data

Frequency (MHz)	Max Peak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
2400.000000	52.2	1000.0	1000.000	101.7	H	138.0	-0.2	21.7	73.9
2480.000000	99.5	1000.0	1000.000	99.7	H	147.0	0.1	Fundamental	
2483.500000	59.4	1000.0	1000.000	100.7	H	148.0	0.1	14.5	73.9

Average Data

Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
2400.000000	32.3	1000.0	1000.000	101.7	H	138.0	-0.2	21.6	53.9
2480.000000	83.4	1000.0	1000.000	99.7	H	147.0	0.1	Fundamental	
2483.500000	37.9	1000.0	1000.000	100.7	H	148.0	0.1	16.0	53.9

Substitution Data

Frequency (MHz)	Max Peak (dBµV/m)	Substitution Antenna Gain (dBi)	Cable Loss (dB)	Signal Generator Level (dBm)	Substitution Level (dBm)	Limit (dBm)	Margin (dB)
2480.000000	99.5	9.503	-3.8	-1.0	4.703	30	25.297

Test Notes: Peak data used for Substitution since EUT is not transmitting @ 100% duty cycle. Average will be ≤ Peak if duty cycle correction is applied. Downlink from the call box is ignored.

2.8 BAND-EDGE COMPLIANCE OF RF CONDUCTED EMISSIONS

2.8.1 Specification Reference

Part 15 Subpart C §15.247(d)

2.8.2 Standard Applicable

(d) 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)).

2.8.3 Equipment Under Test and Modification State

Serial No: 4632081643 / Default Test Configuration

2.8.4 Date of Test/Initial of test personnel who performed the test

August 08, 2014/FSC

2.8.5 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.8.6 Environmental Conditions

Test performed at TÜV SÜD America Inc. Rancho Bernardo facility

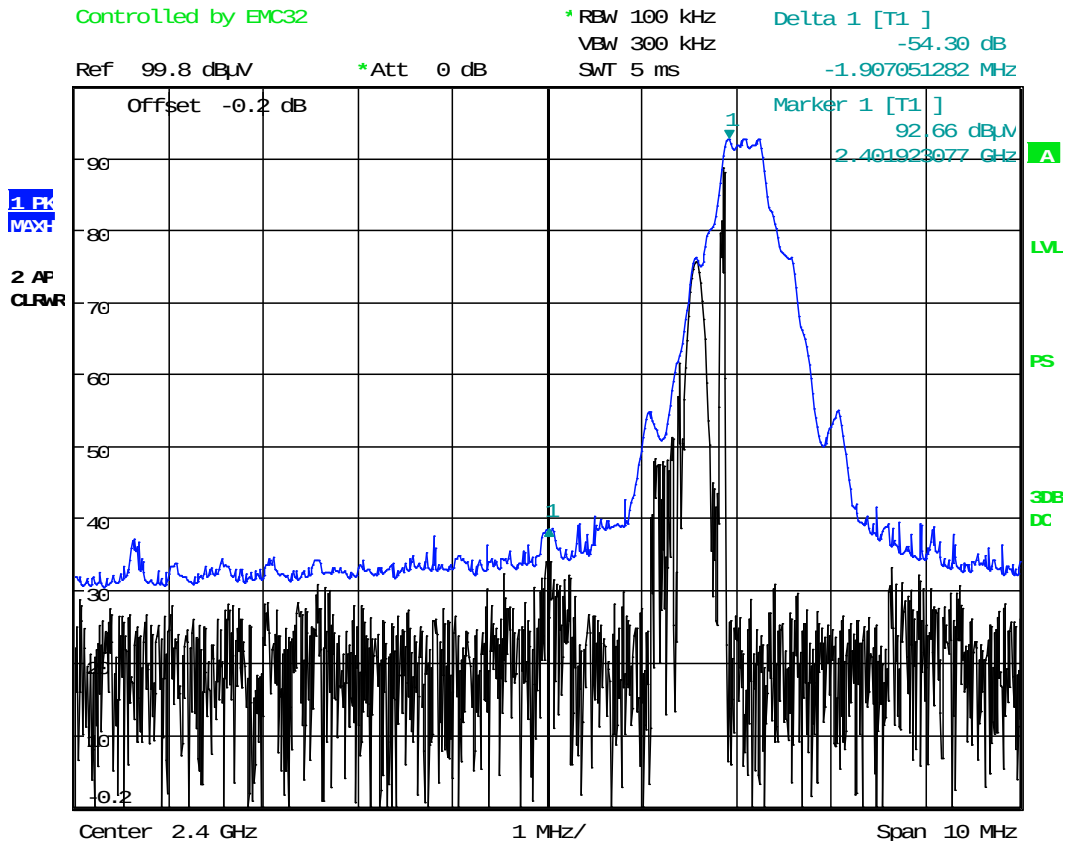
Ambient Temperature	24.3°C
Relative Humidity	52.1%
ATM Pressure	98.9 kPa

2.8.7 Additional Observations

- This is a radiated test.
- An offset of -0.2dB was added manually as the correction factor for the Radiated Emissions Setup using a semi-anechoic chamber (antenna factor, pre-amp gain and cable loss).
- Span is wide enough to capture the peak level of the emission operating on the channel closest to the band edge.
- RBW is 100kHz, VBW is 3X RBW.

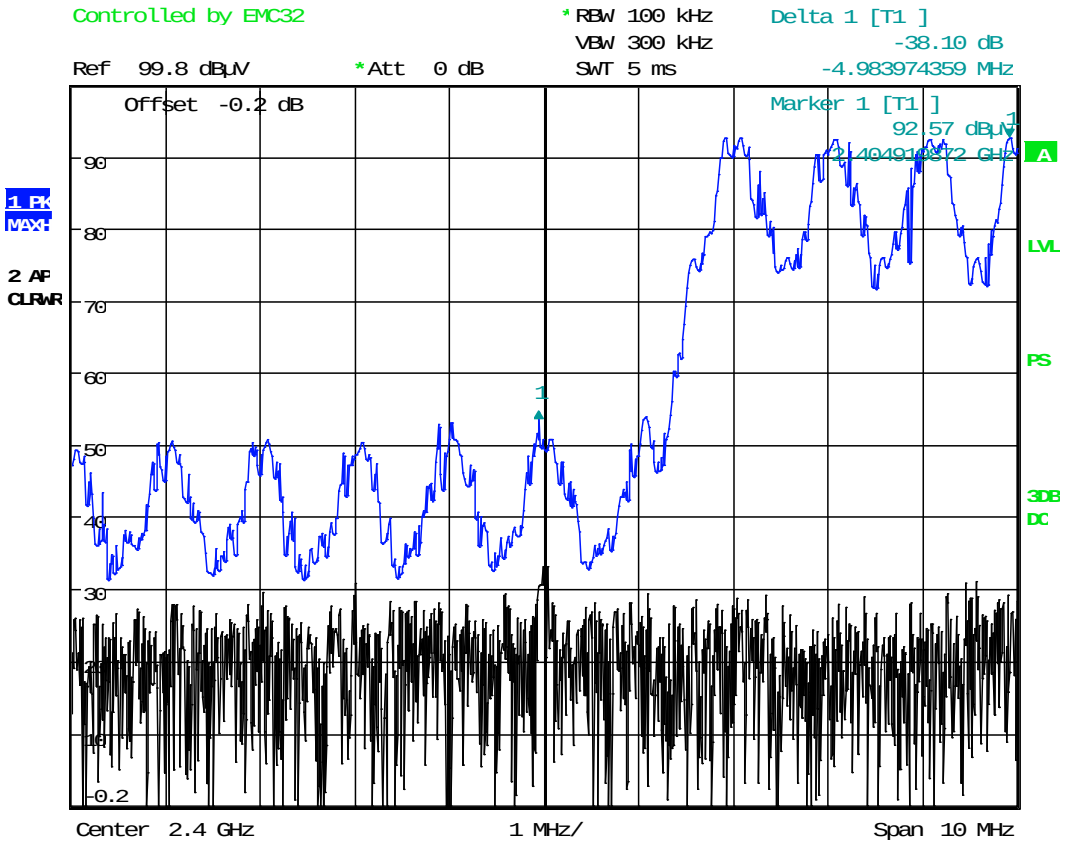
- Sweep is auto, detector is peak, trace is max hold.
- Trace allowed to stabilize. Marker-delta function used to verify compliance.
- Limit is 30dBc.
- Both Hopping and Non-Hopping mode verified.
- Only Lower Bandedges presented, Upper Bandedge test results are covered under Section 2.7 of this test report since it falls under the restricted bands.

2.8.8 Test Results



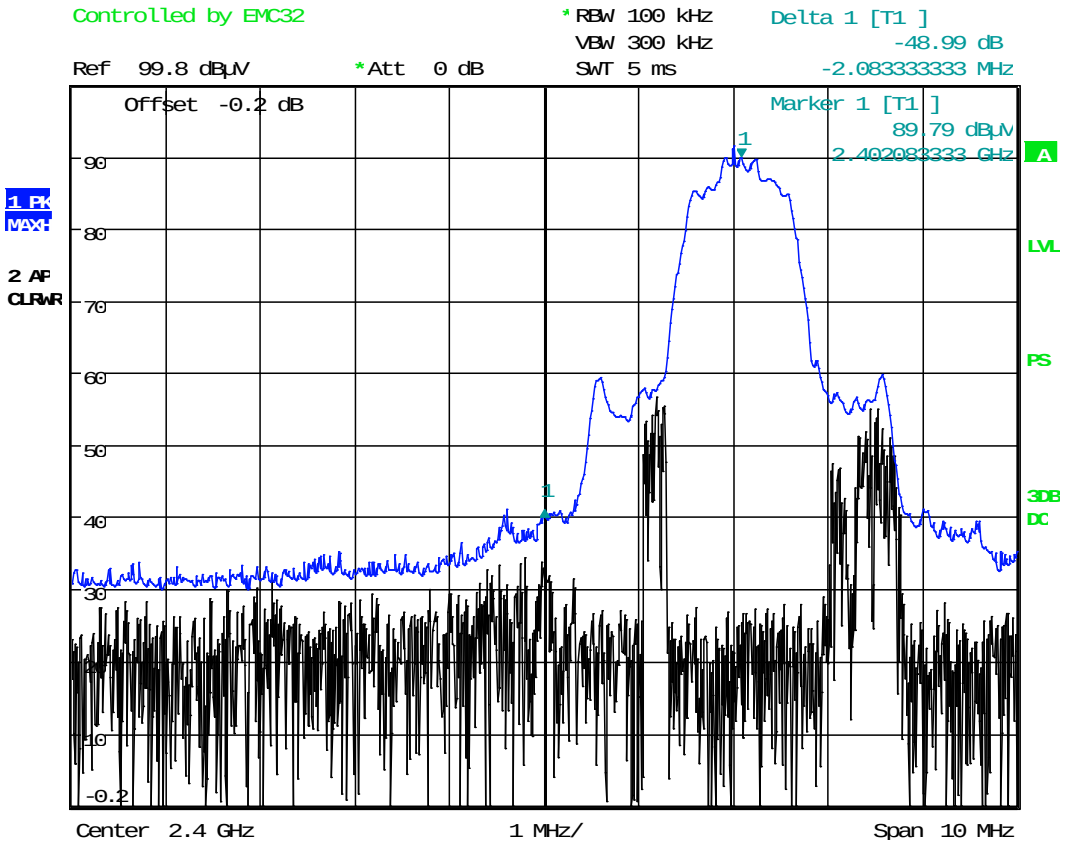
Date: 8.AUG.2014 07:31:27

Lower Bandedge (GFSK)



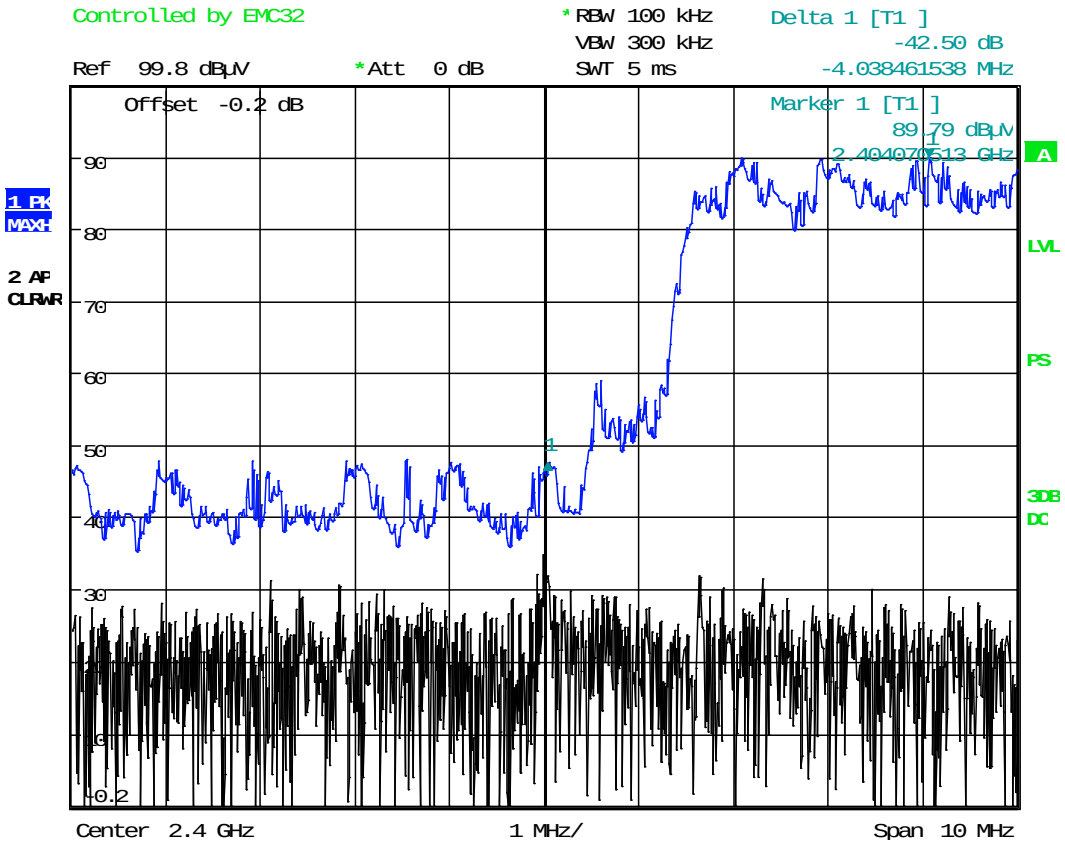
Date: 8.AUG.2014 07:36:28

Hopping Lower Bandedge (GFSK)



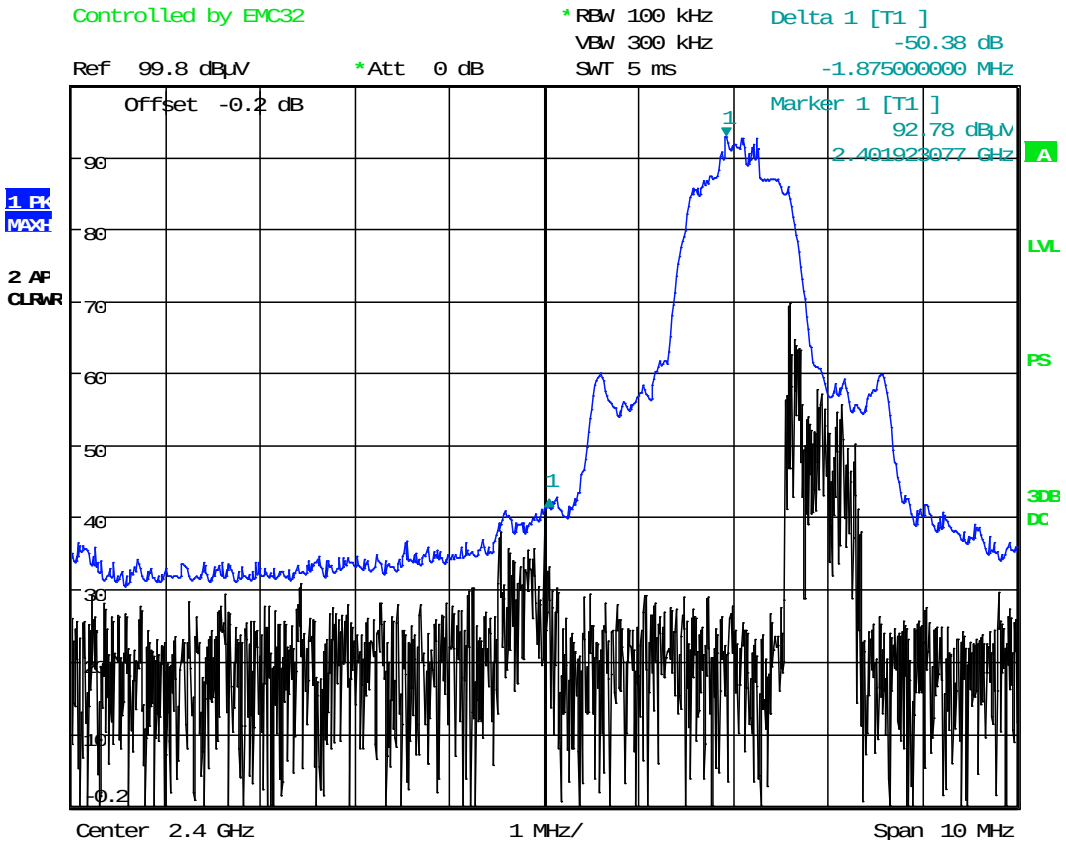
Date: 8.AUG.2014 07:32:36

Lower Bandedge (π/4-DQPSK)



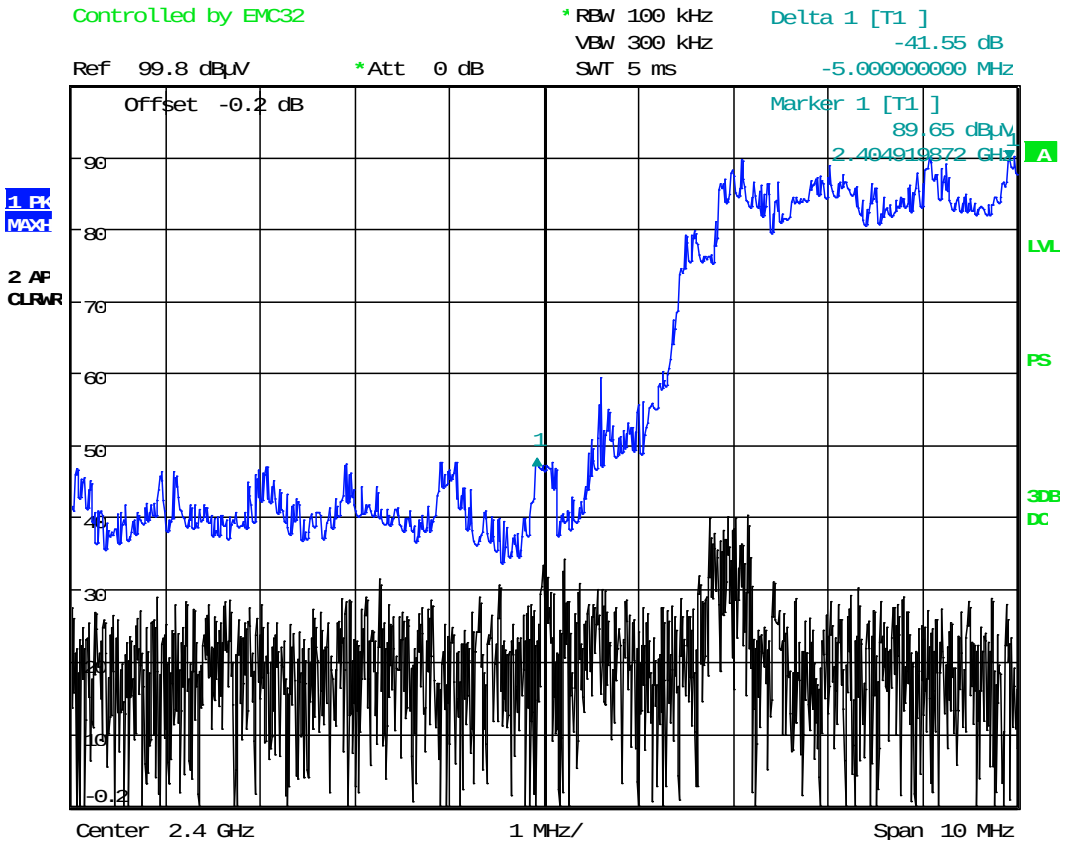
Date: 8.AUG.2014 07:56:26

Hopping Lower Bandedge (π/4-DQPSK)



Date: 8.AUG.2014 07:34:00

Lower Bandedge (8DPSK)



Date: 8.AUG.2014 07:53:05

Hopping Lower Bandedge (8DPSK)

2.9 SPURIOUS RF CONDUCTED EMISSIONS

2.9.1 Specification Reference

Part 15 Subpart C §15.247(d)

2.9.2 Standard Applicable

(d) 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)).

2.9.3 Equipment Under Test and Modification State

Not performed. EUT has an integral antenna. Spurios Emissions is covered under Section 2.10 of this test report.

2.10 SPURIOUS RADIATED EMISSIONS

2.10.1 Specification Reference

Part 15 Subpart C §15.247(d)

2.10.2 Standard Applicable

(d) 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)).

2.10.3 Equipment Under Test and Modification State

Serial No: 4632081643 / Default Test Configuration

2.10.4 Date of Test/Initial of test personnel who performed the test

July 03 and 09, 2014/FSC

2.10.5 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.10.6 Environmental Conditions/ Test Location

Test performed at TÜV SÜD America Inc. Rancho Bernardo facility

Ambient Temperature	20.9-25.3°C
Relative Humidity	44.3-56.4%
ATM Pressure	99.1-99.3 kPa

2.10.7 Additional Observations

- This is a radiated test. The spectrum was searched from 30MHz to the 10th harmonic (25GHz).
- There are no emissions found that do not comply to the restricted bands defined in FCC Part 15 Subpart C, 15.205 or Part 15.247(d).
- Only the considered worst case configuration (8DPSK) presented for radiated emissions when not hopping. There are no significant differences in radiated emissions between the three modulation and packet types.

TÜV SÜD AMERICA INC 10040 Mesa Rim Road San Diego, CA 92121-2912 Phone: 858 678 1400 FAX: 858 546 0364

- Measurement was done using EMC32 automated software. Reported level is the actual level with all the correction factors factored in. Correction Factor column is for informational purposes only. See Section 2.10.8 for sample computation.

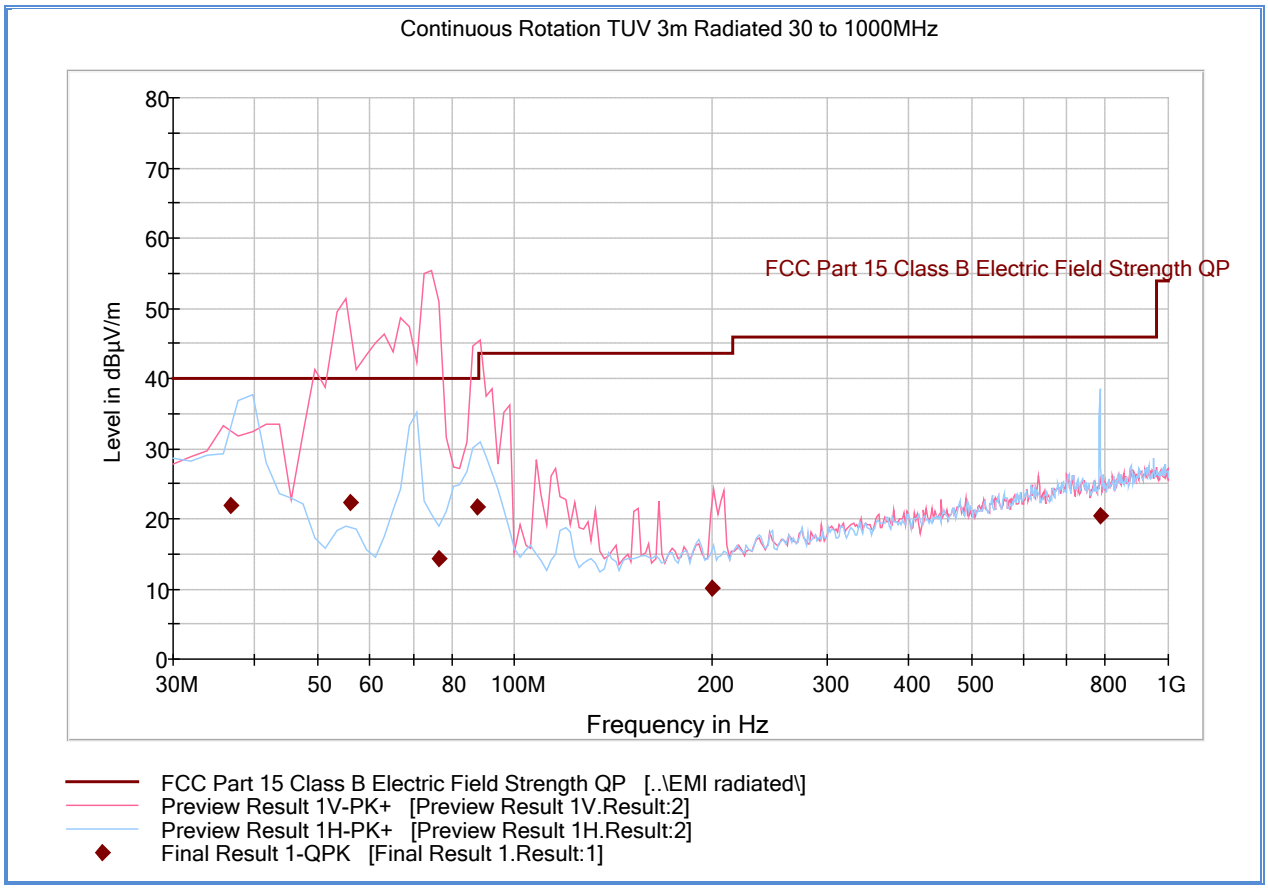
2.10.8 Sample Computation (Radiated Emission)

Measuring equipment raw measurement (dbµV) @ 30 MHz			24.4
Correction Factor (dB)	Asset# 1066 (cable)	0.3	-12.6
	Asset# 1172 (cable)	0.3	
	Asset# 1016 (preamplifier)	-30.7	
	Asset# 1175(cable)	0.3	
	Asset# 1002 (antenna)	17.2	
Reported QuasiPeak Final Measurement (dbµV/m) @ 30MHz			**11.8**

2.10.9 Test Results

See attached plots.

2.10.10 Test Results Below 1GHz (Receive Mode)

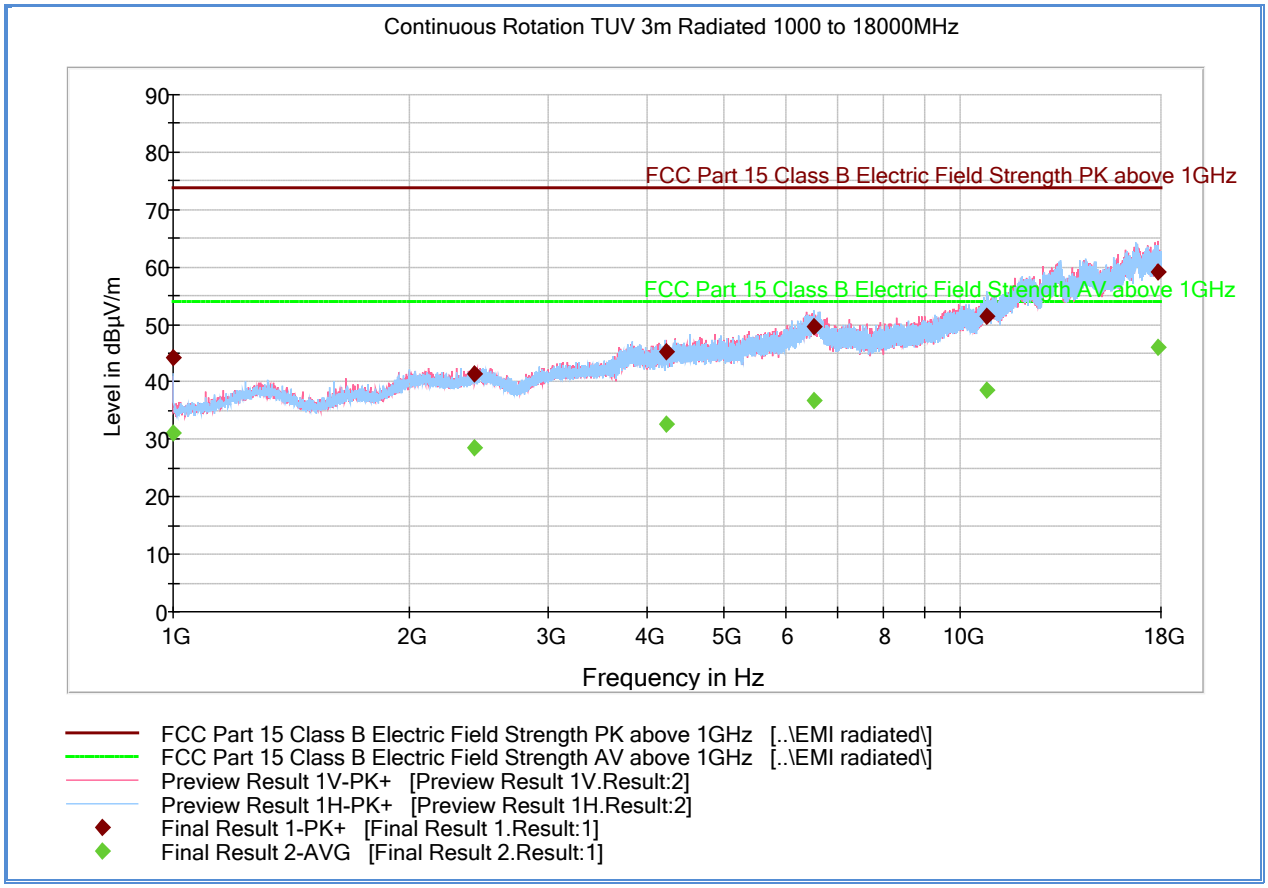


Quasi Peak Data

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
36.679439	21.9	1000.0	120.000	355.0	H	-12.0	-14.1	18.1	40.0
55.870541	22.3	1000.0	120.000	250.0	V	46.0	-20.1	17.7	40.0
76.349419	14.2	1000.0	120.000	116.0	V	263.0	-21.2	25.8	40.0
87.732745	21.6	1000.0	120.000	105.0	V	147.0	-20.3	18.4	40.0
200.422124	10.1	1000.0	120.000	220.0	V	23.0	-15.7	33.4	43.5
785.852345	20.5	1000.0	120.000	160.0	H	80.0	-0.1	25.5	46.0

Test Notes:

2.10.11 Test Results Above 1GHz (Receive Mode)



Peak Data

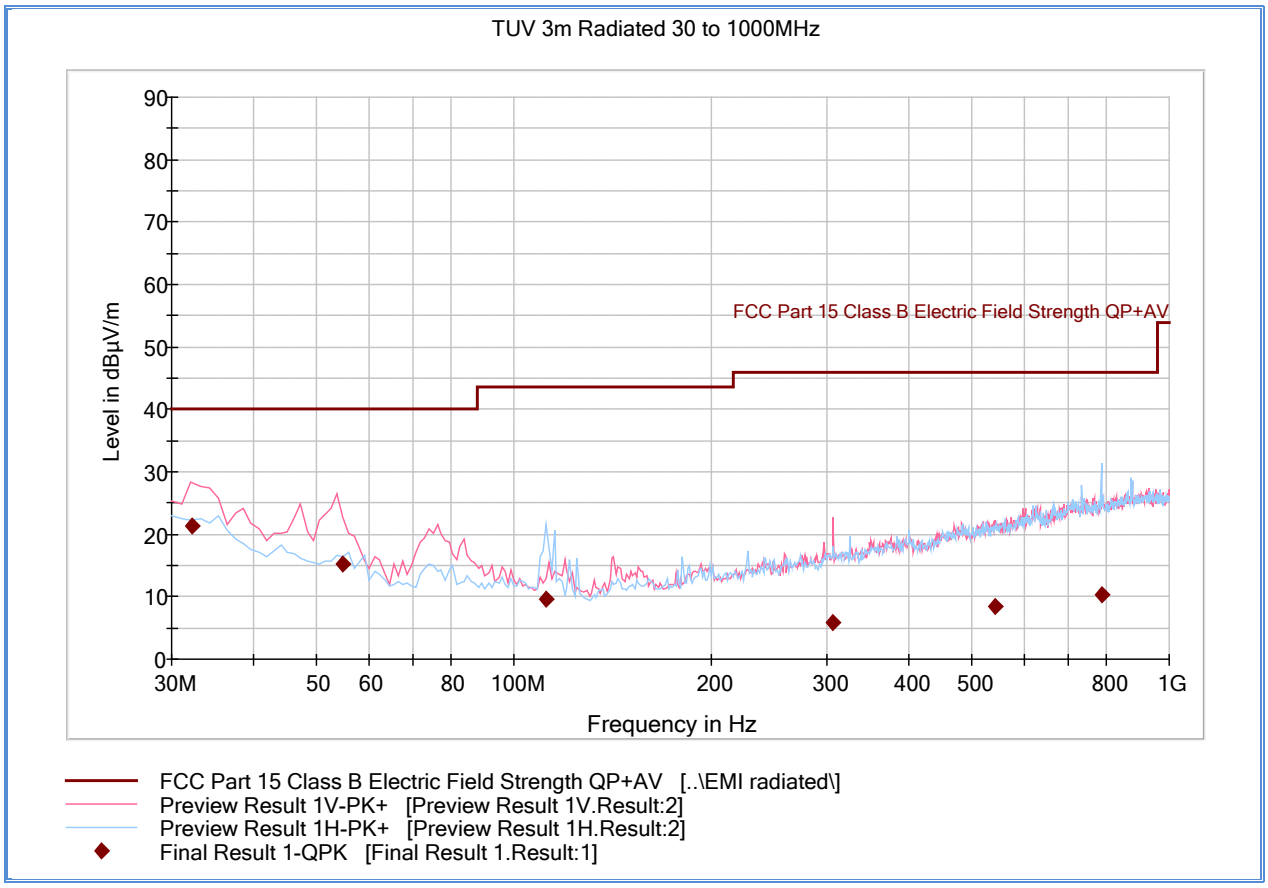
Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1000.00000	44.3	1000.0	1000.000	176.6	H	168.0	-7.0	29.6	73.9
2416.06666	41.5	1000.0	1000.000	99.7	V	298.0	-0.1	32.4	73.9
4226.80000	45.3	1000.0	1000.000	99.8	V	92.0	6.2	28.6	73.9
6511.83333	49.5	1000.0	1000.000	145.7	H	32.0	12.7	24.4	73.9
10832.7666	51.4	1000.0	1000.000	120.7	H	221.0	16.5	22.5	73.9
17817.9000	59.1	1000.0	1000.000	129.7	V	213.0	25.8	14.8	73.9

Average Data

Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1000.00000	31.1	1000.0	1000.000	176.6	H	168.0	-7.0	22.8	53.9
2416.06666	28.6	1000.0	1000.000	99.7	V	298.0	-0.1	25.3	53.9
4226.80000	32.7	1000.0	1000.000	99.8	V	92.0	6.2	21.2	53.9
6511.83333	36.8	1000.0	1000.000	145.7	H	32.0	12.7	17.1	53.9
10832.7666	38.5	1000.0	1000.000	120.7	H	221.0	16.5	15.4	53.9
17817.9000	46.1	1000.0	1000.000	129.7	V	213.0	25.8	7.8	53.9

Test Notes: OBD II and GPS are not active for this test. This scenario is considered typical normal operation (GPS connected to satellites and OBD II connected to the bus). When left active inside the test chamber, GPS will constantly search for satellite signal causing operational issues on the EUT.

2.10.12 Test Results Below 1GHz (Bluetooth TX Worst Case – Non-hopping)

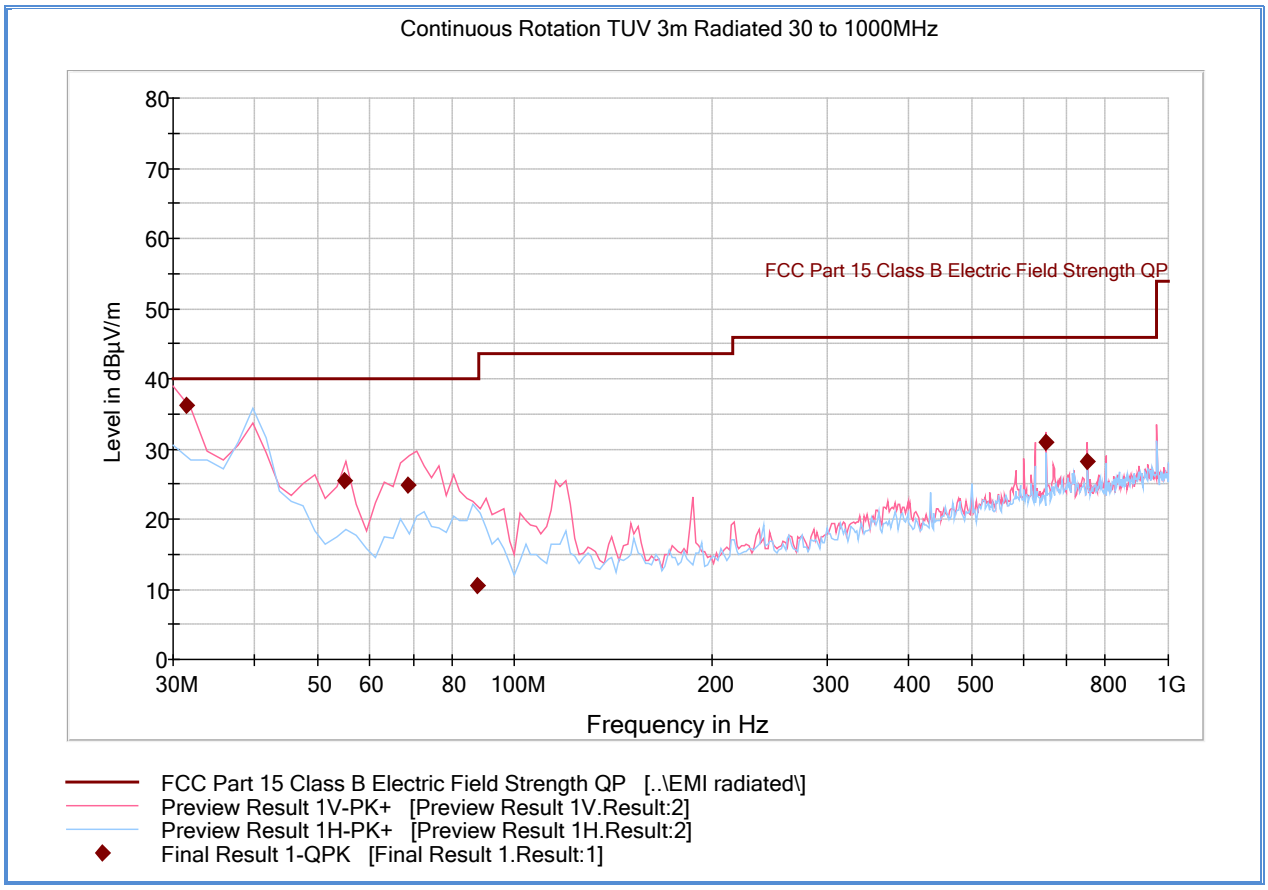


Quasi Peak Data

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
32.195556	21.4	1000.0	120.000	100.0	V	348.0	-15.4	18.6	40.0
54.708889	15.2	1000.0	120.000	100.0	V	312.0	-24.3	24.8	40.0
111.831111	9.7	1000.0	120.000	103.0	H	267.0	-24.7	33.8	43.5
307.028889	6.0	1000.0	120.000	100.0	V	318.0	-19.4	40.0	46.0
543.022222	8.4	1000.0	120.000	100.0	V	45.0	-14.8	37.6	46.0
787.637778	10.2	1000.0	120.000	103.0	H	114.0	-11.1	35.8	46.0

Test Notes: Only worst case channel presented for spurious emissions below 1GHz.

2.10.13 Test Results Below 1GHz (Bluetooth TX Hopping)

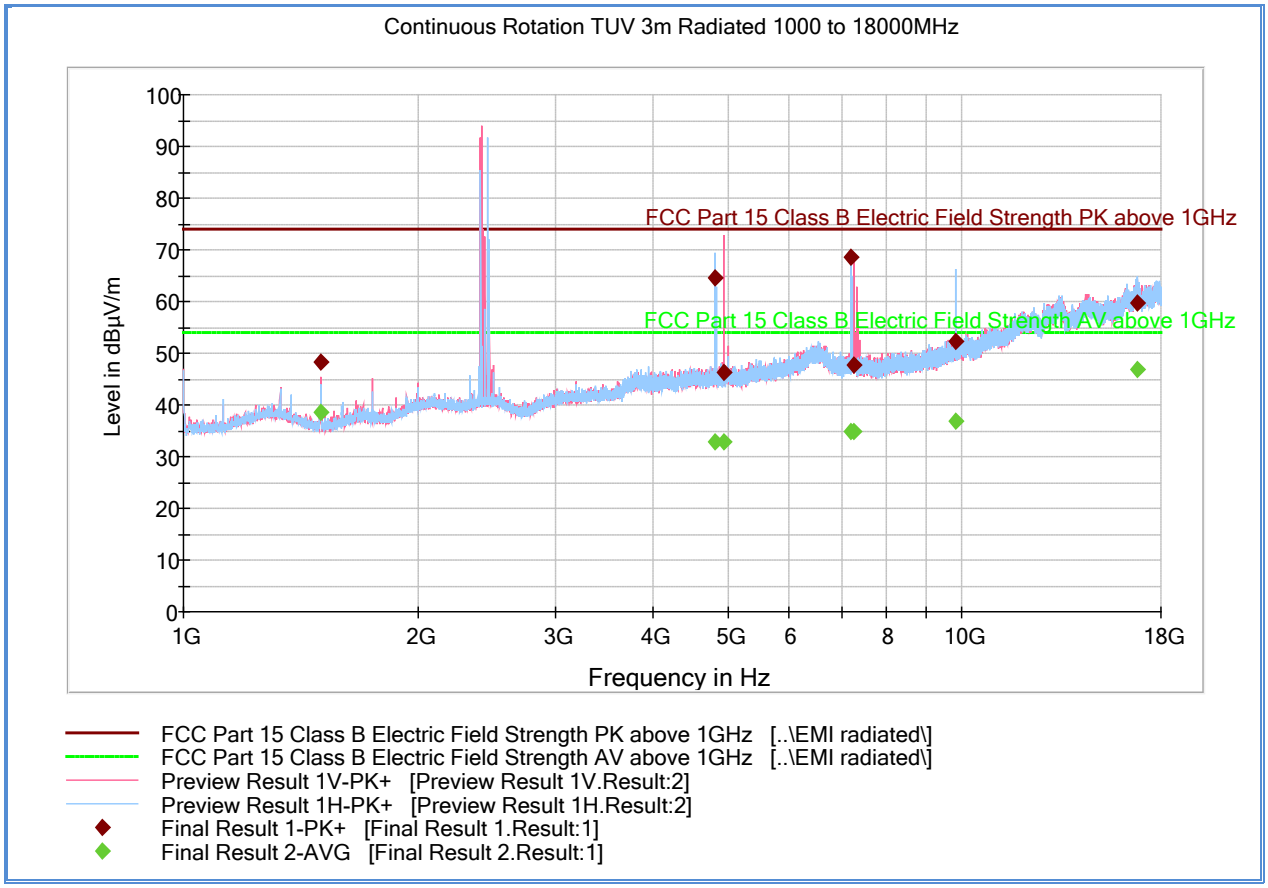


Quasi Peak Data

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
31.360000	36.3	1000.0	120.000	100.0	V	104.0	-11.3	3.8	40.0
54.790541	25.5	1000.0	120.000	100.0	V	180.0	-19.9	14.5	40.0
68.741643	24.8	1000.0	120.000	100.0	V	184.0	-21.4	15.2	40.0
87.652745	10.5	1000.0	120.000	100.0	V	293.0	-20.3	29.5	40.0
650.020200	30.9	1000.0	120.000	109.0	V	42.0	-2.7	15.1	46.0
750.022365	28.3	1000.0	120.000	159.0	V	270.0	-0.8	17.7	46.0

Test Notes:

2.10.14 Test Results Above 1GHz (Bluetooth TX Hopping)



Peak Data

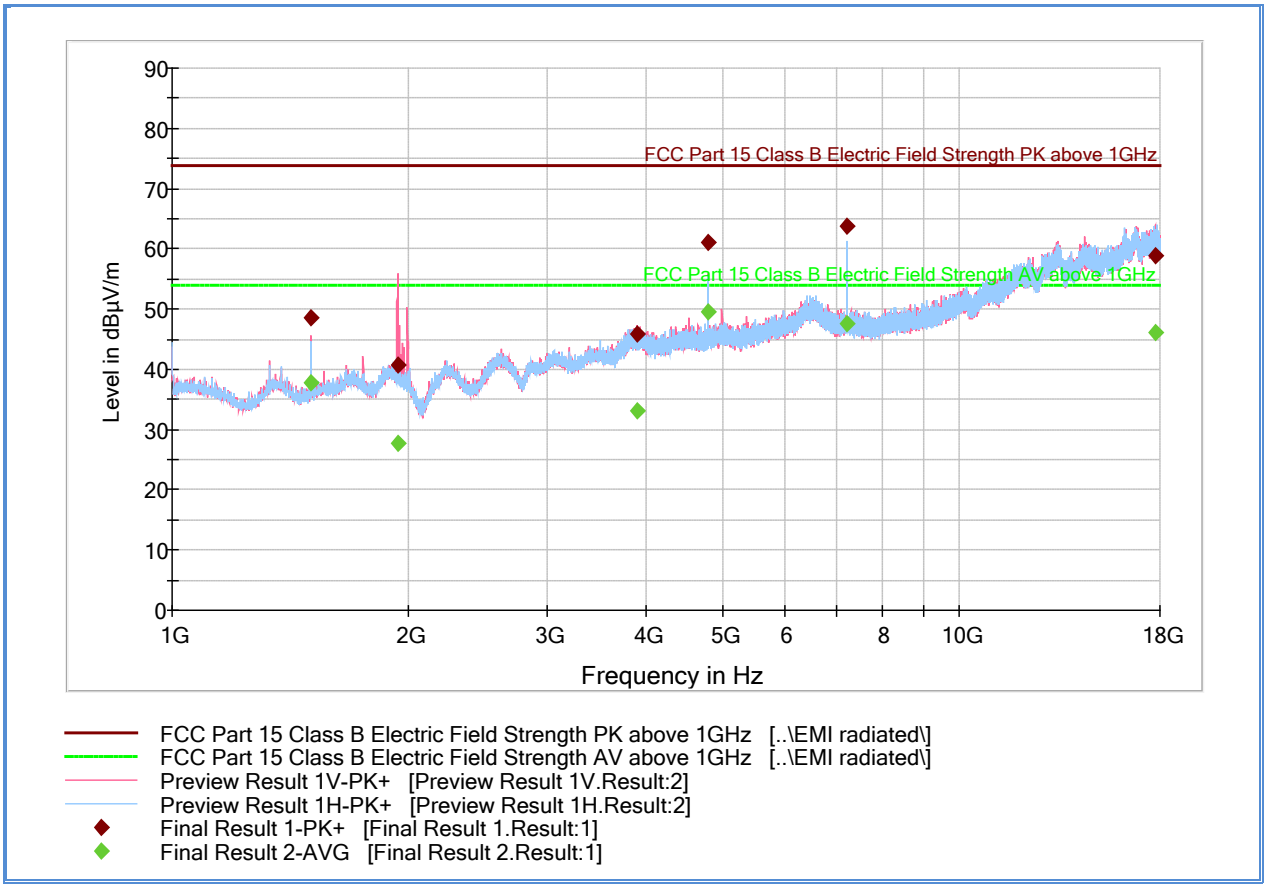
Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1500.000000	48.3	1000.0	1000.000	122.0	V	349.0	-5.1	25.6	73.9
4812.900000	64.5	1000.0	1000.000	98.0	H	27.0	6.8	9.4	73.9
4947.400000	46.2	1000.0	1000.000	137.0	V	123.0	7.4	27.8	73.9
7208.600000	68.6	1000.0	1000.000	300.0	H	70.0	11.3	5.3	73.9
7253.933333	47.7	1000.0	1000.000	263.0	V	41.0	11.3	26.2	73.9
9823.600000	52.4	1000.0	1000.000	164.0	H	91.0	13.9	21.5	73.9
16771.666667	59.7	1000.0	1000.000	191.0	H	165.0	25.9	14.2	73.9

Average Data

Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1500.000000	38.5	1000.0	1000.000	122.0	V	349.0	-5.1	15.4	53.9
4812.900000	32.7	1000.0	1000.000	98.0	H	27.0	6.8	21.2	53.9
4947.400000	32.8	1000.0	1000.000	137.0	V	123.0	7.4	21.1	53.9
7208.600000	34.9	1000.0	1000.000	300.0	H	70.0	11.3	19.0	53.9
7253.933333	34.9	1000.0	1000.000	263.0	V	41.0	11.3	19.0	53.9
9823.600000	36.8	1000.0	1000.000	164.0	H	91.0	13.9	17.1	53.9

Test Notes: No significant emissions observed above 10GHz. Measurements above 10GHz are noise floor figures.

2.10.15 Test Results Above 1GHz Low Channel (Bluetooth TX Worst Case)



Peak Data

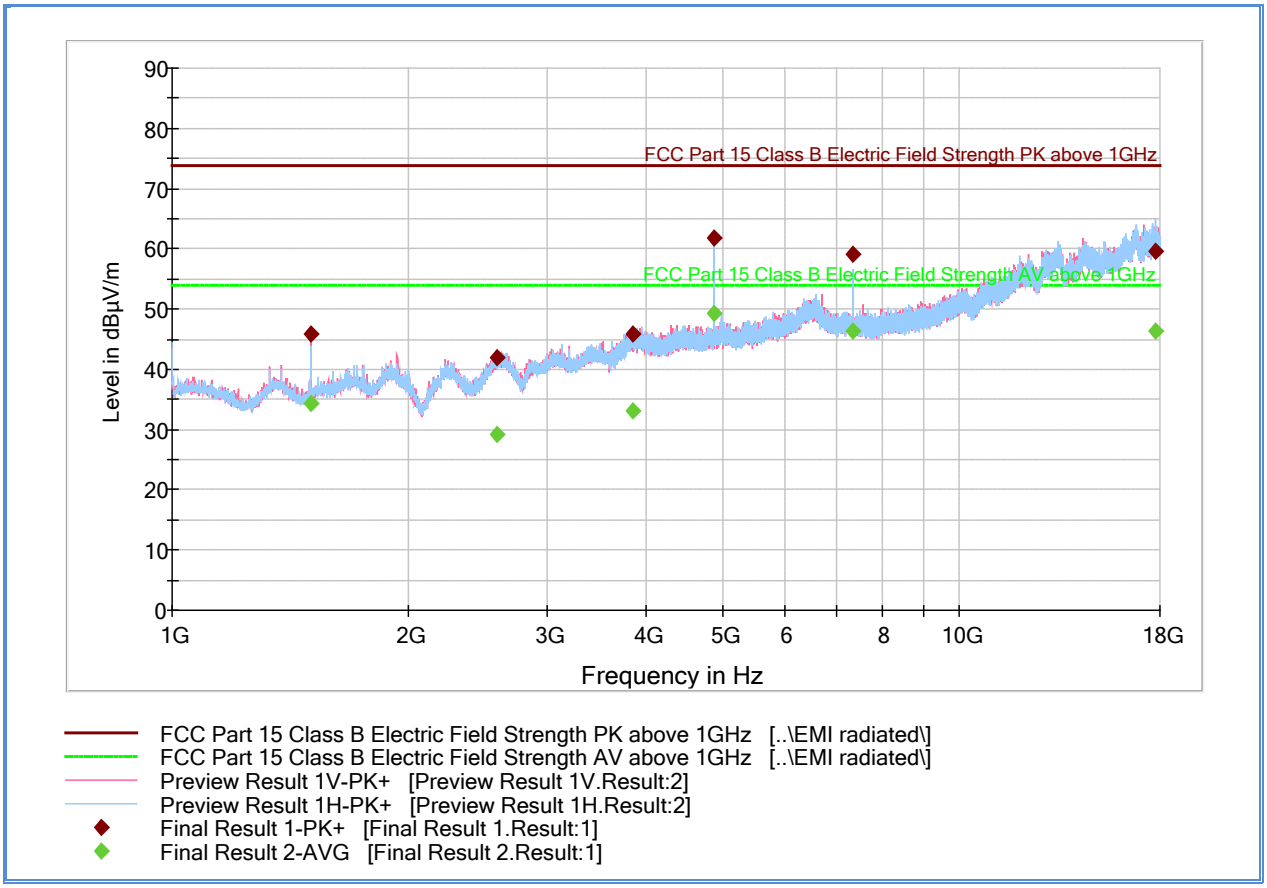
Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1500.000000	48.5	1000.0	1000.000	165.6	V	-16.0	-5.1	25.4	73.9
1937.466667	40.7	1000.0	1000.000	356.1	V	0.0	-1.4	33.2	73.9
3892.500000	45.9	1000.0	1000.000	350.6	V	240.0	6.0	28.0	73.9
4804.233333	61.0	1000.0	1000.000	100.1	V	56.0	6.8	12.9	73.9
7206.733333	63.8	1000.0	1000.000	228.4	H	142.0	11.3	10.1	73.9
17755.033333	58.9	1000.0	1000.000	113.7	V	62.0	25.8	15.0	73.9

Average Data

Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1500.000000	37.8	1000.0	1000.000	165.6	V	-16.0	-5.1	16.1	53.9
1937.466667	27.7	1000.0	1000.000	356.1	V	0.0	-1.4	26.2	53.9
3892.500000	33.2	1000.0	1000.000	350.6	V	240.0	6.0	20.7	53.9
4804.233333	49.4	1000.0	1000.000	100.1	V	56.0	6.8	4.5	53.9
7206.733333	47.5	1000.0	1000.000	228.4	H	142.0	11.3	6.4	53.9
17755.033333	46.0	1000.0	1000.000	113.7	V	62.0	25.8	7.9	53.9

Test Notes: Measurement was performed with a 2.4GHz notch filter. No significant emissions observed above 8GHz. Measurements above 8GHz are noise floor figures.

2.10.16 Test Results Above 1GHz Mid Channel (Bluetooth TX Worst Case)



Peak Data

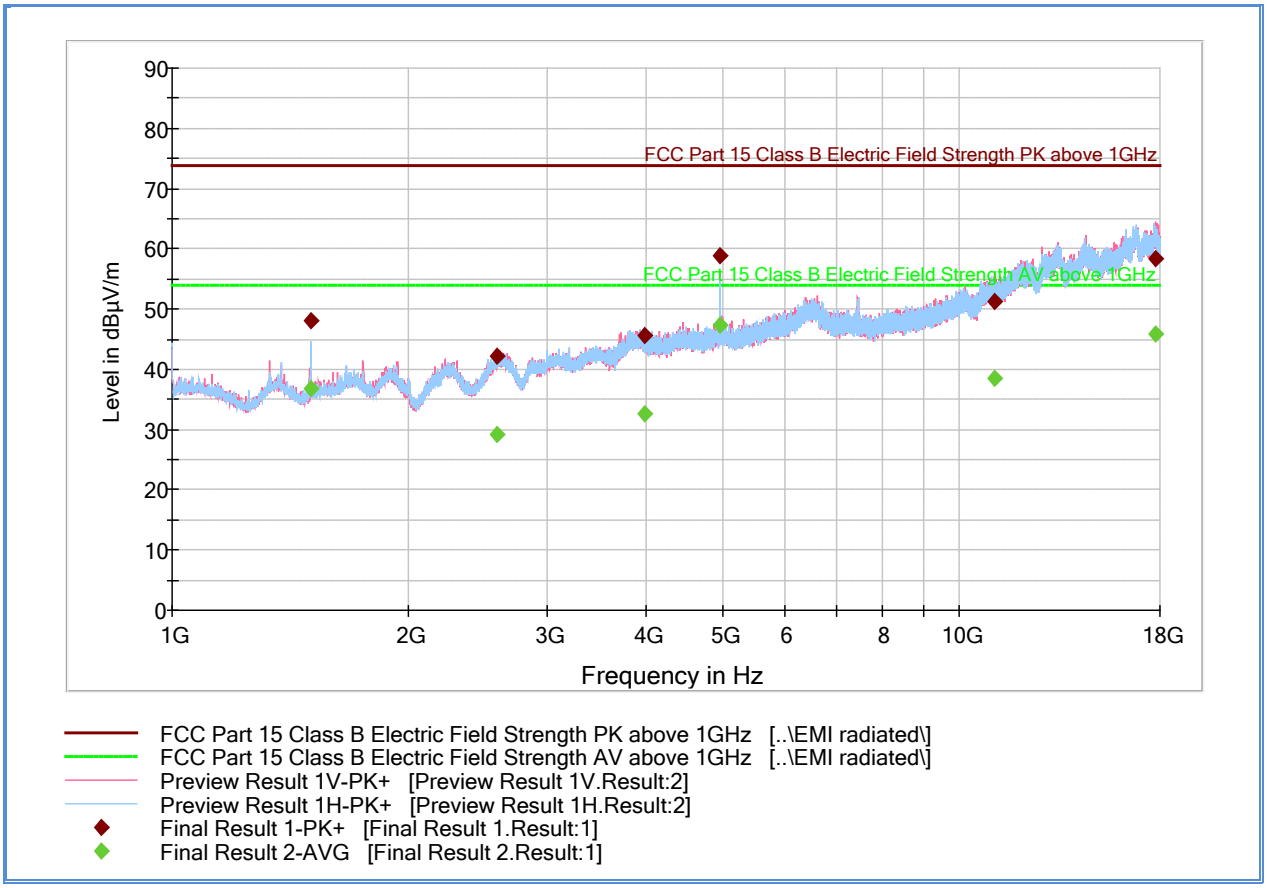
Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1500.000000	45.8	1000.0	1000.000	103.7	V	138.0	-5.1	28.1	73.9
2590.466667	41.9	1000.0	1000.000	192.5	V	204.0	-0.2	32.0	73.9
3846.333333	45.9	1000.0	1000.000	219.4	H	60.0	6.0	28.0	73.9
4880.366667	61.8	1000.0	1000.000	229.4	V	257.0	7.1	12.1	73.9
7320.000000	59.1	1000.0	1000.000	182.6	H	259.0	11.1	14.8	73.9
17757.466667	59.5	1000.0	1000.000	407.1	H	232.0	25.8	14.4	73.9

Average Data

Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1500.000000	34.2	1000.0	1000.000	103.7	V	138.0	-5.1	19.7	53.9
2590.466667	29.1	1000.0	1000.000	192.5	V	204.0	-0.2	24.8	53.9
3846.333333	33.0	1000.0	1000.000	219.4	H	60.0	6.0	20.9	53.9
4880.366667	49.3	1000.0	1000.000	229.4	V	257.0	7.1	4.6	53.9
7320.000000	46.4	1000.0	1000.000	182.6	H	259.0	11.1	7.5	53.9
17757.466667	46.3	1000.0	1000.000	407.1	H	232.0	25.8	7.6	53.9

Test Notes: Measurement was performed with a 2.4GHz notch filter. No significant emissions observed above 8GHz. Measurements above 8GHz are noise floor figures.

2.10.17 Test Results Above 1GHz High Channel (Bluetooth TX Worst Case)



Peak Data

Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1500.000000	48.0	1000.0	1000.000	99.7	H	134.0	-5.1	25.9	73.9
2585.566667	42.2	1000.0	1000.000	403.0	H	37.0	-0.2	31.7	73.9
3979.333333	45.7	1000.0	1000.000	121.7	H	92.0	5.9	28.2	73.9
4960.066667	58.7	1000.0	1000.000	258.3	V	224.0	7.4	15.2	73.9
11073.100000	51.3	1000.0	1000.000	151.6	V	13.0	16.7	22.6	73.9
17780.900000	58.3	1000.0	1000.000	188.5	V	51.0	25.8	15.6	73.9

Average Data

Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1500.000000	36.8	1000.0	1000.000	99.7	H	134.0	-5.1	17.1	53.9
2585.566667	29.1	1000.0	1000.000	403.0	H	37.0	-0.2	24.8	53.9
3979.333333	32.7	1000.0	1000.000	121.7	H	92.0	5.9	21.2	53.9
4960.066667	47.3	1000.0	1000.000	258.3	V	224.0	7.4	6.6	53.9
11073.100000	38.5	1000.0	1000.000	151.6	V	13.0	16.7	15.4	53.9
17780.900000	45.8	1000.0	1000.000	188.5	V	51.0	25.8	8.1	53.9

Test Notes: Measurement was performed with a 2.4GHz notch filter. No significant emissions observed above 8GHz. Measurements above 8GHz are noise floor figures.

2.11 RADIATED IMMEDIATE RESTRICTED BANDS

2.11.1 Specification Reference

Part 15 Subpart C §15.247(d)

2.11.2 Standard Applicable

(d) 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)).

2.11.3 Equipment Under Test and Modification State

Serial No: 4632081643 / Default Test Configuration

2.11.4 Date of Test/Initial of test personnel who performed the test

July 03 and 09, 2014/FSC

2.11.5 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.11.6 Environmental Conditions/ Test Location

Test performed at TÜV SÜD America Inc. Rancho Bernardo facility

Ambient Temperature	20.9-25.3°C
Relative Humidity	44.3-56.4%
ATM Pressure	99.1-99.3 kPa

2.11.7 Additional Observations

- This is a radiated test. The spectrum was searched from 2310MHz to 2390MHz for lower immediate restricted band and 2483.5MHz to 2500MHz for the upper immediate restricted band.
- There are no emissions found that do not comply with the restricted bands defined in FCC Part 15 Subpart C, 15.205.
- Only Hopping modes presented. Non-hopping mode is covered under section 2.7 of this test report.

- Measurement was done using EMC32 automated software. Reported level is the actual level with all the correction factors factored in. Correction Factor column is for informational purposes only. See Section 2.11.8 for sample computation.

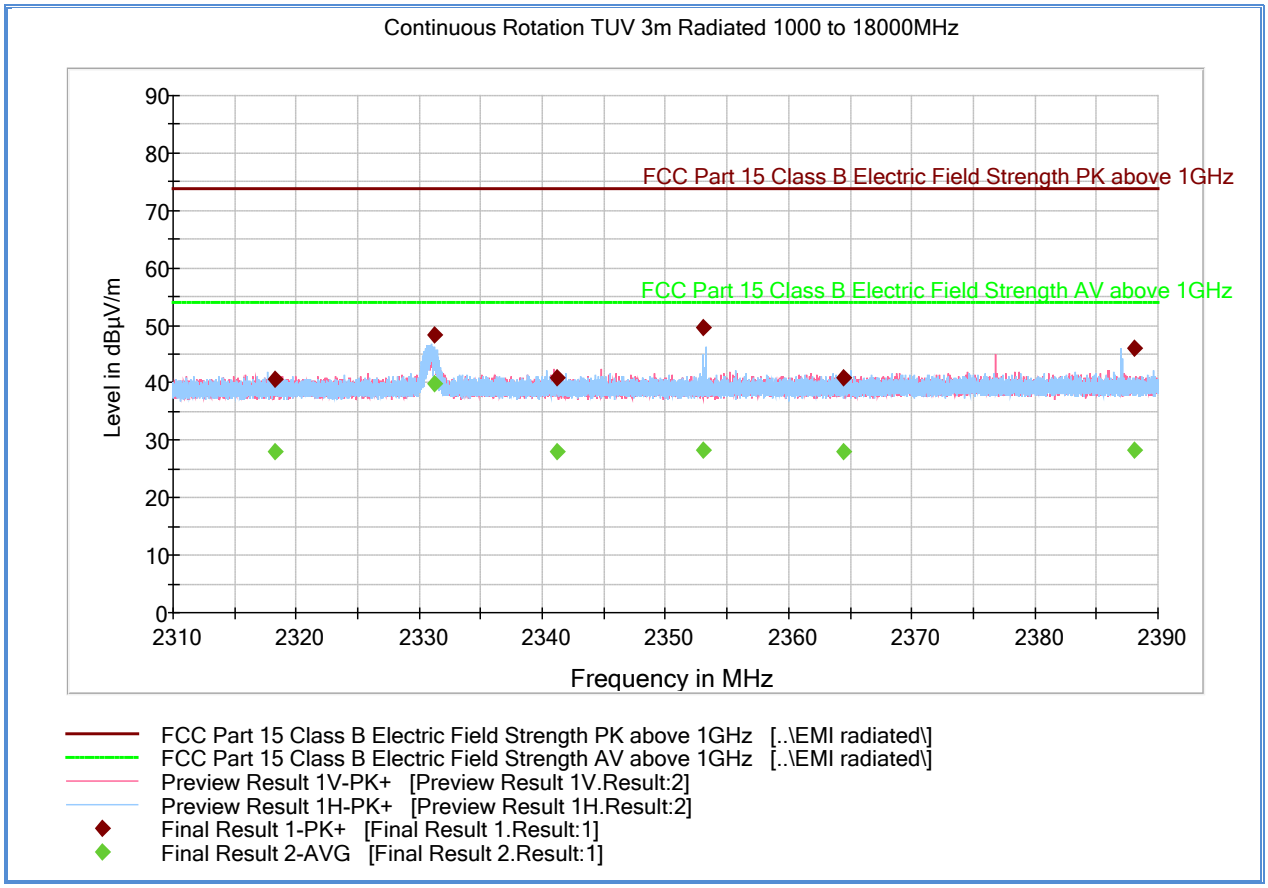
2.11.8 Sample Computation (Radiated Emission)

Measuring equipment raw measurement (dbµV) @ 2400 MHz			53.9
Correction Factor (dB)	Asset# 1153 (cable)	3.4	-0.4
	Asset# 8628(preamplifier)	-36.5	
	Asset#7575 (antenna)	32.7	
Reported Max Peak Final Measurement (dbµV/m) @ 2400 MHz			**53.5**

2.11.9 Test Results

See attached plots.

2.11.10 Test Results Restricted Band 2310MHz to 2390MHz (Hopping)



Peak Data

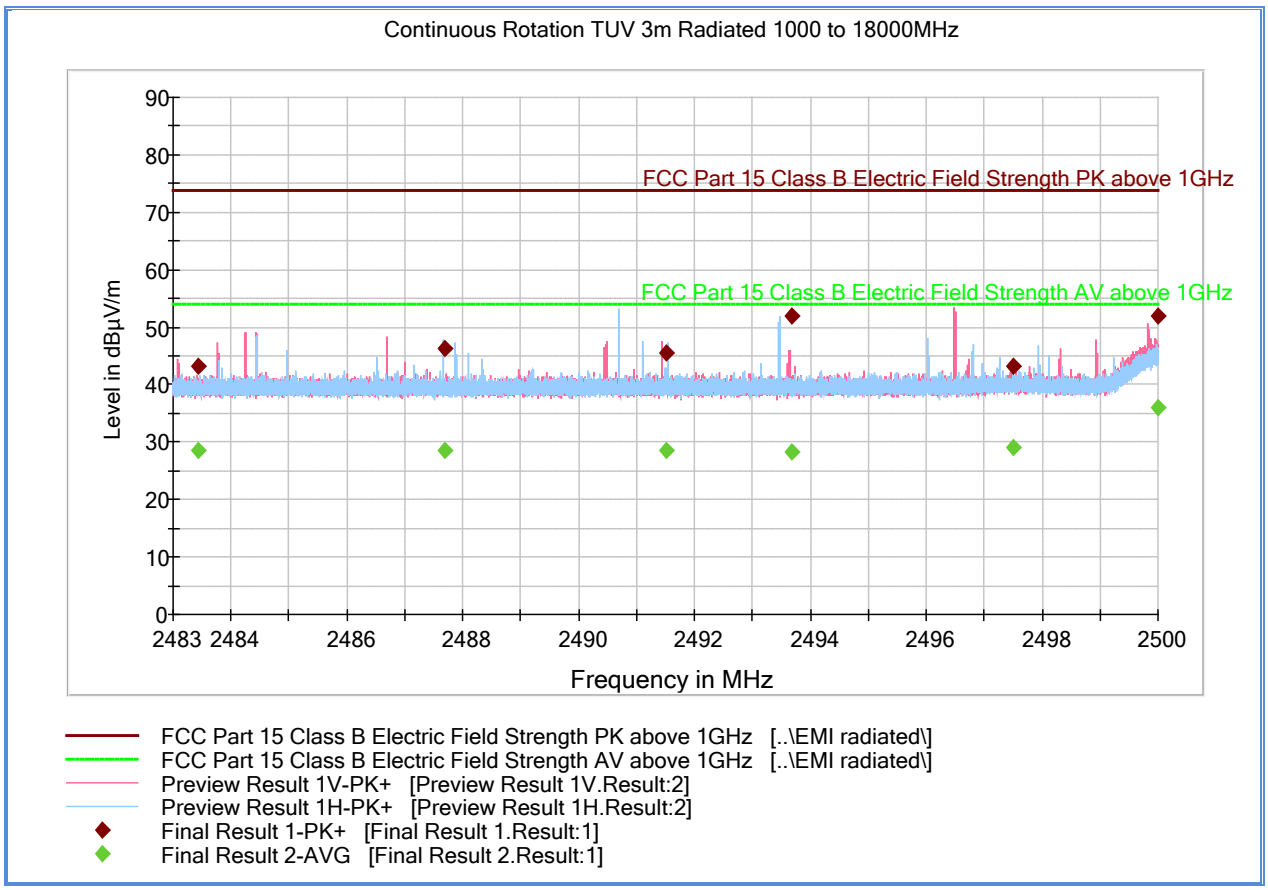
Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
2318.325333	40.6	1000.0	1000.000	100.0	H	-6.0	-0.5	33.3	73.9
2331.192000	48.3	1000.0	1000.000	100.1	H	302.0	-0.4	25.6	73.9
2341.165333	41.0	1000.0	1000.000	300.0	V	316.0	-0.4	32.9	73.9
2353.069333	49.5	1000.0	1000.000	100.0	H	79.0	-0.4	24.4	73.9
2364.429333	40.8	1000.0	1000.000	247.0	H	15.0	-0.4	33.1	73.9
2388.040000	46.0	1000.0	1000.000	100.0	H	84.0	-0.2	27.9	73.9

Average Data

Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
2318.325333	28.0	1000.0	1000.000	100.0	H	-6.0	-0.5	25.9	53.9
2331.192000	39.7	1000.0	1000.000	100.1	H	302.0	-0.4	14.2	53.9
2341.165333	28.0	1000.0	1000.000	300.0	V	316.0	-0.4	25.9	53.9
2353.069333	28.3	1000.0	1000.000	100.0	H	79.0	-0.4	25.6	53.9
2364.429333	28.0	1000.0	1000.000	247.0	H	15.0	-0.4	25.9	53.9
2388.040000	28.4	1000.0	1000.000	100.0	H	84.0	-0.2	25.5	53.9

Test Notes: 2.4GHz notch filter removed for this test.

2.11.11 Test Results Restricted Band 2483.5MHz to 2500MHz (Hopping)



Peak Data

Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
2483.439333	43.3	1000.0	1000.000	200.0	V	172.0	0.1	30.6	73.9
2487.684467	46.3	1000.0	1000.000	200.0	V	20.0	0.2	27.6	73.9
2491.507233	45.5	1000.0	1000.000	191.0	H	39.0	0.2	28.4	73.9
2493.680500	52.0	1000.0	1000.000	191.0	H	71.0	0.2	21.9	73.9
2497.494600	43.1	1000.0	1000.000	100.0	V	111.0	0.2	30.8	73.9
2500.000000	52.1	1000.0	1000.000	100.0	V	19.0	0.2	21.8	73.9

Average Data

Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
2483.439333	28.6	1000.0	1000.000	200.0	V	172.0	0.1	25.3	53.9
2487.684467	28.5	1000.0	1000.000	200.0	V	20.0	0.2	25.4	53.9
2491.507233	28.6	1000.0	1000.000	191.0	H	39.0	0.2	25.3	53.9
2493.680500	28.4	1000.0	1000.000	191.0	H	71.0	0.2	25.5	53.9
2497.494600	29.0	1000.0	1000.000	100.0	V	111.0	0.2	24.9	53.9
2500.000000	35.9	1000.0	1000.000	100.0	V	19.0	0.2	18.0	53.9

Test Notes: 2.4GHz notch filter removed for this test.

2.12 RECEIVER SPURIOUS EMISSIONS

2.12.1 Specification Reference

RSS-Gen 6.0

2.12.2 Standard Applicable

Receivers shall comply with the limits of spurious emissions set out in this section, measured over the frequency range determined in accordance with Section 4.10 of RSS-Gen.

Table 2: Radiated Limits of Receiver Spurious Emissions

Frequency (MHz)	Field Strength (microvolts/m at 3 metres)*
30-88	100
88-216	150
216-960	200
Above 960	500

*Measurements for compliance with limits in the above table may be performed at distances other than 3 metres, in accordance with Section 7.2.7 of RSS-Gen.

2.12.3 Equipment Under Test and Modification State

Serial No: 4632081643 / Default Test Configuration

2.12.4 Date of Test/Initial of test personnel who performed the test

July 03 and 09, 2014/FSC

2.12.5 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.12.6 Environmental Conditions/ Test Location

Test performed at TÜV SÜD America Inc. Rancho Bernardo facility

Ambient Temperature	20.9-25.3°C
Relative Humidity	44.3-56.4%
ATM Pressure	99.1-99.3 kPa

2.12.7 Additional Observations

- This is a radiated test. The spectrum was searched from 30MHz to the 3rd harmonic (up to 10th performed).
- Result identical to Section 2.10.10 and 2.10.11 of this test report.
- EUT in RX (Receive) mode configuration.

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SECTION 3

TEST EQUIPMENT USED

3.1 TEST EQUIPMENT USED

List of absolute measuring and other principal items of test equipment.

ID Number (SDGE/SDRB)	Test Equipment	Type	Serial Number	Manufacturer	Cal Date	Cal Due Date
Radiated Test Setup						
1184	Spectrum Analyzer	FSEM	849718/025	Rhode & Schwarz	06/27/14	06/27/15
1002	Bilog Antenna	3142C	00058717	ETS-Lindgren	01/30/14	01/30/16
7575	Double-ridged waveguide horn antenna	3117	00155511	EMCO	04/08/14	04/08/15
8628	Pre-amplifier	QLJ 01182835-JO	8986002	QuinStar Technologies Inc.	09/03/13	09/03/14
1150	Horn antenna	3160-09	012054-004	ETS	04/26/13	04/26/15
1151	Pre-amplifier	TS-PR26	100026	Rhode & Schwarz	05/02/13	05/02/15
8760	Pre-amplifier	ZKL-2	1001	Mini-Circuits	09/03/13	09/03/14
1153	High-frequency cable	SucoFlex 100 SX	N/A	Suhner	09/03/13	09/03/14
8543	High-frequency cable	Micropore 19057793	N/A	United Microwave Products	09/03/13	09/03/14
1040	EMI Test Receiver	ESIB40	100292	Rhode & Schwarz	07/31/13	08/31/14
1049	EMI Test Receiver	ESU	100133	Rhode & Schwarz	03/17/14	03/17/15
6815	2.4GHz Band Notch Filter	BRM50702	008	Micro-Tronics	Verified by 1188 and 1049	
1016	Pre-amplifier	PAM-0202	187	PAM	10/08/13	10/08/14
1188	Signal Generator	2024	112282/488	Marconi	09/05/13	09/05/14
Miscellaneous						
6452	Multimeter	3478A	2911A52177	Hewlett Packard	08/02/13	09/02/14
7554	Barometer/Temperature /Humidity Transmitter	iBTHX-W	0400706	Omega	01/30/14	01/30/15
1123	DC Power Supply	E3631A	N/A	Hewlett Packard	Verified by 6452	
	Test Software	EMC32	V8.53	Rhode & Schwarz	N/A	

3.2 MEASUREMENT UNCERTAINTY

For a 95% confidence level, the measurement uncertainties for defined systems are:

3.2.1 Radiated Emission Measurements (Below 1GHz)

	Contribution	Probability Distribution Type	Probability Distribution x_i	Standard Uncertainty $u(x_i)$	$[u(x_i)]^2$
1	Receiver/Spectrum Analyzer	Rectangular	0.45	0.26	0.07
2	Cables	Rectangular	0.50	0.29	0.08
3	Preamp	Rectangular	0.50	0.29	0.08
4	Antenna	Rectangular	0.75	0.43	0.19
5	Site	Rectangular	3.89	2.25	5.04
6	EUT Setup	Rectangular	1.00	0.58	0.33
				Combined Uncertainty (u_c):	2.41
				Coverage Factor (k):	2
				Expanded Uncertainty:	4.82

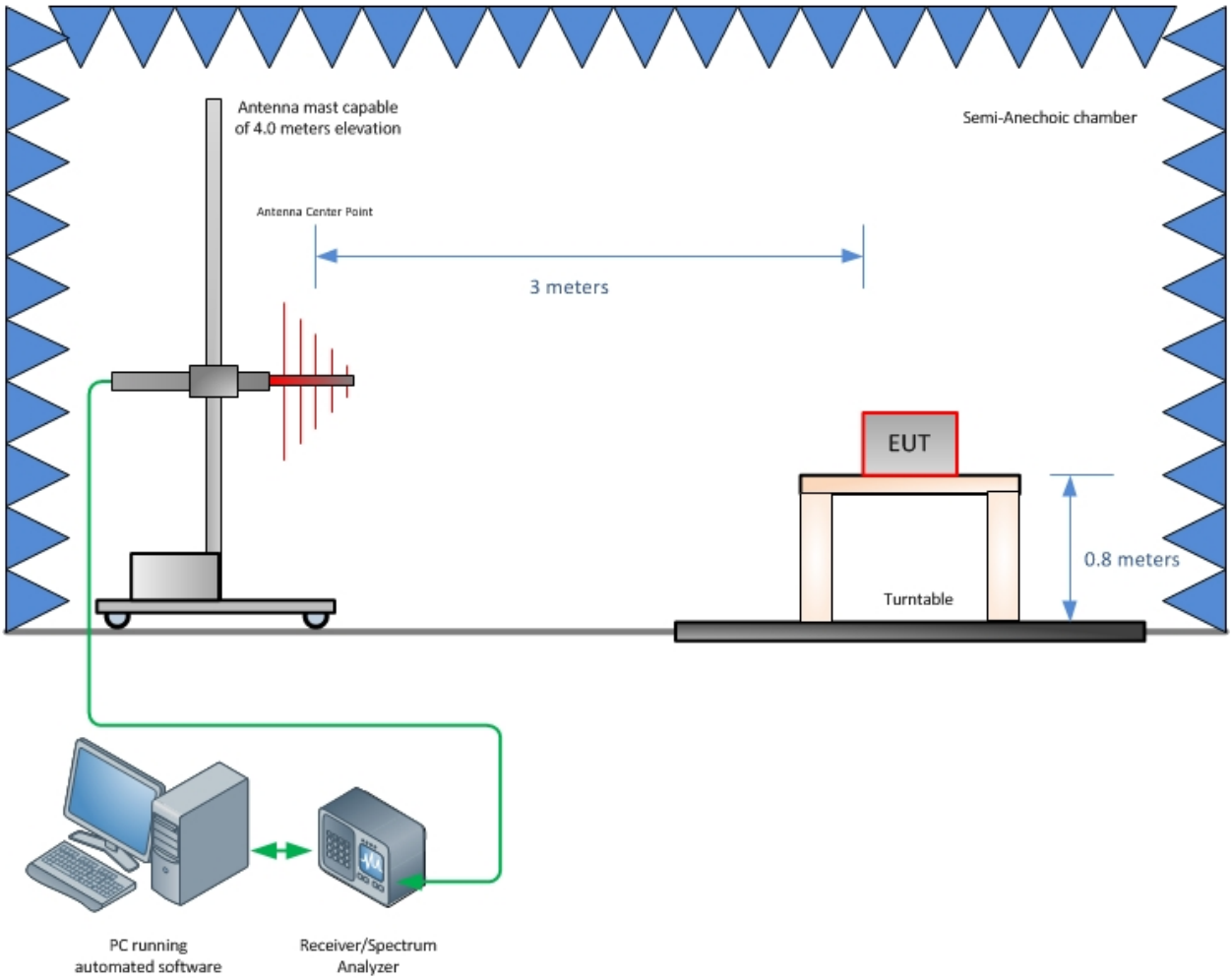
3.2.2 Radiated Emission Measurements (Above 1GHz)

	Contribution	Probability Distribution Type	Probability Distribution x_i	Standard Uncertainty $u(x_i)$	$[u(x_i)]^2$
1	Receiver/Spectrum Analyzer	Rectangular	0.57	0.33	0.11
2	Cables	Rectangular	0.70	0.40	0.16
3	Preamp	Rectangular	0.50	0.29	0.08
4	Antenna	Rectangular	0.37	0.21	0.05
5	Site	Rectangular	3.89	2.25	5.04
6	EUT Setup	Rectangular	1.00	0.58	0.33
				Combined Uncertainty (u_c):	2.40
				Coverage Factor (k):	2
				Expanded Uncertainty:	4.81

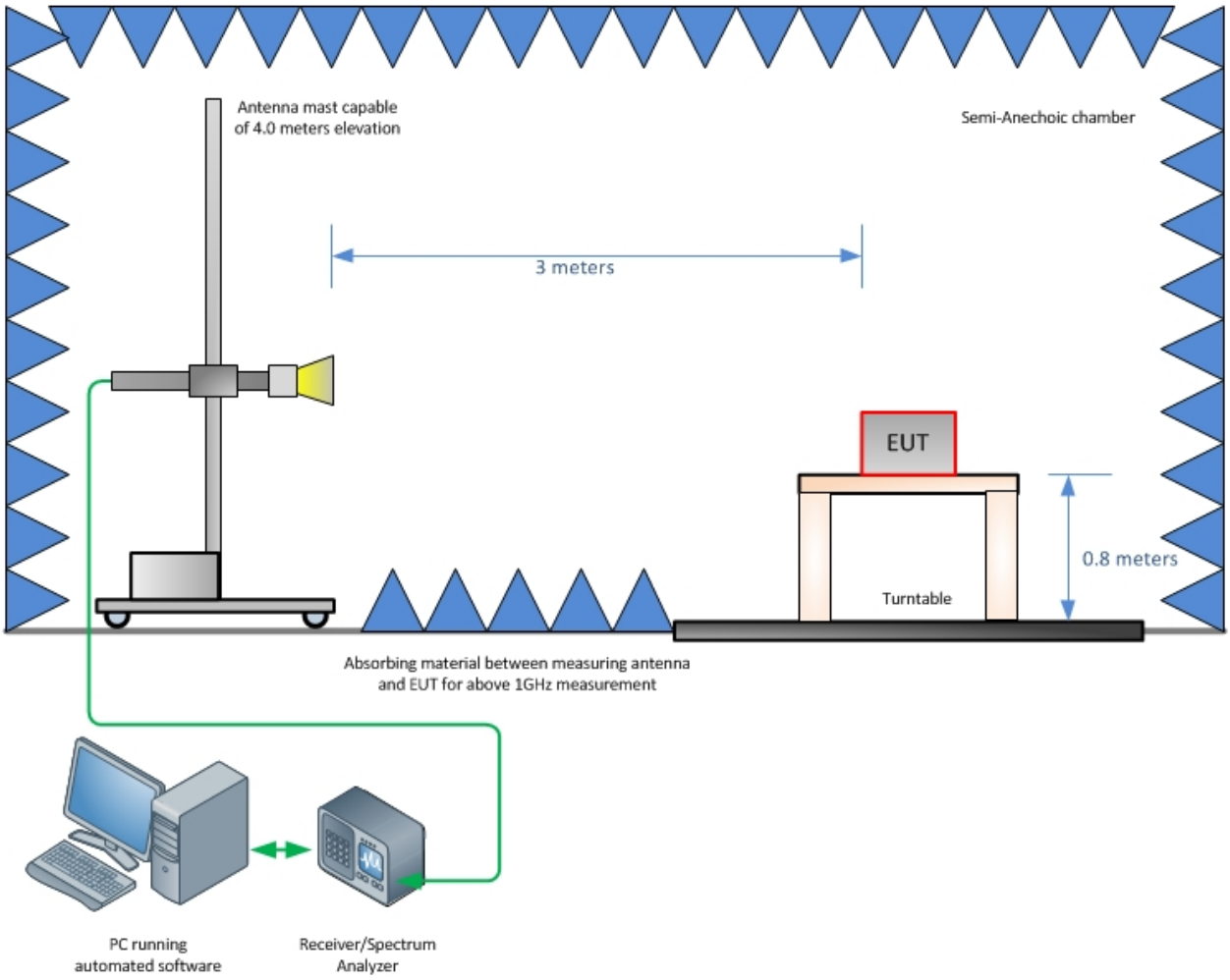
SECTION 4

DIAGRAM OF TEST SETUP

4.1 TEST SETUP DIAGRAM



Radiated Emission Test Setup (Below 1GHz)



Radiated Emission Test Setup (Above 1GHz)

SECTION 5

ACCREDITATION, DISCLAIMERS AND COPYRIGHT

5.1 ACCREDITATION, DISCLAIMERS AND COPYRIGHT

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