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Report On

Radio Testing of the
SMK Electronics Corp.
Brisbane 54.0 UHF 26 Remote Control

FCC Part 15 Subpart C §15.249

Report No. SD72126865-0417B **June 2017**

REPORT ON	Radio Testing of the SMK Electronics Corp. Remote Control
TEST REPORT NUMBER	SD72126865-0417B
PREPARED FOR	SMK Electronics Corp. 1055 Tierra Del Rey, Suite H Chula Vista, CA 91910
CONTACT PERSON	Leon Gateno Senior RF Engineer (619) 216-6425 lgateno@smkusa.com
PREPARED BY	Nikolay Shtin **Name** Authorized Signatory Title: EMC/Wireless Test Engineer
APPROVED BY	Juan Manuel Gonzalez **Name** Authorized Signatory Title: EMC SL Manager West Region
DATED	June 06, 2017

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

Revision History

SD72126865-0417B SMK Electronics Corp. Brisbane Remote Control					
DATE	OLD REVISION	NEW REVISION	REASON	PAGES AFFECTED	APPROVED BY
06/06/2017	Initial Release				Juan M. Gonzalez

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SECTION 1

REPORT SUMMARY

Radio Testing of the
SMK Electronics Corp.
Brisbane Remote Control

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1.1 INTRODUCTION

The information contained in this report is intended to show verification of the SMK Electronics Corp. Brisbane 54.0 UHF 26 Remote Control to the requirements of FCC Part 15 Subpart C §15.249.

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	SMK Electronics Corp.
Model Number(s)	54.0 UHF 26
FCC ID Number	QVE4BRIS
Serial Number(s)	N/A
Number of Samples Tested	1
Test Specification/Issue/Date	• FCC Part 15 Subpart C §15.249 (October 1, 2016).
Start of Test	May 05, 2017
Finish of Test	May 05, 2017
Name of Engineer(s)	Nikolay Shtin
Related Document(s)	None. Supporting documents for EUT certification are separate exhibits.

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1.2 BRIEF SUMMARY OF RESULTS

A brief summary of the tests carried out in accordance with FCC Part 15 Subpart C §15.249 standard is shown below.

Section	Spec Clause	Test Description	Result	Comments/Base Standard
-	§15.207(a)	Conducted Emissions	N/A*	See Note
2.1	§15.215(c)	20 dB Bandwidth	Compliant	
2.2	§15.249(a)	Field Strength Limits for Fundamental and Harmonics	Compliant	
2.3	§15.249(d)	Spurious Radiated Emissions	Compliant	
—		Receiver Spurious Emissions	N/A**	See Note

* *Not applicable. EUT is battery powered.*

** *Not applicable. EUT has no Stand-Alone receiver port.*

1.3 PRODUCT INFORMATION

1.3.1 Technical Description

The Equipment Under Test (EUT) was a SMK Electronics Corp. Brisbane 54.0 UHF 26 Remote Control. The EUT is a battery powered, hand-held remote control. It incorporates a low power radio operating in the 2400-2483.5 MHz ISM band.

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1.3.2 EUT General Description

EUT Description	Remote Control
Model Number(s)	54.0 UHF 26
Rated Voltage	3.0VDC from 2 (two) AA alkaline batteries
Output Power	80.87 dBµV/m @ 3 meters (0.0224 mW EIRP)
Frequency Range	2425 MHz to 2475 MHz in the 2400 MHz to 2483.5 MHz Band
Number of Operating Frequencies	3
Channels Verified	Low Channel 2425 MHz Mid Channel 2450 MHz High Channel 2475 MHz
Antenna Type (used during evaluation)	Integral PCB antenna (Complies with Part 15.203 requirements)
Modulation Used	QPSK

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1.4 EUT TEST CONFIGURATION

1.4.1 Test Configuration Description

Test Configuration	Description
Default	Radiated test setup. EUT transmitting through integral antenna on low, mid and high channels

1.4.2 EUT Exercise Software

The EUT was programmed with a firmware (FW version: Brisbane_FW_SW01_EW44) enabling test mode. The radio control commands were sent via serial interface from a support Laptop.

1.4.3 Support Equipment and I/O cables

Manufacturer	Equipment/Cable	Description
Dell	Support Laptop	Model Inspiron 640M

1.4.4 Worst Case Configuration

EUT is a mobile device. For radiated measurements X, Y and Z orientations were verified. Worst case orientation is “X”.

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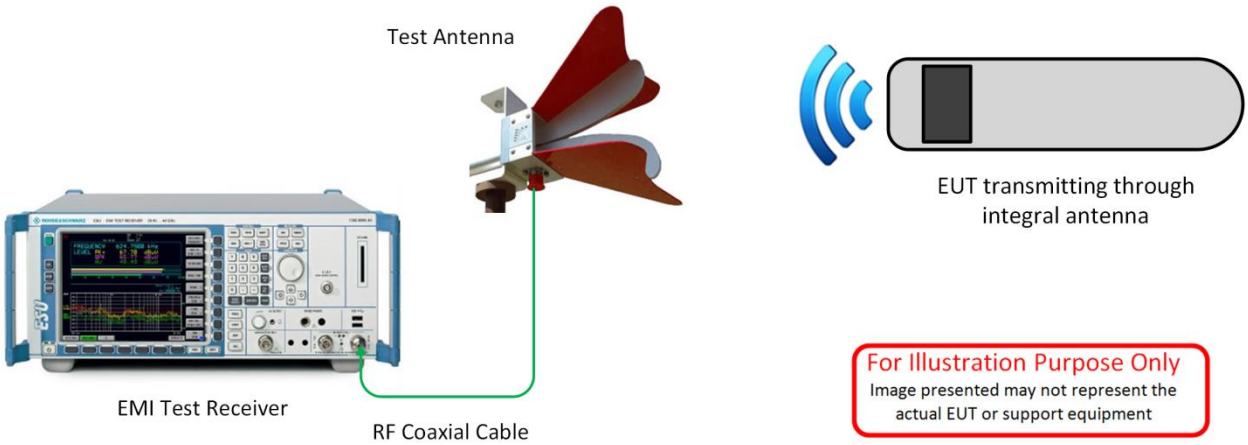
1.4.5 Simplified Test Configuration Diagram



Note:

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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 N/A		
N/A		

The table above details modifications made to the EUT during the test program. 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 C63.10-2013, 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 C63.10-2013. 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)

16936 Via Del Campo, 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), a §2.498 listed test firm operates the EMC Laboratory registered under Sony Electronics Inc. Product Quality Division EMC. This laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files and the Registration is US1146.

1.9.2 Innovation, Science and Economic Development Canada Registration No.: 3067A

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

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SECTION 2

TEST DETAILS

Radio Testing of the
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Brisbane Remote Control

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2.1 20 DB BANDWIDTH

2.1.1 Specification Reference

Part 15 Subpart C §15.215(c)

2.1.2 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.

2.1.3 Equipment Under Test and Modification State

Serial No: N/A / Default Test Configuration

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

May 05, 2017/ NS

2.1.5 Test Equipment Used

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

2.1.6 Environmental Conditions

Ambient Temperature	25.7°C
Relative Humidity	48.5%
ATM Pressure	100.6 kPa

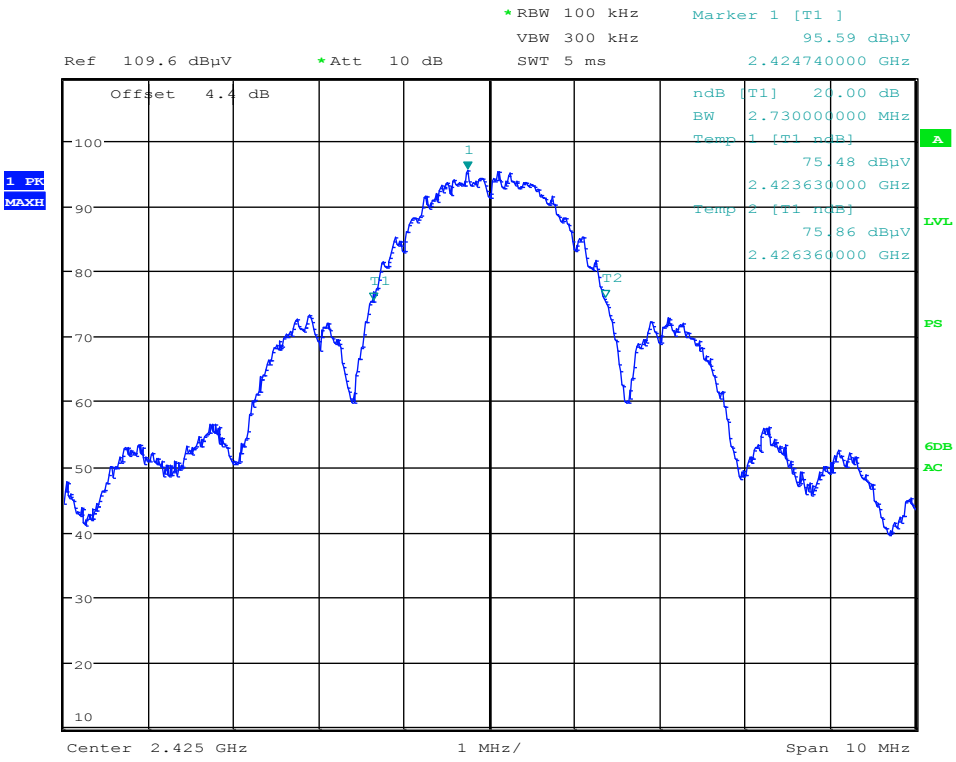
2.1.7 Additional Observations

- This is a conducted test.
- A peak output reading was taken.
- 20dB bandwidth verified using ndB down BW function of the spectrum analyzer.
- 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.
- Trace is max hold.

2.1.8 Test Results

Low Channel (2425 MHz)	Mid Channel (2450 MHz)	High Channel (2475 MHz)
2.73 MHz	2.73 MHz	2.76 MHz

2425 MHz – (20dB BW/2) = 2423.635MHz (within the frequency band - **Compliant**)
2475 MHz + (20dB BW/2) = 2476.380 MHz (within the frequency band - **Compliant**)



Low Channel

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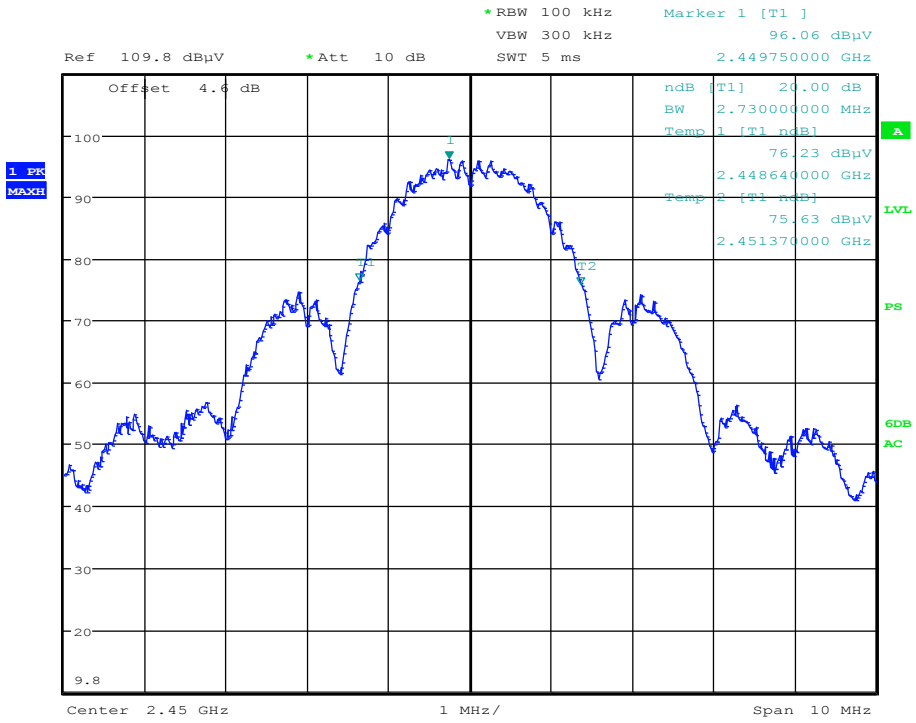
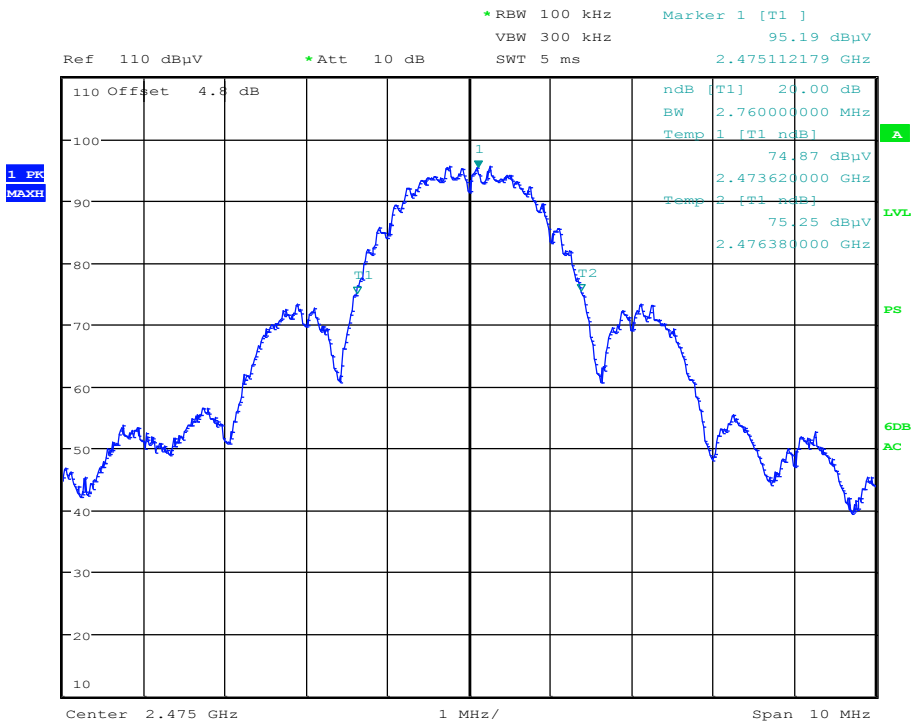


Mid Channel



High Channel

2.2 FIELD STRENGTH LIMITS FOR FUNDAMENTAL AND HARMONICS

2.2.1 Specification Reference

Part 15 Subpart C §15.249(a)

2.2.2 Standard Applicable

(a) The field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following:

Fundamental frequency	Field strength of fundamental (millivolts/meter)	Field strength of harmonics (microvolts/meter)
902–928 MHz	50	500
2400–2483.5 MHz	50	500
5725–5875 MHz	50	500
24.0–24.25 GHz	250	2500

2.2.3 Equipment Under Test and Modification State

Serial No: N/A / Default Test Configuration

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

May 05, 2017/NS

2.2.5 Test Equipment Used

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

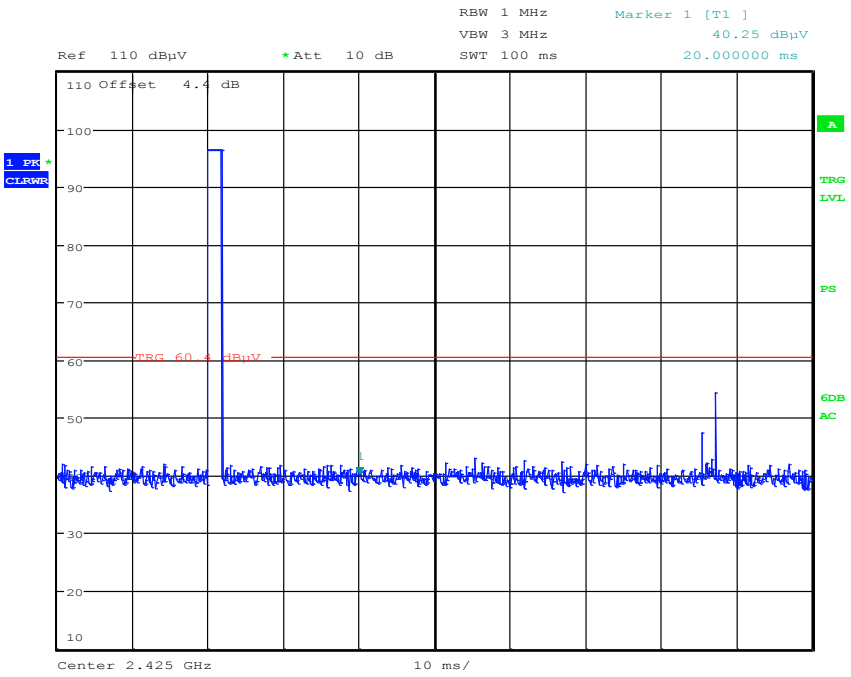
2.2.6 Environmental Conditions

Ambient Temperature	25.7°C
Relative Humidity	48.5%
ATM Pressure	100.6 kPa

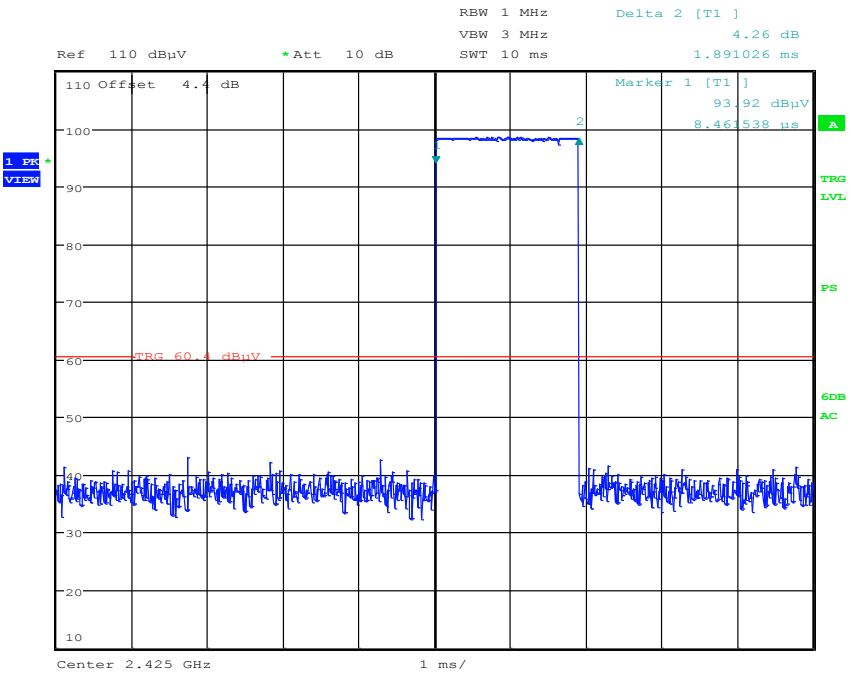
2.2.7 Additional Observations

- This is a radiated test. The spectrum was searched from 1GHz to the 10th harmonic (25GHz).
- Harmonics measurements were performed with a notch filter attenuating the fundamental frequency.

2.2.8 Duty Cycle Correction Factor Calculation



100ms sweep (representative channel)



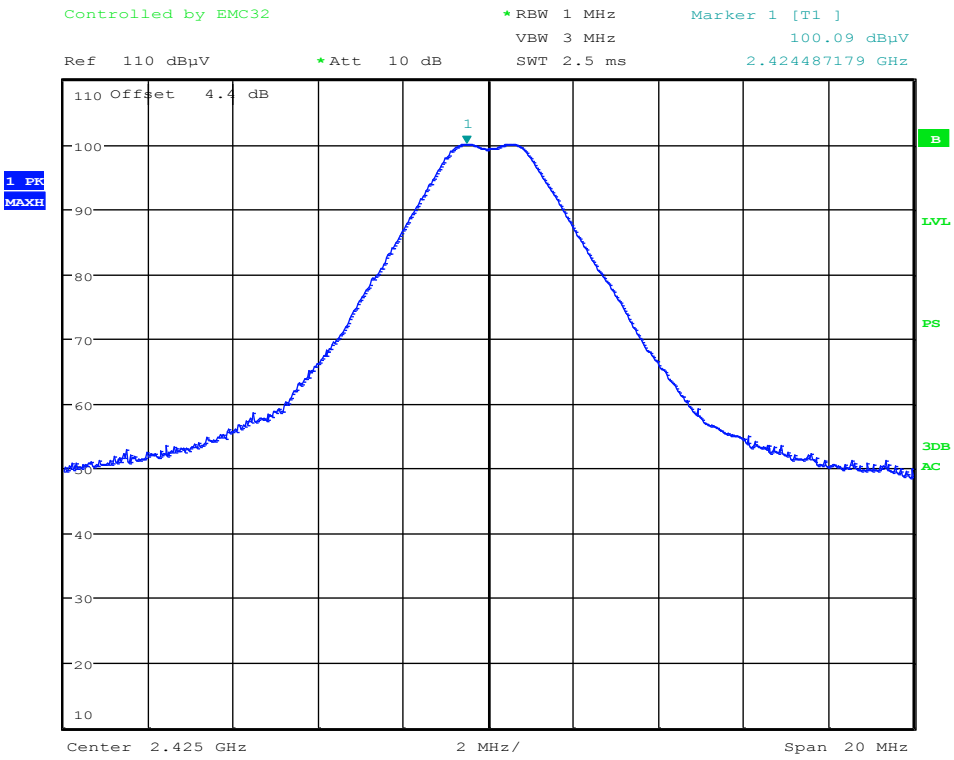
10ms sweep (representative channel)

Duty Cycle Calculation: = 1.89 ms "On" time per 100 ms sweep
= 1.89 ms / 100

Duty Cycle Correction Factor = 20 log (0.0189)
= **-34.47 dB (**Maximum allowed DCCF of 20 dB was used in this evaluation**)**

Duty Cycle correction factor verification was performed when the EUT is in normal operating mode. For actual measurements, the EUT was placed in test mode (100% Duty cycle)

2.2.9 Test Results Fundamental (Low Channel)



Peak Data

Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
2424.4872	100.09	1000.0	1000.000	150.0	H	296.0	4.4	13.91	114.0

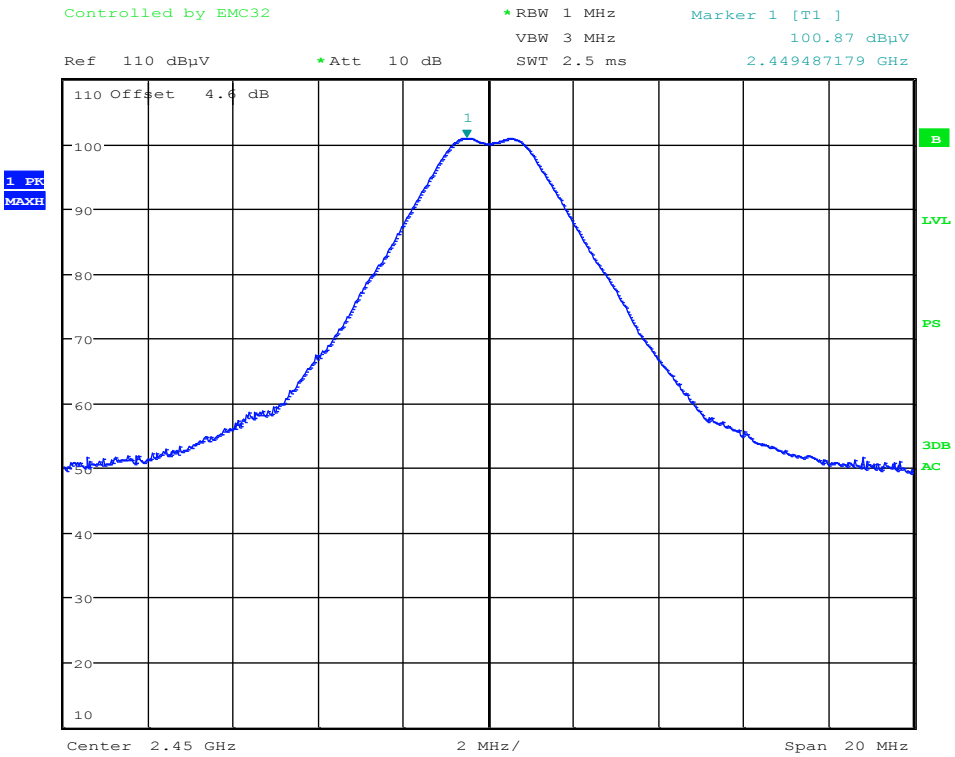
Average Data

Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
2424.4872	80.09							13.91	94.0

Test Notes: Average data are from Peak data with Duty Cycle correction factor applied. Sample computation:
2401.6309 MHz (Low Channel) = 100.09 dBµV/m (Peak)
= 100.09 dBµV/m - 20 (DCCF)

= 80.09 (Average)

2.2.10 Test Results Fundamental (Mid Channel)



Peak Data

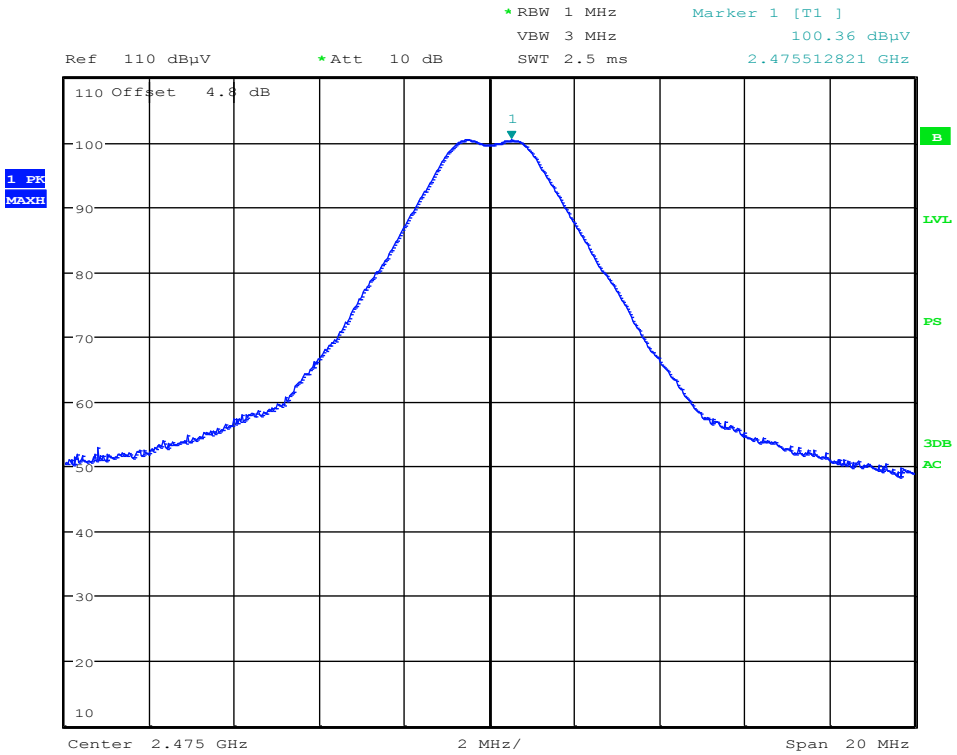
Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
2449.4872	100.87	1000.0	1000.000	150.0	H	296.0	4.6	13.13	114.0

Average Data

Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
2449.4872	80.87							13.13	94.0

Test Notes: Average data are from Peak data with Duty Cycle correction factor applied. Sample computation:
2441.21795 MHz (Mid Channel) = 100.87 dBµV/m (Peak)
= 100.87 dBµV/m - 20 (DCCF)
= 80.87 (Average)

2.2.11 Test Results Fundamental (High Channel)



Peak Data

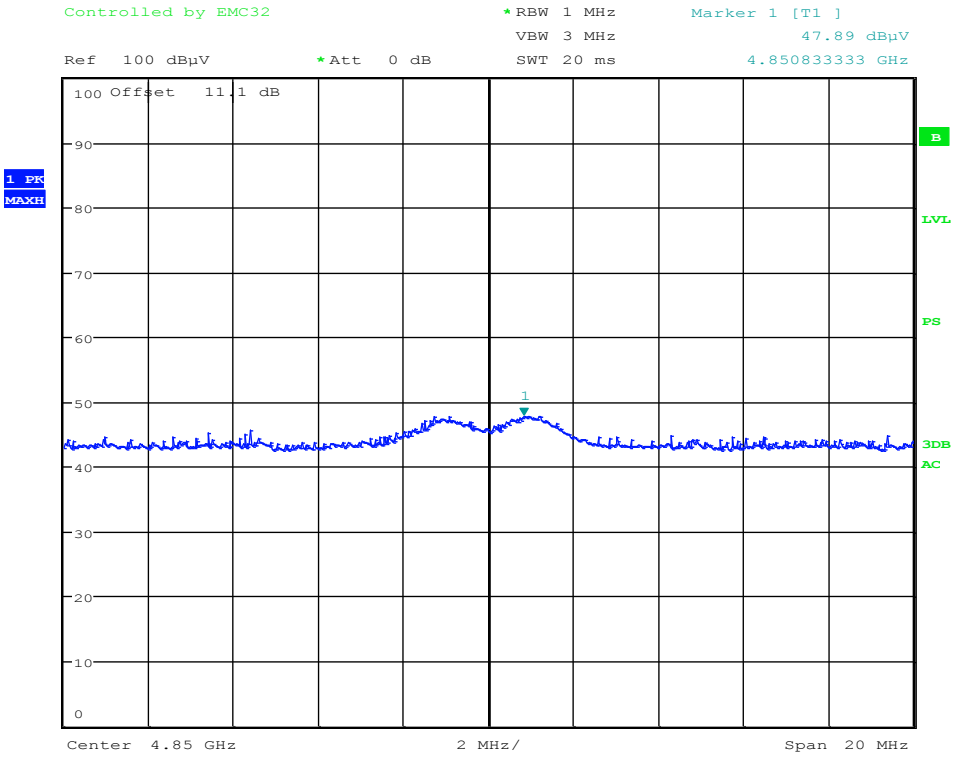
Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
2482.11538	100.36	1000.0	1000.000	150.0	H	296.0	4.8	13.64	114.0

Average Data

Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
2482.11538	80.36							13.64	94.0

Test Notes: Average data are from Peak data with Duty Cycle correction factor applied. Sample computation:
2482.1153 MHz (High Channel) = 100.36 dBµV/m (Peak)
= 100.36 dBµV/m - 20 (DCCF)
= 80.36 (Average)

2.2.12 Test Results Harmonics (Low Channel)



Peak Data

Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
4850.833333	47.89	1000.0	1000.000	365.0	H	270.0	11.1	26.01	73.9

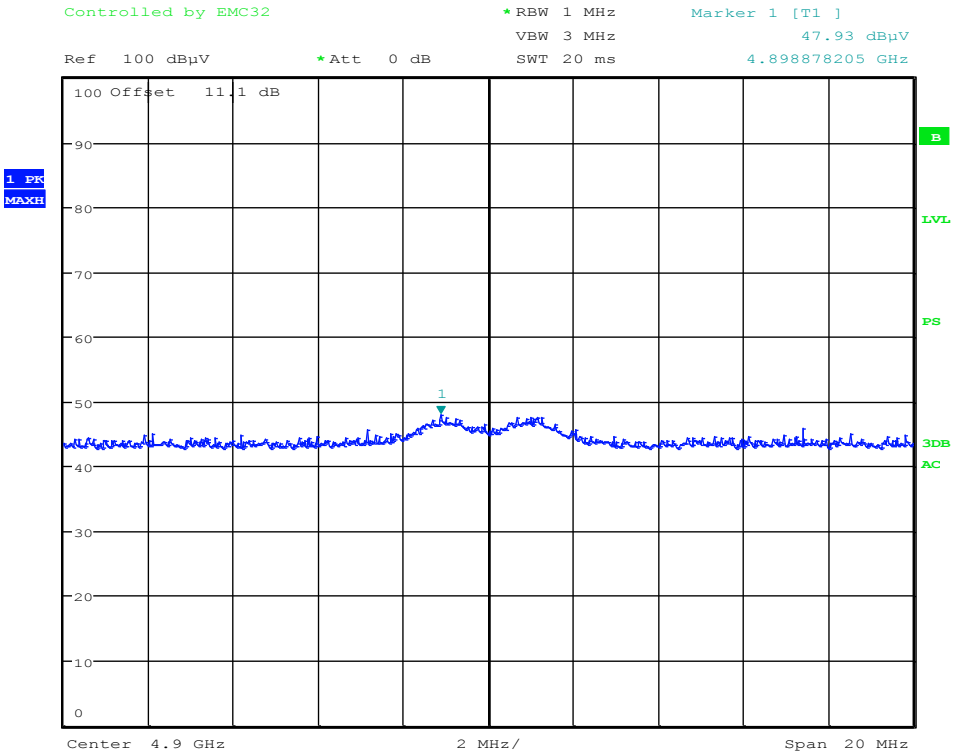
Average Data

Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
4850.833333	27.89	1000.0	1000.000	365.0	H	270.0	11.1	26.01	53.9

Test Notes: Average data are from Peak data with Duty Cycle correction factor applied. Sample computation:
4850.83333 MHz (Low Channel) = 47.89 dBµV/m (Peak)
= 47.89 dBµV/m - 20 (DCCF)
= 27.89 (Average)

Measurement was performed with a 2.4GHz notch filter. No EUT emissions other than the second harmonic were observed.

2.2.13 Test Results Harmonics (Mid Channel)



Peak Data

Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
4898.878205	47.93	1000.0	1000.000	365.0	H	270.0	11.1	25.97	73.9

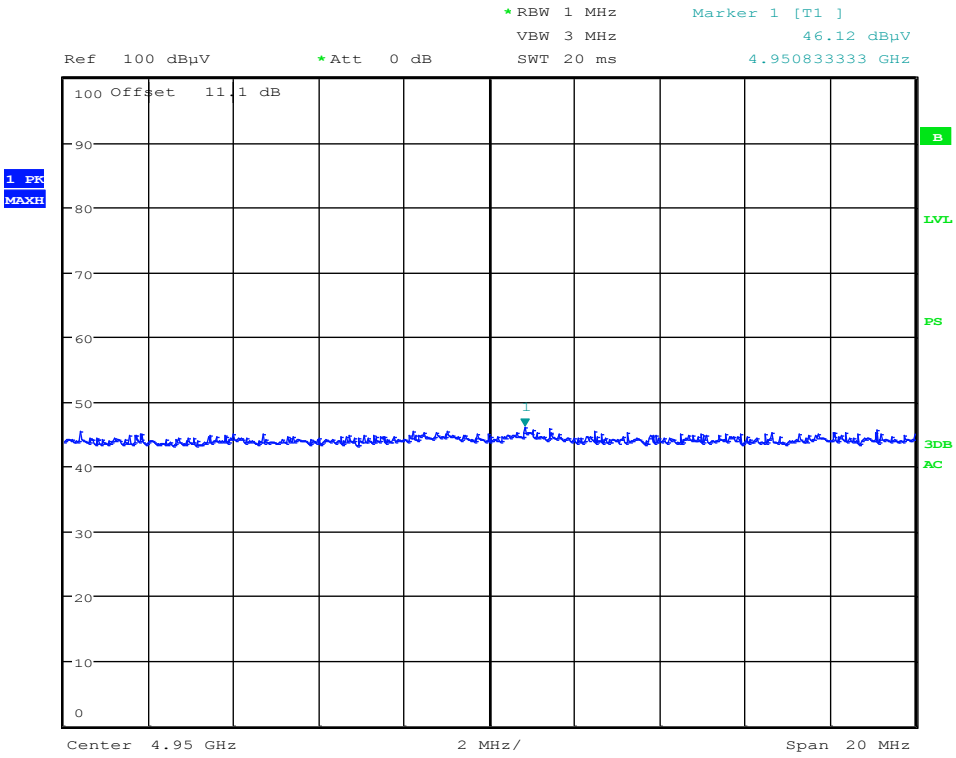
Average Data

Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
4850.878205	27.93	1000.0	1000.000	365.0	H	270.0	11.1	25.97	53.9

Test Notes: Average data are from Peak data with Duty Cycle correction factor applied. Sample computation:
4850.83333 MHz (Mid Channel) = 47.93 dBµV/m (Peak)
= 47.93 dBµV/m - 20 (DCCF)
= 27.93 (Average)

Measurement was performed with a 2.4GHz notch filter. No EUT emissions other than the second harmonic were observed.

2.2.14 Test Results Harmonics (High Channel)



Peak Data

Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
4950.833333	46.12	1000.0	1000.000	400.0	V	144.0	11.1	27.78	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)
4950.833333	26.12	1000.0	1000.000	4000	V	144.0	11.1	27.78	53.9

Test Notes: Average data are from Peak data with Duty Cycle correction factor applied. Sample computation:
4950.83333 MHz (High Channel) = 46.12 dBµV/m (Peak)
= 46.12 dBµV/m - 20 (DCCF)
= 26.12 (Average)

Measurement was performed with a 2.4GHz notch filter. No EUT emissions other than the second harmonic were observed.

2.3 SPURIOUS RADIATED EMISSIONS

2.3.1 Specification Reference

Part 15 Subpart C §15.249(d)

2.3.2 Standard Applicable

(d) Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in §15.209, whichever is the lesser attenuation.

2.3.3 Equipment Under Test and Modification State

Serial No: N/A / Default Test Configuration

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

May 05, 2017/NS

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

Ambient Temperature	25.7°C
Relative Humidity	48.5%
ATM Pressure	100.6 kPa

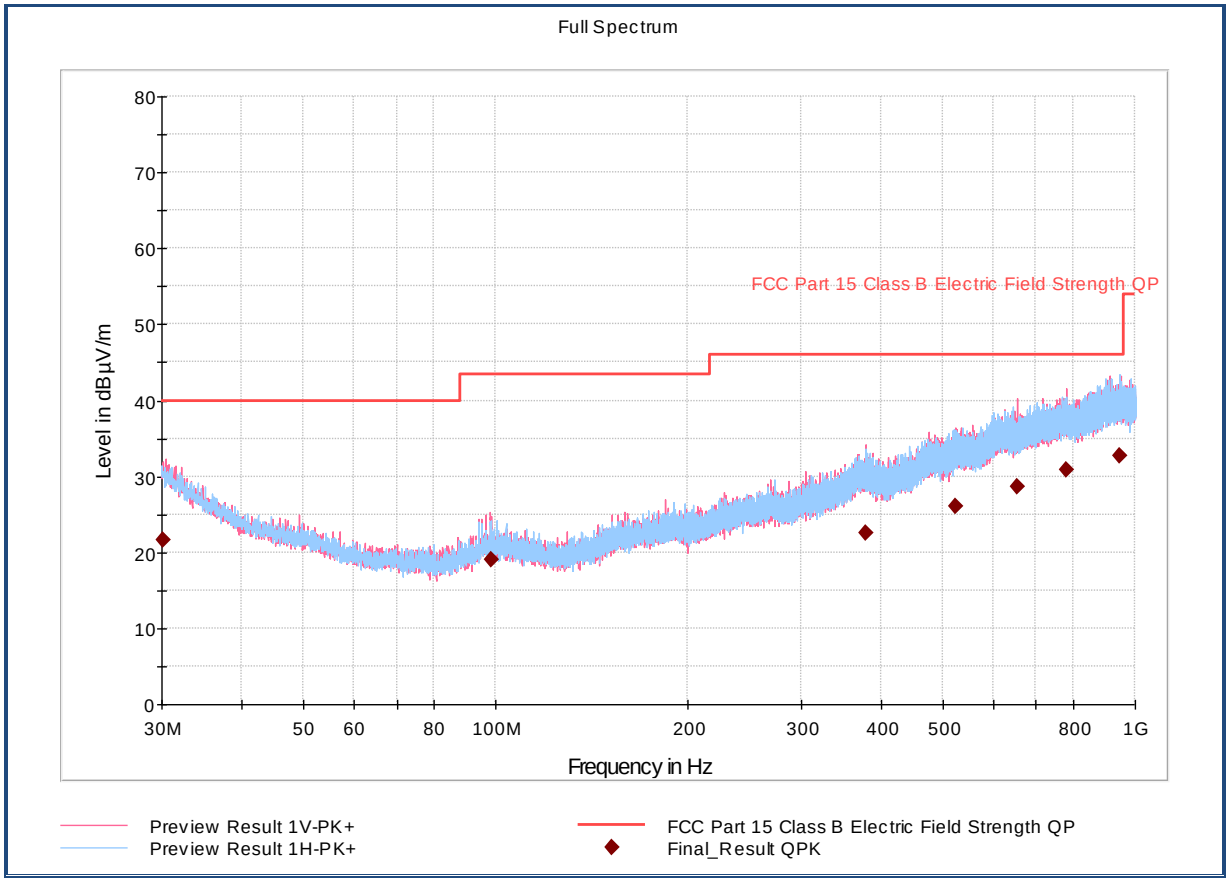
2.3.7 Additional Observations

- This is a radiated test. The spectrum was searched from 30MHz to the 10th harmonic (25GHz). There are no emissions observed beyond 18GHz.
- No significant emission observed below 1GHz. Data presented is from worst configuration based on fundamental/harmonics verification ("X" axis configuration).
- Measurement was done using EMC32 V9.26.0 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 2.3.8 for sample computation.

2.3.8 Sample Computation (Radiated Emission)

Measuring equipment raw measurement (dbµV) **@ 2400 MHz**			58.4
Correction Factor (dB)	Asset# 1153 (cable)	3.3	**-4.8**
	Asset# 8628 (preamplifier)	-36.4	
	Asset# 6669 (antenna)	28.3	
Reported Peak Final Measurement (dbµV/m) @ 2400 MHz			**53.6**

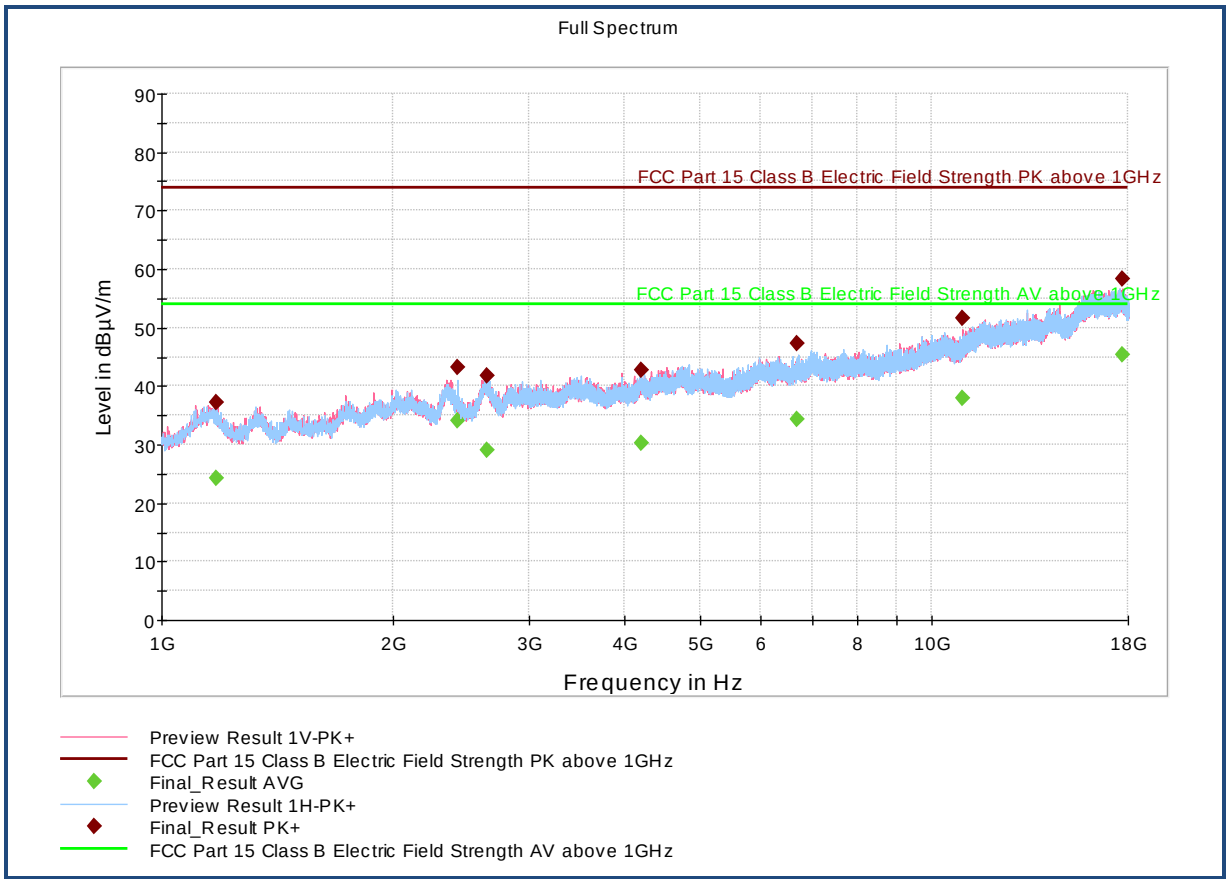
2.3.9 Test Results Below 1GHz (Mid Channel – Worst Case Channel)



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)
30.208000	21.68	40.00	18.32	1000.0	120.000	200.4	V	5.0	23.9
98.114000	19.04	43.50	24.46	1000.0	120.000	119.2	V	172.0	14.9
379.735667	22.49	46.00	23.51	1000.0	120.000	270.2	V	334.0	25.0
524.752333	26.02	46.00	19.98	1000.0	120.000	177.7	V	88.0	28.0
653.827000	28.68	46.00	17.32	1000.0	120.000	156.1	V	314.0	29.4
782.498333	30.93	46.00	15.07	1000.0	120.000	125.8	V	207.0	31.6
945.030333	32.75	46.00	13.25	1000.0	120.000	158.2	H	104.0	33.6

2.3.10 Test Results Above 1GHz (Low Channel)



Peak Data

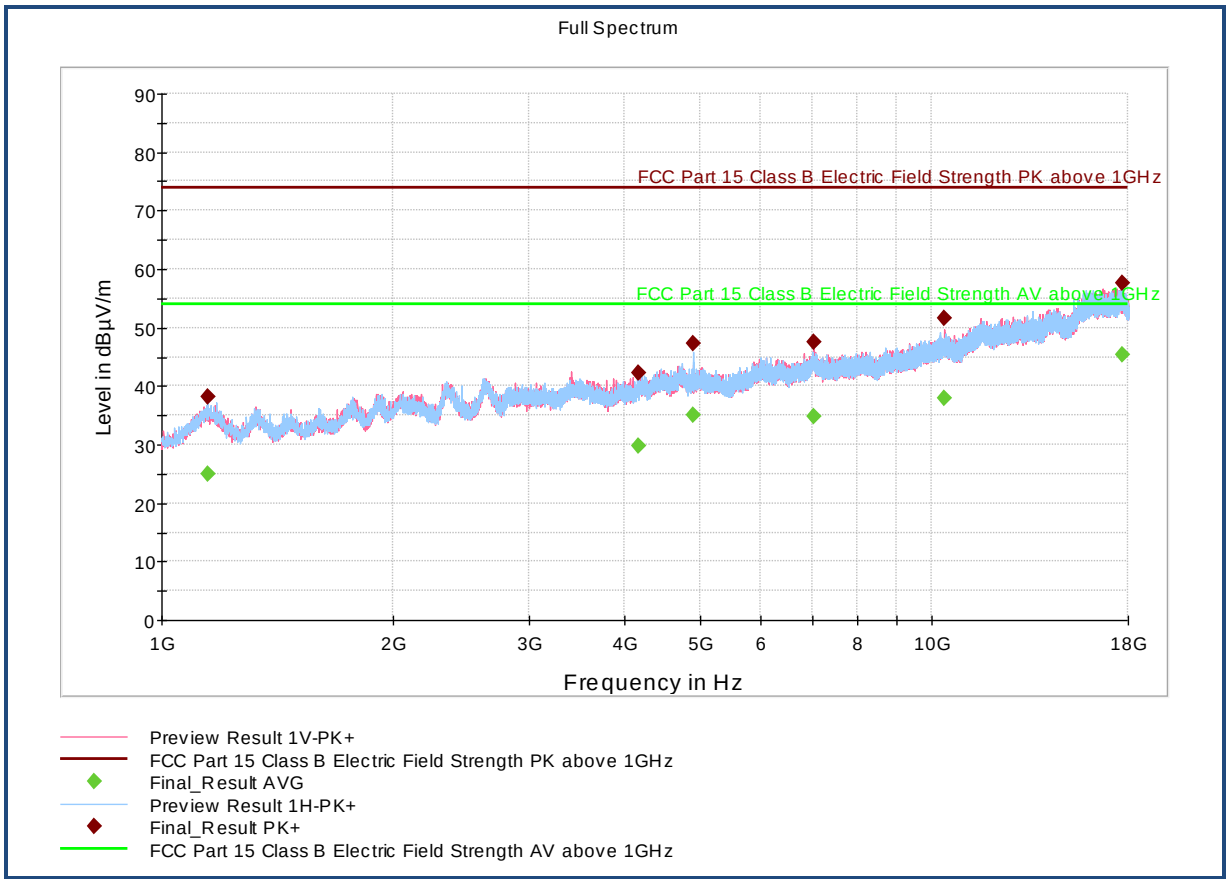
Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
1177.11800	37.29	73.90	36.61	1000.0	1000.000	377.8	V	221.0	-0.7
2424.73900	43.26	73.90	30.64	1000.0	1000.000	397.4	H	282.0	4.4
2644.40933	41.67	73.90	32.23	1000.0	1000.000	400.2	H	17.0	5.2
4190.08766	42.84	73.90	31.06	1000.0	1000.000	400.3	H	-8.0	9.3
6701.05733	47.21	73.90	26.69	1000.0	1000.000	400.3	H	274.0	14.9
10958.4893	51.56	73.90	22.34	1000.0	1000.000	117.2	V	21.0	19.9
17713.3101	58.39	73.90	15.51	1000.0	1000.000	293.0	V	301.0	27.1

Average Data

Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
1177.11800	24.29	53.90	29.61	1000.0	1000.000	377.8	V	221.0	-0.7
2424.73900	34.19	53.90	19.71	1000.0	1000.000	397.4	H	282.0	4.4
2644.40933	29.02	53.90	24.88	1000.0	1000.000	400.2	H	17.0	5.2
4190.08766	30.24	53.90	23.66	1000.0	1000.000	400.3	H	-8.0	9.3
6701.05733	34.23	53.90	19.67	1000.0	1000.000	400.3	H	274.0	14.9
10958.4893	37.83	53.90	16.07	1000.0	1000.000	117.2	V	21.0	19.9
17713.3101	45.38	53.90	8.52	1000.0	1000.000	293.0	V	301.0	27.1

Note: Measurement was performed with a 2.4GHz notch filter.

2.3.11 Test Results Above 1GHz (Mid Channel)



Peak Data

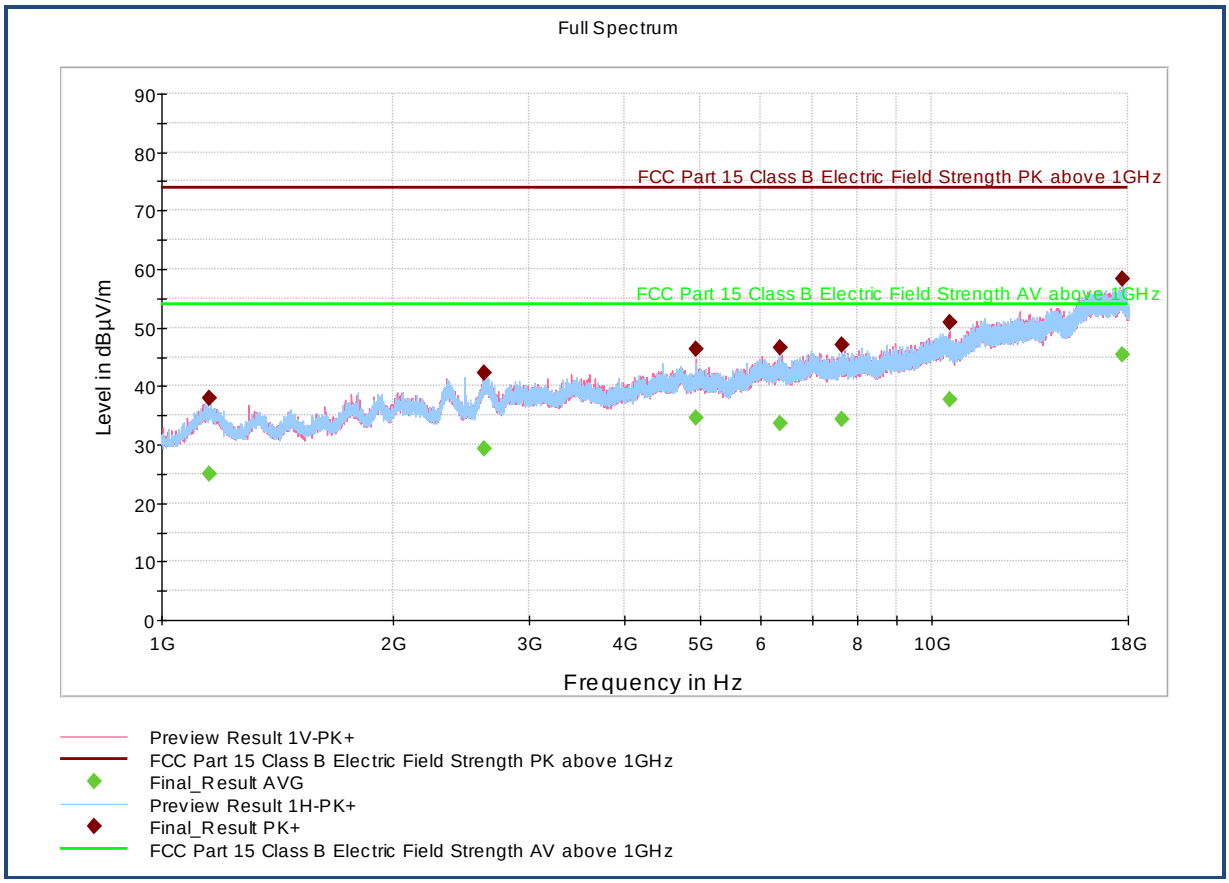
Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
1147.28766	38.05	73.90	35.85	1000.0	1000.000	400.2	H	154.0	-0.9
4166.07666	42.17	73.90	31.73	1000.0	1000.000	385.2	V	245.0	9.2
4901.00800	47.19	73.90	26.71	1000.0	1000.000	365.6	H	270.0	11.1
7031.39183	47.59	73.90	26.31	1000.0	1000.000	153.8	V	-6.0	15.2
10385.4263	51.50	73.90	22.40	1000.0	1000.000	104.9	V	66.0	19.8
17667.1190	57.71	73.90	16.19	1000.0	1000.000	378.6	H	225.0	26.9

Average Data

Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
1147.28766	24.94	53.90	28.96	1000.0	1000.000	400.2	H	154.0	-0.9
4166.07666	29.80	53.90	24.10	1000.0	1000.000	385.2	V	245.0	9.2
4901.00800	35.00	53.90	18.90	1000.0	1000.000	365.6	H	270.0	11.1
7031.39183	34.75	53.90	19.15	1000.0	1000.000	153.8	V	-6.0	15.2
10385.4263	38.02	53.90	15.88	1000.0	1000.000	104.9	V	66.0	19.8
17667.1190	45.42	53.90	8.48	1000.0	1000.000	378.6	H	225.0	26.9

Note: Measurement was performed with a 2.4GHz notch filter.

2.3.12 Test Results Above 1GHz (High Channel)



Peak Data

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
1154.23483	37.88	73.90	36.02	1000.0	1000.000	225.3	H	323.0	-0.8
2621.20066	42.15	73.90	31.75	1000.0	1000.000	262.0	V	345.0	5.0
4949.00899	46.22	73.90	27.68	1000.0	1000.000	400.3	V	144.0	11.1
6356.72233	46.45	73.90	27.45	1000.0	1000.000	253.7	H	303.0	14.4
7644.25666	46.95	73.90	26.95	1000.0	1000.000	249.5	V	146.0	15.8
10565.3213	50.77	73.90	23.13	1000.0	1000.000	105.3	V	131.0	19.6
17681.5835	58.32	73.90	15.58	1000.0	1000.000	250.2	H	300.0	27.0

Average Data

Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
1154.23483	24.99	53.90	28.91	1000.0	1000.000	225.3	H	323.0	-0.8
2621.20066	29.30	53.90	24.60	1000.0	1000.000	262.0	V	345.0	5.0
4949.00899	34.57	53.90	19.33	1000.0	1000.000	400.3	V	144.0	11.1
6356.72233	33.52	53.90	20.38	1000.0	1000.000	253.7	H	303.0	14.4
7644.25666	34.39	53.90	19.51	1000.0	1000.000	249.5	V	146.0	15.8
10565.3213	37.60	53.90	16.30	1000.0	1000.000	105.3	V	131.0	19.6
17681.5835	45.42	53.90	8.48	1000.0	1000.000	250.2	H	300.0	27.0

Note: Measurement was performed with a 2.4GHz notch filter.

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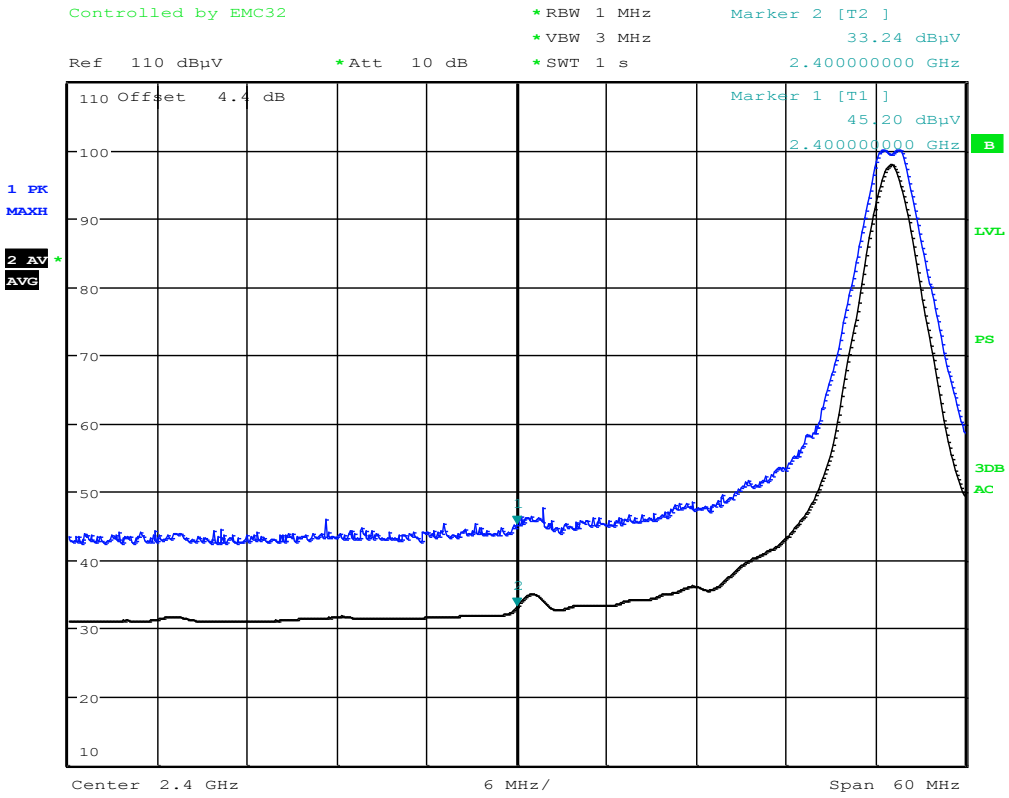
2.3.13 Test Results of Lower Band Edge measurement



Band edge results:

Average value: 33.24 dBµV/m. Limit is 54. EUT **Complies**.

Peak value: 45.20 dBµV/m. Limit is 74. EUT **Complies**.

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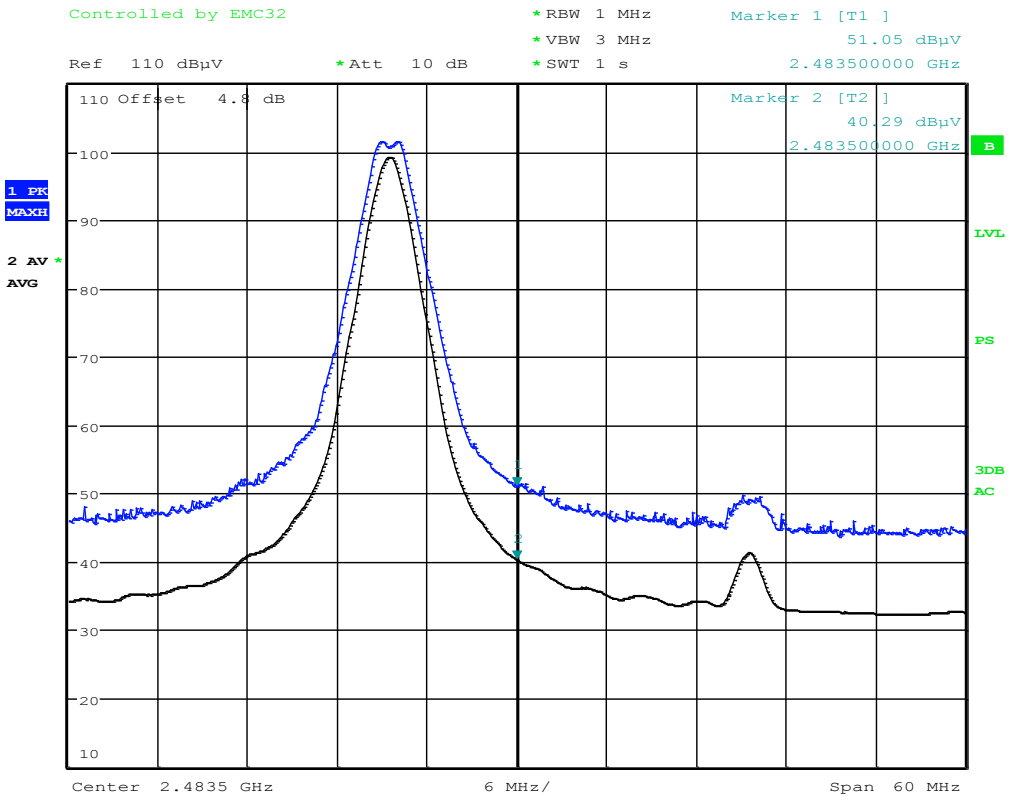
2.3.14 Test Results of Upper Band Edge measurement



Band edge results:

Average value: 40.29 dBµV/m. Limit is 54. EUT **Complies**.
Peak value: 51.05 dBµV/m. Limit is 74. EUT **Complies**.

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SECTION 3

TEST EQUIPMENT USED

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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 Emissions						
1002	Bilog Antenna	3142C	00058717	ETS-Lindgren	11/06/15	11/06/17
7620	EMI Test Receiver	ESU	100133	Rhode & Schwarz	09/09/16	09/09/17
8891	Pre-amplifier (1-18 GHz)	PE15A3262	1012	Pasternack	04/29/17	04/29/18
7631	Double-ridged waveguide horn antenna	3117	00205418	ETS-Lindgren	07/05/16	07/05/17
8878	High-frequency cable	R90-088-240	N/A	Teledyne/Storm Microwave	03/16/17	03/16/18
8879	High-frequency cable	084-0505-100	N/A	Teledyne/Storm Microwave	03/16/17	03/16/18
1003	Signal Generator	SMR-40	1104.0002.40	Rhode & Schwarz	05/16/16	05/16/17
6815	2.4GHz Band Notch Filter	BRM50702	008	Micro-Tronics	Verified by 1003 and 7620	
Miscellaneous						
7619	Barometer/Temperature /Humidity Transmitter	iBTHX-W	15250268	Omega	10/19/15	10/19/16
	Test Software	EMC32	V9.26.0	Rhode & Schwarz	N/A	

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3.2 MEASUREMENT UNCERTAINTY

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

3.2.1 Radiated 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	2.70	1.56	2.43
6	EUT Setup	Rectangular	1.00	0.58	0.33
				Combined Uncertainty (u_c):	1.78
				Coverage Factor (k):	2
				Expanded Uncertainty:	3.57

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	2.70	1.56	2.43
6	EUT Setup	Rectangular	1.00	0.58	0.33
				Combined Uncertainty (u_c):	1.78
				Coverage Factor (k):	2
				Expanded Uncertainty:	3.56

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SECTION 4

DIAGRAM OF TEST SETUP

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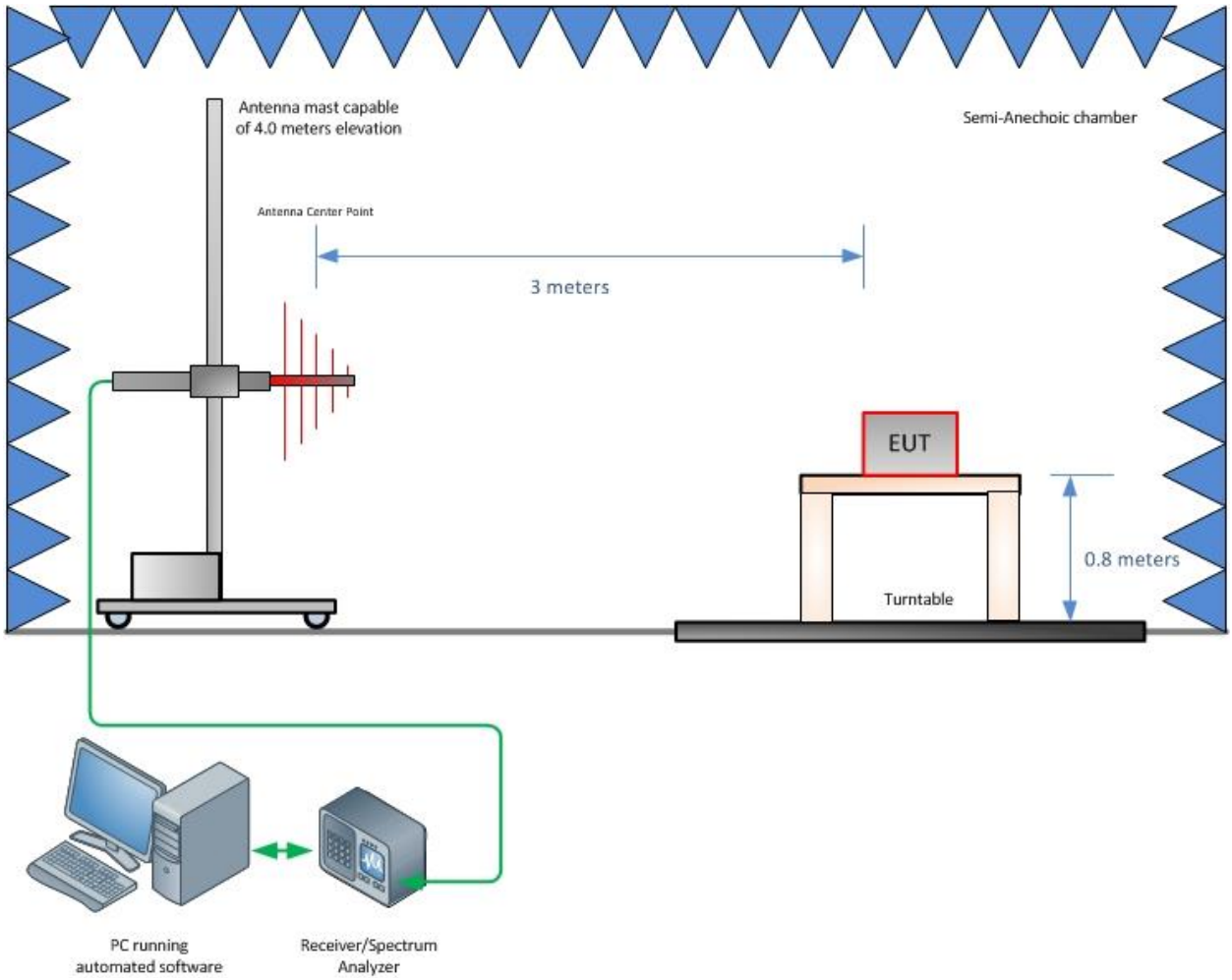
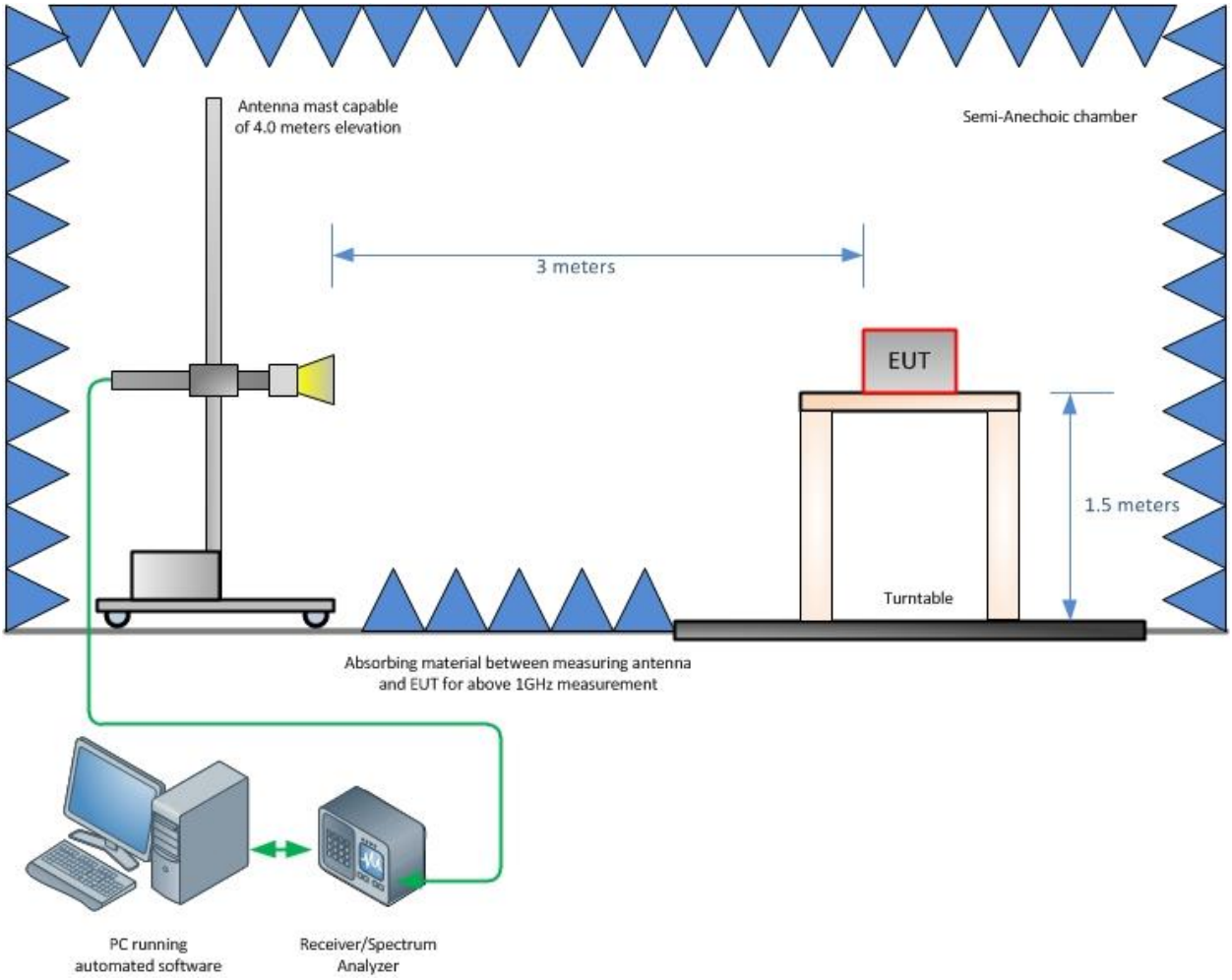
4.1 TEST SETUP DIAGRAM



Radiated Emission Test Setup (Below 1GHz)



Radiated Emission Test Setup (Above 1GHz)

SECTION 5

ACCREDITATION, DISCLAIMERS AND COPYRIGHT

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