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Report On

Application for Grant of Equipment Authorization of the Nextivity Inc. Cel-Fi DUO RAINIER Smart Cellular Signal Booster

FCC Part 15 Subpart E §15.407 RSS-247 Issue 1 May 2015

Report No. SD72116210-0416C

May 2016

FCC ID: YETD32-21266NU and YETD32-21266CU IC: 9298A-D3221266NU and 9298A-D3221266CU Report No. SD72116210-0416C



REPORT ON

EMC Evaluation of the Nextivity Inc. Cel-Fi DUO RAINIER Smart Cellular Signal Booster

TEST REPORT NUMBER

TEST REPORT DATE

PREPARED FOR

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May 2016

Nextivity Inc.

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Name Authorized Signatory Title: West Coast EMC Manager

DATED

May 05, 2016

Page **2** of **91**



Revision History

SD72116210-04: Nextivity Inc. M/N D32-2/12/6 Cel-Fi DUO RAIN	16C 56 IER Smart Cellular Sig	gnal Booster			
DATE	OLD REVISION	NEW REVISION	REASON	PAGES AFFECTED	APPROVED BY
05/05/16	Initial Release				Chip Fleury

Section



Page No

CONTENTS

1 1.1 1.2 1.3 1.4 1.5 1.6 Test Methodology......14 1.7 1.9 2 2.1 Conducted Emissions 17 2.2 2.3 2.4 2.5 2.6 2.7 2.8 3 3.1 3.2 4 4.1 5 5.1



SECTION 1

REPORT SUMMARY

Radio Testing of the Nextivity Inc. Cel-Fi DUO RAINIER Smart Cellular Signal Booster



1.1 INTRODUCTION

The information contained in this report is intended to show verification of the Nextivity Inc. Smart Cellular Signal Booster to the requirements of FCC Part 15 Subpart E §15.407 and RSS-247 Issue 1 May 2015.

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	Nextivity Inc.	
Model Number(s)	D32-2/12/66	
FCC ID Number	YETD32-21266NU and YETD32-21266CU	
IC Number	9298A-D3221266NU and 9298A-D3221266CU	
Serial Number(s)	296546000509 (NU) and 297546000285 (CU)	
Number of Samples Tested	2	
Test Specification/Issue/Date	 FCC Part 15 Subpart E §15.407 (October 1, 2015). RSS-247 - Digital Transmission Systems (DTSs) Frequency Hopping Systems (FHSs) and Licence-Exempt Local Area Network (LE-LAN) (Issue 1, May 2015). RSS-Gen - General Requirements for Compliance of Radio Apparatus (Issue 4, November 2014). KDB KDB789033 D02 General UNII Test Procedures New Rules v01r01 (Guidelines for Compliance Testing of Unlicensed National Information Infrastructure (UNII) Devices - Part 15, Subpart E) January 08, 2016. 	
Start of Test	May 02, 2016	
Finish of Test	May 03, 2016	
Name of Engineer(s)	Xiaoying Zhang Ferdinand Custodio	
Related Document(s)	 SD72112724-0116F FCC Part 15.407 Subpart E RSS247 Test Report.docx (issued by TÜV SÜD America San Diego April 2016). Supporting documents for EUT certification are separate 	

• Supporting documents for EUT certification are separate exhibits.



1.2 BRIEF SUMMARY OF RESULTS

A brief summary of the tests carried out in accordance with FCC Part 15 Subpart E §15.407 with cross-reference to the corresponding IC RSS standard is shown below.

Operation in the UNII 1 and UNII 3 Bands (New Rules)						
Section	Spec Clause	RSS	Test Description Result C		Comments	
2.1	§15.407(a)	RSS-Gen 8.8	Conducted Emissions	Compliant*		
2.2	§15.403(i)		26 dB Bandwidth	As Rep	As Reported	
2.3		RSS-Gen 6.6	99% Emission Bandwidth	As Reported		
2.4	§15.407(e)	RSS-247 6.2.4(1)	Minimum 6dB Bandwidth	Compliant*		
2.5	§15.407(a) (1), (a)(2) and (a)(3)	RSS-247 6.2.4(1)	Maximum Conducted Output Power	Compliant*		
2.6	§15.407(a) (1), (a)(2) and (a)(3)	RSS-247 6.2.3(1)	Maximum Power Spectral Density (PSD)	Compliant*		
2.7	§15.407(b)(1),(4) and (7) / 15.209	RSS-247 6.2.4(2)	Unwanted Emissions Measurement	Compliant**		
2.8	§15.407(b)(1),(4) and (7)	RSS-247 6.2.4(2)	Band-Edge Measurements	Compliant*		
-	§15.407(g)		Frequency Stability	N/A		

 Compliant*
 A variant of the EUT was previously approved under FCC IDs YETD32-21366NU and YETD32-21366CU under

 Model Number D32-2/13/66. The EUT is identical with this model with the exception of LTE Band 12 support.

 All antenna conducted port measurement for BT LE were from this variant and covered under test report

 SD72112724-0116F FCC Part 15.407 Subpart E RSS247 Test Report.docx.

*Compliant*** Same as above with the addition of cabinet spurious emissions verification of the EUT (variant of FCC IDs YETD32-21366NU and YETD32-21366CU with LTE Band 12 support).

N/A

Manufacturer declaration that the emission is maintained within the band of operation. RSS-247 does not require Frequency Stability test (U-NII bands).



1.3 PRODUCT INFORMATION

1.3.1 Technical Description

The Equipment Under Test (EUT) is a Nextivity Inc. Cel-Fi DUO RAINIER Smart Cellular Signal Booster. The EUT is a WCDMA/LTE Signal Booster to improve voice and data cellular performance for indoor residential, small business and small enterprise environments. RAINER consists of two separate units: the Network Unit (NU), and the Coverage Unit (CU). The NU transmits and receives Cellular signals from the base station and operates similar to a cellular handset. The CU transmits and receives signals with the cellular handset and operates on frequencies similar to the cellular base station. The NU and CU are connected wirelessly over a full-duplex wireless link in the UNII band using a mixed OFDM and muxed cellular signal over a 30 or 40 MHz channel in each direction. The CU also includes Bluetooth LE connectivity. With the use of smart phone application, it allows user to register the product, update software, and capture/display details metrics of the system. NU does not support Bluetooth LE. The UNII 5GHz function of the EUT was verified in this test report.

1.3.2 EUT General Description

EUT Description	Smart Cellular Signal Booster
Model Name	Cel-Fi DUO RAINIER
Model Number(s)	D32-2/12/66
Frequency Range	NU:

5190 MHz to 5240 MHz	UNII 1 30MHz
5190 MHz to 5230 MHz	UNII 1 40MHz
5260 MHz to 5310 MHz	UNII 2A 30MHz
5270 MHz to 5310 MHz	UNII 2A 40MHz

CU:

5525 MHz to 5700 MHz	UNII 2C 30MHz
5525 MHz to 5700 MHz	UNII 2C 40MHz
5745 MHz to 5825 MHz	UNII 3 30MHz
5755 MHz to 5825 MHz	UNII 3 40MHz

Channels Verified (UNII 2A)

30MHz Bandwidth:

Low Channel 5260 MHz	Channel 52
Mid Channel 5300 MHz	Channel 60
High Channel 5310 MHz	Channel 62



40MHz Bandwidth:

Low Channel 5270 MHz	Channel 54
Mid Channel 5300 MHz	Channel 60
High Channel 5310 MHz	Channel 62

Channels Verified (UNII 1)

30MHz Bandwidth:

Low Channel 5190 MHz	Channel 38
Mid Channel 5220 MHz	Channel 44
High Channel 5240 MHz	Channel 48

40MHz Bandwidth:

Low Channel 5190 MHz	Channel 38
Mid Channel 5220 MHz	Channel 44
High Channel 5230 MHz	Channel 46

Channels Verified (UNII 2C)

30MHz and 40MHz Bandwidth:

Low Channel 5525 MHz	Channel 105
Mid Channel 5600 MHz	Channel 120
High Channel 5700 MHz	Channel 140

Channels Verified (UNII 3)

30MHz Bandwidth:

Low Channel 5745 MHz	Channel 149
Mid Channel 5785 MHz	Channel 157
High Channel 5825 MHz	Channel 165

40MHz Bandwidth:

Low Channel 5745 MHz	Channel 151
Mid Channel 5785 MHz	Channel 157
High Channel 5825 MHz	Channel 165

FCC ID: YETD32-21266NU and YETD32-21266CU IC: 9298A-D3221266NU and 9298A-D3221266CU Report No. SD72116210-0416C



Rated Voltage	12V DC via external AC/DC adapter
Mode Verified	UNII 1, UNII 2A, UNII 2C and UNII 3
Capability Primary Unit (EUT)	LTE (Band 2, 12 and 4)/UNII and BT LE Production Pre-Production Engineering
Antenna Type	PCB Monopole
Manufacturer	Nextivity Inc.
Antenna Model	N/A
Antenna Gain	NU: 1 dBi CU: 0 dBi

1.3.3 Maximum Conducted Output Power

Mode	Frequency Range (MHz)	Output Power (dBm)	Output Power (W)
UNII 1	5190 - 5250	22.56	0.18
UNII 2A	5260 - 5310	22.68	0.19
UNI 2C	5525 - 5725	22.18	0.17
UNII 3	57355825	22.16	0.16



1.4 EUT TEST CONFIGURATION

1.4.1 Test Configuration Description

Test Configuration	Description
Δ	UNII Low Band. 90dB attenuator is connected between URX of CU and UTX of NU.
A	Output is monitored from UTX port of NU.
D	UNII High Band. 90dB attenuator is connected between URX of NU and UTX of CU.
D	Output is monitored from UTX port of CU.
	Radiated test setup.
С	Radiated test sample used for this test. Normal wireless link between NU and CU
	established.

1.4.2 EUT Exercise Software

Manufacturer provided a configuration software (ConformanceTest.exe) running from a support laptop where both EUT are connected via USB.

1.4.1 Support Equipment and I/O cables

Manufacturer	Equipment/Cable	Description		
Hon-Kwang	AC/DC Adapter (EUT)	M/N HK-AB-120A250-US P/N 290N025-001, 12VDC 2.5A		
Hon-Kwang	I.T.E Power Supply (2X)	Model HK-AX-120A167-US S/N: FB0000101 and FB0000075		
-	Support USB cable	1.75 meters, shielded Type A to Micro B connector		
Nextivity	Support USB cable	Custom 1.0 meter shielded USB Type A to DB9 for the Shielded Test Enclosure		
Sony	Support Laptop	M/N PCG-31311L S/N 27545534 3006488		
Sony	Support Laptop AC Adapter	M/N PCGA-AC19V9 S/N 147839091 0023259		
Mini-Circuits	Support Coaxial SMA Fixed Attenuator (x)	M/N VAT-30W2 30dB DC-6GHz		
		M/N 8494B		
Agilent	11dB Step Attenuator	Frequency Range DC - 18GHz		
		S/N 2812A17193		
		M/N 8496B		
Agilent	110dB Step Attenuator	Frequency Range DC - 18GHz		
		S/N MY42143874		
Pamsov	Support Shielded Test	M/N STE3300 S/N 3042 with custom USB cable		
Enclosure		and AC/DC Adapter		



1.4.2 Worst Case Configuration

Worst-case configuration used in this test report per Transmitter Conducted Output Power (Section 2.1 of this test report). This is for single channel verification, otherwise all three channels (Low, Mid and High) are verified:

Mode	Channel	Bandwidth
UNII 1	48 (High Channel)	30MHz
UNII 2A	52 (Low Channel)	30MHz
UNII 2C	140 (High Channel)	40MHz
UNII 3	165 (High Channel)	40MHz

EUT is a mobile device. Final installation position is unknown at the time of verification. For radiated measurements X, Y and Z orientations were verified. No major variation in emissions observed between the three (3) orientations. Verifications performed using "Z" configuration.



FCC ID: YETD32-21266NU and YETD32-21266CU IC: 9298A-D3221266NU and 9298A-D3221266CU Report No. SD72116210-0416C



1.4.3 Simplified Test Configuration Diagram



Test Configuration "A"

Support Laptop connected to both EUT via USB and running Nextivity UNII Conformance Test

Test Configuration "C"



Page **13** of **91**



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	Description of Modification			
Serial Number 296546000509 (NU) and 297546000285 (CU)					
N/A		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 C63.4-2014, 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 and KDB KDB789033 D02 General UNII Test Procedures New Rules v01r01 (Guidelines for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices - Part 15, Subpart E) January 08, 2016.

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 C63.4-2014. 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)

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 Innovation, Science and Economic Development 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 Innovation, Science and Economic Development Canada for radio equipment testing with Registration No. 3067A.



SECTION 2

TEST DETAILS

Radio Testing of the Nextivity Inc. Cel-Fi DUO RAINIER Smart Cellular Signal Booster

Page **16** of **91**



2.1 CONDUCTED EMISSIONS

2.1.1 Specification Reference

FCC 47 CFR Part 15, 15.207(a) RSS-Gen, Clause 7.2.4

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 μ H/50 ohms line impedance stabilization network (LISN).

	Conducted limit (dBµV)				
Frequency of emission (MHz)	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

Please refer to SD72112724-0116F FCC Part 15.407 Subpart E RSS247 Test Report.docx for serial number/s and test configuration used.

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

January 18, 2016/XYZ

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/Test Location

Test performed at TÜV SÜD America Inc. Rancho Bernardo facility.

Ambient Temperature	22.5°C
Relative Humidity	52.6.%
ATM Pressure	99.9 kPa

Page **17** of **91**



2.1.7 Additional Observations

- Test results presented here is from SD72112724-0116F FCC Part 15.407 Subpart E RSS247 Test Report.docx (issued by TÜV SÜD America San Diego April 2016). See Section 1.2 for more details.
- Measurement was done using EMC32 V8.53 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 2.1.8 for sample computation.

2.1.8 Sample Computation (Conducted Emission – Quasi Peak)

Measuring equipment ra	5.5			
Correction Factor (dB)	Asset# 8607 (20 dB attenuator)	19.9		
	Asset# 1177 (cable)	0.15	20.7	
	Asset# 1176 (cable)	0.35	20.7	
	Asset# 7568 (LISN)	0.30		
Reported QuasiPeak Fina	26.2			

2.1.9 Test Results

Compliant. See attached plots and tables.

FCC ID: YETD32-21266NU and YETD32-21266CU IC: 9298A-D3221266NU and 9298A-D3221266CU Report No. SD72116210-0416C





2.1.10 Test Results - Conducted Emissions Line 1 – Hot (NU)

Quasi Peak

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin - QPK (dB)	Limit - QPK (dBµV)
0.150000	47.9	1000.0	9.000	Off	L1	20.1	18.1	66.0
0.469500	40.0	1000.0	9.000	Off	L1	20.1	16.5	56.5
1.014000	28.0	1000.0	9.000	Off	L1	20.2	28.0	56.0
4.609500	25.9	1000.0	9.000	Off	L1	20.5	30.1	56.0
12.246000	36.2	1000.0	9.000	Off	L1	20.6	23.8	60.0
12.997500	38.4	1000.0	9.000	Off	L1	20.6	21.6	60.0

Frequency (MHz)	Average (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin - Ave (dB)	Limit - Ave (dBµV)
0.150000	34.6	1000.0	9.000	Off	L1	20.1	21.4	56.0
0.469500	36.3	1000.0	9.000	Off	L1	20.1	10.2	46.5
1.014000	24.4	1000.0	9.000	Off	L1	20.2	21.6	46.0
4.366500	19.5	1000.0	9.000	Off	L1	20.4	26.5	46.0
12.408000	31.4	1000.0	9.000	Off	L1	20.6	18.6	50.0
13.263000	33.7	1000.0	9.000	Off	L1	20.6	16.3	50.0





2.1.11 FCC Conducted Emissions Line 2 – Neutral (NU)

Quasi Peak

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin - QPK (dB)	Limit - QPK (dBµV)
0.150000	49.0	1000.0	9.000	Off	Ν	20.1	17.0	66.0
0.469500	41.5	1000.0	9.000	Off	N	20.1	15.0	56.5
2.107500	31.5	1000.0	9.000	Off	N	20.3	24.5	56.0
4.623000	33.4	1000.0	9.000	Off	N	20.4	22.6	56.0
12.358500	42.4	1000.0	9.000	Off	N	20.7	17.6	60.0
13.281000	43.2	1000.0	9.000	Off	N	20.6	16.8	60.0

Frequency (MHz)	Average (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin - Ave (dB)	Limit - Ave (dBµV)
0.348000	26.9	1000.0	9.000	Off	Ν	20.2	21.9	48.8
0.469500	37.1	1000.0	9.000	Off	Ν	20.1	9.4	46.5
1.860000	25.7	1000.0	9.000	Off	Ν	20.2	20.3	46.0
4.537500	27.5	1000.0	9.000	Off	Ν	20.4	18.5	46.0
12.435000	37.5	1000.0	9.000	Off	Ν	20.7	12.5	50.0
13.177500	38.5	1000.0	9.000	Off	N	20.6	11.5	50.0

FCC ID: YETD32-21266NU and YETD32-21266CU IC: 9298A-D3221266NU and 9298A-D3221266CU Report No. SD72116210-0416C





2.1.12 Test Results - Conducted Emissions Line 1 – Hot (CU)

Quasi Peak

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin - QPK (dB)	Limit - QPK (dBµV)
0.150000	48.9	1000.0	9.000	Off	L1	20.1	17.1	66.0
0.469500	40.9	1000.0	9.000	Off	L1	20.1	15.6	56.5
1.014000	28.3	1000.0	9.000	Off	L1	20.2	27.7	56.0
4.285500	27.2	1000.0	9.000	Off	L1	20.4	28.8	56.0
12.363000	36.4	1000.0	9.000	Off	L1	20.6	23.6	60.0
15.841500	37.1	1000.0	9.000	Off	L1	20.6	22.9	60.0

Frequency (MHz)	Average (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin - Ave (dB)	Limit - Ave (dBµV)
0.150000	33.9	1000.0	9.000	Off	L1	20.1	22.1	56.0
0.465000	37.8	1000.0	9.000	Off	L1	20.1	8.7	46.5
1.014000	24.9	1000.0	9.000	Off	L1	20.2	21.1	46.0
4.582500	21.3	1000.0	9.000	Off	L1	20.4	24.7	46.0
12.403500	31.3	1000.0	9.000	Off	L1	20.6	18.7	50.0
13.452000	32.4	1000.0	9.000	Off	L1	20.6	17.6	50.0





2.1.13 FCC Conducted Emissions Line 2 – Neutral (CU)

Quasi Peak

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin - QPK (dB)	Limit - QPK (dBµV)
0.150000	47.4	1000.0	9.000	Off	N	20.1	18.6	66.0
0.469500	40.8	1000.0	9.000	Off	N	20.1	15.7	56.5
1.819500	31.2	1000.0	9.000	Off	Ν	20.2	24.8	56.0
4.312500	32.9	1000.0	9.000	Off	N	20.4	23.1	56.0
8.875500	41.6	1000.0	9.000	Off	Ν	20.5	18.4	60.0
13.101000	41.4	1000.0	9.000	Off	Ν	20.6	18.6	60.0

Frequency (MHz)	Average (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin - Ave (dB)	Limit - Ave (dBµV)
0.154500	32.0	1000.0	9.000	Off	N	20.0	23.7	55.7
0.465000	37.8	1000.0	9.000	Off	N	20.1	8.7	46.5
2.031000	25.4	1000.0	9.000	Off	N	20.1	20.6	46.0
4.803000	27.8	1000.0	9.000	Off	N	20.5	18.2	46.0
8.938500	36.2	1000.0	9.000	Off	Ν	20.5	13.8	50.0
12.741000	36.6	1000.0	9.000	Off	N	20.7	13.4	50.0



2.2 26 DB BANDWIDTH

2.2.1 Specification Reference

FCC 47 CFR Part 15, Clause 15.403

2.2.2 Standard Applicable

(i) Emission bandwidth. For purposes of this subpart the emission bandwidth shall be determined by measuring the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, that are 26 dB down relative to the maximum level of the modulated carrier. Determination of the emissions bandwidth is based on the use of measurement instrumentation employing a peak detector function with an instrument resolution bandwidth approximately equal to 1.0 percent of the emission bandwidth of the device under measurement.

2.2.3 Test Methodology

Section II (C) (1) of KDB789033 D02 General UNII Test Procedures New Rules v01r01

2.2.4 Equipment Under Test and Modification State

Please refer to SD72112724-0116F FCC Part 15.407 Subpart E RSS247 Test Report for serial number/s and test configuration used.

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

March 18 and 21, 2016/XYZ

2.2.6 Test Equipment Used

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

2.2.7 Environmental Conditions

Test performed at TÜV SÜD America Inc. Rancho Bernardo facility

Ambient Temperature	25.7 - 26.0°C
Relative Humidity	46.9 - 47.0%
ATM Pressure	98.9 - 99.3kPa



2.2.8 Additional Observations

- Test results presented here is from SD72112724-0116F FCC Part 15.407 Subpart E RSS247 Test Report.docx (issued by TÜV SÜD America San Diego April 2016). See Section 1.2 for more details.
- This is a conducted test.
- Test methodology is per Section II (C) (1) of KDB789033 D02 General UNII Test Procedures New Rules v01r01 (January 8, 2016).
- Span is wide enough to capture the channel transmission.
- RBW is 1% of EBW.
- VBW > RBW.
- Detector is peak. Trace is max hold.
- Sweep time is set to Auto.
- "n dB down" (26dB) marker function of the spectrum analyzer was used for this test.

2.2.9 Summary Test Results (as reported)

UNII 1 30MHz -26dB Bandwidth (NU)								
Channel	Frequency (MHz)	-26dB Bandwidth (MHz)						
38	5190	30.54						
44	5220	30.39						
48	5240	30.68						
UNII 1 40MHz -26dB Bandwidth (NU)								
Channel	Frequency (MHz)	-26dB Bandwidth (MHz)						
38	5190	38.35						
44	5220	38.49						
46	5230	38.35						
	UNII 2A 30MHz -26dB Bandwidth (NU)							
Channel	Frequency (MHz)	-26dB Bandwidth (MHz)						
52	5260	30.54						
60	5300	31.11						
62	5310	30.54						
	UNII 2A 40MHz -26dB Bandy	vidth (NU)						
Channel	Frequency (MHz)	-26dB Bandwidth (MHz)						
54	5270	38.49						
60	5300	38.35						
62	5310	38.49						



UNII 2C 30MHz -26dB Bandwidth (CU)								
Channel	Frequency (MHz)	-26dB Bandwidth (MHz)						
105	5525	30.54						
120	5600	30.54						
140	5700	30.39						
UNII 2C 40MHz -26dB Bandwidth (CU)								
Channel	Frequency (MHz)	-26dB Bandwidth (MHz)						
105	5525	39.80						
120	5600	38.35						
140	5700	38.35						
	UNII 3 30MHz -26dB Bandwidth (CU)							
Channel	Frequency (MHz)	-26dB Bandwidth (MHz)						
149	5745	30.54						
157	5785	30.54						
165	5825	30.54						
	UNII 3 40MHz -26dB Bandw	vidth (CU)						
Channel	Frequency (MHz)	-26dB Bandwidth (MHz)						
151	5755	38.35						
157	5785	38.35						



2.2.10 Test Plots



Date: 18 MAR 2016 15:05:33





Date: 18.MAR 2016 15:04:31

UNII 1 40MHz Bandwidth Mid Channel 5220 MHz





Date: 18 MAR 2016 15:18:35

UNII 2A 30MHz Bandwidth Middle Channel 5300 MHz



Date: 18 MAR 2016 15:20:17

UNII 2A 40MHz Bandwidth Middle Channel 5300 MHz





Date: 21 MAR 2016 13:56:02





Date: 21.MAR 2016 14:00:21

UNII 2C 40MHz Bandwidth Middle Channel 5600 MHz





Date: 21.MAR 2016 15:22:09





Date: 21.MAR 2016 15:20:00

UNII 3 40MHz Bandwidth Middle Channel 5785 MHz



2.3 99% EMISSION BANDWIDTH

2.3.1 Specification Reference

RSS-Gen, Clause 6.6

2.3.2 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.

2.3.3 Equipment Under Test and Modification State

Please refer to SD72112724-0116F FCC Part 15.407 Subpart E RSS247 Test Report for serial number/s and test configuration used.

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

March 18 and 21, 2016/XYZ

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	25.7 - 26.0°C
Relative Humidity	46.9 - 47.0%
ATM Pressure	98.9 - 99.3kPa



2.3.7 Additional Observations

- Test results presented here is from SD72112724-0116F FCC Part 15.407 Subpart E RSS247 Test Report.docx (issued by TÜV SÜD America San Diego April 2016). See Section 1.2 for more details.
- This is a conducted test.
- The path loss was measured and entered as a level offset.
- Test methodology is per Section II (D) of KDB789033 D02 General UNII Test Procedures New Rules v01r01 (January 8, 2016).
- Span is wide enough to capture the channel transmission.
- RBW is 1% of the Emission Bandwidth.
- VBW is \geq 3x RBW.
- Sweep is auto.
- Detector is peak.
- The Channel Bandwidth measurement function of the spectrum analyzer was used for this test.

2.3.8 Summary Test Results (as reported)

UNII 1 30MHz 99% Bandwidth (NU)								
Channel	Frequency (MHz)	99% Bandwidth (MHz)						
38	5190	28.94						
44	5220	28.94						
48	5240	28.94						
UNII 1 40MHz 99% Bandwidth (NU)								
Channel	Frequency (MHz)	99% Bandwidth (MHz)						
38	5190	36.32						
44	5220	36.32						
46	5230	36.32						
	UNII 2A 30MHz 99% Bandwidth (NU)							
Channel	Frequency (MHz)	99% Bandwidth (MHz)						
52	5260	28.94						
60	5300	29.09						
62	5310	28.94						
	UNII 2A 40MHz 99% Bandw	idth (NU)						
Channel	Frequency (MHz)	99% Bandwidth (MHz)						
54	5270	36.18						
60	5300	36.47						
62	5310	36.18						



	UNII 2C 30MHz 99% Bandwidth (CU)						
Channel	Frequency (MHz)	99% Bandwidth (MHz)					
105	5525	28.94					
120	5600	28.94					
140	5700	28.94					
UNII 2C 40MHz 99% Bandwidth (CU)							
Channel	Frequency (MHz)	99% Bandwidth (MHz)					
105	5525	36.18					
120	5600	36.18					
140	5700	36.18					
	UNII 3 30MHz 99% Bandwidth (CU)						
Channel	Frequency (MHz)	99% Bandwidth (MHz)					
149	5745	28.94					
157	5785	28.94					
165	5825	28.94					
	UNII 3 40MHz 99% Bandwi	dth (CU)					
Channel	Frequency (MHz)	99% Bandwidth (MHz)					
151	5755	36.32					
157	5785	36.18					
165	5825	36.32					

FCC ID: YETD32-21266NU and YETD32-21266CU IC: 9298A-D3221266NU and 9298A-D3221266CU Report No. SD72116210-0416C



2.3.9 Test Plots







Date: 18 MAR 2016 15:04:04

UNII 1 40MHz Bandwidth Mid Channel 5220 MHz

Page **33** of **91**





Date: 18 MAR 2016 15:19:01

UNII 2A 30MHz Bandwidth Middle Channel 5300 MHz



Date: 18 MAR 2016 15:19:51

UNII 2A 40MHz Bandwidth Middle Channel 5300 MHz





Date: 21.MAR 2016 13:57:00





Date: 21.MAR 2016 13:59:47

UNII 2C 40MHz Bandwidth Middle Channel 5600 MHz





Date: 21.MAR 2016 15:21:43





Date: 21.MAR 2016 15:20:38

UNII 3 40MHz Bandwidth Middle Channel 5785 MHz


2.4 MINIMUM 6DB BANDWIDTH

2.4.1 Specification Reference

FCC 47 CFR Part 152, Clause 15.407(e) and RSS-247, Clause 6.2.4(1)

2.4.2 Standard Applicable

(e) Within the 5.725-5.85 GHz band, the minimum 6 dB bandwidth of UNII devices shall be at least 500 kHz.

2.4.3 Test Methodology

Section II (C) (2) of KDB789033 D02 General UNII Test Procedures New Rules v01r01

2.4.4 Equipment Under Test and Modification State

Please refer to SD72112724-0116F FCC Part 15.407 Subpart E RSS247 Test Report for serial number/s and test configuration used.

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

February 08, 12 and 16, 2016/XYZ

2.4.6 Test Equipment Used

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

2.4.7 Environmental Conditions

Test performed at TÜV SÜD America Inc. Rancho Bernardo facility

Ambient Temperature	26.7 - 29.0°C
Relative Humidity	21.4 - 26.8%
ATM Pressure	98.9 - 99.5kPa

2.4.8 Additional Observations

- Test results presented here is from SD72112724-0116F FCC Part 15.407 Subpart E RSS247 Test Report.docx (issued by TÜV SÜD America San Diego April 2016). See Section 1.2 for more details.
- This is a conducted test.
- The path loss was measured and entered as a level offset.
- Span is wide enough to capture the channel transmission.
- RBW is 100kHz.
- VBW is \geq 3X RBW.
- Sweep is auto.
- Detector is Peak.
- Trace mode is Max Hold.



UNII 1 30MHz 6dB Bandwidth (NU)							
Channel	Frequency (MHz)	-6dB Bandwidth (MHz)					
38	5190	28.90					
44	5220	28.94					
48	5240	28.97					
	UNII 1 40MHz 6dB Bandwi	dth (NU)					
Channel	Channel Frequency -6dB (MHz)						
38	5190	38.35					
44	5220	38.35					
46	5230	38.35					
	UNII 2A 30MHz 6dB Bandw	idth (NU)					
Channel	Frequency (MHz)	-6dB Bandwidth (MHz)					
52	5260	28.94					
60	5300	29.09					
62	5310	29.09					
UNII 2A 40MHz 6dB Bandwidth (NU)							
Channel	Frequency (MHz)	-6dB Bandwidth (MHz)					
54	5270	38.35					
60	5300	38.35					
62	5310	38.36					

2.4.9 Summary Test Results (as reported)



UNII 2C 30MHz 6dB Bandwidth (CU)									
Channel	Frequency (MHz)	-6dB Bandwidth (MHz)							
105	5525	29.23							
120	5600	29.38							
140	5700	29.38							
	UNII 2C 40MHz 6dB Bandwidth (CU)								
Channel	Frequency (MHz)	-6dB Bandwidth (MHz)							
105	5525	38.21							
120	5600	38.35							
140	5700	38.35							
	UNII 3 30MHz 6dB Bandwi	dth (CU)							
Channel	Frequency (MHz)	-6dB Bandwidth (MHz)							
149	5745	29.32							
157	5785	29.38							
165	5825	29.38							
UNII 3 40MHz 6dB Bandwidth (CU)									
Channel	Frequency (MHz)	-6dB Bandwidth (MHz)							
151	5755	38.35							
157	5785	38.35							
165	5825	38.35							

FCC ID: YETD32-21266NU and YETD32-21266CU IC: 9298A-D3221266NU and 9298A-D3221266CU Report No. SD72116210-0416C



2.4.10 Test Plots



Date: 12.FEB.2016 13:36:26





Date: 12.FEB.2016 11:54:42

UNII 1 40MHz Bandwidth Mid Channel 5220 MHz

Page **40** of **91**





Date: 12.FEB 2016 14:15:29

UNII 2A 30MHz Bandwidth Middle Channel 5300 MHz



Date: 12 FEB.2016 14:31:54

UNII 2A 40MHz Bandwidth Middle Channel 5300 MHz





Date: 8.FEB.2016 13:34:46

UNII 2C 30MHz Bandwidth Middle Channel 5600 MHz



Date: 8.FEB.2016 13:37:14

UNII 2C 40MHz Bandwidth Middle Channel 5600 MHz





Date: 8.FEB.2016 12:45:46





Date: 8.FEB.2016 12:36:46

UNII 3 40MHz Bandwidth Middle Channel 5785 MHz



2.5 MAXIMUM CONDUCTED OUTPUT POWER

2.5.1 Specification Reference

FCC 47 CFR Part 15, Clause 15.407(a) and RSS-247, Clause 6.2.4(1)

2.5.2 Standard Applicable

(iv) For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(2) For the 5.25–5.35 GHz and 5.47–5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in megahertz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(3) For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point UNII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the UNII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

2.5.3 Test Methodology

Section II (E)(2)(b) Method SA-1 of KDB789033 D02 General UNII Test Procedures New Rules v01r01

2.5.1 Equipment Under Test and Modification State

Please refer to SD72112724-0116F FCC Part 15.407 Subpart E RSS247 Test Report for serial number/s and test configuration used.

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

February 02, 04 and 16, 2016 / XYZ



2.5.2 Test Equipment Used

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

2.5.3 Environmental Conditions

Test performed at TÜV SÜD America Inc. Rancho Bernardo facility

Ambient Temperature	22.7 - 29.0°C
Relative Humidity	21.5 - 29.1%
ATM Pressure	98.9 - 100.1kPa

2.5.4 Additional Observations

- Test results presented here is from SD72112724-0116F FCC Part 15.407 Subpart E RSS247 Test Report.docx (issued by TÜV SÜD America San Diego April 2016). See Section 1.2 for more details.
- This is a conducted test.
- Test methodology is per Section E(2)(b) Method SA-1 of KDB789033 D02 General UNII Test Procedures New Rules v01r01 (January 8, 2016). All conditions under this Section were satisfied.
- RBW is 1MHz while VBW is \geq 3 MHz
- Detector is RMS
- Trace was averaged >100 times.
- The path loss was measured and entered as a level offset.
- The spectrum analyser band power function was used for this test.
- Only Middle Channel test plots presented as the representative configuration.

2.5.5 Test Results

UNII 1 30MHz Bandwidth (NU)									
Channel	Frequency (MHz)	Average Power (dBm)	Average Power (W)	Margin from 24dBm limit (dB)					
38	5190	21.15	0.13	2.85					
44	5220	21.46	0.14	2.54					
48	5240	22.56	0.18	1.44					
	UNII 1 40MHz Bandwidth (NU)								
Channel	Frequency (MHz)	Average Power (dBm)	Average Power (W)	Margin from 24dBm limit (dB)					
38	5190	21.45	0.14	2.55					
44	5220	21.36	0.14	2.64					
46	5230	21.62	0.15	2.38					



UNII 2A 30MHz Bandwidth (NU)								
Channel	Frequency Average Power Average Power (MHz) (dBm) (W)			Margin from 24dBm limit (dB)				
52	5260	22.68	0.19	1.32				
60	5300	22.07	0.16	1.93				
62	5310	20.48	0.11	3.52				
	UNII	2A 40MHz Bandwidth	(NU)					
Channel	Channel Frequency Average Power (MHz) (dBm)			Margin from 24dBm limit (dB)				
54	5270	22.50	0.18	1.5				
60	5300	22.48	0.18	1.52				
62	5310	20.16	0.10	3.84				

UNII 2C 30MHz Bandwidth (CU)								
Channel	Frequency (MHz)	Average Power (dBm)	Average Power (W)	Margin from 24dBm limit (dB)				
105	5525	21.20	0.13	2.8				
120	5600	21.44	0.14	2.56				
140	5700	21.94	0.16	2.06				
	UNI	2C 40MHz Bandwidth	(CU)					
Channel	Frequency (MHz)	Average Power (dBm)	Average Power (W)	Margin from 24dBm limit (dB)				
105	5525	21.21	0.13	2.79				
120	5600	21.58	0.14	2.42				
140	5700	22.18	0.17	1.82				
	UN	ll 3 30MHz Bandwidth (CU)					
Channel	Frequency (MHz)	Average Power (dBm)	Average Power (W)	Margin from 30dBm limit (dB)				
149	5745	21.32	0.14	8.68				
157	5785	21.87	0.15	8.13				
165	5825	21.82	0.15	8.18				
UNII 3 40MHz Bandwidth (CU)								
Channel	Frequency (MHz)	Average Power (dBm)	Average Power (W)	Margin from 30dBm limit (dB)				
151	5755	20.19	0.10	9.81				
157	5785	22.02	0.16	7.98				
165	5825	22.16	0.16	7.84				

Page **46** of **91**

FCC ID: YETD32-21266NU and YETD32-21266CU IC: 9298A-D3221266NU and 9298A-D3221266CU Report No. SD72116210-0416C



2.5.6 Sample Test Plots



Date: 2 FEB 2016 14:40:43





Date: 2.FEB.2016 14:39:07

UNII 1 40MHz Bandwidth Mid Channel 5220 MHz

Page **47** of **91**



× \$9.11	X Sp.m	n 🔆 🔭 (Sp.	10 🐥 🔹	5p.m4	uns Spant	X Sp.m?	🔶 X Sp.mit		4 5
Ref Level 42.6 Att 1 Frequency Sw	0 dBm Offs 25 dB SWT	et 17.60 dB ≅ 1 1 ms ≅ 1	RBW 1 MHz VBW 3 MHz	Compatible R8 Mode Auto	IS FSV Sweep			1 (GL ount 100/100
40 dBm								M1[1]	4.52 dBm
									5.3000000 GHZ
30 dBm									
20.45									
SD UELD									
10 dBm									
		$\langle - \rangle$	Annan		Carrow Contraction of the	many.			
0 dBm		/					<u> </u>		
The second second									
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warene ynynger	of Wester Car							- Ville	warmen to an
-+D dim									
-SD dam									
CF 5.3 GHz			691	pts	5.0	MHz/			Span 50.0 MHz
2 Marker Table									
M1 Ref	1	5.3 GHz		4.52 dBm	Band Power	on	Fund 22.	07 dBm	
							Ready 🛄		02.02.2016

Date: 2.FEB 2016 14:52:12

UNII 2A 30MHz Bandwidth Middle Channel 5300 MHz



Date: 2.FEB 2016 14:57:42

UNII 2A 40MHz Bandwidth Middle Channel 5300 MHz



HaltiView II Spam	Sp.2	: × sp.)		x spis	x Sp.6	્રિટ્રોબ		p.8 X Sp.8	4 .
Ref Level 41.9 Att	99 dBm Offs 25 dB = SWT	et 20.07 dB ● RE 10 ms ● VE	WIMHZ C WIMHZ N	ompatible R Iode Auto	8S FSV Sweep				SGL Count 100/100
40 dBm	Toop							MIL	1] 3.64 dBm
									5.600000 GHz
					-		_		
		\sim			1	1	~	\rightarrow	
								(
	/								
المرمدين والمراجع أستروا الترويد التقالي والتقالي	uninnormal							and the second se	وجاوم مار را الم الحمالية الم المحمد الم
-50 d0m									
CF 5.6 GHz			2000	ots		5.0 MHz/			Span 50.0 MHz
2 Marker Table									
Type Ref M1	Trc 1	X-Value 5.6 GHz		Y-Value 3.64 dBm	Fur Band Pow	nction /er		Function Rest 21.44 dBm	alt
							Ready		04.02.2016 14:52:52

Date: 4 FEB 2016 14:52:52

UNII 2C 30MHz Bandwidth Middle Channel 5600 MHz



Date: 4 FEB 2016 14:56:53

UNII 2C 40MHz Bandwidth Middle Channel 5600 MHz



HaltiView II Spaan	× 59.2	× (59.3	59.4	× 59.5	× 5p.6	(x)[92	X 5p.8	× 54.9	4 4 4
Ref Level 39.3 Att 1 Frequency Sw	6 dBm Offs 25 dB = SWT eep	et 17.44 dB ● RBW 10 ms ● VBW	1 MHz Compat 3 MHz Mode	ible R&S I Auto Sw	FSV eep				SGL Count 100/100 • IRm Avg
	the lock per se							M1[1]	4.00 dBm
30 dBm									317050000 0112
20 dbm									
10 dBm				ML		Junior		Š.	
0 dậm						<i></i>		1	
-10 dfim								1	
-20 dBm									
-30 d8m								Sund wind with and	with a male of a manual state
charge and a fair and a fair and a fair a fa									and the second sec
-40 dem									
-50 dBm									
CF 5.785 GHz			2000 pts		5	.0 MHz/			Span 50.0 MHz
2 Marker Table Type Ref	Trc	X-Value 5.785 GHz	4.00	Value D dBm	Fund Band Powe	tion	F	unction Result 21.87 dBm	
							Ready		04.02.2016 13:42:31

Date: 4 FEB 2016 13:42:32

UNII 3 30MHz Bandwidth Middle Channel 5785 MHz



Date: 4 FEB 2016 13:40:33

UNII 3 40MHz Bandwidth Middle Channel 5785 MHz



2.6 MAXIMUM POWER SPECTRAL DENSITY (PSD)

2.6.1 Specification Reference

FCC 47 CFR Part 15, Clause 15.407(a)(1), (a)(2) and (a)(3) RSS-247, Clause 6.2.4(1)

2.6.2 Standard Applicable

(iv) For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(2) For the 5.25–5.35 GHz and 5.47–5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in megahertz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(3) For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point UNII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the UNII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

2.6.3 Test Methodology

Section II (F) PSD of KDB789033 D02 General UNII Test Procedures New Rules v01r01

2.6.4 Equipment Under Test and Modification State

Please refer to SD72112724-0116F FCC Part 15.407 Subpart E RSS247 Test Report for serial number/s and test configuration used.

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

February 05, 08, 09 and 16, 2016 / XYZ



2.6.6 Test Equipment Used

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

2.6.7 Environmental Conditions

Test performed at TÜV SÜD America Inc. Rancho Bernardo facility

Ambient Temperature	23.0 - 29.0°C
Relative Humidity	21.5 - 29.1%
ATM Pressure	98.9 - 100.1kPa

2.6.8 Additional Observations

- Test results presented here is from SD72112724-0116F FCC Part 15.407 Subpart E RSS247 Test Report.docx (issued by TÜV SÜD America San Diego April 2016). See Section 1.2 for more details.
- This is a conducted test as per Section II (F) PSD of KDB789033 D02 General UNII Test Procedures New Rules v01r01 (January 8, 2016). All conditions under this Section were satisfied.
- The path loss was measured and entered as a level offset.
- Only Middle Channel test plots presented as the representative configuration.
- RBW for UNII 1, UNII 2A and UNII 2C is 1MHz while 500 kHz for UNII 3.

UNII 1 30MHz Bandwidth (NU)							
Channel	Frequency (MHz)	Maximum PSD (dBm)	Limit (dB)	Margin (dB)			
38	5190	8.38	11	2.62			
44	5220	9.22	11	1.78			
48	5240	6.80	11	4.2			
	UNI	I 1 40MHz Bandwidth (I	NU)				
Channel	Frequency (MHz)	Maximum PSD (dBm)	Limit (dB)	Margin (dB)			
38	5190	5.14	11	5.86			
44	5220	6.34	11	4.66			
46	5230	7.04	11	3.96			
UNII 2A 30MHz Bandwidth (NU)							
Channel	Frequency (MHz)	Maximum PSD (dBm)	Limit (dB)	Margin (dB)			
52	5260	5.89	11	5.11			
60	5300	5.90	11	5.1			
62	5310	5.92	11	5.08			

2.6.9 Test Results



UNII 2A 40MHz Bandwidth (NU)										
Channel	Frequency (MHz)	Maximum PSD (dBm)	Limit (dB)	Margin (dB)						
54	5270	6.62	11	4.38						
60	5300	3.78	11	7.22						
62	5310	2.46	11	8.54						

UNII 2C 30MHz Bandwidth (CU)										
Channel	Frequency (MHz)	Maximum PSD (dBm/MHz)	Limit (dB/MHz)	Margin (dB)						
105	5525	8.88	11	2.12						
120	5600	9.10	11	1.9						
140	5700	9.27	11	1.73						
UNII 2C 40MHz Bandwidth (CU)										
Channel	Frequency (MHz)	FrequencyMaximum PSDLimit(MHz)(dBm/MHz)(dB/MHz)		Margin (dB)						
105	5525	7.56	11	3.44						
120	5600	7.85	11	3.15						
140	5700	7.52	11	3.48						
	UN	II 3 30MHz Bandwidth (CU)							
Channel	Frequency (MHz)	Maximum PSD (dBm/MHz)	Limit (dB/MHz)	Margin (dB)						
149	5745	7.21	30	22.79						
157	5785	6.84	30	23.16						
165	5825	6.91	30	23.09						
	UN	II 3 40MHz Bandwidth (CU)							
Channel	Frequency (MHz)	Maximum PSD (dBm/MHz)	Limit (dB/MHz)	Margin (dB)						
151	5755	5.84	30	24.16						
157	5785	4.93	30	25.07						
165	5825	5.86	30	24.14						

FCC ID: YETD32-21266NU and YETD32-21266CU IC: 9298A-D3221266NU and 9298A-D3221266CU Report No. SD72116210-0416C



2.6.10 Test Plots



UNII 1 30MHz Bandwidth Middle Channel 5220 MHz



Date: 8 FEB 2016 15:41:58

UNII 1 40MHz Bandwidth Mid Channel 5220 MHz

Page **54** of **91**



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Ref Level 36.37 dBm Offs Att 15 dB SWT 1 Frequency Sweep	et 21.37 dB ≈ RB 2 ms ≈ VB	WIMHZ Co WIMHZ Mo	mpatible R80 de Auto S	s FSV weep			5 (GL ount 100/100
							M1[1]	5.90 dBm
30 dBm								3.312.3000 GH2
2.0 dBm								
ALL STATES								
10 dem					MI			
Л. (Ви)		1 Jum	were Amazzard		and a start			
-10 dBm-		<u> </u>						
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-30 dam-	in a sharp of a strategies i					Welder Bulliage	Monthly Links	
white law and white your purport							Part Manual Manual	all forth and a second the for
40 dam								
Sn dilio								
-60 d9m-								
CF 5.3 GHz		2000 p	ts		8.0 MHz/			pan 80.0 MHz
						Ready		09.02.2016

Date: 9.FEB.2016 09:53:15

UNII 2A 30MHz Bandwidth Middle Channel 5300 MHz



Date: 9.FEB 2016 09:54:53

UNII 2A 40MHz Bandwidth Middle Channel 5300 MHz



MultiView 🎫 Spectru	um 2 🔺 👘 Spectr	um 11 🛛 🐥	* Spectrum	🔹 🛪 🛐	pectrum 3			
Ref Level 37.97 dBm Att 30 dB 1 Frequency Sweep	Offset 20.07 dB = RB SWT 2 ms = VB	WIMHz Com WIMHz Mod	npatible R&S le Auto Sv	FSV reep			5 (GL Count 100/100 • 18m Avg
20 d0m							M1[1]	9.10 dBm 5.6131400 GHz
JU dem								
20 dBm								
10 dBm		proved your	a print	proved pro	MI AND			
0 döm			V Y					
+10 dBm								
-20 d8m								
-30.d0m	maddall trades and to the way of					what which the her which	Mahapin Makapakang	and the state of t
Witherson and an and a second an								
-40 dBm								
-50 dBm-								
A0 d0m								
CF 5.6 GHz		2000 pts		8	8.0 MHz/	Dent.		Span 80.0 MHz 05.02.2016
						Ready	342	12:45:56

Date: 5.FEB.2016 12:45:57

UNII 2C 30MHz Bandwidth Middle Channel 5600 MHz



Date: 5 FEB 2016 12:44:29

UNII 2C 40MHz Bandwidth Middle Channel 5600 MHz



MaltiView II Spanz 🔆 🐨 Spall 🔆 💌	Sp.um 🚽 🎽 🗶 Sp.m	u X sa	41 💽 SP	unis X	Sp.nt X	ipint 🔆 📰	4 4 4
Ref Level 33.08 dBm Offset 18.08 dB = ● Att 15 dB SWT 2 ms = 1 Frequency Sweep	RBW 500 kHz Co VBW 2 MHz M	ompatible R8 ode Auto	iS FSV Sweep			5 (GL ount 100/100 • 1Rm Avg
30 dBm						M1[1]	6.84 dBm 5.7725400 GHz
20 dBm							
10.dBm	MI man		Mare .	Carlo and April and			
0 idam		and the second	provide provide	man f	\		
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-30 dBm	40.00				Whiting the reduced		
angtentraindependent mailetulerantelen viernenaame + +						and a station of	hander Line yes branches
-50 dBm							
-60:d8m							
CF 5.785 GHz	2000 pts	;	8	.0 MHz/			pan 80.0 MHz
					Ready	490	10:26:46

Date: 9.FEB.2016 10:26:46

UNII 3 30MHz Bandwidth Middle Channel 5785 MHz



Date: 9.FEB 2016 10:30:18

UNII 3 40MHz Bandwidth Middle Channel 5785 MHz



2.7 UNWANTED EMISSIONS MEASUREMENT

2.7.1 Specification Reference

FCC 47 CFR Part 15, Clause 15.407(b) FCC 47 CFR Part 15.209 RSS-247, Clause 6.2.4(2)

2.7.2 Standard Applicable

(b) Undesirable emission limits. Except as shown in paragraph (b)(7) of this section, the maximum emissions outside of the frequency bands of operation shall be attenuated in accordance with the following limits:

(1) For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.

(2) For transmitters operating in the 5.25–5.35 GHz band: All emissions outside of the 5.15–5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.

(3) For transmitters operating in the 5.47–5.725 GHz band: All emissions outside of the 5.47–5.725 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.

(4) For transmitters operating in the 5.725-5.85 GHz band: All emissions within the frequency range from the band edge to 10 MHz above or below the band edge shall not exceed an e.i.r.p. of -17 dBm/MHz; for frequencies 10 MHz or greater above or below the band edge, emissions shall not exceed an e.i.r.p. of -27 dBm/MHz.

(6) Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in § 15.209.

(7) The provisions of §15.205 apply to intentional radiators operating under this section.

2.7.3 Test Methodology

Section II (G) Unwanted Emission Measurement of KDB789033 D02 General UNII Test Procedures New Rules v01r01

2.7.4 Equipment Under Test and Modification State

Serial No: 296546000509 (NU) and 297546000285 (CU) / Test Configuration C only, A and B were used for original filing. Please refer to SD72112724-0116F FCC Part 15.407 Subpart E RSS247 Test Report for serial number/s of units used in test configuration A and B.

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

February 05, 06, 16 and 21, 2016 / XYZ (original filing) May 02, 2016 / FSC (radiated emissions verification of LTE B12 variant)



2.7.6 Test Equipment Used

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

2.7.7 Environmental Conditions

Test performed at TÜV SÜD America Inc. Rancho Bernardo facility

Ambient Temperature	23.0 - 25.3 °C
Relative Humidity	21.5 – 38.8 %
ATM Pressure	98.9 – 99.9 kPa

2.7.8 Additional Observations

- This is an antenna-port conducted measurement test plus radiated cabinet emissions measurements.
- Antenna conducted port test results presented here is from SD72112724-0116F FCC Part 15.407 Subpart E RSS247 Test Report.docx (issued by TÜV SÜD America San Diego April 2016). See Section 1.2 for more details.
- Low, Middle and High channels were verified. Only Middle Channel test plots presented as the representative configuration.
- Sweep time is set to auto.
- The path loss was measured and entered as a level offset.
- The field strength limit of 15.209 is first converted to dBm (EIRP) using the formula under Section G(2)(d) of KDB789033 D02 General UNII Test Procedures New Rules v01r01. Prescans were performed against this limit. If Peak complies with the limit, no Average evaluation will be performed.
- Any emissions that is not in the restricted band will be evaluated to -27dBm/MHz (UNII 1, 2A, 2C) and -17dBm/MHz (UNII 3) limit. -27dBm limit line was set as the worst case.
- Radiated 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 2.7.9 for sample computation.

2.7.9 Sample Computation (Radiated Emission)

Measuring equipment raw measur		24.4	
Correction Factor (dB)	Asset# 1066 (cable)	0.3	
	Asset# 1172 (cable)	0.3	
	Asset# 1016 (preamplifier)	-30.7	-12.6
	Asset# 1175(cable)	0.3	
	Asset# 1002 (antenna)	17.2	
Reported QuasiPeak Final Measur	11.8		

2.7.10 Test Results

See attached plots.

FCC ID: YETD32-21266NU and YETD32-21266CU IC: 9298A-D3221266NU and 9298A-D3221266CU Report No. SD72116210-0416C



2.7.11 Test Plots



Date: 6.FEB.2016 11:17:13





Date: 6.FEB.2016 11:16:27

UNII 1 30MHz Bandwidth Middle Channel 5220 MHz Above 1GHz



Maltivian II Sp.m2 👹	59-11	*	Sp.um 🛛 🐳 🇖	Sp.m3	-	-m (X)	5p.m5 🐥 💌	Sp.mb X	Saint 🔺 🗴	
Ref Level -10.00 dt Att 5 1 Frequency Sweep	Bm Offset dB SWT	10.50 dB (2 ms (RBW 1 MH VBW 3 MH	iz Compa iz Mode	tible R8 Auto S	S FSV Sweep				SGL Count 100/100 • IPk Max
									M	1[1] -64.87 dBm 9.259 MHz
-20 dlim 9447 35_309 QP AVERAGE I										
-30 dtm										
-40 d9m										
-50 ctim										
-og dam					In the second				h. the	فالارتقار فليتكار والمتعاوم
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-60 dtm										
-90 dBm										
-100 dBm										
9.0 kHz			20	000 pts			00.0 MHz/			1.0 GHz
								Ready		06.02.2016 11:06:39

Date: 6.FEB 2016 11:06:38





Date: 6.FEB.2016 11:07:50

UNII 1 40MHz Bandwidth Mid Channel 5220 MHz Above 1GHz



Haltiview II Sp.m2	- *	9.11 🐥 🗵	Sp.un 🚽 🌞 🐨	5p.m3 👙 🐨	Sp.m1	Sp.m5 X	Sp.ex6 🔆 🗴	59.m7 🐥 🗴	4 • •
Ref Level -10 Att 1 Frequency Sy	.00 dBm Of 5 dB SV weep	fset 10.50 dB VI 2 ms	 RBW 1 MHz VBW 3 MHz 	Compatible Mode Au	R&S FSV uto Sweep			s c	GL ount 100/100 • 1Pk Max
								M1[1	-66.44 dBm 33.259 MHz
-20 dlim Poort 15_209 ige ove									
-30 d9m									
-40.d9m									
-50 cm									[
and the second galies	chyrationaldown	antornation	and malentaire an	adaladaraada	inhiadman-kanonanang	og,Afredikoliskisk	Nestantostation	ant franklika kan a	entelenterste
-60 dbm									
-90 dB/m									
-100 dBm									
9.0 kHz			2000	pts		100.0 MHz/			1.0 GHz
							Ready		06.02.2016 11:52:01

Date: 6.FEB.2016 11:52:02





Date: 6.FEB.2016 11:50:58

UNII 2A 30MHz Bandwidth Middle Channel 5300 MHz Above 1GHz

Page 62 of 91



MaltiVian 💷 Sp.m2 🍝 🖘 Sp.1	11 🔆 🐨 Spann — 🔆 🖙	🗐 Sp.m3 🛛 🔆 💷 🗍 Sp.m1	Sp.m5 X	Sp.eeb 🔆 🗶 Sp.e	w 🔆 🗐 () 💌
Ref Level -10.00 dBm Offs Att 5 dB SW1 1 Frequency Sweep	et 10.50 dB = RBW 1 MH; I 2 ms = VBW 3 MH;	z Compatible R&S F z Mode Auto Swe	SV sep		SGL Count 100/100 • 1Pk Max
					M1[1] -66.24 dBm 996.249 MHz
-20 dlim sout 25_200 ge overkoji Unit					
-30 dum					
⊶ł0 d9m-					
-50 dum					
-69 dbm					
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-03 dbm					
-90 dBm					
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9.0 kHz	20	00 pts	100.0 MHz/		1.0 GHz
				Ready 🛄	06.02.2016 11:49:10

Date: 6.FEB.2016 11:49:10





Date: 6.FEB.2016 11:48:18

UNII 2A 40MHz Bandwidth Middle Channel 5300 MHz Above 1GHz

Page **63** of **91**



HaltsView II Sp.m2		u 🌞 🛛	Sp.um	5p.m3 👙 🐨	Spant (Sp.m5	Sp.mb X	Sym7 X	
Ref Level -10 Att 1 Frequency Systems	.00 dBm Offs 5 dB SW1 weep	et 10.50 dB 2 ms	■ RBW 1 MHz 0 ■ VBW 3 MHz 1	Compatible Mode Aut	RBS FSV to Sweep			s	GL ount 100/100 • 1Pk Max
								M1[1	-64.79 dBm 6.759 MHz
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-30 dlm									
40 d9m									
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an the straight with	endors the history of the	realperation	anstrate for an internal ways	aylayoshodayd	hyungata taka kata kata kata kata kata kata	ghashiyiddigeonghadeolaydda	history	in the strategy and the	pathipsichlihesdestifters-
-60 dtm									
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9.0 kHz			2000	ots		100.0 MHz/			1.0 GHz
							Ready		05.02.2016 14:57:37

Date: 5 FEB 2016 14:57:37





Date: 5.FEB 2016 14:56:47

UNII 2C 30MHz Bandwidth Middle Channel 5600 MHz Above 1GHz

Page **64** of **91**



HaltsView 💷 Sp.m2 🍝 🐨 Sp.11	🔆 🛛 Sp.um 🛛 🔍	5p.m3 🔆 🖬 5p.m	el Sp.m5	X Sp.mb X	Sp.m7	1.00
Ref Level -10.00 dBm Offset Att 5 dB SWT 1 Frequency Sweep	10.50 dB ● RBW 1 MHz 2 ms ● VBW 3 MHz	Compatible R85 Mode Auto S	i FSV weep		SI Ci	3L ount 100/100 • 1Pk Max
					M1[1]	-66.20 dBm 919.749 MHz
-20 dlm exet 35_209 (p. overkoll UNIT						
-30 dlim						
-40.d9m						
-50 dtm						
-60 dam-						
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-100 dBm-						
9.0 kHz	2000) pts	100.0 MH	iz/		1.0 GHz
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Date: 5 FEB 2016 15:01:02





Date: 5 FEB 2016 15:00:33

UNII 2C 40MHz Bandwidth Middle Channel 5600 MHz Above 1GHz

Page **65** of **91**



Haltsview II Sp.m2	*	5p.11	*	Sp.um		und 🔆	x Sp.ml		Sp.nis	X Sp.mb	×	59.m7	
Ref Level -10.0 Att Frequency Sw	00 dBm 1 5 dB 1	Offset 10 SWT	0.50 dB 2 ms	RBW VBW	1 MHz C 3 MHz N	ompatible lode	e R&S Auto Sw	FSV eep					GL Count 100/100
												M1	1] -65.84 dBm 9.259 MHz
-20 dim Part 15_209 QP Aven													
-30 dum													
-40 d9m													
-50 ct/m													
-60 dtm													
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An approximated with	a hadding for the	idonidi, araili	h <i>arriter</i> r	(NP3-PAUron	Philip Hallery	an the second	raya, pana	allen feitigelet. A	lan kunan an a	andren within the	diritu dirita (na dir	al ann ann ann ann a'	
-03 dtm													
-95 dBin													
-100 dBm													
9.0 kHz					2000 p	ts		1	00.0 MHz/				1.0 GHz
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Date: 5.FEB.2016 15:56:07





Date: 5 FEB.2016 15:54:54

UNII 3 30MHz Bandwidth Middle Channel 5785 MHz Above 1GHz

Page **66** of **91**



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Ref Level -10.00 dBm Offset 10.50 Att 5 dB SWT 2 1 Frequency Sweep)dB = RBW 1 MHz Compatible :ms = VBW 3 MHz Mode A	R&S FSV uto Sweep		SGL Count 100/100 • 1Pk Max
				M1[1] -65.49 dBm 30.259 MHz
-20 dlim exert 15_200 ge xweekoli Usert				
-30 dum				
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-50 dum				
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-60 dbm				
-90 dBin				
-100 d8m				
9.0 kHz	2000 pts	100.0 MHz/		1.0 GHz
		Troto date	Ready III	05.02.2016 15:52:47

Date: 5.FEB.2016 15:52:48





Date: 5.FEB 2016 15:51:55

UNII 3 40MHz Bandwidth Middle Channel 5785 MHz Below 1GHz

Page 67 of 91





2.7.12 Test Results Below 1GHz (Representative Cabinet Spurious Emissions)

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)
31.320000	31.0	1000.0	120.000	115.0	V	18.0	-6.6	9.0	40.0
43.967214	27.3	1000.0	120.000	100.0	V	298.0	-12.6	12.7	40.0
82.028858	27.9	1000.0	120.000	100.0	н	138.0	-16.3	12.1	40.0
119.594950	34.8	1000.0	120.000	100.0	V	87.0	-15.2	8.7	43.5
120.986613	34.0	1000.0	120.000	110.0	Н	3.0	-15.3	9.5	43.5
920.996713	29.5	1000.0	120.000	265.0	Н	308.0	6.4	16.5	46.0





2.7.13 Test Results Above 1GHz (Representative Cabinet Spurious Emissions)

Peak Data

Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1000.500000	36.7	1000.0	1000.000	204.3	V	236.0	-11.2	37.2	73.9
1099.133333	35.4	1000.0	1000.000	196.5	V	23.0	-10.4	38.5	73.9
1931.966667	48.8	1000.0	1000.000	268.3	Н	23.0	-6.5	25.1	73.9
2653.200000	35.0	1000.0	1000.000	397.6	Н	117.0	-6.5	38.9	73.9
11087.83333	44.3	1000.0	1000.000	397.6	V	289.0	9.4	29.6	73.9
17783.76666	49.4	1000.0	1000.000	99.7	V	0.0	16.6	24.5	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)
1000.500000	22.5	1000.0	1000.000	204.3	V	236.0	-11.2	31.4	53.9
1099.133333	21.4	1000.0	1000.000	196.5	V	23.0	-10.4	32.5	53.9
1931.966667	32.1	1000.0	1000.000	268.3	Н	23.0	-6.5	21.8	53.9
2653.200000	21.6	1000.0	1000.000	397.6	Н	117.0	-6.5	32.3	53.9
11087.83333	31.5	1000.0	1000.000	397.6	V	289.0	9.4	22.4	53.9
17783.76666	36.4	1000.0	1000.000	99.7	V	0.0	16.6	17.5	53.9

Test Notes: No significant emissions observed above 18GHz. Only the worst case configuration presented.

Page **69** of **91**



2.8 BAND-EDGE MEASUREMENTS

2.8.1 Specification Reference

FCC 47 CFR Part 15, Clause 15.407(b) RSS-247, Clause 6.2.4(2)

2.8.2 Standard Applicable

(1) For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.

(2) For transmitters operating in the 5.25–5.35 GHz band: All emissions outside of the 5.15–5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.

(3) For transmitters operating in the 5.47–5.725 GHz band: All emissions outside of the 5.47–5.725 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.

(4) For transmitters operating in the 5.725-5.85 GHz band: All emissions within the frequency range from the band edge to 10 MHz above or below the band edge shall not exceed an e.i.r.p. of -17 dBm/MHz; for frequencies 10 MHz or greater above or below the band edge, emissions shall not exceed an e.i.r.p. of -27 dBm/MHz.

(7) The provisions of §15.205 apply to intentional radiators operating under this section.

2.8.3 Test Methodology

Section II (G)(3)(d)(ii) Band Edge Measurement of KDB789033 D02 General UNII Test Procedures New Rules v01r01

2.8.4 Equipment Under Test and Modification State

Please refer to SD72112724-0116F FCC Part 15.407 Subpart E RSS247 Test Report for serial number/s and test configuration used.

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

February 26 and March 18, 2016 / XYZ

2.8.6 Test Equipment Used

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

2.8.7 Environmental Conditions

Test performed at TÜV SÜD America Inc. Rancho Bernardo facility

Page **70** of **91**



23.0 - 25.7°C
21.5 - 47.0%
98.9 - 100kPa

2.8.8 Additional Observations

- Test results presented here is from SD72112724-0116F FCC Part 15.407 Subpart E RSS247 Test Report.docx (issued by TÜV SÜD America San Diego April 2016). See Section 1.2 for more details.
- This is a conducted test using Integration Method as per Section II (G)(3)(d)(ii) Band Edge Measurement of KDB789033 D02 General UNII Test Procedures New Rules v01r01.
- RBW=100 kHz
- VBW=300 kHz
- Sweep time=Auto
- Trace Mode=max hold
- Detector is Peak for Peak measurements and RMS for Average measurements.
- Sweep time is set to auto.
- The path loss was measured and entered as a level offset.
- Integration performed across 1MHz bandwidth.

2.8.9 Test Results



Date: 18 MAR 2016 14:49:19

UNII 1 30MHz Lower Band Edge 5150MHz (Peak Measurement) @5190MHz

Lower band edge calculation:

- 5150 MHz (in the restricted band)
- Limit is -27dBm EIRP
- Use the following formula as per Section Section G(2)d)(III) of KDB789033 D02 General UNII Test

Page **71** of **91**

FCC ID: YETD32-21266NU and YETD32-21266CU IC: 9298A-D3221266NU and 9298A-D3221266CU Report No. SD72116210-0416C



- Procedures New Rules v01r01:
 - E(dBµV/m) =

= EIRP (dBm) + 95.2

= (-33.77 dBm + 1 dBi antenna gain) + 95.2

= 62.43 dB μ V/m @ 3 meters (Complies with 74 dB μ V/m limit)

Ref Level 10.0	00 dBm Of	fset 25.80 d8 •	RBW 100 kHz Compati	ble R8S FSV		SGL
Att	10 dB SW	/T 41.84 µs (~6.9 ms) ●	VBW 300 kHz Mode	Auto FFT		Count 100/100
rrequency sv	veep					M1[1] -54.34 dB
						5.15000000 GH
			MI		~	~
50 dBm						
F 5.15 GHz			691 pts	500.0 kHz/		Span 5.0 MH
Marker Table						
Type Ref	Trc	X-Value	Y-Value	Function	Fune	tion Result
MI	1	5.15 GHZ	-54.34 aBM	Band Power	-44	.22 aBm
					Ready	18.03.2016

UNII 1 30MHz Lower Band Edge 5150MHz (Average Measurement) @5190MHz

Lower band edge calculation:

- 5150 MHz (in the restricted band)
- Use the following formula as per Section Section G(2)d)(III) of KDB789033 D02 General UNII Test Procedures New Rules v01r01:
 - $E(dB\mu V/m) = EIRP (dBm) + 95.2$
 - = (-44.22 dBm + 1 dBi antenna gain) + 95.2
 - = 51.98 dBµV/m @ 3 meters (Complies with 54 dBµV/m limit)


Haltiview II Span2	× [59-11	x Sp.um	Spini Spini	sp.m4	Sp.m5	Sp.mb	X 59.00		4 4 4
Ref Level 10.00 Att 1 Frequency Swi	dBm Offset 10 dB SWT	25.80 41.84 µs (~6.9 m	dB = RBW 100 kHz s) = VBW 300 kHz	Compatible 4 Mode 4	R8S FSV Auto FFT			s	GL ount 100/100
								M1[1] 5	-42.06 dBm
0 diim									
-10 dBm									
-20 d8m									
-20 dlim									
-40 dbm	\sim			MI		\sim	m	~	\sim
-50 dim				~~~ ~					
-60 dlim									
-70 dBm									
-80 dêm									
CF 5.15 GHz			691 pts		500.0 kH	tz/			Span 5.0 MHz
2 Marker Table Type Ref M1	Trc 1	X-Value 5.15 GHz	-42.06	alue 5 dBm e	Function and Power		Funct	ion Result 21 dBm	
						Re	ady 🛄	1111 498	18.03.2016 14:38:51

Date: 18.MAR 2016 14:38:51



Lower band edge calculation:

- 5150 MHz (in the restricted band)
- Limit is -27dBm EIRP
- Use the following formula as per Section Section G(2)d)(III) of KDB789033 D02 General UNII Test Procedures New Rules v01r01:

E(dBµV/m)

- = EIRP (dBm) + 95.2
 - = (-33.21 dBm + 1 dBi antenna gain) + 95.2
 - = 62.99 dB μ V/m @ 3 meters (Complies with 74 dB μ V/m limit)

Page **73** of **91**



MultiView II Sp.m2	1 Sp.11	i 📰 (Spam 🕴	spint 🗖	Sp.mt X	Spins 🎽 🔭	Sp.ad 🛛 🔍	Sp.m7	4 4 4
Ref Level 10.0 Att	0 dBm Offse 10 dB SWT	t 25.80 dB 41.84 µs (~6.9 ms)	 RBW 100 kHz VBW 300 kHz M 	ompatible R&S FS lode Auto FF	V T			SGL Count 100/100
Triequency on	reep						M1[1]	-55.64 dBm
								15000000 GHz
0 dim-								
-10 d8m-								
-20 d9m								
-30 dtim								
-to due								
Here Guille								
10 dtm								
-su aum				MI				
~~~~				~				
-60 dlim-								
- weather								
-20.dBm								
-60 dim								
CF 5.15 GHz			691 pts		500.0 kHz/			Span 5.0 MHz
2 Marker Table								- ²²
Type Ref	Trc	X-Value	Y-Value	Ren F	unction	ŀ	unction Result	
MI		5.15 GHZ	-55.64 a	Band Po	ower		45.67 dBm	18.03 2016
						Ready		14:43:43

Date: 18 MAR 2016 14 43 43



### Lower band edge calculation:

- 5150 MHz (in the restricted band)
- Use the following formula as per Section Section G(2)d)(III) of KDB789033 D02 General UNII Test Procedures New Rules v01r01:

= EIRP (dBm) + 95.2

E(dBµV/m)

- = (-45.67 dBm + 1 dBi antenna gain) + 95.2
- = 50.53 dBµV/m @ 3 meters (Complies with 54 dBµV/m limit)



Haltivian 22 59.11	a a a a a a a a a a a a a a a a a a a	a 🔍 Sp.m3	Sp.m4	🐨 spans 🛛 🌞	Spint X	Sp.m7 X Sq	unt 🔍 💌
Ref Level 10.9 Att 1 Frequency Sy	0 dBm Offse 0 dB SWT veep	t 26.70 dB 41.84 µs (∼6.9 ms)	<ul> <li>RBW 100 kHz</li> <li>VBW 300 kHz</li> </ul>	Compatible R&S Mode Auto	FSV FFT		SGL Count 100/100 • 1Pk Max
							M1[1] -44.10 dBm 5 35000000 GHz
0 dam-							5.55000000 012
-10 d0m							
+20 dBm							
22.45							
ATT DUM							
12-14	~~~~	~ ~ ~		MI			
		~~~~ -				$\sim$	marian
-50 dBm-							
40 d0m							
0.5.000.							
-70 dBm							
-80 dBm							
			601.00		500.01415.6		0.00
2 Marker Table			691 pts		500.0 KH2/		Span 5.0 MHz
Type Ref	Trc	X-Value	Y-Val	ue d Bm	Function	Fur	action Result
INIT		3.33 GHZ	-44.10	Band	Power	-3	18.03.2016
						readay	16:08:08

Date: 18.MAR 2016 16:08:08



Upper band edge calculation (5350 MHz):

- 5350 MHz (in the restricted bands)
- Limit is -27dBm EIRP
- Use the following formula as per Section Section G(2)D)(III) of KDB789033 D02 General UNII Test Procedures New Rules v01r01:

E(dBµV/m)

- = EIRP (dBm) + 95.2
 - = (-33.32 dBm + 1 dBi antenna gain) + 95.2
 - = 62.88 dB μ V/m @ 3 meters (Complies with 74 dB μ V/m limit)

Page **75** of **91**



HallSView II 59.11	Sp.em	Sp.m3	Sp.m4	🐨 Spant 🎽	X Sp.mb	x 3p.m7 X	Sp.ml X	
Ref Level 10.9 Att Frequency Sw	0 dBm Offset 0 dB SWT	t 26.70 dE 41.84 μs (~6.9 ms	 RBW 100 kHz VBW 300 kHz 	Compatible R8 Mode Au	S FSV to FFT			SGL Count 100/100
							M1[1]	-52.94 dBm 5.35000000 GHz
0 dam								
-10 dBm								
+20 dBm								
-30 d0m								
-40 dlim								
-SD dBm				MI				
-60 d8m							~~~~	
-70 dBm								
-80' d8m								
CF 5.35 GHz			691 pts		500.0 kHz/	,		Span 5.0 MHz
2 Marker Table					1			1997 - 19
Type Ref M1	Trc 1	X-Value 5.35 GHz	7-Val -52.94	ue dBm Bar	Function nd Power		-43.35 dBm	
						Ready		18.03.2016 16:11:17

Date: 18.MAR 2016 16:11:17

UNII 2A 30MHz Upper Band Edge 5350MHz (Average Measurement) @ 5310 MHz

Upper band edge calculation (5350 MHz):

- 5350 MHz (in the restricted bands)
- Limit is -27dBm EIRP
- Use the following formula as per Section Section G(2)D)(III) of KDB789033 D02 General UNII Test Procedures New Rules v01r01:

E(dBµV/m)

- = EIRP (dBm) + 95.2
 - = (-43.35 dBm + 1 dBi antenna gain) + 95.2
 - = 52.85 dB μ V/m @ 3 meters (Complies with 54 dB μ V/m limit)

Page **76** of **91**



Maltivian 22 59.11	Span	n 💽 Sp.mt	5p.m4	Sp.m5	🔆 🔭 Spinik	X 5p.m7	Sp.mt	
Ref Level 10.9 Att 1 Frequency Sw	0 dBm Offse 5 dB SWT	t 26.70 41.84 μs (~6.9 n	dB = RBW 100 kHz ns) = VBW 300 kHz	Compatible Mode	R8S FSV Auto FFT			SGL Count 100/100 • 1Pk Max
								M1[1] -41.54 dBm 5 35000000 GHz
ð dam-								3133000000 GHz
-10 d0m								
-20 dBm								
-30.d0m								
	\sim	$\sim\sim\sim$	som	hand	~~~~			
-50 dBm-								V
-60 dBm								
The shore								
-70 dBm-								
-80 dBm								
CF 5.35 GHz			691 pts		500.0	kHz/		Span 5.0 MHz
2 Marker Table Type Ref	Trc	X-Value	Y-V	alue 1 d Bm	Function Band Power		Functi	on Result
1 V						in the second	teady	18.03.2016 16:06:18

Date: 18.MAR 2016 16:06:19



Upper band edge calculation (5350 MHz):

- 5350 MHz (in the restricted bands)
- Limit is -27dBm EIRP
- Use the following formula as per Section Section G(2)D)(III) of KDB789033 D02 General UNII Test Procedures New Rules v01r01:

E(dBµV/m)

- = EIRP (dBm) + 95.2
 - = (-31.16 dBm + 1 dBi antenna gain) + 95.2
 - = 65.04 dB μ V/m @ 3 meters (Complies with 74 dB μ V/m limit)

Page **77** of **91**



HallSView II 59.11	Sp.cm	Sp.m3	Sp.n4	Sp.m5 🌞 🕅 Sp.	n6 X Sp.m7	X Spant X	
Ref Level 10.9 Att Frequency Sw	0 dBm Offset 5 dB SWT	t 26.70 dB 41.84 µs (∼6.9 ms)	 RBW 100 kHz VBW 300 kHz M 	ompatible R&S FSV ode Auto FFT	21		SGL Count 100/100
						M1[1]	-53.28 dBm 5.35000000 GHz
0 dêm							
-10 dBm							
+20 dBm							
-30 dim							
-40 dBm							
~50.080)				~	~~~~~~		
-60,d8m							
-70 dBm							
-90 d8m							
CF 5.35 GHz			691 pts	50	0.0 kHz/		Span 5.0 MHz
2 Marker Table							
Type Ref M1	Trc 1	X-Value 5.35 GHz	Y-Value -53.28 de	5m Band Power	tion	Function Result -42.60 dBm	
					Read	y 🕂 🕂 👬 🤐	18.03.2016 16:04:17

Date: 18.MAR 2016 16:04:17

UNII 2A 40MHz Upper Band Edge 5350MHz (Average Measurement) @ 5310 MHz

Upper band edge calculation (5350 MHz):

- 5350 MHz (in the restricted bands)
- Limit is -27dBm EIRP
- Use the following formula as per Section Section G(2)D)(III) of KDB789033 D02 General UNII Test Procedures New Rules v01r01:

E(dBµV/m)

- = EIRP (dBm) + 95.2
 - = (-42.6 dBm + 1 dBi antenna gain) + 95.2
 - = 53.6 dBµV/m @ 3 meters (Complies with 54 dBµV/m limit)

Page **78** of **91**



Haltivian 22 5p.m2	- 🐳 💷 🖌 sp.1	11 🔆 🙁 Sp.um	Sp.m3	x Sp.m1	X Sp.n5	X Sp.mb	X Sp.m7 X	4
Ref Level 26.2 Att 1 Frequency Sv	28 dBm Offse 15 dB SWT veep	et 22.10 dB 41.84 µs (~6.9 ms)	 RBW 100 kHz VBW 300 kHz 	Compatible R8 Node Au	S FSV to FFT			SGL Count 100/100 • 1Pk Max
20 dbm							M1[1]	-53.73 dBm 5.47000000 GHz
20.0210								
10 dBm								
0 d8m								
.17.40m								
10000								
-20 dBm								
-30 d8m								
-40 d8m								
-90 d0m	~~~~		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		~~~~	m		\sim
60 dBm								
+70 d8m								
CF 5.47 GHz			691 pts		500.0 kHz/	,		Span 5.0 MHz
2 Marker Table Type Ref M1	Trc 1	X-Value 5.47 GHz	Y-Valu -53.73 d	e Bm Bar	Function Id Power		Function Result -42.74 dBm	
						Ready	1111111) 9 9	09.02.2016 14:04:50

Date: 9.FEB.2016 14:04:50

UNII 2C 30MHz Lower Band Edge 5470MHz (Peak Measurement) @ 5525 MHz

Lower band edge calculation:

- 5470 MHz (not in the restricted bands)
- Limit is -27dBm EIRP
- Calculation @ 5470 MHz:

Integrated average measurement @ 5525 MHz EIRP @ 5525 MHz

Margin of compliance

= -42.74 dBm

- = -42.7 + 0 dBi (antenna gain)
- = -42.7 dBm
- = -15.7dB (compliant)

Page **79** of **91**



Haltsview II Sp.m2		🔆 📰 Spam	Sp.m3	Sp.ml	X Sp.n5	X Sp.mb	x Sp.m7	4 4 4
Ref Level 26.2 Att 1 Frequency Sw	8 dBm Offset 15 dB SWT cep	t 22.10 d 41.84 µs (~6.9 m:	B = RBW 100 kHz s) = VBW 300 kHz	Compatible Mode	R&S FSV Auto FFT			SGL Count 100/100 • 1Pk Max
20 dBm							M1[1]	-51.96 dBm 5.47000000 GHz
10 dBm								
0 dBm								
-10 d9m								
-20 dBm								
-30 dtini								
+0 d8m								
AD dBm					\sim			
-70 d8m-								
CF 5.47 GHz			691 pts		500.0 kHz	2/		Span 5.0 MHz
2 Marker Table Type Ref M1	Trc 1	X-Value 5.47 GHz	γ-v. -51.96	alue 5 dBm e	Function land Power		Function Result -41.94 dBm	
						Ready		09.02.2016 14:06:48

Date: 9.FEB.2016 14:06:48



Lower band edge calculation:

- 5470 MHz (not in the restricted bands)
- Limit is -27dBm EIRP
- Calculation @ 5470 MHz:
 Integrated average measurement @ 5725 MHz

EIRP @ 5725 MHz

Margin of compliance

= -41.94 dBm

- = -41.94 + 0 dBi (antenna gain)
- = -41.94 dBm
- = -14.94dB (compliant)

Page 80 of 91



HaltiView II Sp.m2		11 🐥 🔟 Sp.um	X 5p.m3	Sp.mi	X Sp.m5	x [54	.eeb 💌	Sp.m7	4 4 4
Ref Level 32.9 Att Frequency Systems	92 dBm Offse 15 dB SWT	et 17.92 41.84 µs (~6.9 r	dB ● RBW 100 kH; ns) ● VBW 300 kH;	z Compatibl z Mode	e R&S FSV Auto FFT				SGL Count 100/100
00 dBm								M1[1]	-31,55 dBm 5.85000000 GHz
20 dBm									
10 dBm									
0 dēm									
-10 d9m									
-20 dtm									
40 dam	\sim				\sim	\sim	\sim		produce.
-50 clim-									
-60 dBm									
CF 5.85 GHz			691 pts		500.0	kHz/			Span 5.0 MHz
2 Marker Table Type Ref M1	Trc 1	X-Value 5.85 GHz	-31.5	/alue 5 dBm	Function Band Power	<u> </u>	!	unction Result 21.57 dBm	
							Ready		09.02.2016 14:01:36

Date: 9.FEB.2016 14:01:36



Lower band edge calculation:

- 5850 MHz (not in the restricted bands)
- Limit is -17dBm EIRP
- Calculation @ 5850 MHz:

Integrated average measurement @ 5850 MHz EIRP @ 5850 MHz

Margin of compliance

= -21.57 dBm

- = -21.57 + 0 dBi (antenna gain)
- = -21.57 dBm
- = -4.57 dB (Compliant)

Page **81** of **91**



Haltivian II Span	2 👹 🐨 🕯 54	s.11 🔆 🛪 Sp.um	Sp.ml T	Sp.m4 X Sp.m5 X	Sp.mb X Sp.m7	
Ref Level 32 Att 1 Frequency 5	.92 dBm Offs 15 dB SW	et 17.92 o I 41.84 μs (~6.9 m:	B ● RBW 100 kHz Con s) ● VBW 300 kHz Mod	npatible R&SFSV le AutoFFT		SGL Count 100/100
30 dBm					M1[1]	-31.84 dBm 5.85000000 GHz
157 700	<u> </u>			MI		~~~
CE 5 85 CH2			601 ptc	500.0 kHz/		Spap 5 0 MHz
2 Marker Tabl	0		091 pts	300.0 KH27		apan ato Miriz
Type Re M1	Trc 1	X-Value 5.85 GHz	Y-Value -31.84 dBn	Function Band Power	Function Resu -22.83 dBn	IL
6	T				Ready 🗰	09.02.2016 14:00:29

Date: 9.FEB 2016 14:00:29



Lower band edge calculation:

- 5850 MHz (not in the restricted bands)
- Limit is -17dBm EIRP
- Calculation @ 5850 MHz:

Integrated average measurement @ 5850 MHz EIRP @ 5850 MHz

Margin of compliance

= -22.83 dBm

- = -22.83 + 0 dBi (antenna gain)
 - = -22.83 dBm
 - = -5.83 dB (Compliant)

Page 82 of 91



SECTION 3

TEST EQUIPMENT USED

Page **83** of **91**



3.1 TEST EQUIPMENT USED

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

ID Number (SDGE/SDRB)	Test Equipment	Туре	Serial Number	Manufacturer	Cal Date	Cal Due Date
Conducted Port Se	tup					
7582	Signal/Spectrum Analyzer	FSW26	101614	Rhode & Schwarz	10/05/15	10/05/16
7608	Vector Signal Generator	SMBV100A	259021	Rhode & Schwarz	07/29/15	07/29/16
7569	Series Power Meter	N1911A P-	MY45100625	Agilent	06/19/15	06/19/16
7605	50MHz-18GHz Wideband Power Sensor	N1921A	MY51100054	Agilent	04/10/15	04/10/16
8772	10dB Attenuator	606-06- 1F4/DR	-	MECA	Verified by 7	608 and 7569
-	Step Attenuator (110dB)	8496B	MY42143874	Agilent	Ν	I/A
-	Step Attenuator (11dB)	8494B	2812A17193	Agilent	Ν	I/A
Radiated Test Setu	p					
1002	Bilog Antenna	3142C	00058717	ETS-Lindgren	11/06/15	11/06/17
1040	EMI Test Receiver	ESIB40	100292	Rhode & Schwarz	09/29/15	09/29/16
1016	Pre-amplifier	PAM-0202	187	PAM	12/15/15	12/15/16
1051	Double-ridged waveguide horn antenna	3115	9408-4329	EMCO	03/21/16	03/21/17
1049	EMI Test Receiver	ESU	100133	Rhode & Schwarz	03/17/16	03/17/17
8628	Pre-amplifier	QLJ 01182835-JO	8986002	QuinStar Technologies Inc.	01/11/16	01/11/17
Conducted Emissic	ins					
1024	EMI Test Receiver	ESCS 30	847793/001	Rhode & Schwarz	04/10/15	04/10/16
7567	LISN	FCC-LISN-50- 25-2-10	120304	Fischer Custom Comm.	07/14/15	07/14/16
7568	LISN	FCC-LISN-50- 25-2-10	120305	Fischer Custom Comm.	10/28/15	10/28/16
8822	20dB Attenuator	34-20-34	N/A	MCE / Weinschel	02/20/15	02/20/16
8824	20dB Attenuator	34-20-34	N/A	MCE / Weinschel	02/20/15	02/20/16
Miscellaneous						
	Test Software	EMC32	V8.53	Rhode & Schwarz	N	I/A
1072	DC Power Supply	E3610A	KR51311519	Hewlett Packard	Verified	l by 6752
6792	Multimeter	3478A	2911A70964	Hewlett Packard	08/14/15	08/14/16
7560	Barometer/Temperature/Humi dity Transmitter	iBTHX-W	1240476	Omega	10/19/15	10/19/16

Page 84 of 91



3.2 MEASUREMENT UNCERTAINTY

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

3.2.1 Conducted Measurements

		Contribution	Probability Distribution Type	Probability Distribution x _i	Standard Uncertainty u(x _i)	[u(x _i)] ²
	1	Receiver/Spectrum Analyzer	Rectangular	0.36	0.21	0.04
1	2	Cables	Rectangular	0.50	0.29	0.08
1.1	3	LISN	Rectangular	0.66	0.38	0.15
4	4	Attenuator	Rectangular	0.30	0.17	0.03
	5	EUT Setup	Rectangular	1.00	0.58	0.33
				Combined	d Uncertainty (u _c):	0.80
				Co	verage Factor (k):	2
				Expai	nded Uncertainty:	1.59

3.2.2 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

3.2.3 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

Page **85** of **91**

FCC ID: YETD32-21266NU and YETD32-21266CU IC: 9298A-D3221266NU and 9298A-D3221266CU Report No. SD72116210-0416C



3.2.4 Conducted Antenna Port Measurement

	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	0.50	0.29	0.08
3	EUT Setup	Rectangular	1.00	0.58	0.33
		Combined Uncertainty (u _c):		0.72	
		Coverage Factor (k):		2	
			Expanded Uncertainty:		1.45



SECTION 4

DIAGRAM OF TEST SETUP

Page **87** of **91**

FCC ID: YETD32-21266NU and YETD32-21266CU IC: 9298A-D3221266NU and 9298A-D3221266CU Report No. SD72116210-0416C



4.1 TEST SETUP DIAGRAM



Radiated Emission Test Setup (Below 1GHz)

Page 88 of 91





Analyzer

Radiated Emission Test Setup (Above 1GHz)

Page 89 of 91



SECTION 5

ACCREDITATION, DISCLAIMERS AND COPYRIGHT



5.1 ACCREDITATION, DISCLAIMERS AND COPYRIGHT

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Page **91** of **91**