TEST REPORT

Reference No. : WTU16S0960900E

FCC ID...... : 2AHCK-ELST3216H

Applicant : ANHUI KONKA ELECTRONIC CO., LTD

Address : NO.999, ZhongDu Road, Chu Zhou, An Hui, China

Manufacturer : ANHUI KONKA ELECTRONIC CO., LTD

Address NO.999, ZhongDu Road, Chu Zhou, An Hui, China

Product Name 32" HD Digital LED TV

ELST3216H, ELEFJ322S, ELEFT326, ELEFW328, ELEFR321,

Model No. ELEFJ322, ELEFS321, ELEFW328B, ELEFT326LE-32GY16-A3,

ELEFT32*, ELEFW32*, ELEFW328-01, ELST3216H, LE-32GDXB-B3

Standards FCC CFR47 Part 15 C Section 15.247:2015

Date of Receipt sample..... Sep. 18, 2016

Date of Test...... Sep. 19 – Oct. 13, 2016

de 2

Date of Issue Oct. 28, 2016

Test Result Pass

Remarks:

The results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of the company.

The report would be invalid without specific stamp of test institute and the signatures of compiler and approver.

Prepared By:

Waltek Services (Shenzhen) Co., Ltd.

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Tested by:

Approved by:

Zero Zhou / Test Engineer

Philo Zhong / Manager

2 Contents

	001	WED DAGE	Page
1		VER PAGE NTENTS	
2		PORT REVISION HISTORY	
4		NERAL INFORMATION	
•	4.1	GENERAL DESCRIPTION OF E.U.T.	
	4.1	DETAILS OF E.U.T.	
	4.3	CHANNEL LIST	
	4.4	TEST MODE	
	4.5	TEST FACILITY	
5		UIPMENT USED DURING TEST	
	5.1	EQUIPMENTS LIST	
	5.2 5.3	TEST EQUIPMENT CALIBRATION	
6		ST SUMMARY	
7		NDUCTED EMISSION	
,	7.1	E.U.T. OPERATION	
	7.1	EUT SETUP	
	7.3	MEASUREMENT DESCRIPTION	10
	7.4	CONDUCTED EMISSION TEST RESULT	11
8	RAI	DIATED EMISSIONS	13
	8.1	EUT OPERATION	
	8.2	TEST SETUP	
	8.3 8.4	SPECTRUM ANALYZER SETUP TEST PROCEDURE	
	8.5	CORRECTED AMPLITUDE & MARGIN CALCULATION	
	8.6	SUMMARY OF TEST RESULTS	17
9	BAI	ND EDGE MEASUREMENT	29
	9.1	TEST PRODUCE	29
	9.2	TEST RESULT	
10	BAI	NDWIDTH MEASUREMENT	34
	10.1		
	10.2		
11	MA	XIMUM PEAK OUTPUT POWER	
	11.1 11.2		
12		Page 1 Test Result:	
12			
	12.1 12.2		_
13		TENNA REQUIREMENT	
14		EXPOSURE	
	14.1		
	14.2	2 THE PROCEDURES / LIMIT	56
	14.3		
15	PHO	OTOGRAPHS – MODEL ELST3216H TEST SETUP PHOTOS	58
	15 1	RADIATED EMISSION	58

Reference No.: WTU16S0960900E Page 3 of 70

	15.2	CONDUCTED EMISSION AT TEST SITE 2#	61
16	PHOT	TOGRAPHS - CONSTRUCTIONAL DETAILS	62
	16.1	MODEL ELST3216H-EXTERNAL PHOTOS	62
	16.2	MODEL ELST3216H-INTERNAL PHOTOS	67

Reference No.: WTU16S0960900E Page 4 of 70

3 Report Revision History

Test report No.	Date of Receipt sample	Date of Test	Date of Issue	Purpose	Comment	Approved
WTU16S0960900E	Sep. 18, 2016	Sep. 19 – Oct. 13, 2016	Oct. 14, 2016	Original	-	Replaced
WTU16S0960900E	Sep. 18, 2016	Sep. 19 – Oct. 13, 2016	Oct. 28, 2016	Revision 1	Revised Test Equipment List / Calibration Date And added 6db Bandwidth&99% Bandwidth Test Result	Valid

Reference No.: WTU16S0960900E Page 5 of 70

4 General Information

4.1 General Description of E.U.T.

Product Name: 32" HD Digital LED TV

Model No.: ELST3216H, ELEFJ322S, ELEFT326, ELEFW328, ELEFR321,

ELEFJ322, ELEFS321, ELEFW328B, ELEFT326LE-32GY16-A3,

ELEFT32*, ELEFW32*, ELEFW328-01, ELST3216H, LE-32GDXB-B3

Model Difference: Only the model name is different.

Operation Frequency: 802.11b/g/n HT20: 2412MHz ~ 2462MHz,

802.11n HT40: 2422MHz~2452MHz

The Lowest Oscillator: 24MHz

Antenna Gain: :2.0dBi

Type of modulation: IEEE 802.11b (CCK/QPSK/BPSK,11Mbps max.)

IEEE 802.11g (BPSK/QPSK/16QAM/64QAM,54Mbps max.)
IEEE 802.11n (BPSK/QPSK/16QAM/64QAM,HT20:72Mbps max.,

HT40:150Mbps max.)

4.2 Details of E.U.T.

Technical Data: Input Power: AC 120V~50/60Hz, 65W

4.3 Channel List

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
No.	(MHz)	No.	(MHz)	No.	(MHz)	No.	(MHz)
1	2412	2	2417	3	2422	4	2427
5	2432	6	2437	7	2442	8	2447
9	2452	10	2457	11	2462	12	-

4.4 Test Mode

Table 1 Tests Carried Out Under FCC part 15.247

Test Items	Mode	Data Rate	Channel	TX/RX
	802.11b	11 Mbps	1/6/11	TX
Maximum Book Output Bours	802.11g	54 Mbps	1/6/11	TX
Maximum Peak Output Power	802.11n HT20	108 Mbps	1/6/11	TX
	802.11n HT40	150 Mbps	3/6/9	TX
	802.11b	11 Mbps	1/6/11	TX
Down Chartel Dansity	802.11g	54 Mbps	1/6/11	TX
Power Spectral Density	802.11n HT20	108 Mbps	1/6/11	TX
	802.11n HT40	150 Mbps	3/6/9	TX
	802.11b	11 Mbps	1/11	TX
Fraguency Dange	802.11g	54 Mbps	1/11	TX
Frequency Range	802.11n HT20	108 Mbps	1/11	TX
	802.11n HT40	150 Mbps	3/9	TX
	802.11b	11 Mbps	1/6/11	TX
Transmitter Spurious Emissions	802.11g	54 Mbps	1/6/11	TX
Transmitter Spurious Emissions	802.11n HT20	108 Mbps	1/6/11	TX
	802.11n HT40	150 Mbps	3/6/9	TX

Note :Parameters set by test software during channel & power tests, the software provided by the customer was used to set the operating channels as well as the output power level. The RF output power set is the power expected by the manufacturer and is going to be fixed on the firmware of the final product .

4.5 Test Facility

The test facility has a test site registered with the following organizations:

IC – Registration No.: 7760A-1

Waltek Services(Shenzhen) Co., Ltd. Has been registered and fully described in a report filed with the Industry Canada. The acceptance letter from the Industry Canada is maintained in our files. Registration number 7760A-1, October 15, 2015.

FCC Test Site 1# Registration No.: 880581

Waltek Services(Shenzhen) Co., Ltd. EMC 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. Registration 880581, April 29, 2014.

• FCC Test Site 2#– Registration No.: 328995

Waltek Services(Shenzhen) Co., Ltd. EMC 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. Registration 328995, December 3, 2014.

Equipment Used during Test 5

5	5.1 Equipments L	_ist				
Condu	cted Emissions Test	Site 1#				
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Calibration Date	Calibration Due Date
1.	EMI Test Receiver	R&S	ESCI	100947	Sep.12, 2016	Sep.11, 2017
2.	LISN	R&S	ENV216	101215	Sep.12, 2016	Sep.11, 2017
3.	Cable	Тор	TYPE16(3.5M)	-	Sep.12, 2016	Sep.11, 2017
Condu	cted Emissions Test	Site 2#				
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Calibration Date	Calibration Due Date
1.	EMI Test Receiver	R&S	ESCI	101155	Sep.12, 2016	Sep.11, 2017
2.	LISN	SCHWARZBECK	NSLK 8128	8128-289	Sep.12, 2016	Sep.11, 2017
3.	Limiter	York	MTS-IMP-136	261115-001- 0024	Sep.12, 2016	Sep.11, 2017
4.	Cable	LARGE	RF300	-	Sep.12, 2016	Sep.11, 2017
3m Sei	mi-anechoic Chamber	for Radiation Emis	sions Test site	1#		
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Calibration Date	Calibration Due Date
1	EMC Analyzer	Agilent	E7405A	MY45114943	Sep.15,2016	Sep.14,2017
2	Active Loop Antenna	Beijing Dazhi	ZN30900A	-	Oct.17, 2015	Oct.16, 2016
3	Trilog Broadband Antenna	SCHWARZBECK	VULB9163	336	Apr.09, 2016	Apr.08, 2017
4	Coaxial Cable (below 1GHz)	Тор	TYPE16(13M)	-	Apr.13, 2016	Apr.12, 2017
5	Broad-band Horn Antenna	SCHWARZBECK	BBHA 9120 D	667	Apr.09, 2016	Apr.08, 2017
6	Broad-band Horn Antenna	SCHWARZBECK	BBHA 9170	335	Apr.09, 2016	Apr.08, 2017
7	Broadband Preamplifier	COMPLIANCE DIRECTION	PAP-1G18	2004	Apr.13, 2016	Apr.12, 2017
8	Coaxial Cable (above 1GHz)	Тор	1GHz-25GHz	EW02014-7	Apr.13, 2016	Apr.12, 2017
3m Sei	mi-anechoic Chamber	for Radiation Emis	sions Test site	2#		
Item	Equipment	Manufacturer	Model No.	Serial No	Last Calibration Date	Calibration Due Date
1	Test Receiver	R&S	ESCI	101296	Apr.13, 2016	Apr.12, 2017
2	Trilog Broadband Antenna	SCHWARZBECK	VULB9160	9160-3325	Apr.09, 2016	Apr.08, 2017
3	Amplifier	Compliance pirection systems inc	PAP-0203	22024	Apr.13, 2016	Apr.12, 2017
4	Cable	HUBER+SUHNER	CBL2	525178	Apr.13, 2016	Apr.12, 2017

RF Conducted Testing									
Item	Equipment Manufacturer		Model No.	Serial No.	Last Calibration Date	Calibration Due Date			
1.	EMC Analyzer (9k~26.5GHz)	Agilent	E7405A	MY45114943	Sep.15,2016	Sep.14,2017			
2.	Spectrum Analyzer (9k-6GHz)	R&S	FSL6	100959	Sep.15,2016	Sep.14,2017			
3.	Signal Analyzer (9k~26.5GHz)	Agilent	N9010A	MY50520207	Sep.15,2016	Sep.14,2017			

5.2 Measurement Uncertainty

Parameter	Uncertainty
Radio Frequency	± 1 x 10 ⁻⁶
RF Power	± 1.0 dB
RF Power Density	± 2.2 dB
	± 5.03 dB (30M~1000MHz)
Radiated Spurious Emissions test	± 5.47 dB (1000M~25000MHz)
Conducted Spurious Emissions test	± 3.64 dB (AC mains 150KHz~30MHz)

5.3 Test Equipment Calibration

All the test equipments used are valid and calibrated by CEPREI Certification Body that address is No.110 Dongguan Zhuang RD. Guangzhou, P.R.China.

Reference No.: WTU16S0960900E Page 9 of 70

6 Test Summary

Test Items	Test Requirement	Result
	15.247	
Radiated Emissions	15.205(a)	С
	15.209(a)	
Conducted Emissions	15.207(a)	С
Bandwidth	15.247(a)(2)	С
Maximum Peak Output Power	15.247(b)(3),(4)	С
Power Spectral Density	15.247(e)	С
Band Edge	15.247(d)	С
Antenna Requirement	15.203	С
Maximum Permissible Exposure (Exposure of Humans to RF Fields)	1.1307(b)(1)	С
Note: C=Compliance; NC=Not Compliance;	NT=Not Tested; N/A=N	ot Applicable.

Reference No.: WTU16S0960900E Page 10 of 70

7 Conducted Emission

Test Requirement: FCC CFR 47 Part 15 Section 15.207
Test Method: ANSI C63.10:2013,ANSI C63.4:2014

Test Result: PASS

Frequency Range: 150kHz to 30MHz

Class/Severity: Class B

Limit: 66-56 dB_µV between 0.15MHz & 0.5MHz

 $56~dB\mu V$ between 0.5MHz~&~5MHz $60~dB\mu V$ between 5MHz~&~30MHz

Detector: Peak for pre-scan (9kHz Resolution Bandwidth)

7.1 E.U.T. Operation

Operating Environment:

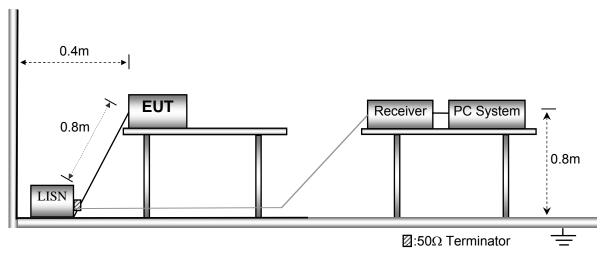
Temperature: 21.5 °C
Humidity: 51.9 % RH
Atmospheric Pressure: 101.2kPa

EUT Operation:

The test was performed in Transmitting mode, the test data were shown in the report.

7.2 EUT Setup

The conducted emission tests were performed using the setup accordance with the ANSI C63.10.

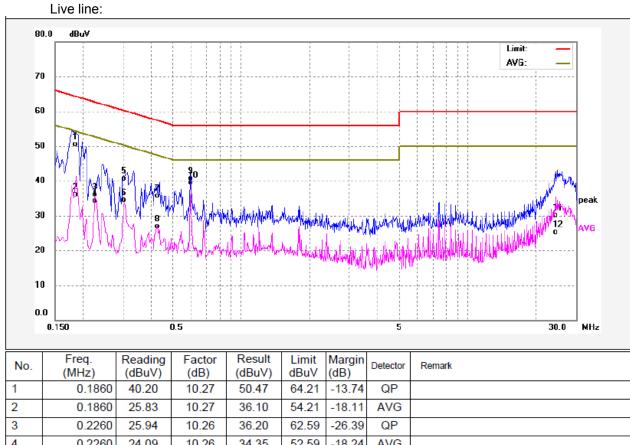


7.3 Measurement Description

The maximised peak emissions from the EUT was scanned and measured for both the Live and Neutral Lines. Quasi-peak & average measurements were performed if peak emissions were within 6dB of the average limit line.

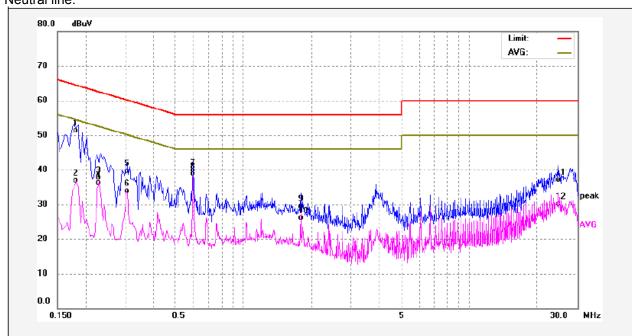
Conducted Emission Test Result 7.4

An initial pre-scan was performed on the live and neutral lines.



No.	Freq. (MHz)	(dBuV)	(dB)	(dBuV)	dBuV	(dB)	Detector	Remark
1	0.1860	40.20	10.27	50.47	64.21	-13.74	QP	
2	0.1860	25.83	10.27	36.10	54.21	-18.11	AVG	
3	0.2260	25.94	10.26	36.20	62.59	-26.39	QP	
4	0.2260	24.09	10.26	34.35	52.59	-18.24	AVG	
5	0.3060	30.38	10.28	40.66	60.08	-19.42	QP	
6	0.3060	24.21	10.28	34.49	50.08	-15.59	AVG	
7	0.4260	25.45	10.26	35.71	57.33	-21.62	QP	
8	0.4260	16.63	10.26	26.89	47.33	-20.44	AVG	
9	0.5980	30.45	10.30	40.75	56.00	-15.25	QP	
10	0.5980	29.25	10.30	39.55	46.00	-6.45	AVG	
11	24.4820	18.99	11.20	30.19	60.00	-29.81	QP	
12	24.4820	14.06	11.20	25.26	50.00	-24.74	AVG	

Neutral line:



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Margin (dB)	Detector	Remark
1	0.1819	40.95	10.27	51.22	64.39	-13.17	QP	
2	0.1819	26.57	10.27	36.84	54.39	-17.55	AVG	
3	0.2300	27.51	10.26	37.77	62.45	-24.68	QP	
4	0.2300	25.99	10.26	36.25	52.45	-16.20	AVG	
5	0.3060	29.49	10.28	39.77	60.08	-20.31	QP	
6	0.3060	23.60	10.28	33.88	50.08	-16.20	AVG	
7	0.5980	29.68	10.30	39.98	56.00	-16.02	QP	
8	0.5980	28.69	10.30	38.99	46.00	-7.01	AVG	
9	1.7940	19.06	10.45	29.51	56.00	-26.49	QP	
10	1.7940	15.65	10.45	26.10	46.00	-19.90	AVG	
11	24.6620	25.87	11.20	37.07	60.00	-22.93	QP	
12	24.6620	18.81	11.20	30.01	50.00	-19.99	AVG	

Reference No.: WTU16S0960900E Page 13 of 70

8 Radiated Emissions

Test Requirement: FCC CFR47 Part 15 Section 15.209 & 15.247

Test Method: ANSI C63.10:2013,ANSI C63.4:2014

Test Result: PASS
Measurement Distance: 3m

I imit

LIIIII.						
	Field Stre	ngth	Field Strength Limit at 3m Measurement Dist			
Frequency (MHz)	uV/m Distance (m)		uV/m	dBuV/m		
0.009 ~ 0.490	2400/F(kHz)	300	10000 * 2400/F(kHz)	20log ^{(2400/F(kHz))} + 80		
0.490 ~ 1.705	24000/F(kHz)	30	100 * 24000/F(kHz)	20log ^{(24000/F(kHz))} + 40		
1.705 ~ 30	30	30	100 * 30	20log ⁽³⁰⁾ + 40		
30 ~ 88	100	3	100	20log ⁽¹⁰⁰⁾		
88 ~ 216	150	3	150	20log ⁽¹⁵⁰⁾		
216 ~ 960	200	3	200	20log ⁽²⁰⁰⁾		
Above 960	500	3	500	20log ⁽⁵⁰⁰⁾		

8.1 EUT Operation

Operating Environment:

Temperature: 23.5 °C
Humidity: 52.1 % RH
Atmospheric Pressure: 101.2kPa

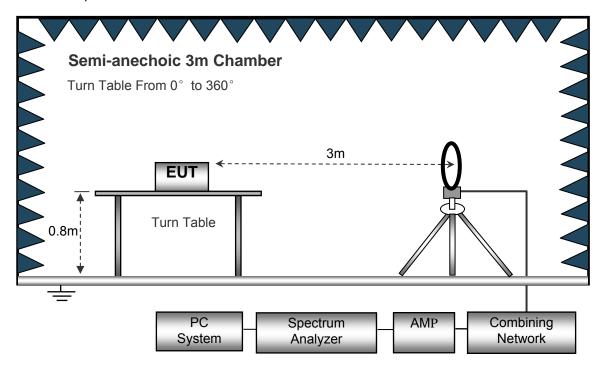
EUT Operation:

The test was performed in transmitting mode, the test data were shown in the report.

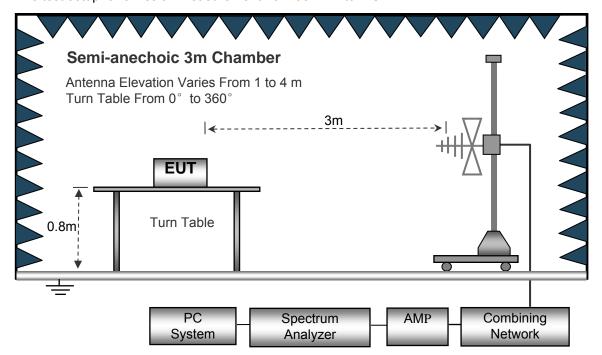
8.2 Test Setup

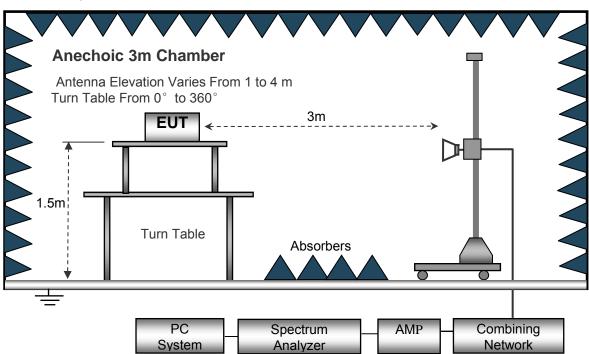
The radiated emission tests were performed in the 3m Semi- Anechoic Chamber test site, using the setup accordance with the ANSI C63.10.

The test setup for emission measurement below 30MHz.



The test setup for emission measurement from 30 MHz to 1 GHz.





The test setup for emission measurement above 1 GHz.

8.3 Spectrum Analyzer Setup

Below 30MHz		
	Sweep Speed	. Auto
	IF Bandwidth	.10kHz
	Video Bandwidth	.10kHz
	Resolution Bandwidth	.10kHz
30MHz ~ 1GHz	z	
	Sweep Speed	. Auto
	Detector	.PK
	Resolution Bandwidth	.100kHz
	Video Bandwidth	.300kHz
Above 1GHz		
	Sweep Speed	. Auto
	Detector	.PK
	Resolution Bandwidth	.1MHz
	Video Bandwidth	.3MHz
	Detector	.Ave.
	Resolution Bandwidth	.1MHz
	Video Bandwidth	.10Hz

Reference No.: WTU16S0960900E Page 16 of 70

8.4 Test Procedure

1. The EUT is placed on a turntable. For below 1GHz, the EUT is 0.8m above ground plane; For above1GHz, the EUT is 1.5m above ground plane.

- 2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level
- EUT is set 3m away from the receiving antenna, which is moved from 1m to 4m to find out the maximum emissions.
- 4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
- 5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
- 6. Repeat above procedures until the measurements for all frequencies are complete.
- 7. The radiation measurements are performed in X,Y and Z axis positioning(X denotes lying on the table, Y denotes side stand and Z denotes vertical stand),the worst condition was tested putting the eut in X axis.so the worst data were shown as follow.
- 8. A 2.4GHz high –pass filter is used druing radiated emissions above 1GHz measurement.

8.5 Corrected Amplitude & Margin Calculation

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

Corr. Ampl. = Indicated Reading + Antenna Factor + Cable Factor - Amplifier Gain

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

Margin = Corr. Ampl. – Limit

8.6 Summary of Test Results

Test Frequency : 24MHz to 30MHz

The measurements were more than 20 dB below the limit and not reported.

Test Frequency: 30MHz ~ 18GHz

F	Receiver	Datastan	Turn	RX An	tenna	Corrected	Corrected	FCC F 15.247/2	
Frequency	Reading	Detector	table Angle	Height	Polar	Factor	Amplitude	Limit	Margin
(MHz)	(dBµV)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dBµV/m)	(dBµV/m)	(dB)
			11b: Lo	w Chann	el 2412 l	ИНz			
265.21	41.02	QP	192.93	1.71	Н	-11.62	29.40	46.00	-16.60
265.21	36.20	QP	213.67	1.34	V	-11.62	24.58	46.00	-21.42
4824.00	50.47	PK	285.99	1.53	V	-1.06	49.41	74.00	-24.59
4824.00	47.02	Ave	285.99	1.53	V	-1.06	45.96	54.00	-8.04
7236.00	41.63	PK	173.73	1.60	Н	1.33	42.96	74.00	-31.04
7236.00	41.54	Ave	173.73	1.60	Н	1.33	42.87	54.00	-11.13
2310.56	45.59	PK	231.58	1.68	V	-13.19	32.40	74.00	-41.60
2310.56	39.48	Ave	231.58	1.68	V	-13.19	26.29	54.00	-27.71
2365.28	44.80	PK	287.33	1.85	Н	-13.14	31.66	74.00	-42.34
2365.28	37.51	Ave	287.33	1.85	Н	-13.14	24.37	54.00	-29.63
2492.36	42.49	PK	74.55	1.48	V	-13.08	29.41	74.00	-44.59
2492.36	36.89	Ave	74.55	1.48	V	-13.08	23.81	54.00	-30.19

F	Receiver	Datastan	Turn	RX An	tenna	Corrected	0	FCC F 15.247/2	
Frequency	Reading	Detector	table Angle	Height	Polar	Factor	Corrected Amplitude	Limit	Margin
(MHz)	(dBµV)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dBµV/m)	(dBµV/m)	(dB)
11b: Middle Channel 2437MHz									
265.21	40.33	QP	150.00	1.88	Н	-11.62	28.71	46.00	-17.29
265.21	35.98	QP	126.63	1.55	V	-11.62	24.36	46.00	-21.64
4874.00	49.85	PK	272.89	1.17	V	-0.62	49.23	74.00	-24.77
4874.00	46.83	Ave	272.89	1.17	V	-0.62	46.21	54.00	-7.79
7311.00	40.82	PK	102.00	1.45	Н	2.21	43.03	74.00	-30.97
7311.00	42.35	Ave	102.00	1.45	Н	2.21	44.56	54.00	-9.44
2349.73	45.78	PK	310.58	1.56	V	-13.19	32.59	74.00	-41.41
2349.73	38.05	Ave	310.58	1.56	V	-13.19	24.86	54.00	-29.14
2387.43	43.91	PK	278.70	1.98	Н	-13.14	30.77	74.00	-43.23
2387.43	37.72	Ave	278.70	1.98	Н	-13.14	24.58	54.00	-29.42
2498.58	42.98	PK	344.35	1.03	V	-13.08	29.90	74.00	-44.10
2498.58	36.79	Ave	344.35	1.03	V	-13.08	23.71	54.00	-30.29

	Receiver	Detector	Turn	RX An	tenna	Corrected	0	FCC F 15.247/2			
Frequency	Reading	Detector	table Angle	Height	Polar	Factor	Corrected Amplitude	Limit	Margin		
(MHz)	(dBµV)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dBµV/m)	(dBµV/m)	(dB)		
	11b: High Channel 2462MHz										
265.21	40.35	QP	54.53	1.23	Н	-11.62	28.73	46.00	-17.27		
265.21	37.31	QP	268.71	1.91	V	-11.62	25.69	46.00	-20.31		
4924.00	50.81	PK	333.92	1.89	V	-0.24	50.57	74.00	-23.43		
4924.00	46.91	Ave	333.92	1.89	V	-0.24	46.67	54.00	-7.33		
7386.00	39.60	PK	255.83	1.92	Н	2.84	42.44	74.00	-31.56		
7386.00	42.57	Ave	255.83	1.92	Н	2.84	45.41	54.00	-8.59		
2313.20	45.14	PK	74.77	1.90	V	-13.19	31.95	74.00	-42.05		
2313.20	39.94	Ave	74.77	1.90	V	-13.19	26.75	54.00	-27.25		
2353.44	43.12	PK	339.78	1.47	Н	-13.14	29.98	74.00	-44.02		
2353.44	36.35	Ave	339.78	1.47	Н	-13.14	23.21	54.00	-30.79		
2490.68	43.07	PK	333.49	1.09	V	-13.08	29.99	74.00	-44.01		
2490.68	36.79	Ave	333.49	1.09	V	-13.08	23.71	54.00	-30.29		

	Receiver	Datastan	Turn	RX An	tenna	Corrected	Carrantad	FCC F 15.247/2	
Frequency	Reading	Detector	table Angle	Height	Polar	Factor	Corrected Amplitude	Limit	Margin
(MHz)	(dBµV)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dBµV/m)	(dBµV/m)	(dB)
			11g: Lo	w Chann	el 2412I	MHz			
265.21	41.16	QP	156.63	1.84	Н	-11.62	29.54	46.00	-16.46
265.21	37.33	QP	109.45	1.90	V	-11.62	25.71	46.00	-20.29
4824.00	50.10	PK	17.72	1.48	V	-1.06	49.04	74.00	-24.96
4824.00	46.09	Ave	17.72	1.48	V	-1.06	45.03	54.00	-8.97
7236.00	40.02	PK	338.20	1.53	Н	1.33	41.35	74.00	-32.65
7236.00	42.57	Ave	338.20	1.53	Н	1.33	43.90	54.00	-10.10
2314.42	46.62	PK	240.09	1.37	V	-13.19	33.43	74.00	-40.57
2314.42	37.50	Ave	240.09	1.37	V	-13.19	24.31	54.00	-29.69
2363.68	43.07	PK	292.77	1.77	Н	-13.14	29.93	74.00	-44.07
2363.68	36.86	Ave	292.77	1.77	Н	-13.14	23.72	54.00	-30.28
2499.99	42.23	PK	148.05	1.97	V	-13.08	29.15	74.00	-44.85
2499.99	37.95	Ave	148.05	1.97	V	-13.08	24.87	54.00	-29.13

F	Receiver	Datastan	Turn table	RX An	tenna	Corrected	Carra ata d	FCC F 15.247/2	
Frequency	Reading	Detector	I I Factor I	Corrected Amplitude	Limit	Margin			
(MHz)	(dBµV)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dBµV/m)	(dBµV/m)	(dB)
			11g: Mid	dle Chan	nel 243	7MHz			
265.21	40.90	QP	134.80	1.77	Н	-11.62	29.28	46.00	-16.72
265.21	38.49	QP	203.16	1.55	V	-11.62	26.87	46.00	-19.13
4874.00	49.64	PK	221.17	1.11	V	-0.62	49.02	74.00	-24.98
4874.00	44.67	Ave	221.17	1.11	V	-0.62	44.05	54.00	-9.95
7311.00	40.04	PK	197.74	1.24	Н	2.21	42.25	74.00	-31.75
7311.00	43.71	Ave	197.74	1.24	Н	2.21	45.92	54.00	-8.08
2346.44	46.15	PK	35.54	1.84	V	-13.19	32.96	74.00	-41.04
2346.44	38.96	Ave	35.54	1.84	V	-13.19	25.77	54.00	-28.23
2357.24	44.90	PK	116.18	1.58	Н	-13.14	31.76	74.00	-42.24
2357.24	37.98	Ave	116.18	1.58	Н	-13.14	24.84	54.00	-29.16
2483.76	44.14	PK	308.65	1.27	V	-13.08	31.06	74.00	-42.94
2483.76	36.75	Ave	308.65	1.27	V	-13.08	23.67	54.00	-30.33

F	Receiver	Datastan	Turn	RX An	tenna	Corrected	0	FCC F 15.247/2	
Frequency	Reading	Detector	table Angle	Height	Polar	Factor	Corrected Amplitude	Limit	Margin
(MHz)	(dBµV)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dBµV/m)	(dBµV/m)	(dB)
			11g: Hiç	gh Chann	el 2462	MHz			
265.21	42.20	QP	148.93	1.15	Н	-11.62	30.58	46.00	-15.42
265.21	39.31	QP	137.58	1.68	V	-11.62	27.69	46.00	-18.31
4924.00	50.03	PK	284.49	1.30	V	-0.24	49.79	74.00	-24.21
4924.00	44.05	Ave	284.49	1.30	V	-0.24	43.81	54.00	-10.19
7386.00	39.21	PK	70.54	1.67	Н	2.84	42.05	74.00	-31.95
7386.00	44.79	Ave	70.54	1.67	Н	2.84	47.63	54.00	-6.37
2321.61	46.63	PK	131.72	1.03	V	-13.19	33.44	74.00	-40.56
2321.61	39.27	Ave	131.72	1.03	V	-13.19	26.08	54.00	-27.92
2371.31	42.53	PK	305.37	1.68	Н	-13.14	29.39	74.00	-44.61
2371.31	38.59	Ave	305.37	1.68	Н	-13.14	25.45	54.00	-28.55
2483.98	43.06	PK	71.31	1.79	V	-13.08	29.98	74.00	-44.02
2483.98	36.89	Ave	71.31	1.79	V	-13.08	23.81	54.00	-30.19

F	Receiver	Detector	Turn	RX An	tenna	Corrected Factor	0	FCC Part 15.247/209/205		
Frequency	Reading	Detector	table Angle	Height	Polar		Corrected Amplitude	Limit	Margin	
(MHz)	(dBµV)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	
n20: Low Channel 2412MHz										
265.21	40.74	QP	195.01	1.67	Н	-11.62	29.12	46.00	-16.88	
265.21	39.06	QP	60.76	1.38	V	-11.62	27.44	46.00	-18.56	
4824.00	49.58	PK	105.85	1.72	V	-1.06	48.52	74.00	-25.48	
4824.00	45.18	Ave	105.85	1.72	V	-1.06	44.12	54.00	-9.88	
7236.00	37.80	PK	309.23	1.78	Н	1.33	39.13	74.00	-34.87	
7236.00	45.82	Ave	309.23	1.78	Н	1.33	47.15	54.00	-6.85	
2339.27	46.86	PK	344.66	1.22	V	-13.19	33.67	74.00	-40.33	
2339.27	38.45	Ave	344.66	1.22	V	-13.19	25.26	54.00	-28.74	
2356.78	43.34	PK	269.91	1.54	Н	-13.14	30.20	74.00	-43.80	
2356.78	37.30	Ave	269.91	1.54	Н	-13.14	24.16	54.00	-29.84	
2498.89	43.17	PK	243.96	1.34	V	-13.08	30.09	74.00	-43.91	
2498.89	37.14	Ave	243.96	1.34	V	-13.08	24.06	54.00	-29.94	

	Receiver	Datastan	Turn	RX An	tenna	Corrected	0	FCC F 15.247/20	
Frequency	Reading	Detector	table Angle	Height	Polar	Factor	Corrected Amplitude	Limit	Margin
(MHz)	(dBµV)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dBµV/m)	(dBµV/m)	(dB)
			n20: Mid	dle Chan	nel 243	7MHz			
265.21	41.31	QP	78.60	1.92	Н	-11.62	29.69	46.00	-16.31
265.21	37.70	QP	183.11	1.26	V	-11.62	26.08	46.00	-19.92
4874.00	49.60	PK	105.07	1.17	V	-0.62	48.98	74.00	-25.02
4874.00	45.50	Ave	105.07	1.17	V	-0.62	44.88	54.00	-9.12
7311.00	36.88	PK	272.15	1.83	Н	2.21	39.09	74.00	-34.91
7311.00	45.06	Ave	272.15	1.83	Н	2.21	47.27	54.00	-6.73
2340.43	46.50	PK	170.09	1.49	V	-13.19	33.31	74.00	-40.69
2340.43	38.74	Ave	170.09	1.49	V	-13.19	25.55	54.00	-28.45
2383.42	44.81	PK	29.55	1.86	Н	-13.14	31.67	74.00	-42.33
2383.42	38.83	Ave	29.55	1.86	Н	-13.14	25.69	54.00	-28.31
2484.49	44.68	PK	333.85	1.74	V	-13.08	31.60	74.00	-42.40
2484.49	36.94	Ave	333.85	1.74	V	-13.08	23.86	54.00	-30.14

	Receiver	Datastan	Turn	RX An	tenna	Corrected	Compated	FCC F 15.247/2		
Frequency	Reading	Detector	table Angle	Height	Polar	Factor	Corrected Amplitude	Limit	Margin	
(MHz)	(dBµV)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	
n20: High Channel 2462MHz										
265.21	41.96	QP	144.24	1.77	Н	-11.62	30.34	46.00	-15.66	
265.21	37.80	QP	206.21	1.55	V	-11.62	26.18	46.00	-19.82	
4924.00	48.84	PK	178.43	1.78	V	-0.24	48.60	74.00	-25.40	
4924.00	44.21	Ave	178.43	1.78	V	-0.24	43.97	54.00	-10.03	
7386.00	37.58	PK	281.76	1.29	Н	2.84	40.42	74.00	-33.58	
7386.00	44.83	Ave	281.76	1.29	Н	2.84	47.67	54.00	-6.33	
2334.22	46.43	PK	175.20	1.95	V	-13.19	33.24	74.00	-40.76	
2334.22	39.28	Ave	175.20	1.95	V	-13.19	26.09	54.00	-27.91	
2371.13	44.30	PK	252.68	1.67	Н	-13.14	31.16	74.00	-42.84	
2371.13	36.27	Ave	252.68	1.67	Н	-13.14	23.13	54.00	-30.87	
2494.50	44.94	PK	269.19	1.64	V	-13.08	31.86	74.00	-42.14	
2494.50	36.79	Ave	269.19	1.64	V	-13.08	23.71	54.00	-30.29	

F	Receiver	Detector	Turn	RX An	tenna	Corrected	0	FCC F 15.247/2	
Frequency	Reading	Detector	table Angle	Height	Polar	Factor	Corrected Amplitude	Limit	Margin
(MHz)	(dBµV)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB) (dBµV/m)	(dBµV/m)	(dB)	
			n40: Lo	w Chann	el 2422I	MHz			
265.21	42.90	QP	273.19	1.76	Н	-11.62	31.28	46.00	-14.72
265.21	36.65	QP	61.39	1.84	V	-11.62	25.03	46.00	-20.97
4844.00	46.74	PK	95.12	1.34	V	-1.06	45.68	74.00	-28.32
4844.00	41.87	Ave	95.12	1.34	V	-1.06	40.81	54.00	-13.19
7266.00	34.88	PK	164.40	1.48	Н	1.33	36.21	74.00	-37.79
7266.00	43.28	Ave	164.40	1.48	Н	1.33	44.61	54.00	-9.39
2346.34	45.00	PK	179.21	1.77	V	-13.19	31.81	74.00	-42.19
2346.34	37.71	Ave	179.21	1.77	V	-13.19	24.52	54.00	-29.48
2355.29	43.32	PK	275.43	1.76	Н	-13.14	30.18	74.00	-43.82
2355.29	36.84	Ave	275.43	1.76	Н	-13.14	23.70	54.00	-30.30
2499.24	44.84	PK	159.55	1.52	V	-13.08	31.76	74.00	-42.24
2499.24	38.13	Ave	159.55	1.52	V	-13.08	25.05	54.00	-28.95

	Receiver	Datastan	Turn	RX An	tenna	Corrected	0	FCC F 15.247/2	
Frequency	Reading	Detector	table Angle	Height	Polar	Factor	Corrected Amplitude	Limit	Margin
(MHz)	(dBµV)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dBµV/m)	(dBµV/m)	(dB)
			n40: Mid	dle Chan	nel 243	7MHz			
265.21	42.83	QP	249.53	1.37	Н	-11.62	31.21	46.00	-14.79
265.21	36.71	QP	267.04	1.08	V	-11.62	25.09	46.00	-20.91
4874.00	46.67	PK	301.89	1.98	V	-0.62	46.05	74.00	-27.95
4874.00	41.68	Ave	301.89	1.98	V	-0.62	41.06	54.00	-12.94
7311.00	34.65	PK	273.85	1.26	Н	2.21	36.86	74.00	-37.14
7311.00	44.20	Ave	273.85	1.26	Н	2.21	46.41	54.00	-7.59
2325.01	45.03	PK	104.87	1.19	V	-13.19	31.84	74.00	-42.16
2325.01	37.94	Ave	104.87	1.19	V	-13.19	24.75	54.00	-29.25
2387.02	44.81	PK	359.90	1.85	Н	-13.14	31.67	74.00	-42.33
2387.02	36.88	Ave	359.90	1.85	Н	-13.14	23.74	54.00	-30.26
2487.26	44.67	PK	208.59	1.08	V	-13.08	31.59	74.00	-42.41
2487.26	38.60	Ave	208.59	1.08	V	-13.08	25.52	54.00	-28.48

Frequency	Receiver Reading	Detector	Turn table Angle	RX Antenna		Corrected	0 1 1	FCC Part 15.247/209/205					
				Height	Polar	Factor	Corrected Amplitude	Limit	Margin				
(MHz)	(dBµV)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dBµV/m)	(dBµV/m)	(dB)				
n40: High Channel 2452MHz													
265.21	43.27	QP	7.13	1.27	Н	-11.62	31.65	46.00	-14.35				
265.21	37.11	QP	128.09	1.16	V	-11.62	25.49	46.00	-20.51				
4904.00	46.65	PK	296.71	1.74	V	-0.24	46.41	74.00	-27.59				
4904.00	41.08	Ave	296.71	1.74	V	-0.24	40.84	54.00	-13.16				
7356.00	33.67	PK	296.38	1.63	Н	2.84	36.51	74.00	-37.49				
7356.00	43.79	Ave	296.38	1.63	Н	2.84	46.63	54.00	-7.37				
2331.10	45.28	PK	32.27	1.82	V	-13.19	32.09	74.00	-41.91				
2331.10	38.43	Ave	32.27	1.82	V	-13.19	25.24	54.00	-28.76				
2380.71	44.00	PK	47.57	1.02	Н	-13.14	30.86	74.00	-43.14				
2380.71	36.90	Ave	47.57	1.02	Н	-13.14	23.76	54.00	-30.24				
2495.08	44.13	PK	350.74	1.15	V	-13.08	31.05	74.00	-42.95				
2495.08	37.62	Ave	350.74	1.15	V	-13.08	24.54	54.00	-29.46				

Test Frequency: 18GHz~25GHz

The measurements were more than 20 dB below the limit and not reported.

Reference No.: WTU16S0960900E Page 29 of 70

9 Band Edge Measurement

Test Requirement: FCC CFR47 Part 15 Section 15.247

Test Method: 558074 D01 DTS Meas Guidance v03r05

Test Limit: Regulation 15.247 (d), In any 100 kHz bandwidth outside the

frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits

specified in §15.209(a) (see §15.205(c)).

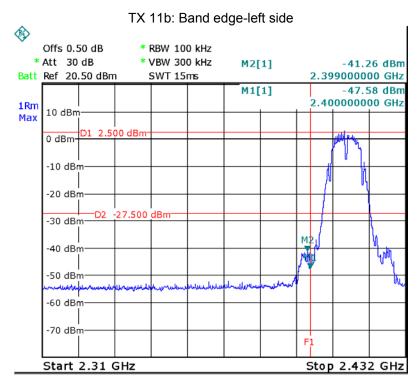
Test Mode: Transmitting

9.1 Test Produce

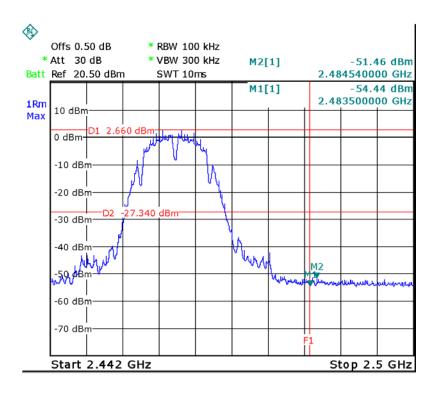
- 1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
- 2. Position the EUT without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range, and make sure the instrument is operated in its linear range.
- Set RBW to 100 kHz and VBW of spectrum analyzer to 300 kHz with a convenient frequency span including 100 kHz bandwidth from band edge.
- 4. Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency.
- 5. Repeat above procedures until all measured frequencies were complete.

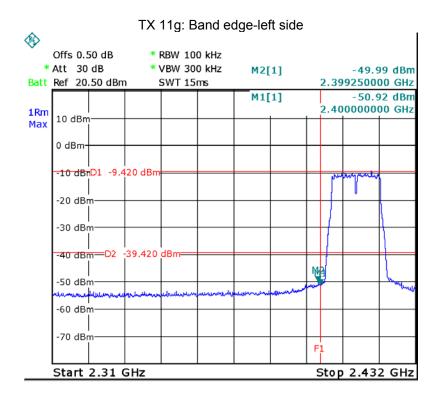
9.2 Test Result

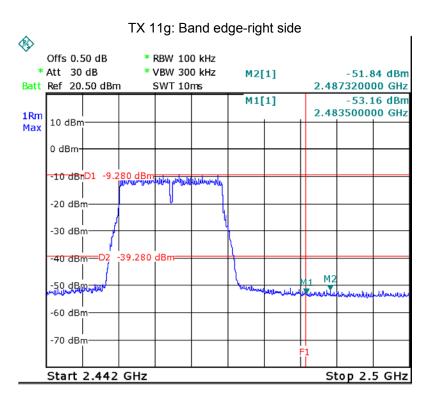
Test result plots shown as follows:

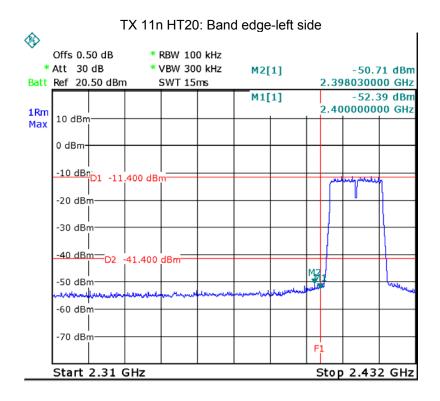


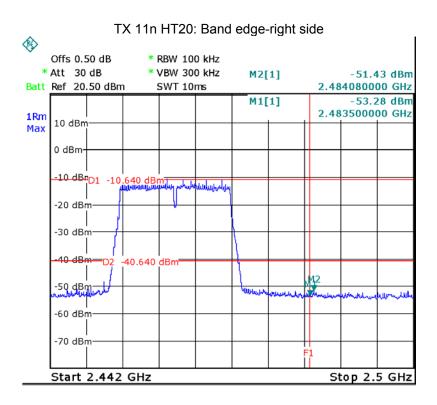
TX 11b: Band edge-right side

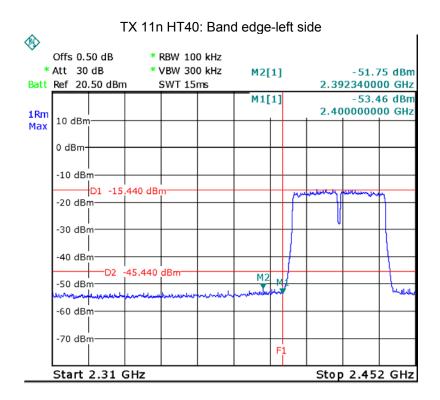


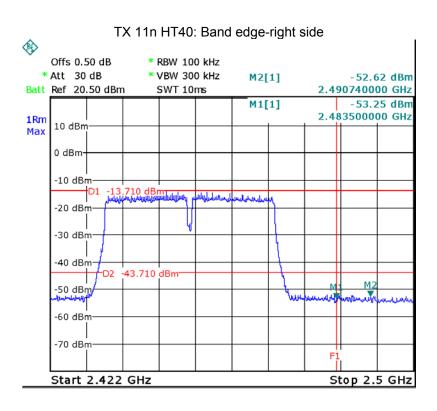












Reference No.: WTU16S0960900E Page 34 of 70

10 Bandwidth Measurement

Test Requirement: FCC CFR47 Part 15 Section 15.247

Test Method: 558074 D01 DTS Meas Guidance v03r05

10.1 Test Procedure:

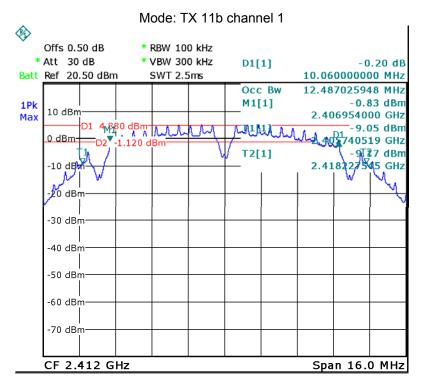
1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum;

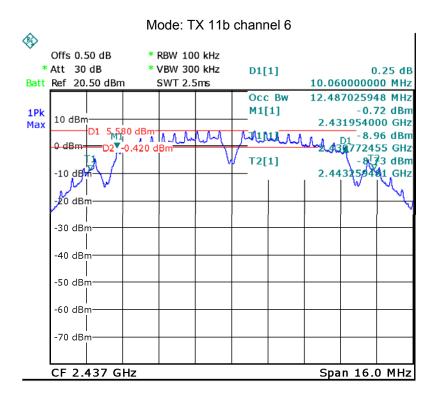
2. Set the spectrum analyzer: RBW = 100kHz, VBW = 300kHz

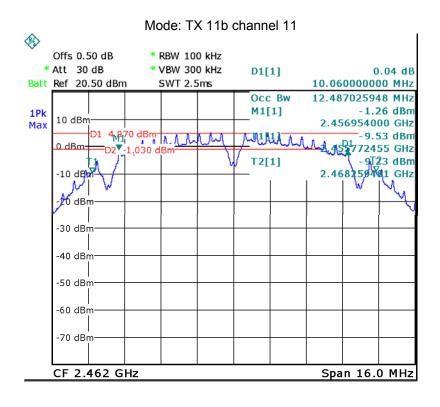
10.2 Test Result:

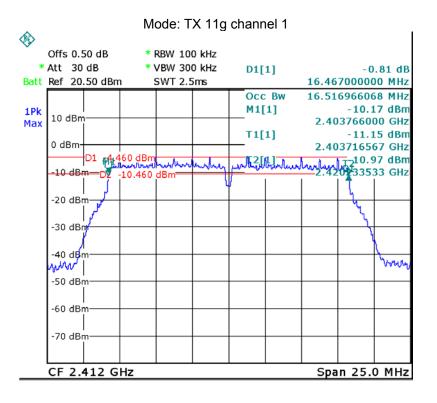
Operation mode	6dB	Bandwidth (MHz)	99% Bandwidth (MHz)			
	Channel 1	Channel 6	Channel 11	Channel 1	Channel 6	Channel 11	
TX 11b	10.060	10.060	10.060	12.487	12.487	12.487	
	Channel 1	Channel 6	Channel 11	Channel 1	Channel 6	Channel 11	
TX 11g	16.467 16.467		16.467	16.517	16.517	16.517	
	Channel 1	Channel 6	Channel 11	Channel 1	Channel 6	Channel 11	
TX 11n HT20	17.623	17.623	17.623	17.623	17.623	17.623	
	Channel 3	Channel 6	Channel 9	Channel 3	Channel 6	Channel 9	
TX 11n HT40	36.230	36.230	36.230	36.008	36.008	36.008	

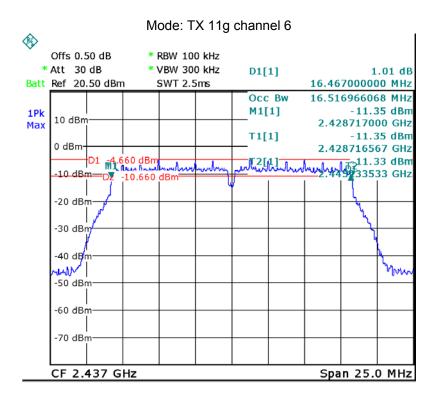
Test result plot as follows:

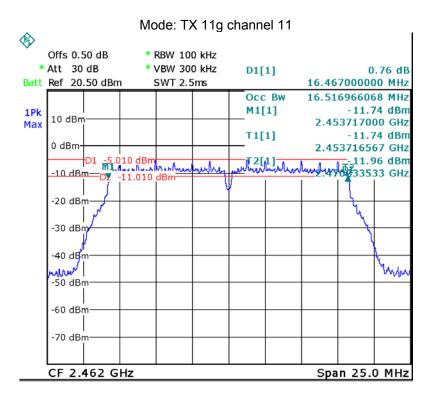


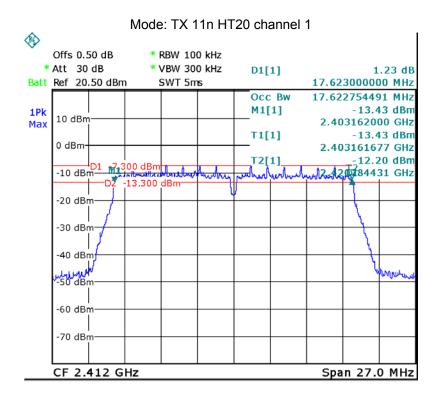


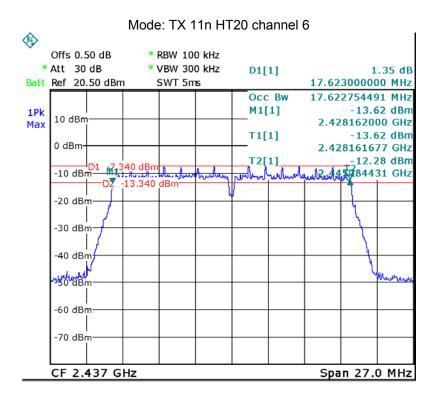


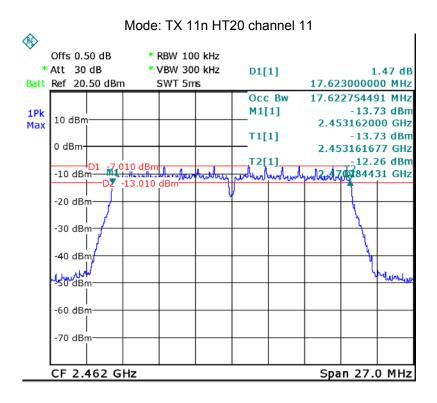


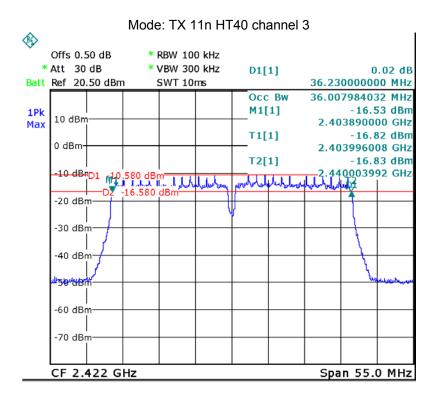


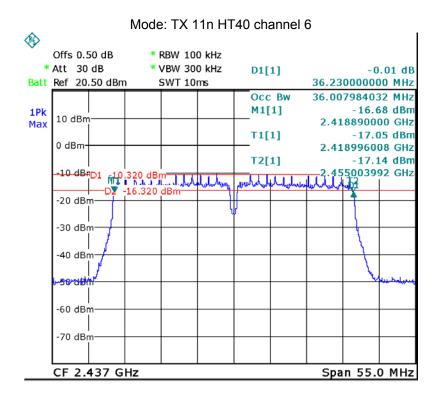


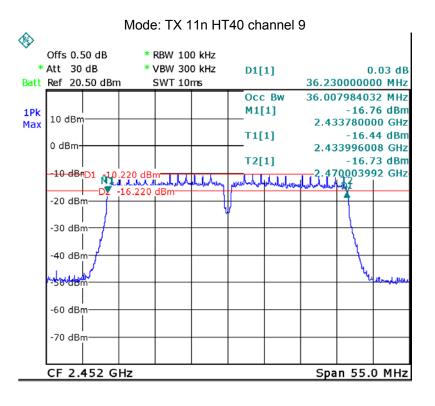












Reference No.: WTU16S0960900E Page 41 of 70

11 Maximum Peak Output Power

Test Requirement: FCC CFR47 Part 15 Section 15.247

Test Method: 558074 D01 DTS Meas Guidance v03r05

11.1 Test Procedure:

558074 D01 DTS Meas Guidance v03r05

- 1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum.
- 2. Set the spectrum analyzer: RBW = 1 MHz. VBW = 3 MHz. Sweep = auto; Detector Function = Peak, Set the span to fully encompass the DTS bandwidth.
- 3. Keep the EUT in transmitting at lowest, medium and highest channel individually. Record the max value.

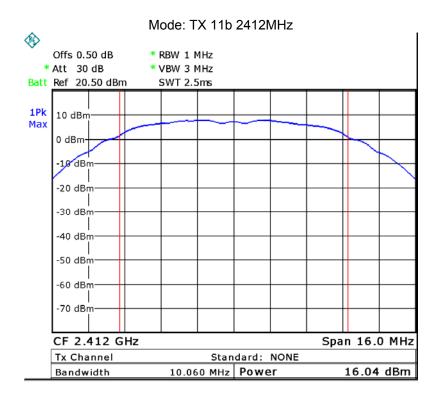
11.2 Test Result:

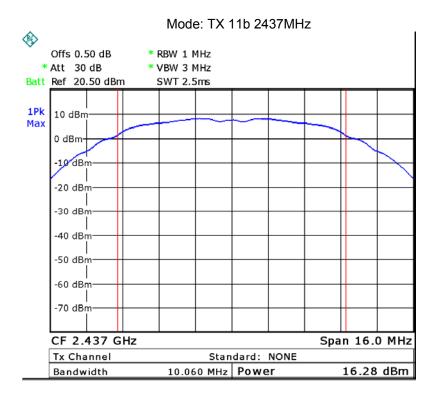
Test mode :TX 11b					
Maximum Peak Output Power (dBm)					
2412MHz 2437MHz 2462MHz					
16.04 16.28 16.67					
Limit: 1W/30dBm					

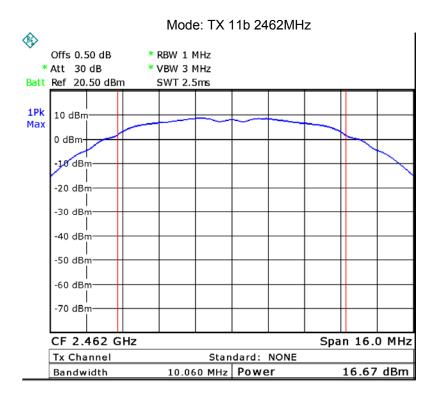
Test mode :TX 11g						
Maximum Peak Output Power (dBm)						
2412MHz	2412MHz 2437MHz 2462MHz					
14.13 14.36 14.12						
Limit: 1W/30dBm						

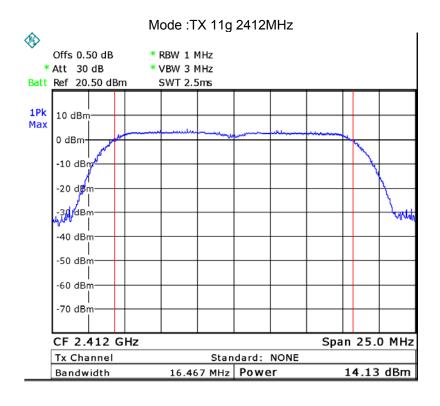
Test mode :TX 11n HT20						
Maximum Peak Output Power (dBm)						
2412MHz	2412MHz 2437MHz 2462MHz					
12.16 12.16 12.49						
Limit: 1W/30dBm						

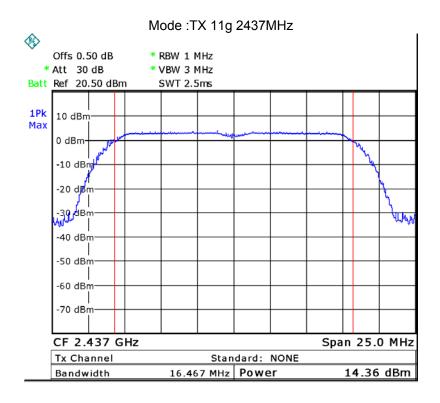
Test mode : TX 11n HT40					
Maximum Peak Output Power (dBm)					
2422MHz 2437MHz 2452MHz					
12.21 12.13 12.33					
Limit: 1W/30dBm					

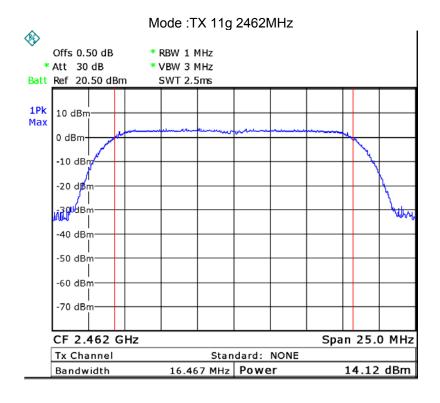


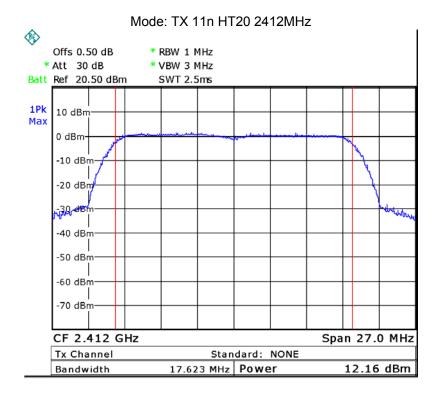


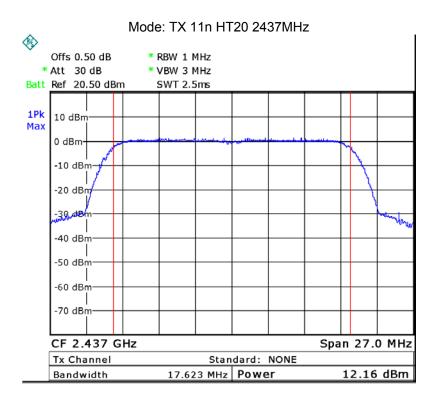


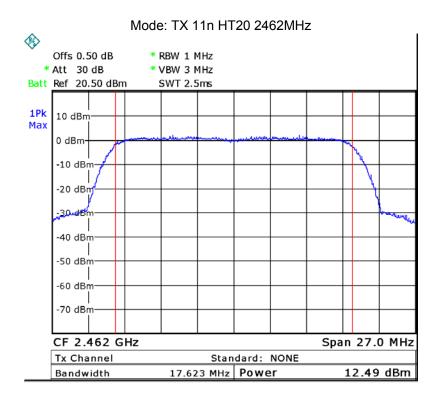


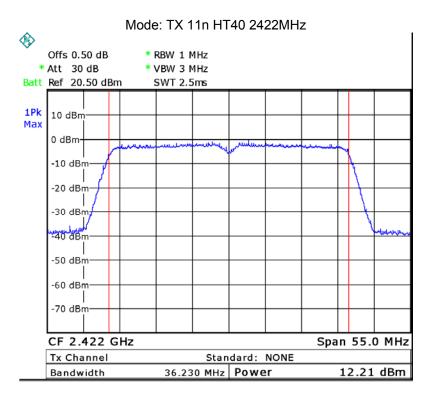


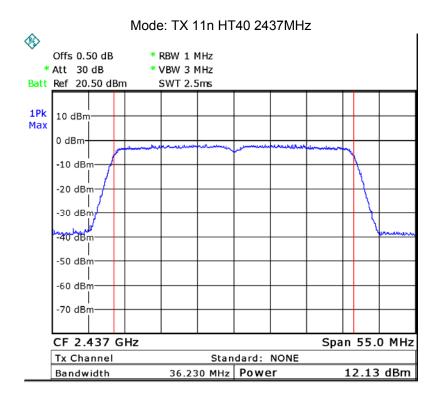


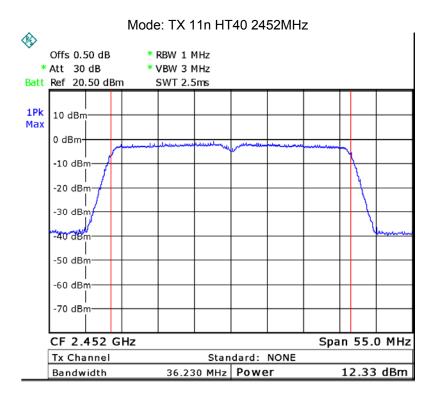












Reference No.: WTU16S0960900E Page 48 of 70

12 Power Spectral density

Test Requirement: FCC CFR47 Part 15 Section 15.247

Test Method: 558074 D01 DTS Meas Guidance v03r05

12.1 Test Procedure:

558074 D01 DTS Meas Guidance v03r05

- 1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum.
- 2. Set the spectrum analyzer: RBW = 3kHz. VBW = 10kHz , Span = 1.5 times the DTS channel bandwidth(6 dB bandwidth). Sweep = auto; Detector Function = Peak. Trace = Max hold.
- 3. Allow the trace to stabilize. Use the marker-delta function to determine the separation between the peaks of the adjacent channels. The limit is specified in one of the subparagraphs of this Section Submit this plot.

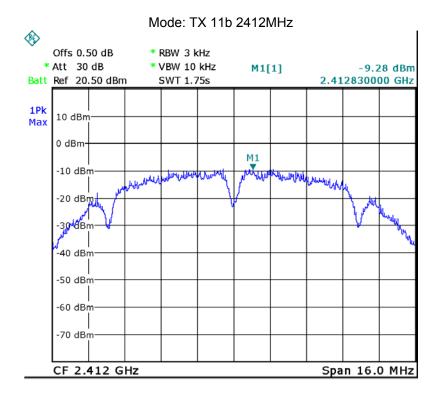
12.2 Test Result:

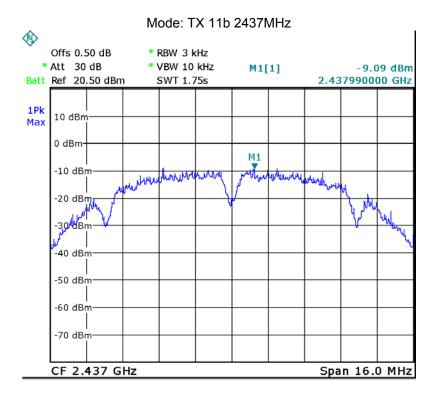
Test mode :TX 11b					
Power Spectral (dBm per 3kHz)					
2412MHz 2437MHz 2462MHz					
-9.28 -9.09 -9.28					
Limit: 8dBm per 3kHz					

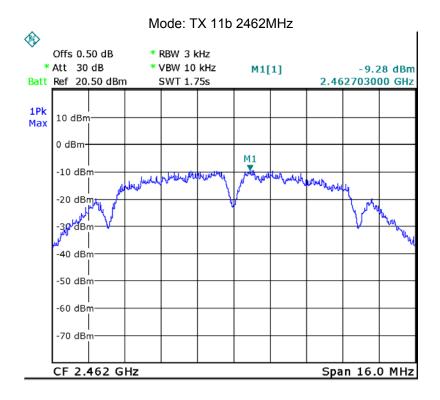
Test mode :TX 11g						
Power Spectral (dBm per 3kHz)						
2412MHz	2412MHz 2437MHz 2462MHz					
-19.19 -19.11 -18.79						
Limit: 8dBm per 3kHz						

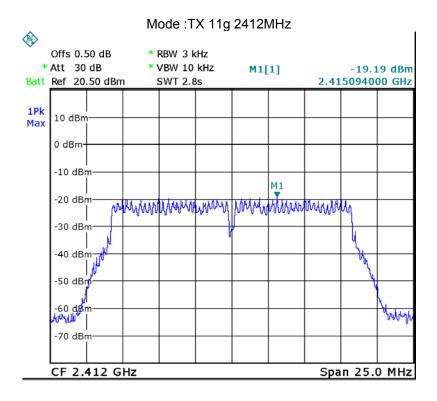
Test mode :TX 11n HT20					
Power Spectral (dBm per 3kHz)					
2412MHz 2437MHz 2462MHz					
-21.92 -19.54 -20.19					
Limit: 8dBm per 3kHz					

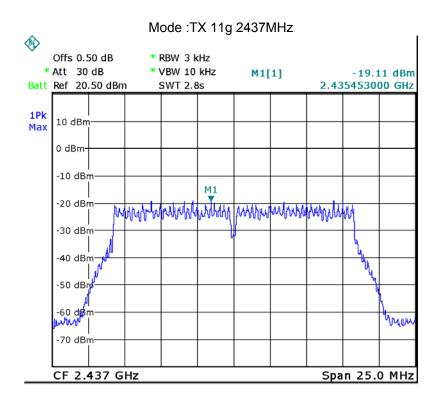
Test mode : TX 11n HT40					
Power Spectral (dBm per 3kHz)					
2422MHz 2437MHz 2452MHz					
-25.49 -24.88 -25.20					
Limit: 8dBm per 3kHz					

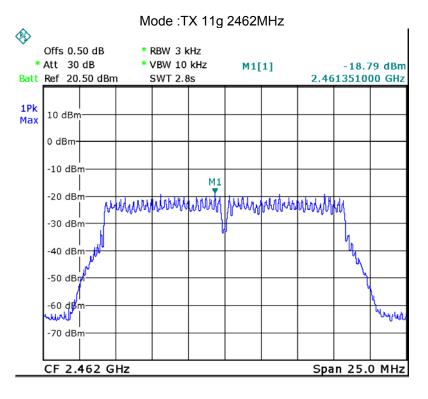


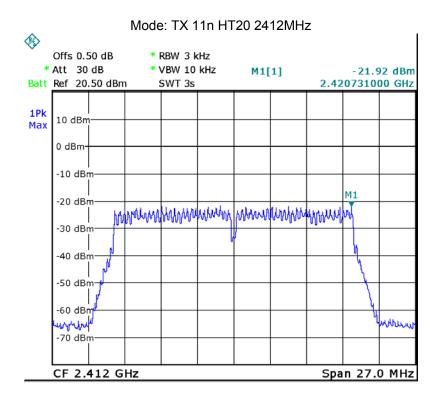


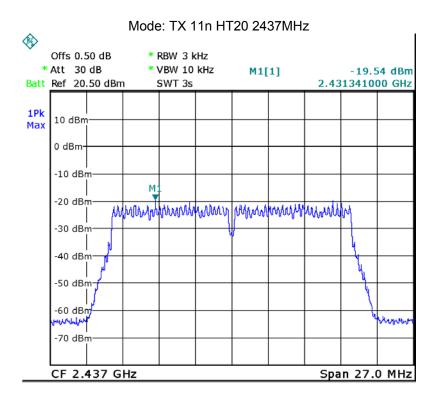


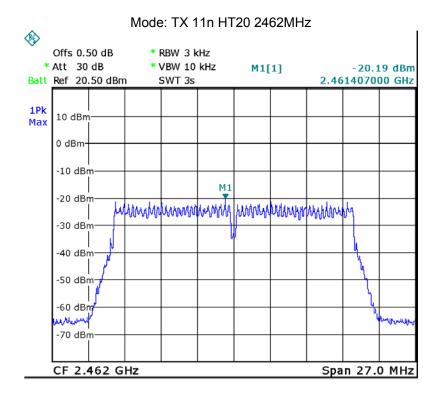


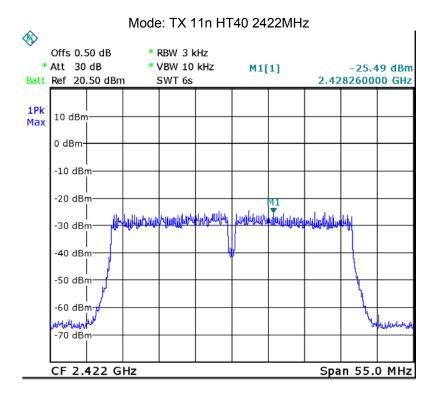


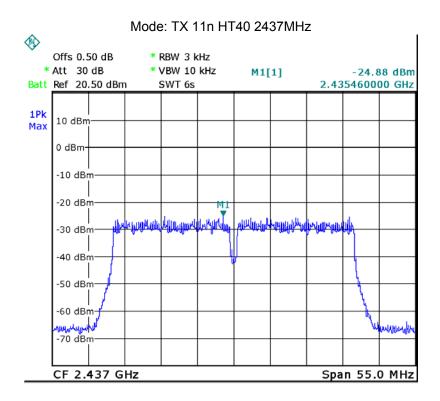


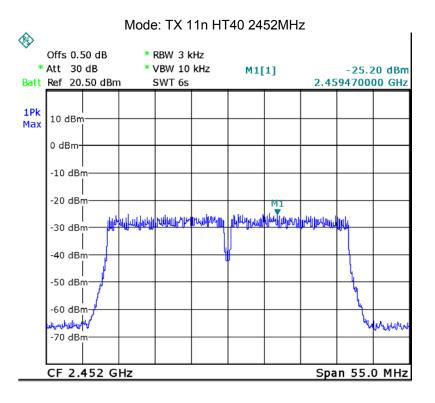












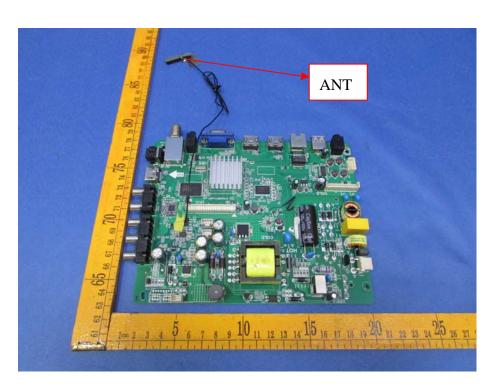
13 Antenna Requirement

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. This requirement does not apply to carrier current devices or to devices operated under the provisions of §15.211, §15.213, §15.217, §15.219, or §15.221. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with §15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded.

For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

Result:

The EUT has one Internal Integrated Antenna, the gain is 2.0 dBi. meets the requirements of FCC 15.203.



Reference No.: WTU16S0960900E Page 56 of 70

14 RF Exposure

Test Requirement: FCC Part 1.1307

Evaluation Method: FCC Part 2.1091 & KDB 447498 D01 General RF Exposure Guidance v06

14.1 Requirements

Systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy levels in excess limit for maximum permissible exposure. In accordance with 47 CFR FCC Part 2 Subpart J, section 2.1091 this device has been defined as a mobile device whereby a distance of 0.2 m normally can be maintained between the user and the device.

14.2 The procedures / limit

(A) Limits for Occupational / Controlled Exposure

(7 t) Ellithic for Good	(7 t) Entitle for Goodpational 7 Controlled Exposure				
Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/ cm²)	Averaging Time E ², H ²or S (minutes)	
0.3-3.0	614	1.63 (100)*		6	
3.0-30	1842 / f	42 / f 4.89 / f (900 / f)*		6	
30-300	61.4	0.163	1.0	6	
300-1500			F/300	6	
1500-100,000			5	6	

(B) Limits for General Population / Uncontrolled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/ cm²)	Averaging Time E ², H ² or S (minutes)
0.3-1.34	614	1.63	(100)*	30
			` ,	
1.34-30	824/f	2.19/f	(180/f)*	30
30-300	27.5	0.073	0.2	30
300-1500			F/1500	30
1500-100,000			1.0	30

Note: f = frequency in MHz; *Plane-wave equivalent power density

Reference No.: WTU16S0960900E Page 57 of 70

14.3 MPE Calculation Method

$$\mathbf{S} = \frac{P \times G}{4 \times \pi \times R^2}$$

S = power density (in appropriate units, e.g. mW/cm²)

P = output power to the antenna (in appropriate units, e.g., mW).

G = power gain of the antenna in the direction of interest relative to an isotropic radiator, the power gain factor, is normally numeric gain.

R = distance to the center of radiation of the antenna (appropriate units, e.g., cm)

From the peak EUT RF output power, the minimum mobile separation distance, R=20cm, as well as the gain of the used antenna, the RF power density can be obtained

Antenna Gain (dBi)	Antenna Gain (numeric)	Max. Peak Output Power (dBm)	Peak Output Power (mW)	Power Density (mW/cm²)	Limit of Power Density (mW/cm²)	Result
2.00	1.585	16.67	46.45	0.0146	1	Compliance

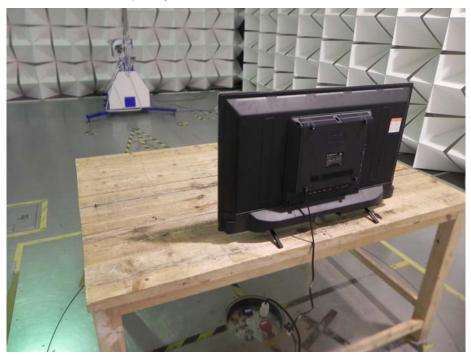
15 Photographs – Model ELST3216H Test Setup Photos

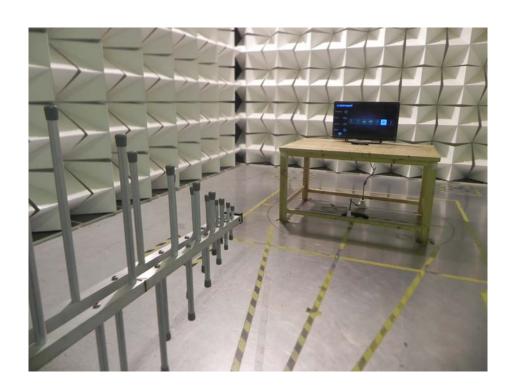
15.1 Radiated Emission

Test frequency 24MHz to 30MHz at Test Site 2#



Test frequency from 30MHz to 1GHz at Test Site 2#

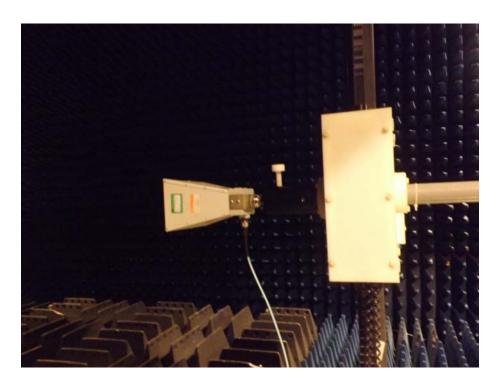




Test frequency above 1GHz at Test Site 1#



Reference No.: WTU16S0960900E Page 60 of 70





Reference No.: WTU16S0960900E Page 61 of 70

15.2 Conducted Emission at Test Site 2#



16 Photographs - Constructional Details

16.1 Model ELST3216H-External Photos





Reference No.: WTU16S0960900E Page 63 of 70





Reference No.: WTU16S0960900E Page 64 of 70





Reference No.: WTU16S0960900E Page 65 of 70





Reference No.: WTU16S0960900E Page 66 of 70



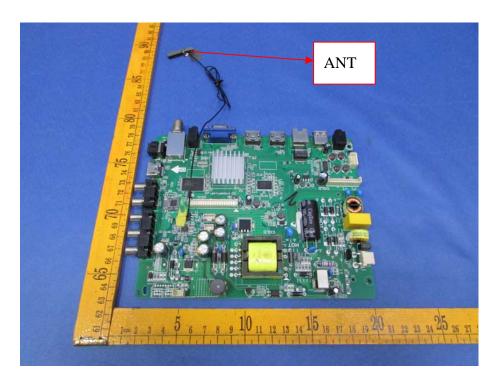
Reference No.: WTU16S0960900E Page 67 of 70

16.2 Model ELST3216H- Internal Photos





Reference No.: WTU16S0960900E Page 68 of 70





Reference No.: WTU16S0960900E Page 69 of 70





Reference No.: WTU16S0960900E Page 70 of 70





=====End of Report=====