### TEST REPORT On behalf of

### Hisense Electric Co., Ltd.

### Product Name: TV Remote Control

### Model No.: ERF3A69, ERF3B69, EFR3C69, ERF3\*69

### FCC ID: W9HBRCB0006

Prepared For: Hisense Electric Co., Ltd. No.218 Qianwangang Road, Economy & Technology Development Zone, Qingdao, China

Prepared By: Audix Technology (Shanghai) Co., Ltd. 3F and 4F, 34Bldg, 680 Guiping Rd., Caohejing Hi-Tech Park, Shanghai 200233, China

> Tel: +86-21-64955500 Fax: +86-21-64955491



File No.:C1D1712039Report No.:ACI-F18001Date of Test:2018.01.03 - 2018.01.04Date of Report:2018.01.09

The statement is based on a single evaluation of one sample of the above-mentioned products. It does not imply an assessment of the whole production and does not permit the use of the test lab logo. The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

## TABLE OF CONTENTS

## Page

1	SUI	MMARY OF STANDARDS AND RESULTS	5
	1.1	Description of Standards and Results	5
2	GE	NERAL INFORMATION	6
	2.1	Description of Equipment Under Test	6
	2.2	Description of Test Facility	7
	2.3	Measurement Uncertainty	7
3	RA	DIATED EMISSION TEST	8
	31	Test Equipment	8
	3.2	Block Diagram of Test Setup	8
	3.3	Radiated Emission Limit [FCC Part 15 Subpart C 15.209]	9
	3.4	Test Configuration	9
	3.5	Operating Condition of EUT	10
	3.6	Test Procedures	10
	3.7	Test Results	11
4	6 d1	B BANDWIDTH MEASUREMENT	20
	4.1	Test Equipment	20
	4.2	Block Diagram of Test Setup	20
	4.3	Specification Limits (§15.247(a)(2))	20
	4.4	Operating Condition of EUT	20
	4.5	Test Procedure	20
	4.6	Test Results	20
5	MA	XIMUM PEAK OUTPUT POWER MEASUREMENT	23
	5.1	Test Equipment	23
	5.2	Block Diagram of Test Setup	23
	5.3	Specification Limits ((§15.247(b)(3))	23
	5.4	Operating Condition of EUT	23
	5.5	Test Procedure	23
_	5.6		23
6	EM	USSION LIMITATIONS MEASUREMENT	26
	6.1	Test Equipment	26
	6.2	Block Diagram of Test Setup	26
	6.3	Specification Limits (§15.247(d))	26
			20
	6.4	Operating Condition of EUT	26
	6.4 6.5	Operating Condition of EUT Test Procedure	26 26
-	6.4 6.5 6.6	Operating Condition of EUT Test Procedure Test Results	26 26 26
7	6.4 6.5 6.6 <b>BA</b>	Operating Condition of EUT Test Procedure Test Results ND EDGES MEASUREMENT	26 26 26 <b>33</b>
7	6.4 6.5 6.6 <b>BA</b> 7.1	Operating Condition of EUT Test Procedure Test Results ND EDGES MEASUREMENT Test Equipment	26 26 26 <b>33</b> 33
7	<ul> <li>6.4</li> <li>6.5</li> <li>6.6</li> <li><b>BA</b></li> <li>7.1</li> <li>7.2</li> <li>7.2</li> </ul>	Operating Condition of EUT Test Procedure Test Results <b>ND EDGES MEASUREMENT</b> Test Equipment. Block Diagram of Test Setup Specification Limits (\$15.247(d))	26 26 26 33 33 33 22
7	6.4 6.5 6.6 <b>BA</b> 7.1 7.2 7.3 7.4	Operating Condition of EUT Test Procedure Test Results <b>ND EDGES MEASUREMENT</b> Test Equipment. Block Diagram of Test Setup Specification Limits (§15.247(d))	26 26 33 33 33 33 33
7	6.4 6.5 6.6 <b>BA</b> 7.1 7.2 7.3 7.4 7.5	Operating Condition of EUT Test Procedure Test Results <b>ND EDGES MEASUREMENT</b> Test Equipment Block Diagram of Test Setup Specification Limits (§15.247(d)) Operating Condition of EUT Test Procedure	26 26 33 33 33 33 33 33 33
7	<ul> <li>6.4</li> <li>6.5</li> <li>6.6</li> <li><b>BA</b></li> <li>7.1</li> <li>7.2</li> <li>7.3</li> <li>7.4</li> <li>7.5</li> <li>7.6</li> </ul>	Operating Condition of EUT Test Procedure Test Results <b>ND EDGES MEASUREMENT</b> Test Equipment Block Diagram of Test Setup Specification Limits (§15.247(d)) Operating Condition of EUT Test Procedure Test Results	26 26 33 33 33 33 33 33 33 33
<b>7</b>	<ul> <li>6.4</li> <li>6.5</li> <li>6.6</li> <li><b>BA</b></li> <li>7.1</li> <li>7.2</li> <li>7.3</li> <li>7.4</li> <li>7.5</li> <li>7.6</li> <li><b>PO</b></li> </ul>	Operating Condition of EUT Test Procedure Test Results <b>ND EDGES MEASUREMENT</b> Test Equipment. Block Diagram of Test Setup Specification Limits (§15.247(d)) Operating Condition of EUT. Test Procedure Test Results <b>WER SPECTRAL DENSITY MEASUREMENT</b>	26 26 33 33 33 33 33 33 33 33 33
7 8	6.4 6.5 6.6 <b>BA</b> 7.1 7.2 7.3 7.4 7.5 7.6 <b>PO</b>	Operating Condition of EUT Test Procedure Test Results <b>ND EDGES MEASUREMENT</b> Test Equipment. Block Diagram of Test Setup Specification Limits (§15.247(d)). Operating Condition of EUT Test Procedure Test Results. <b>WER SPECTRAL DENSITY MEASUREMENT</b>	26 26 33 33 33 33 33 33 33 33 33 33 35 25

9	DEVIATION TO TEST SPECIFICATIONS	
	8.6 Test Results	
	8.5 Test Procedure	
	8.4 Operating Condition of EUT	
	8.3 Specification Limits (§15.247(e))	
	8.2 Block Diagram of Test Setup	

## TEST REPORT

Applicant	:	Hisense Electric Co., Ltd.				
EUT Description	:	TV Remote Contro	1			
		(A) Model No.	:	Refer to Sec.2.1		
		(B) Power Supply	:	DC 3V		
		(C) Test Voltage	:	DC 3V		

#### **Test Procedure Used:**

#### FCC RULES AND REGULATIONS PART 15 SUBPART C AND ANSI C63.10-2013

The device described above is tested by Audix Technology (Shanghai) Co., Ltd. to determine the maximum emission levels emanating from the device. The maximum emission levels are compared to the FCC Part 15 Subpart C limits.

The test results are contained in this test report and Audix Technology (Shanghai) Co., Ltd. is assumed full responsibility for the accuracy and completeness of these measurements. This report also shows that the EUT (M/N: Refer to Sec2.1), which was tested on 2018.01.03 - 2018.01.04 is technically compliance with the FCC limits.

This report applies to above tested Sample only. This report shall not be reproduced in part without written approval of Audix Technology (Shanghai) Co., Ltd.

Date of Test :	2018.01.03 - 2018.01.04	Date of Report :	2018.01.09
Producer : _	JAREY SU / Test Engin	neer	
Reviewer :	Byron M BYRON/WU / Deputy Assista	nt Manager	
Audix Technology (S Signatory : Authorized Signature	r and on behalf of hanghai) Co., Ltd. (s) BYRON KWO/Assistant Gener	ral Manager	

## **1 SUMMARY OF STANDARDS AND RESULTS**

## 1.1 Description of Standards and Results

The EUT have been tested according to the applicable standards as referenced below:

Description / Test Item	Test Standard	Results	Meets Limit			
EMISSION						
Conducted Emission	onducted Emission FCC RULES AND REGULATIONS PART 15 SUBPART C AND ANSI C63.10:2013		15.207			
Radiated Emission	FCC RULES AND REGULATIONS PART 15 SUBPART C AND ANSI C63.10:2013	Pass	15.209(a) 15.205(a)(c)			
6 dB Bandwidth Measurement	FCC RULES AND REGULATIONS PART 15 SUBPART C AND ANSI C63.10:2013	Pass	15.247(a)(2)			
Maximum Peak Output Power Measurement	aximum Peak Output Power Measurement FCC RULES AND REGULATIONS PART 15 SUBPART C AND ANSI C63.10:2013		15.247(b)(3)			
Emission Limitations Measurement	FCC RULES AND REGULATIONS PART 15 SUBPART C AND ANSI C63.10:2013	Pass	15.247(d)			
Band Edge Measurement	FCC RULES AND REGULATIONS PART 15 SUBPART C AND ANSI C63.10:2013		15.247(d)			
Power Spectral Density Measurement	FCC RULES AND REGULATIONS PART 15 SUBPART C AND ANSI C63.10:2013	Pass	15.247(e)			
N/A is an abbreviation	for Not Applicable.					

# **2** GENERAL INFORMATION

2.1 Description of Equipment Under Test

Description	:	TV Remote Co	ntrol	
Type of EUT		Production	□ Pre-product	□ Pro-type
Model Number	:	ERF3A69, ERI	F3B69, EFR3C69	, ERF3*69

Note : The modified histories of report are as follows:

M/N	Difference	
ERF3A69		
ERF3B69		1.00 4 . 4 1
ERF3C69		different printed
ERF3 *69	"*" represents "D" ~ "Z", for different sales area and customer.	word of keys

Test Model	:	ERF3A69
Radio Tech	:	Bluetooth v4.2 BLE
Channel Freq.	:	2402MHz-2480MHz
Tested Freq.	:	2402MHz, 2442MHz, 2480MHz
Modulation	:	GFSK
Antenna Gain	:	3.23 dBi
Test Mode	:	The EUT was set at continuous TX with duty cycle 100% during all the test in the report
Applicant	:	Hisense Electric Co., Ltd. No.218 Qianwangang Road, Economy & Technology Development Zone, Qingdao, China

2.2	Description of Test Facility		
	Name of Firm	:	Audix Technology (Shanghai) Co., Ltd.
	Site Location	:	3F and 4F, 34Bldg, 680 Guiping Rd., Caohejing Hi-Tech Park, Shanghai 200233, China.
	Accredited by NVLAP, Lab Code	:	200371-0
	FCC Designation Number	:	CN5027
	Test Firm Registration Number	:	954668
2.3	Measurement Uncertainty		
	Radiated Emission Expanded Uncerta	int	ty (30-1000MHz):
	Radiated Emission Expanded Uncerta	int	U = 3.99 dB ty (1000M-26.5GHz): U = 4.98 dB
	6 dB Bandwidth Expanded Uncertain	ty	U = 4.58  MHz : U = 6x10 <sup>-8</sup> MHz
	Maximum Peak Output Power Expan	deo	d Uncertainty : $U = 0.84 \text{ dB}$
	Tower spectral Density Expanded On		1.0 = 0.38  ub

# **3 RADIATED EMISSION TEST**

## 3.1 Test Equipment

The following test equipment are used during the radiated emission test in a semi-anechoic chamber:

Item	Туре	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Preamplifier	Agilent	8447D	2944A06664	Apr 27, 2017	Apr 26, 2018
2.	Preamplifier	HP	8449B	3008A00864	Mar 20, 2017	Mar 19, 2018
3.	Spectrum Analyzer	Agilent	N9010A	MY52221182	Jun 12, 2017	Jun 11, 2018
4.	Test Receiver	R&S	ESCI	101303	May 07, 2017	May 06, 2018
5.	Bi-log Antenna	Schwarz beck	VULB 9168	708	Jul 20, 2017	Jul 19, 2018
6.	Horn Antenna	EMCO	3115	9607-4878	Jun 02, 2017	Jun 01, 2018
7.	Horn Antenna	EMCO	3116	00062643	Sep 08, 2017	Sep 08, 2019
8.	50Ω Coaxial Switch	Anritsu	MP59B	6200426390	Sep 17, 2017	Mar 17, 2018
9.	Software	Audix	E3	SET00200 9912M295-2		

## 3.2 Block Diagram of Test Setup

3.2.1 Below 1GHz



■ : 50 ohm Coaxial Switch

#### 3.2.2 Above 1GHz



### 3.3 Radiated Emission Limit [FCC Part 15 Subpart C 15.209]

Frequency	Distance	Field strength limits ( $\mu V/m$ )				
(MHz)	(m)	(µV/m)	dB(µV/m)			
30 ~ 88	3	100	40.0			
88 ~ 216	3	150	43.5			
216 ~ 960	3	200	46.0			
Above 960	3	500	54.0			
<ul> <li>NOTE 1 - Emission Level dB (μV/m) = 20 log Emission Level (μV/m)</li> <li>NOTE 2 - The tighter limit applies at the band edges.</li> <li>NOTE 3 - Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system</li> </ul>						
NOTE 4 - The limits shown are based on Quasi-peak value detector below or equal to 1GHz and Average value detector above 1GHz.						
NOTE 5 - Ab	NOTE 5 - Above 1 GHz, the limit on peak emission is 20 dB above the maximum permitted average emission limit applicable to the EUT					

### 3.4 Test Configuration

The EUT (listed in Sec.2.1) and the simulators (listed in Sec.2.2) were installed as shown on Sec.3.2 to meet FCC requirements and operating in a manner that tends to maximize its emission level in a normal application.

### 3.5 Operating Condition of EUT

- 3.5.1 Setup the EUT as shown in Sec. 3.2.
- 3.5.2 Turn on the power of all equipment.
- 3.5.3 Turn the EUT on the test mode, and then test.

#### 3.6 Test Procedures

Radiated emission test applies to harmonics/spurs that fall in the restricted bands listed in Section 15.205. The maximum permitted average field strength is listed in Section 15.209. A pre-amp is necessary for this measurement. For measurement above 1 GHz, set RBW = 1MHz, VBW = 10 Hz, Sweep: Auto. If the emission is pulsed, modify the unit for continuous operation; use the settings shown above, then correct the reading by subtracting the peak-average correction factor, derived from the appropriate duty cycle calculation.

The EUT was placed on a turntable. Below 1 GHz, the table height is 80 cm above the reference ground plane. Above 1 GHz, the table height is 1.5 m. The turntable rotated 360 degrees to determine the position of the maximum emission level. The EUT was set 3 meters away from the receiving antenna, which was mounted on an antenna tower. The antenna moved up and down between 1 meter and 4 meters to find out the maximum emission level. Broadband antenna (Calibrated Bilog Antenna) or Horn antenna was used as receiving antenna. Both horizontal and vertical polarizations of the antenna were set on measurement. In order to find the maximum emission, all of the interference cables were manipulated according to ANSI C63.10: 2013 requirements during radiated emission test.

The bandwidth of Test Receiver R&S ESCI was set at 120 kHz from 30MHz to 1000MHz.

The bandwidth of the VBW was set at 1MHz and RBW was set at 1MHz for peak emission measurement above 1GHz and 1MHz RBW, 10Hz VBW for average emission above 1GHz for Spectrum Agilent N9010A.

The frequency range from 30 MHz to 25 GHz (Up to 10<sup>th</sup> harmonics from fundamental frequency) was checked.

All the test results are listed in Sec.3.7.

## 3.7 Test Results

### <PASS>

The frequency and amplitude of the highest radiated emission relative the limit is reported. All the emissions not reported below are too low against the FCC limit.

No.	Operation	Channel Frequency		Data Pa	ge
1.		Worst ca	se emission < 1GHz	P12	
2.	Transmitting	00	2402 MHz		
3.		20	2442 MHz	P13-14	Ļ
4.		39	2480 MHz		
5.	Receiving				
6.		Cab	inet Emission	P16	
7.	Transmitting	00	2402 MHz	Restricted	P18
8.		39	2480 MHz	bands	P19

NOTE 1 – Level = Read Level + Antenna Factor + Cable Loss (<1GHz)

- NOTE 2 Level = Read Level + Antenna Factor + Cable Loss Preamp Factor (>1GHz)
- NOTE 3 All reading are Quasi-Peak values below or equal to 1GHz, Peak and Average values above 1GHz.

For above 1GHz test, if the peak measured value complies with the average limit, it is unnecessary to perform an average measurement.

FCC ID: W9HBRCB0006

## Worst case emission < 1GHz

EUT	:	TV Remote Control	Temperature :	22°C
Model No.	:	ERF3A69	Humidity :	51%RH
Test Mode	:	Transmitting	Date of Test :	2018.01.03

Polarization	Frequency (MHz)	Meter Reading dB (µV)	Antenna Factor (dB/m)	Cable Loss (dB)	Emission Level dB (µV/m)	Limits dB (µV/m)	Margin (dB)	Remark	
	35.749	8.35	19.32	0.61	28.28	40	11.72		
	49.014	2.98	19.4	0.72	23.1	40	16.9		
Uorizontal	67.438	2.77	18.15	0.81	21.73	43.5	18.27	OD	
Horizontal	144.335	3.09	18.61	1.25	22.95	46	20.55	QP	
	550.948	3.48	24.72	2.41	30.61	46	15.39		
	906.482	3.93	29.37	3.05	36.35	46	9.65		
	35.749	9.12	19.32	0.61	29.05	40	10.95		
	46.995	2.87	19.6	0.7	23.17	40	16.83		
Vertical	63.313	2.77	18.72	0.79	22.28	40	17.72	OD	
	162.041	3.34	19.39	1.33	24.06	43.5	19.44	Qr	
	537.589	3.59	24.47	2.38	30.44	46	15.56		
	830.4	3.52	28.69	2.92	35.13	46	10.87		

TEST ENGINEER: Jarey

FCC ID: W9HBRCB0006

## **Radiated Emission > 1GHz**

EUT	:	TV Remote Control	Temperature :	22°C
Model No.	:	ERF3A69	Humidity :	51%RH
Test Mode	:	Transmitting	Date of Test :	2018.01.03

#### CH00 (2402MHz)

Polarization	Frequency (MHz)	Meter Reading dB (µV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission Level dB (µV/m)	Limits dB (µV/m)	Margin (dB)	Remark
	1192.811	44.46	24.32	3.57	36.12	36.23	74	37.77	Peak
-	1798.127	42.86	27.1	4.4	35.47	38.89	74	35.11	Peak
Horizontal	2339.107	41.84	28.5	5.04	35.26	40.12	74	33.88	Peak
Horizontai	4004.339	39.32	32.7	6.72	34.2	44.54	74	29.46	Peak
	6322.136	37.86	35.84	8.64	34.57	47.77	74	26.23	Peak
	11076.1	38.42	39.23	11.39	35.61	53.43	74	20.57	Peak
	1032.305	44.68	23.32	3.27	36.35	34.92	74	39.08	Peak
	1422.798	43.11	25.54	3.92	35.84	36.73	74	37.27	Peak
Vartical	1944.073	40.56	27.61	4.58	35.35	37.4	74	36.6	Peak
Vertical	3196.094	39.28	31	5.95	34.97	41.26	74	32.74	Peak
	5881.418	37.3	35.11	8.38	34.17	46.62	74	27.38	Peak
	11044.13	37.63	39.21	11.25	35.6	52.49	74	21.51	Peak

#### CH20 (2442MHz)

Polarization	Frequency (MHz)	Meter Reading dB (µV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission Level dB (µV/m)	Limits dB (µV/m)	Margin (dB)	Remark
	1068.738	46.06	23.56	3.33	36.3	36.65	74	37.35	Peak
	1653.55	42.64	26.55	4.22	35.61	37.8	74	36.2	Peak
Horizontal	2252.846	42.43	28.33	4.96	35.27	40.45	74	33.55	Peak
	4329.354	38.1	33.44	7.12	34.09	44.57	74	29.43	Peak
	7519.349	38.13	37.84	9.34	35.62	49.69	74	24.31	Peak
	12149.42	37.79	39	12.17	35.54	53.42	74	20.58	Peak
	1068.738	44.33	23.56	3.33	36.3	34.92	74	39.08	Peak
	1402.384	43.24	25.44	3.9	35.87	36.71	74	37.29	Peak
Vertical -	2126.308	42.08	28.07	4.8	35.29	39.66	74	34.34	Peak
	3801.333	38.39	32.32	6.57	34.38	42.9	74	31.1	Peak
	6507.536	37.82	36.2	8.75	34.79	47.98	74	26.02	Peak
	12255.22	37.75	39	12.28	35.42	53.61	74	20.39	Peak

### CH39 (2480MHz)

Polarization	Frequency (MHz)	Meter Reading dB (µV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission Level dB (µV/m)	Limits dB (µV/m)	Margin (dB)	Remark
	1122.563	44.41	23.9	3.45	36.22	35.54	74	38.46	Peak
	1620.431	43.03	26.41	4.19	35.64	37.99	74	36.01	Peak
Hamimontal	2163.504	41.96	28.15	4.84	35.28	39.67	74	34.33	Peak
Horizontal	4341.886	37.44	33.47	7.12	34.09	43.94	74	30.06	Peak
	7368.741	39.46	37.62	9.21	35.52	50.77	74	23.23	Peak
	12651.13	37.59	39.4	12.5	35.06	54.43	74	19.57	Peak
	1096.904	43.35	23.74	3.39	36.25	34.23	74	39.77	Peak
	1394.3	42.96	25.4	3.9	35.88	36.38	74	37.62	Peak
Vartical	1731.816	42.09	26.85	4.34	35.53	37.75	74	36.25	Peak
vertical	2641.019	40.99	29.31	5.39	35.23	40.46	74	33.54	Peak
	5209.075	37.81	34.45	7.95	33.97	46.24	74	27.76	Peak
	12433.62	37.83	39	12.39	35.26	53.96	74	20.04	Peak

TEST ENGINEER: Jarey

EUT	: _	TV Remote Control	Temperature :	22°C
Model No.	: _	ERF3A69	Humidity :	51%RH
Test Mode	: _	Receiving	Date of Test :	2018.01.03

Polarization	Frequency (MHz)	Meter Reading dB (µV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission Level dB (µV/m)	Limits dB (µV/m)	Margin (dB)	Remark	
	36.127	8.88	19.32	0.61		28.81	40	11.19		
	51.843	2.32	19.28	0.73		22.33	40	17.67		
	63.313	2.77	18.72	0.79		22.28	43.5	17.72	OD	
	154.821	2.72	19.29	1.3		23.31	46	20.19	QP	
	524.554	4.3	24.26	2.34		30.9	46	15.1		
Horizontal	818.834	3.74	28.4	2.89 35.03		46	10.97			
Horizontai	1263.796	44.09	24.72	3.69	36.03	36.47	74	37.53		
	1731.816	43.87	26.85	4.34	35.53	39.53	74	34.47		
	2507.129	41.14	28.83	5.23	35.24	39.96	74	34.04	DV	
	4547.396	37.99	33.84	7.32	34.03	45.12	74	28.88	ΓK	
	6874.906	37.16	36.88	8.96	35.16	47.84	74	26.16		
	11701.38	37.58	39.24	11.79	35.67	52.94	74	21.06		
	36.509	8.31	19.33	0.62		28.26	40	11.74		
	48.332	2.85	19.47	0.71		23.03	43.5	16.97		
	69.114	3.39	17.93	0.82		22.14	43.5	17.86	OD	
	152.13	4.56	19.12	1.29		24.97	46	18.53	QP	
	444.851	3.39	23.04	2.17		28.6	46	17.4		
Vartical	771.449	4.12	28.07	2.82		35.01	46	10.99		
vertical	1050.364	45.61	23.44	3.3	36.32	36.03	74	37.97		
	1477.276	43.01	25.8	4.01	35.78	37.04	74	36.96		
	2024.354	42.04	27.85	4.64	35.3	39.23	74	34.77	DV	
	2947.623	40.42	30.34	5.67	35.2	41.23	74	32.77	РК	
	5567.137	36.68	34.85	8.16	34.08	45.61	74	28.39		
	11735.25	37.76	39.21	11.93	35.67	53.23	74	20.77		

TEST ENGINEER: Jarey

### **Emissions in restricted frequency bands Using Antenna-port conducted measurements:**

According to the ANSI C63.10-2013 Sec. 11.12.2, antenna-port conducted measurements is also be permitted as an alternative to radiated measurements in the restricted frequency bands.

The transmitter output was connected to the Test Receiver. The EUT was set to transmit continuously ( $\geq$  98% duty cycle).

The test procedure is defined in ANSI C63.10-2013

(11.12.2.4 Peak power measurement procedure & the 11.12.2.5 Average power measurement procedures (11.12.2.5.1 Trace averaging with continuous EUT transmission at full power)):

Note1 – The additional radiated test was performed to prove that the cabinet emissions (transmit antenna be replaced with a termination matching the impedance of the antenna) also comply with the applicable limits.

Polarization	Frequency (MHz)	Meter Reading dB (µV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission Level dB (µV/m)	Limits dB (µV/m)	Margin (dB)	Remark
	2312.219	41.89	28.45	5.04	35.26	40.12	74	33.88	Peak
	2312.219	24.86	28.45	5.04	35.26	23.09	54	30.91	Average
	2390	44.15	28.59	5.12	35.26	42.6	74	31.4	Peak
Horizontal	2390	26.47	28.59	5.12	35.26	24.92	54	29.08	Average
Horizontal	2483.5	46.53	28.77	5.19	35.25	45.24	74	28.76	Peak
	2483.5	28.01	28.77	5.19	35.25	26.72	54	27.28	Average
	2492.677	42.89	28.79	5.23	35.25	41.66	74	32.34	Peak
	2492.677	23.32	28.79	5.23	35.25	22.09	54	31.91	Average
	2312.219	42.03	28.45	5.04	35.26	40.26	74	33.74	Peak
	2312.219	24.51	28.45	5.04	35.26	22.74	54	31.26	Average
	2390	44.05	28.59	5.12	35.26	42.5	74	31.5	Peak
Vartical	2390	28.16	28.59	5.12	35.26	26.61	54	27.39	Average
Vertical	2483.5	48.63	28.77	5.19	35.35	47.24	74	26.76	Peak
	2483.5	30.04	28.77	5.19	35.35	28.65	54	25.35	Average
	2499.893	40.79	28.8	5.23	35.24	39.58	74	34.42	Peak
	2499.893	25.33	28.8	5.23	35.24	24.12	54	29.88	Average

#### Cabinet Emission (Radiated with antenna terminated):

The frequency range 2310-2390MHz & 2483.5-2500MHz were tested, and the maximum emission frequency was recorded above.

Note2 – The antenna gain (3.23dBi) and cable loss (0.5dB) were set as offset (3dB) in the spectrum.

(According to ANSI C63.10-2013 Sec. 11.12.2.6, when determining the EIRP from the measured conducted power, the upper bound on antenna gain for a device with a signal RF output shall be selected as the maximum in-band gain of the antenna across all operating bands, or 2 dBi, whichever is greater. )

Note3 - EIRP = E + 20logD - 104.8

Where: EIRP = equivalent isotropic radiated power in dBm,

 $E = electric field strength in dB\mu V/m$ ,

D = specified measurement distance in meters.

The Average Power limit = -41.2 dBm

The Peak Power limit = -21.2 dBm

#### **AV Result on CH00**

LXI			RF	50 Ω	DC			SEN	ISE:INT		🗥 ALIGN OFF	12:12:43 F	M Jan 06, 2018
Cen	iter	Fre	a	2.39000	0000	GHz				Avg	Type: RMS	TRAC	E 1 2 3 4 5 6
						PNO: Fast	t 😱	Trig: Free	Run	Avg	Hold:>100/100	TYF	
						IFGain:Lov	N T	Atten: 20	dB			DE	
											Miles	4 0 400	20.011-
			Ref	Offset 3 d	IB						IVIKI	1 2.402	30 GHZ
10 d	B/div	,	Re	f 10.00 d	Bm							3.5	18 dBm
Lõg											<b>_</b>		
0.00													
0.00													
-10.0	⊢		$\rightarrow$										
20.0											$        \rangle$		
-20.0													
-30.0	L												
10.0													
-40.0											-/¥		
-50.0								,	<u>2</u>		1	<u> </u>	
					1-10		-	here is a primeria	Louisenser	and a start of the start of		when the gold days	an and the second
-60.0	and the second	المطر (194)	e de la come	allel and the second states	and the second second second								
-70.0													
10.0													
-80.0	⊢												
Cen	ter	2.39	100	0 GHz								Span 5	0.00 MHz
#Do	e Bi	M 1	n i			#\	/B)//	100 kHz	ŧ.		Sween	1 00 me (	1001 nte)
#RC	3 0		. V I	VILLE		#\	1-344				oweep	1.00 1115 (	roor pisj
MKR	MODE	TRC	SCL		х			Y	FU	NCTION	FUNCTION WIDTH	FUNCTIO	N VALUE
1	Ν	1	f		2.40	2 30 GHz		3.518 dF	3m				
2	Ň	1	f		2.39	0 00 GHz		-57.401 dE	Bm				
3													
4													
5													
6													
7													
8													
10													
11													
12													
14													

#### **PK Result on CH00**



#### AV Result on CH39

LXI			RF	50 Ω	DC				SEI	VSE:IN	Г		<u>^</u>	ALIGN OFF	01:30:10	PM Jan 06, 2018
Cen	ter	Fre	αź	2.48350	0000 G	Hz						Avg	Туре	RMS	TRA	CE 1 2 3 4 5 6
						PNO: Fast		Trig	: Free	e Run		Avg	Hold:	>100/100	TΥ	PE MWWWW
						Gain:Lov	v	Atte	en: 20	) dB					0	
														Miles	4 0 400	
			Ref	Offset 3 d	B									INIKI	1 2.480	25 GHZ
10 dF	Ndiv		36	10.00 d	IBm										2.8	79 dBm
Log				10100 0												
0.00								<mark>~</mark> '								
0.00								7								
-10.0								<u>/                                     </u>								
								/	l							
-20.0									<b>1</b>							
-30.0							(		<u> </u>							
-30.0							/		ł							
-40.0	<u> </u>								<u> </u>	-						
50.0							1		<u>\</u> ر	()^						
-50.0						ALL MINTY	<b>.</b>		<u>۱</u>	and have a	h. n.					
-60.0	رموسائل	Sec. of	r v nul	number	مولوه المطريقي						and shares	and the second	-	Manual Indiana	Margaland Lawren	- Marine Constant
-00.0																
-70.0																
-80.0																
Cen	ter :	2.48	35	0 GHz											Span :	50.00 MHz
#Re	s Bì	N 1	<u>n r</u>	/Hz		#\/	/BW	100	кHz	*				Sween	1.00 ms	(1001 nts)
														0.000		(1991 1999)
MKR I	NODE	TRC	SCL		х			Y			FUNC	TION	FUN	CTION WIDTH	FUNCTI	ON VALUE
1	N	1	f		2,480	25 GHz		2.8	79 di	3m						
2	N	1	f		2.483	50 GHz		-51.3	17 dE	3m						
3																
4																
5																
6																
7																
8																
9																
10																
11																
12																

#### PK Result on CH39



## 4 6 dB BANDWIDTH MEASUREMENT

### 4.1 Test Equipment

The following test equipment was used during the Emission Bandwidth measurement:

Item	Туре	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Spectrum Analyzer	Agilent	N9010A	MY52221182	Jun 12, 2017	Jun 11, 2018

#### 4.2 Block Diagram of Test Setup

Spectrum Analyzer	
Spectrum Analyzer	EUI

### 4.3 Specification Limits (§15.247(a)(2))

The minimum 6 dB bandwidth shall be at least 500 kHz.

#### 4.4 Operating Condition of EUT

The switch ON/OFF was used to enable the EUT to change the channel one by one.

#### 4.5 Test Procedure

The transmitter output was connected to the spectrum analyzer. The bandwidth of the fundamental frequency was measure by spectrum analyzer with 100 kHz RBW / 300 kHz VBW.

The 6 dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 6 dB .

The test procedure is defined in ANSI C63.10-2013 (the 11.8.2 Measurement Procedure "Option 2" was used).

4.6 Test Results

#### PASSED.

All the test results are attached in next pages.

(Test Date: 2018.01.04 Temperature: 23°C Humidity: 51 %)

Channel	Frequency	6dB Bandwidth
00	2402 MHz	665.6 kHz
20	2442 MHz	763.9 kHz
39	2480 MHz	705.3 kHz

#### CH00 (2402 MHz)



#### CH20 (2442 MHz)



#### CH39 (2480 MHz)

L <mark>XI</mark>		RF 50 Ω	DC DC		SE	NSE:INT		🔥 ALIGN OFF	12:16:42	PM Jan 06, 2018	
Cen	ter Fre	q 2.48000	00000 GH	lz	Center F	req: 2.48000	0000 GHz		Radio Std:	None	
			#IF	Gain:Low	∋ ing.rre #Atten: 2	e Run 20 dB	Avginoi	1.>10/10	Radio Dev	ice: BTS	
10 1	2446.0	Ref Offset	3 dB								
Log	3/017	Rei 20.0									
10.0											
0.00											
U.UU					m	m					
-10.0				and the second	í – –		my y				
-20.0								N L			
-30.0									~ ~		
-40.0		- m	~~ ~~					www.	- Vla		
-50.0	100 m	, m								man	
co. 0											
-60.0											
-70.0											
Cen	ter 249	R GH7							Sn	an 3 MHz	
#Re	s BW 1	00 kHz			#VI	BW 300 k	Hz		Swe	ep 1 ms	
0	ccupi	ed Band	width			Total P	ower	2.61	dBm		
			1 09	31 M	47						
			1.00								
T	ransmi	t Freq Eri	ror	8.823 kHz		<b>OBW Power</b>		99	.00 %		
x	dB Bar	ndwidth		705.3	kHz	x dB		-6.	-6.00 dB		

## **5 MAXIMUM PEAK OUTPUT POWER MEASUREMENT**

### 5.1 Test Equipment

The following test equipment was used during the maximum peak output power measurement:

Item	Туре	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Spectrum Analyzer	Agilent	N9010A	MY52221182	Jun 12, 2017	Jun 11, 2018

#### 5.2 Block Diagram of Test Setup

The Same as Section. 4.2.

#### 5.3 Specification Limits ((§15.247(b)(3))

The Limits of maximum Peak Output Power for digital modulation in 2400-2483.5 MHz is: 1 Watt. (30 dBm)

#### 5.4 Operating Condition of EUT

The switch ON/OFF was used to enable the EUT to change the channel one by one.

#### 5.5 Test Procedure

The following procedure shall be used when an instrument with a resolution bandwidth that is greater than the DTS bandwidth is available to perform the measurement:

- a) Set the RBW  $\geq$  DTS bandwidth.
- b) Set VBW  $\geq$  [3 × RBW].
- c) Set span  $\geq [3 \times RBW]$ .
- d) Sweep time = auto couple.
- e) Detector = peak.
- f) Trace mode = max hold.
- g) Allow trace to fully stabilize.
- h) Use peak marker function to determine the peak amplitude level.

The test procedure is defined in ANSI C63.10-2013 (11.9.1.1 Measurement Procedure "RBW  $\geq$  DTS bandwidth" was used).

5.6 Test Results

**PASSED.** All the test results are listed below.

(Test Date: 2018.01.04 Temperature: 23°C Humidity: 51 %)

Channel	Frequency	Peak Output Power	Limit
00	2402 MHz	5.28 dBm	30 dBm
20	2442 MHz	4.71 dBm	30 dBm
39	2480 MHz	4.55 dBm	30 dBm

#### CH00 (2402 MHz)

LXI	RF 50	Ω DC		SEN	SE:INT		ALIGN OFF	01:27:53	PM Jan 06, 2018			
Center Fr	eq 2.402	000000	GHz	Center Fre	eq: 2.40200 Run	AvalHa	z old:>10/10	Radio Std	: None			
			#IFGain:Low	#Atten: 10	dB	, right		Radio Dev	/ice: BTS			
	Def Offe											
10 dB/div	Ref 10	.00 dBn	1									
Log												
0.00												
-10.0												
-20.0												
20.0												
-30.0												
-40.0												
-50.0												
-60.0												
-70.0												
-80.0												
Center 2.4 #Res BW	402 GHz 1 MHz			#VB	w змн	z		Sp Sw	an 3 MHz eep  1 ms			
Chann	el Powe	er		Power Spectral Density								
	5.28 c	IBm	/ 2 MHz	-57.73 dBm /нz								

#### CH20 (2442 MHz)



\_\_\_\_\_

### CH39 (2480 MHz)

L <mark>XI</mark>	RF 50 Ω	DC		SEN	NSE:INT		ALIGN OFF	01:35:35	M Dec 28, 2017	
Center F	req 2.480000	000 GHz		Center Fr Trig: Free	eq:2.480000 ≘Run	0000 GHz Avg Hol	d:>10/10	Radio Std	: None	
		#IFGai	in:Low 📩	#Atten: 1	0 dB			Radio Dev	ice: BTS	
	Ref Offset 3	dB								
10 dB/div	Ref 20.00	dBm					_			
LOG										
10.0										
0.00										
-10.0										
-20.0										
-30.0										
-40.0										
-50.0										
en n										
-00.0										
-70.0										
Center 2. #Res BW	48 GHz 1 MHz			#VE	SW 3 MH2	z		Sp Swe	an 3 MHz ep 1 ms	
Chan	nel Power			Power Spectral Density						
	4.55 dB	m / 2 N	١Hz	-58.46 dBm /Hz						

## **6 EMISSION LIMITATIONS MEASUREMENT**

#### 6.1 Test Equipment

The following test equipment was used during the emission limitations test :

Item	Туре	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Spectrum Analyzer	Agilent	N9010A	MY52221182	Jun 12, 2017	Jun 11, 2018

#### 6.2 Block Diagram of Test Setup

The Same as Section. 4.2.

#### 6.3 Specification Limits (§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. Attenuation below the general limits specified in Section 15.209(a) is not required.

In addition, radiated emissions which fall in restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (See Section 15.205(c)).(\*This test result attaching to Section. 4.7)

#### 6.4 Operating Condition of EUT

The switch ON/OFF was used to enable the EUT to change the channel one by one.

#### 6.5 Test Procedure

The transmitter output was connected to the Test Receiver. Set RBW = 100 kHz,  $VBW \ge 300$  kHz, scan up through  $10^{th}$  harmonic. All harmonics/spurs must be at least 20 dB down from the highest emission level within the authorized band as measured with a 100 kHz RBW.

The test procedure is defined in ANSI C63.10-2013 (11.11.2 Reference level measurement and 11.11.3 Emission level measurement was used).

#### 6.6 Test Results

#### PASSED.

The test data was attached in the next pages. (Test Date: 2018.01.04 Temperature: 23°C Humidity: 51 %)

Channel	Data Page
00	P27-28
20	P29-30
39	P31-32

#### CH00 (2402 MHz)

			Re	eference	e level				
LXI	RF 50 Ω	DC		SEN	ISE:INT	<u>A</u>	ALIGN OFF	01:41:04 PI	M Dec 28, 2017
Center	r Freq 2.40200	00000 GF PN IFC	Z IO: Wide 😱 Gain:Low	Trig: Free Atten: 20	e Run dB	Avg Type Avg Hold:	: Log-Pwr >100/100	TRAC TYP DE	E M WWWW P N N N N N
10 dB/di	Ref Offset 3 d v <b>Ref 10.00 d</b>	IB <b>IBm</b>					Mkr1	2.401 7 3.5	69 GHz 39 dBm
				<b>1</b>		<b>L</b>			
0.00									
-10.0							λ.		-16.61 dBm
-20.0		mar					- Land		
-30.0	and the second sec							- All Mr	hy mad
-40.0	manna an								"here"
-50.0									
-60.0									
-70.0									
-80.0									
Center #Res B	2.402000 GHz W 100 kHz		#VBW	300 kHz			Sweep	Span 3. 1.00 ms (*	.000 MHz 1001 pts)



			-										
L <mark>XI</mark>		R	F	50 Ω	DC			SEN	ISE:INT		ALIGN OFF	01:45:53 P	M Dec 28, 2017
Mar	ker 1	14.	4800	0000	00000	0 GI	HZ	Trig: Free	Run		>100/100	TYP	E M WWWWW
						PN0 IEGa	J:Fast ∟ ain:Low	Atten: 20	dB	, rightera.	- 100/100	DE	T P N N N N N
						1100		_				Hend d A	40.011-
		Re	f Offse	et3d	в						I	/KF1 14.	48 GHZ
10 di	B/div	Re	ef 10.	00 d	Bm							-62.6	13 dBm
Log													
0.00	<u> </u>												
10.0													
-10.0													
													-16.61 dBm
-20.0	<u> </u>												
-30.0													
-40.0	<u> </u>												
-50.0													
													. 1
-60.0													<b>\'</b> _
	all alle	<u>م د</u>	ter allere		Mary	www.w <sup>la</sup>	when when	all marshell me	and sugar be	Moderation	a service sales		monthing
70.0	441		-							C. March 44 and	An	all and a second	
-70.0													
-80.0													
Star	t 5.000	) G	Hz							^		Stop 15.	.000 GHz
#Re	s BW ′	100	kHz				#VBW	300 kHz			Sweep	956 ms (	1001 pts)

LXI		RF	50 Ω	DC		SEI	NSE:INT	<u> </u>	ALIGN OFF	01:48:50 P	M Dec 28, 2017
Mar	ker 1	23.54	00000	00000	0 GHz			Avg Type	: Log-Pwr	TRAC	E 1 2 3 4 5 6
					PNO: Fast 🔾	Trig: Free	e Run	Avg Hold:	>100/100	TYP	
					IFGain:Low	Atten: 20	) dB			DE	
										/kr1 23	54 GHz
		Ref Of	ffset 3 d	IB						50.2	75 dBm
10 dE	3/div	Ref 1	0.00 d	IBm						-09.0	/5 цып
LOG											
0.00											
0.00											
-10.0											
											40.04 40-
											-16.61 dBm
-20.0	<b>—</b> —										
20.0											
-30.0											
-40 N											
-50.0	———										
										<b>1</b>	
										• • ·	
-60.0						A Astronomic Andrews	half a s	and the second	Lath bernerly in stage	wennethund	and the allowed as
	nthe man	sequeres a	we have	Lithurton the	all and prover and the second	la un ha collins quali	and a frank far tag	Polyment of a second second			
70.0											
-70.0											
-80.0											
Stor	+ 45 00		-							Oton 25	
Star "D	t 15.00	GH	Z		-40 (D)14				-	Stop 25	
#Re	5 BW 1	00 KI	IZ		#VBV	• 300 KHZ			sweep	900 ms (	1001 pts)

#### CH20 (2442 MHz)

			R	eference	e level				
L <mark>XI</mark>	RF 50 Ω	DC		SEN	NSE:INT	<u> </u>	ALIGN OFF	01:49:59 P	M Dec 28, 2017
Center F	req 2.44200	10000 GH PN IFC	Z IO: Wide 🖵 Gain:Low	Trig: Free Atten: 20	e Run ) dB	Avg Type Avg Hold:	: Log-Pwr >100/100	TRAC TYP DE	E 1 2 3 4 5 6 E MWWWW T P N N N N N
10 dB/div	Ref Offset 3 d Ref 10.00 d	IB <b>IB</b> m					Mkr1	2.441 7 3.0	60 GHz 55 dBm
				<b>1</b>	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~				
0.00									
-10.0							×		-16.95 dBm
-20.0							- Luca	~~~~ <u>~</u>	
-30.0								- North And	how profile
-40.0	ЪФД <sup>77</sup>								
-60.0									
-70.0									
-80.0									
Center 2.	442000 GHz		43 ( <b>1</b> 514)				0	Span 3	.000 MHz
#Res BW	TOU KHZ		#VBW	300 KHZ			Sweep	1.00 ms (	toot pts)



<mark>a</mark> Aark	er 1	<sup>RF</sup> 7.33000	50 Ω DC DOOOOOOO	GHz PNO: Fast G IFGain:Low	Trig: Free Atten: 20	Run dB	Avg Type Avg Hold:	ALIGN OFF : Log-Pwr :>100/100	01:58:35 P TRAC TYP DE	MDec 28, 2017 E 1 2 3 4 5 6 E M WWWWW ET P N N N N
0 dB	/div	Ref Offse Ref 10.	et 3 dB <b>00 dBm</b>						Mkr1 7. -60.7	.33 GHz 15 dBm
10.0										
20.0										-16.95 dBm
30.0 -										
40.0										
50.0										
50.0 -			<b>•</b> 1							
70.0	*nover of the	aller Happeller and	New Strate State	konselesetestestestes	hellyng wird all all and any	<sub>พ</sub> .พ.ษ/	and Call Add at an	hander of the second	a at have the laws	httelanderhologioglaftyri-
30.0 -										
tart Res	5.000 BW 7	) GHz 100 kHz		#VBV	V 300 kHz			Sweep	Stop 15 956 ms (	.000 GHz 1001 pts)



#### CH39 (2480 MHz)





LXI		RF 50 Ω	DC		SEN	NSE:INT	<u>^</u>	ALIGN OFF	02:14:38 P	M Dec 28, 2017
Mar	ker 1 7.	4400000	00000 G F	HZ PNO: Fast G Gain:Low	Trig: Free Atten: 20	e Run ) dB	Avg Type Avg Hold:	: Log-Pwr >100/100	TRAC TYP DE	E 1 2 3 4 5 6 E MWWWW T P N N N N N
10 dE	R B/div R	tef Offset 3 ( tef 10.00 (	dB d <b>Bm</b>						Mkr1 7. -59.59	44 GHz 91 dBm
Log										
0.00										
-10.0										
										-17.16 dBm
-20.0										
-30.0										
-40.0										
40.0										
-50.0			. 1							
-60.0			<u> </u>							
70.0	we where seeds	M Heart make	an we have a start of a	all Abertal Market	legale Magging Mr.	an all water for	here with a large	water the state of the	the share and the last	malaberation
-70.0										
-80.0										
Star #Res	t 5.000 ( s BW 10	GHZ 10 kHz		#VBW	300 kHz			Sweep	Stop 15. 956 ms (	.000 GHz 1001 pts)



## 7 BAND EDGES MEASUREMENT

### 7.1 Test Equipment

The following test equipment was used during the band edges measurement:

Item	Туре	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Spectrum Analyzer	Agilent	N9010A	MY52221182	Jun 12, 2017	Jun 11, 2018

### 7.2 Block Diagram of Test Setup

The Same as section.4.2.

### 7.3 Specification Limits (§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.

### 7.4 Operating Condition of EUT

The switch ON/OFF was used to enable the EUT to change the channel one by one.

#### 7.5 Test Procedure

The transmitter output was connected to the Test Receiver. Set RBW of Test Receiver to 100kHz and VBW to 300kHz with suitable frequency span including 100kHz bandwidth from band edge.

The test procedure is defined in ANSI C63.10-2013 (11.11.3 Emission level measurement was used).

7.6 Test Results

**PASSED**. All the test results are attached in next pages.

(Test Date: 2018.01.04 Temperature: 23°C Humidity: 51 %)

Location	Channel	Frequency	Delta Marker	Result
Below Band Edge	00	2402 MHz	65.647 dB	More than <b>20 dB</b> below the highest
Upper Band Edge	39	2480 MHz	58.834 dB	level of the desired power

#### CH00 2402MHz (Below Edge 2390 MHz)

L XI			RF	50 Ω	DC		SE	NSE:INT		ALIGN OFF	12:12:53 F	M Jan 06, 2018
Cen	iter	Fre	eq 2	2.39000	0000 GH	z		_	Avg	Type: Log-Pwr	TRAC	E 1 2 3 4 5 6
					PN	IO: Fast	Trig: Fre	e Run	AvgiH	lold:>100/100	DF	ET PNNNN
_			_		IFG	Sain:Low	Atten. 20	Jub				
			Ref	Offset 3 d	IB					MK	r1 2.402	30 GHz
<u>1</u> 0 dE	B/div		Ref	10.00 d	IBm						3.4	90 dBm
Log										1		
0.00												
-10.0												
20 N							A Real Providence					
-20.0							i segar				ويوروا أ	
-30.0												
-40.0												
-50.0										<i>,</i>	<u> </u>	
<u></u>								<b>∆</b> <sup>2</sup>	mum	<i>C</i>	Mar mar and a	ran a
-60.0	and the second	المالعمو	pressioner	man	and the second	and a second second second	all any agent the	and the second second				hall part and any
-70.0												
-80.0												
Cen	ter 1	2.39	9000	0 GHz							Span 5	0.00 MHz
#Re	s BV	N 1	.0 N	ЛНz		#VB\	W 100 kHz			Sweep	1.00 ms (	1001 pts)
MKR I	MODE	TRC	SCI		×		Y	F		EUNCTION WIDTH	EUNCTIC	MAZALIJE
1	N	1	f		2.402 30	0 GHz	3.490 d	Bm	UNCTION	FUNCTION WIDT		IN VALUE
2	Ň	1	f		2.390 00	0 GHz	-61.157 d	Bm				
3								ه و				
5												
6												
7						<u>ل الله</u>						
9												
10												
11								<u>ک ک</u>			<u>سکا ا</u>	
12 🛛												

### CH39 2480MHz (Upper Edge 2483.5 MHz)

Cent	ter	Freq	RF 50 Ω   <b>2.4835</b> 0	DC 00000 GH PN IFG	Z NO:Fast C Gain:Low	Trig:	SENSI Free F en: 20 d	E:INT Run IB	Avg Avg I	ALIGN OFF Type: Log-Pwr Hold:>100/100	01:30:03 F TRAC TYF DE	PM Jan 06, 2018 E 1 2 3 4 5 6 E M WWWWW T P N N N N N
10 dB	}/div	R	ef Offset 3 ef 10.00	dB d <b>Bm</b>						Mki	1 2.480 2.9	25 GHz 04 dBm
0.00												
-10.0 - -20.0 -												
-30.0 -												
-40.0 - -50.0 -					_			2				
-60.0	-M	***	and the second	And the Angeneration of the second second	Marene and a second				a star	an-to-anti-to-market	Martin Martin	manun
-80.0 -												
Cent #Res	er : s B\	2.483 N 1.0	50 GHz MHz		#VB	W 100 I	kHz			Sweep	Span 5 1.00 ms (	0.00 MHz 1001 pts)
MKR M	IODE	TRC S	CL	Х		Y		FUNC	TION	FUNCTION WIDTH	FUNCTIO	N VALUE
1	N	1		2.480 25	5 GHz	2.90	)4 dBn	n				
2	N			2.483 50	JGHZ	-00.93	ov a Br	1				
4												
5												
7												
8												
10												
11												
12												

## 8 POWER SPECTRAL DENSITY MEASUREMENT

### 8.1 Test Equipment

The following test equipment was used during the power spectral density measurement:

Item	Туре	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Spectrum Analyzer	Agilent	N9010A	MY52221182	Jun 12, 2017	Jun 11, 2018

#### 8.2 Block Diagram of Test Setup

The Same as section 4.2.

#### 8.3 Specification Limits (§15.247(e))

The peak power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band.

#### 8.4 Operating Condition of EUT

The switch ON/OFF was used to enable the EUT to change the channel one by one.

#### 8.5 Test Procedure

The transmitter output was connected to the Test Receiver. The Test Receiver was set as  $3kHz \le RBW \le 100kHz$ ,  $VBW \ge 3 \times RBW$ , span = 1.5 times the DTS channel bandwidth.

The test procedure is defined in ANSI C63.10-2013 (11.10.2 Measurement Procedure "Method PKPSD (peak PSD)" was used).

#### 8.6 Test Results

**PASSED**. All the test results are attached in next pages.

(Test Date: 2018.01.04 Temperature: 23°C Humidity: 51 %)

Channel	Frequency	Power Spectral Density	Limit
00	2402 MHz	3.539 dBm	8 dBm
20	2442 MHz	3.055 dBm	8 dBm
39	2480 MHz	2.839 dBm	8 dBm

### CH00 2402 MHz



#### CH20 2442 MHz



#### CH39 2480 MHz



# **9 DEVIATION TO TEST SPECIFICATIONS**

None.