TECHNICAL REPORT

Report No.:	FCC 1610104
File reference No.:	2016-10-26
Applicant:	Shenzhen KIVOS Technology Co.,Ltd.
Product:	Wireless Door Viewer--camera
Model No.:	KDB307, KDB307A, KDB307A+, KDB308, KDB309
Trademark:	KIVOS
Test Standards:	FCC Part 15 Subpart C, Paragraph 15.247
Test result:	It is herewith confirmed and found to comply with the requirements set up by ANSI C63.4&FCC Part 15 Subpart C, Paragraph 15.247 regulations for the evaluation of electromagnetic compatibility

Approved By

Jack Chung

Jack Chung
Manager

Dated: October 26, 2014

Results appearing herein relate only to the sample tested
The technical reports is issued errors and omissions exempt and is subject to withdrawal at

SHENZHEN TIMEWAY TESTING LABORATORIES

Room 512-519, 5/F., East Tower, Building 4, Anhua Industrial Zone, Futian District, Shenzhen, Guangdong, China
Tel (+86 755)8344 8688 Fax (+86 755)8344 2996 E-Mail:info@timeway-lab.com

Special Statement:

The testing quality ability of our laboratory meet with "Quality Law of People's Republic of China" Clause 19.

The testing quality system of our laboratory meets with ISO/IEC-17025 requirements, which is approved by CNAS. This approval result is accepted by MRA of APLAC.

Our test facility is recognized, certified, or accredited by the following organizations:

CNAS-LAB Code: L2292

The EMC Laboratory has been assessed and in compliance with CNAS-CL01 accreditation criteria for testing Laboratories (identical to ISO/IEC 17025:1999 General Requirements) for the Competence of testing Laboratories.

FCC-Registration No.: 899988

The 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 No.:899988.

IC- Registration No.: IC5205A-02

The EMC Laboratory has been registered and fully described in a report filed with the (IC) Industry Canada. The acceptance letter from the IC is maintained in our files. Registration No.: IC 5205A-02.

Test Report Conclusion

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1.0 General Details

1.1 Test Lab Details

Name : SHENZHEN TIMEWAY TESTING LABORATORIES

Address: Room 512-519, 5/F., East Tower, Building 4, Anhua Industrial Zone, Futian District, Shenzhen, Guangdong, China

Telephone: +86 755 83448688

Fax: +86 755 83442996

Site on File with the Federal Communications Commission – United Sates

Registration Number: 899988

For 3m & 10 m OATS

Site Listed with Industry Canada of Ottawa, Canada

Registration Number: IC: 5205A-02

For 3m & 10 m OATS

1.2 Applicant Details

Applicant: Shenzhen KIVOS Technology Co.,Ltd.

Address: Building 4,No.6 Industrial Park,Yulv Village,Gongming Town,Guangming New District, Shenzhen,China.

Telephone: 0755-27150848

Fax: 0755-27151938

1.3 Description of EUT

Product: Wireless Door Viewer--camera

Manufacturer: Shenzhen KIVOS Technology Co.,Ltd.

Address: Building 4,No.6 Industrial Park,Yulv Village,Gongming Town,Guangming New District,Shenzhen,China.

Brand Name: KIVOS

Model Number: KDB307

Additional Model Name KDB307A, KDB307A+, KDB308, KDB309

Additional Trade Name N/A

Type of Modulation BPSK

Frequency Channel List: (MHz)

CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8
2410.875	2424.375	2441.25	2458.125	2427.75	2444.625	2461.5	2414.25
CH9	CH10	CH11	CH12	CH13	CH14	CH15	CH16
2431.125	2448	2464.875	2417.625	2434.5	2451.375	2468.25	2421
CH17	CH18	CH19					
2437.875	2454.75	2471.625					

Frequency Selection	By software
Antenna type	Integral Antenna used, the antenna gain is 2.0dBi
Power Supply:	BSG0501000, Input: 100-240V, 50/60Hz; Output: 5V, 1000mA

1.4 Submitted Sample: 2 Sample

1.5 Test Duration:
2016-09-26 to 2016-10-26

1.6 Test Uncertainty
Conducted Emissions Uncertainty =3.6dB
Radiated Emissions Uncertainty =4.7dB

1.7 Test Engineer

The sample tested by Terry Tang

Print Name: Terry Tang

2.0	Test Equipments				
Instrument Type	Manufacturer	Model	Serial No.	Date of Cal.	Due Date
ESPI Test Receiver	ROHDE&SCHWARZ	ESPI 3	100379	2016-08-19	2017-08-18
TWO Line-V-NETW	ROHDE&SCHWARZ	EZH3-Z5	100294	2016-08-20	2017-08-29
TWO Line-V-NETW	ROHDE&SCHWARZ	EZH3-Z5	100253	2016-08-20	2017-08-19
Ultra Broadband ANT	ROHDE&SCHWARZ	HL562	100157	2016-08-24	2017-08-23
ESDV Test Receiver	ROHDE&SCHWARZ	ESDV	100008	2016-08-22	2017-08-21
Impuls-Begrenzer	ROHDE&SCHWARZ	ESH3-Z2	100281	2016-08-19	2017-08-20
System Controller	CT	SC100	-	--	--
Printer	EPSON	PHOTO EX3	CFNH234850	--	--
Computer	IBM	8434	1S8434KCE99BLXLO*	-	-
Loop Antenna	EMCO	6502	00042960	2016-08-23	2017-08-22
ESPI Test Receiver	ROHDE&SCHWARZ	ESI26	838786/013	2016-08-19	2017-08-20
3m OATS	--	--	N/A	2016-08-24	2017-08-23
Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170265	2016-08-24	2017-08-23
Horn Antenna	SCHWARZBECK	BBHA 9120D	9120D-631	2016-08-24	2017-08-23
Power meter	Anritsu	ML2487A	6K00003613	2016-08-19	2017-08-18
Power sensor	Anritsu	MA2491A	32263	2016-08-19	2017-08-18
Bilog Antenna	Schwarebeck	VULB9163	9163/340	2016-08-24	2017-08-23
LISN	AFJ	LS16C	10010947251	2016-08-22	2017-08-21
LISN (Three Phase)	Schwarebeck	NSLK 8126	8126453	2016-08-20	2017-08-19
9*6*6 Anechoic	--	--	N/A	2016-08-24	2017-08-23
EMI Test Receiver	RS	ESCS30	100139	2016-08-19	2017-08-20

3.0 Technical Details

3.1 Summary of test results

The EUT has been tested according to the following specifications:

Requirement	CFR 47 Section	Result	Notes
Antenna Requirement	15.203, 15.247(b)(4)	PASS	Complies
Maximum Peak Out Power	15.247 (b)(1), (4)	PASS	Complies
Carrier Frequency Separation	15.247(a)(1)	PASS	Complies
20dB Channel Bandwidth	15.247 (a)(1)	PASS	Complies
Number of Hopping Channels	15.247(a)(iii), 15.247(b)(1)	PASS	Complies
Time of Occupancy (Dwell Time)	15.247(a)(iii)	PASS	Complies
Spurious Emission, Band Edge, and Restricted bands	15.247(d),15.205(a), 15.209 (a),15.109	PASS	Complies
Conducted Emissions	15.207(a)，15.107	PASS	Complies
RF Exposure	15.247(i), 1.1307(b)(1)	PASS	Complies

3.2 Test Standards

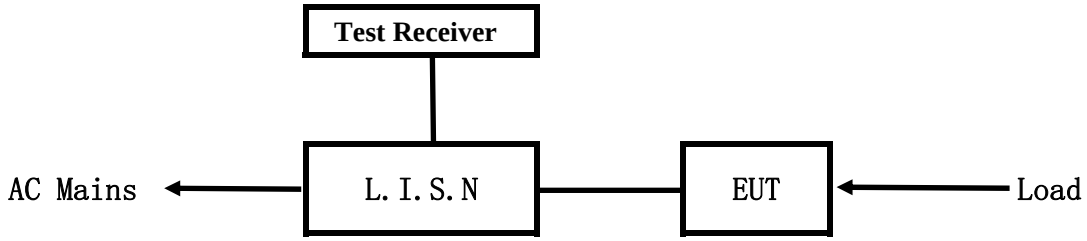
FCC Part 15 Subpart & Subpart C, Paragraph 15.247

4.0 EUT Modification

No modification by SHENZHEN TIMEWAY TESTING LABORATORIES

5. Power Line Conducted Emission Test

5.1 Schematics of the test



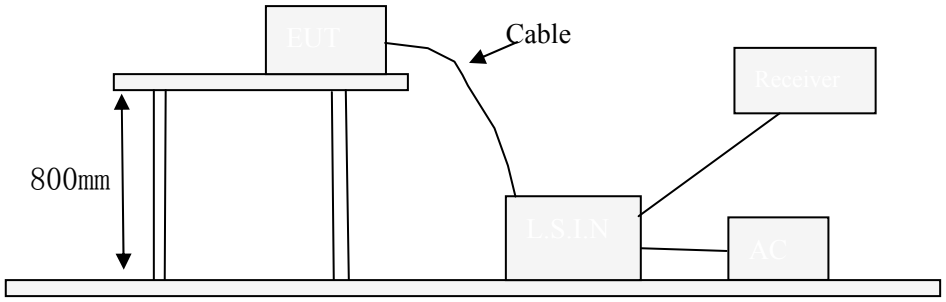
EUT: Equipment Under Test

5.2 Test Method and test Procedure

The EUT was tested according to ANSI C63.4-2014.The Frequency spectrum From 0.15MHz to 30MHz was investigated. The LISN used was 50ohm/50uH as specified by section 5.1 of ANSI C63.4 –2014.

Test Voltage: 120V~60Hz

Block diagram of Test setup



5.3 Configuration of The EUT

The EUT was configured according to ANSI C63.4-2014. All interface ports were connected to the appropriate peripherals. All peripherals and cables are listed below.

19 channels are provided to the EUT

A. EUT

Device	Manufacturer	Model	FCC ID
Wireless Door Viewer--camera	Shenzhen KIVOS Technology Co.,Ltd.	KDB307, KDB307A, KDB307A+, KDB308, KDB309	2AKAJ307

B. Internal Device

Device	Manufacturer	Model	FCC ID/DOC
N/A			

C. Peripherals

Device	Manufacturer	Model	FCC ID/DOC	Cable
--	--	--	--	--

5.4 EUT Operating Condition

Operating condition is according to ANSI C63.4 -2014.

A Setup the EUT and simulators as shown on follow

B Enable AF signal and confirm EUT active to normal condition

5.5 Power line conducted Emission Limit according to Paragraph 15.107 ,15.207

Frequency (MHz)	Class A Limits (dB μ V)		Class B Limits (dB μ V)	
	Quasi-peak Level	Average Level	Quasi-peak Level	Average Level
0.15 ～ 0.50	79.0	66.0	66.0～56.0*	56.0～46.0*
0.50 ～ 5.00	73.0	60.0	56.0	46.0
5.00 ～ 30.00	73.0	60.0	60.0	50.0

Notes: 1. *Decreasing linearly with logarithm of frequency.

2. The tighter limit shall apply at the transition frequencies

5.6 Test Results

The frequency spectrum from 0.15MHz to 30MHz was investigated. All reading are quasi-peak values with a resolution bandwidth of 9kHz.

A: Conducted Emission on Live Terminal (150kHz to 30MHz)

EUT Operating Environment

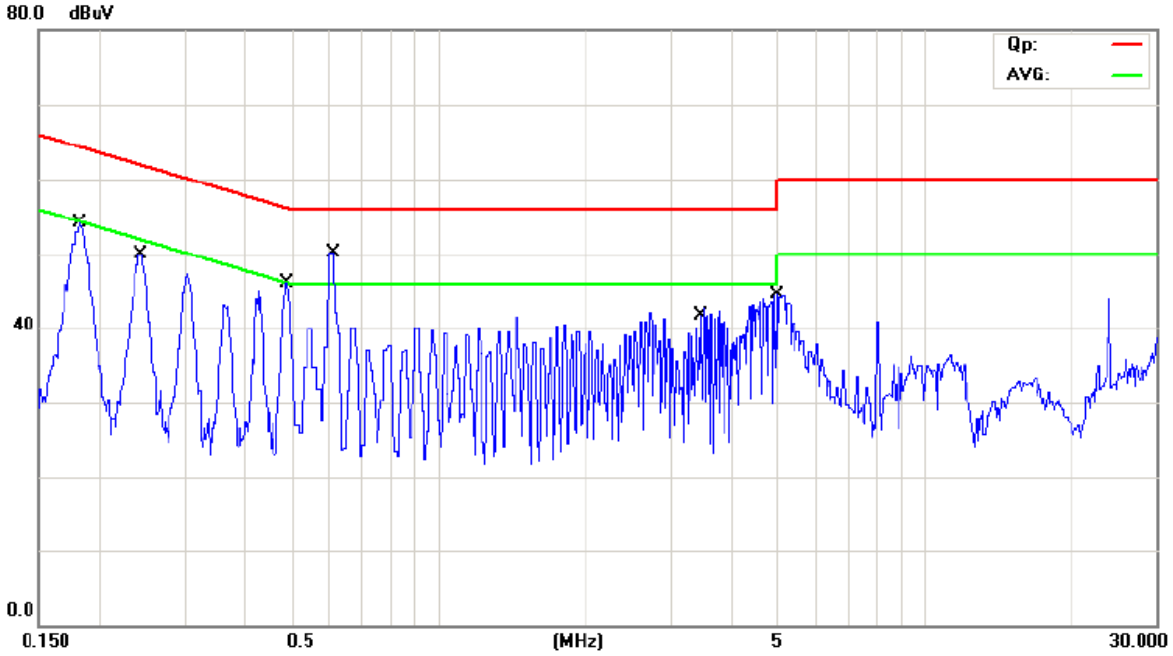
Temperature: 26℃ Humidity: 65%RH Atmospheric Pressure: 101 KPa

EUT set Condition: Keeping Transmitting

Equipment Level: Class B

Results: PASS

Please refer to following diagram for individual



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1811	40.50	11.03	51.53	64.44	-12.91	QP	
2		0.1811	19.10	11.03	30.13	54.44	-24.31	AVG	
3		0.2414	36.40	11.10	47.50	62.05	-14.55	QP	
4		0.2414	20.10	11.10	31.20	52.05	-20.85	AVG	
5		0.4824	32.40	11.35	43.75	56.30	-12.55	QP	
6		0.4824	22.60	11.35	33.95	46.30	-12.35	AVG	
7		0.6034	33.60	11.48	45.08	56.00	-10.92	QP	
8	*	0.6034	25.30	11.48	36.78	46.00	-9.22	AVG	
9		3.4346	27.20	12.87	40.07	56.00	-15.93	QP	
10		3.4346	8.00	12.87	20.87	46.00	-25.13	AVG	
11		4.9994	29.70	13.50	43.20	56.00	-12.80	QP	
12		4.9994	20.20	13.50	33.70	46.00	-12.30	AVG	

B: Conducted Emission on Neutral Terminal (150kHz to 30MHz)

EUT Operating Environment

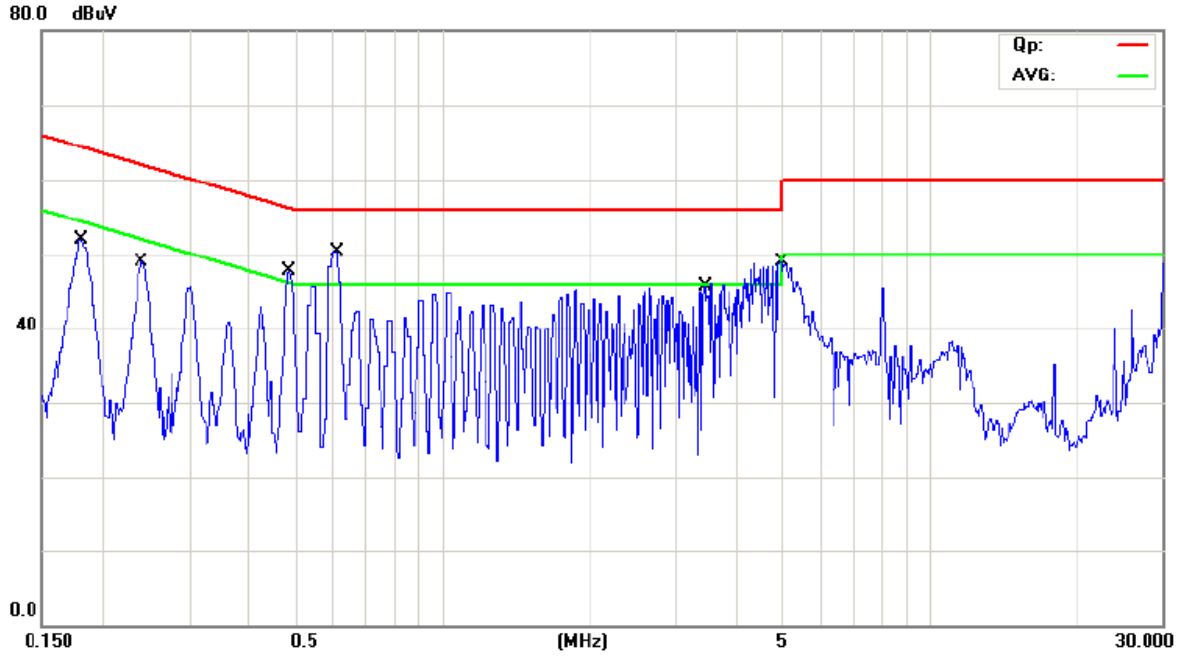
Temperature: 26℃ Humidity: 65%RH Atmospheric Pressure: 101 KPa

EUT set Condition: Keeping Transmitting

Equipment Level: Class B

Results: Pass

Please refer to following diagram for individual



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1802	38.70	11.03	49.73	64.48	-14.75	QP	
2		0.1802	15.30	11.03	26.33	54.48	-28.15	AVG	
3		0.2410	36.00	11.10	47.10	62.06	-14.96	QP	
4		0.2410	17.00	11.10	28.10	52.06	-23.96	AVG	
5		0.4815	33.70	11.35	45.05	56.31	-11.26	QP	
6		0.4815	19.70	11.35	31.05	46.31	-15.26	AVG	
7	*	0.6014	36.40	11.48	47.88	56.00	-8.12	QP	
8		0.6014	23.70	11.48	35.18	46.00	-10.82	AVG	
9		3.4885	31.20	12.90	44.10	56.00	-11.90	QP	
10		3.4885	11.40	12.90	24.30	46.00	-21.70	AVG	
11		4.9904	34.10	13.50	47.60	56.00	-8.40	QP	
12		4.9904	22.50	13.50	36.00	46.00	-10.00	AVG	

6 Radiated Emission Test

6.1 Test Method and test Procedure:

(1) The EUT was tested according to ANSI C63.10–2013. The radiated test was performed at Timeway Laboratory. This site is on file with the FCC laboratory division, Registration No.899988

(2) The EUT, peripherals were put on the turntable which table size is 1m x 1.5 m, table high 0.8 m. All set up is according to ANSI C63.10-2013.

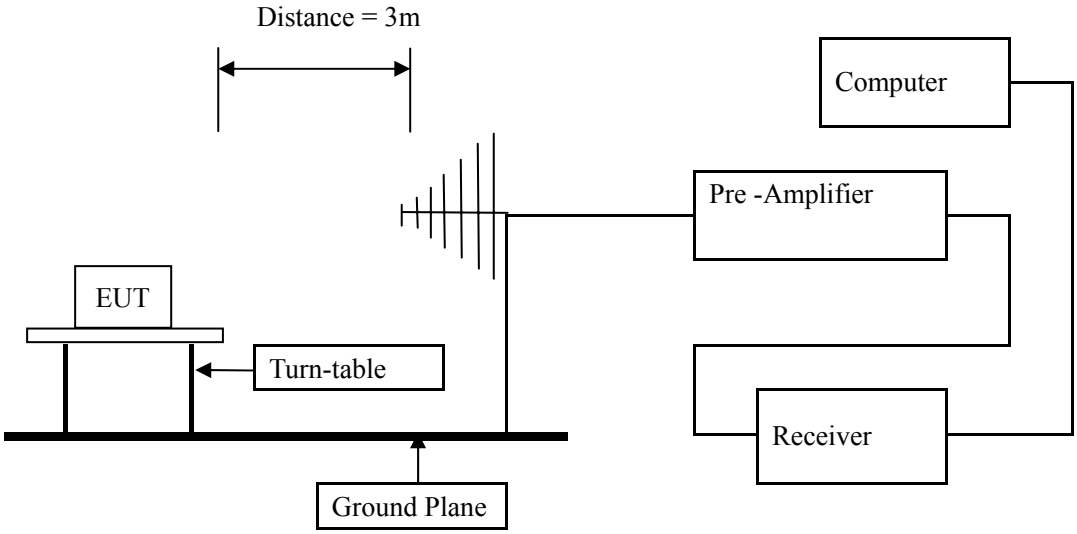
(3) The frequency spectrum from 30 MHz to 1 GHz was investigated. All readings from 30 MHz to 1 GHz are quasi-peak values with a resolution bandwidth of 120 kHz. For measurement above 1GHz, peak values with RBW=VBW=1MHz and PK detector. AV value with RBW=1MHz, VBW=10Hz and PK detector. Measurements were made at 3 meters.

(4) The antenna high is varied from 1 m to 4 m high to find the maximum emission for each frequency.

(5) Maximizing procedure was performed on the six (6) highest emissions to ensure EUT compliance is with all installation combinations. All data was recorded in the peak detection mode. Quasi-peak readings was performed only when an emission was found to be marginal (within -4 dB of specification limit), and are distinguished with a "**QP**" in the data table.

(6) The antenna polarization : Vertical polarization and Horizontal polarization.

Block diagram of Test setup



6.2 Configuration of The EUT

Same as section 5.3 of this report

6.3 EUT Operating Condition

Same as section 5.4 of this report.

6.4 Radiated Emission Limit

All emission from a digital device, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strength specified below:

Frequencies in restricted band are complied to limit on Paragraph 15.109. 15.209

Frequency Range (MHz)	Distance (m)	Field strength (dB μ V/m)
30-88	3	40.0
88-216	3	43.5
216-960	3	46.0
Above 960	3	54.0

Note: 1. RF Voltage (dBuV) = 20 log RF Voltage (uV)

2. In the Above Table, the higher limit applies at the band edges.

3. Distance refers to the distance in meters between the measuring instrument antenna and the EUT

Test result

General Radiated Emission Data and Harmonics Radiated Emission Data

Radiated Emission In Horizontal/ In Vertical (30MHz----1000MHz)

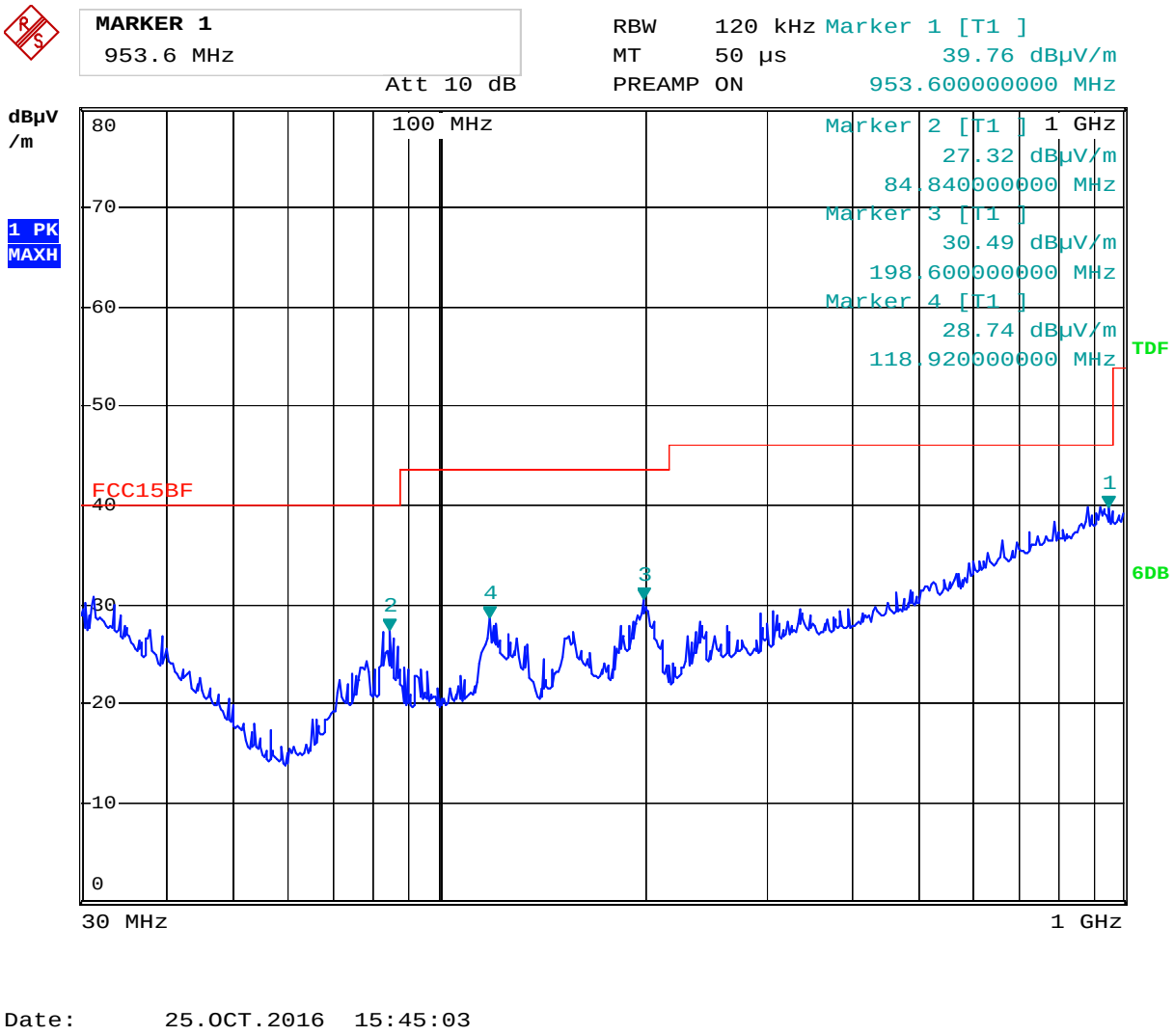
EUT set Condition: **Keeping Transmitting**

Results: **Pass**

Frequency (MHz)	Level@3m (dB μ V/m)	Antenna Polarity	Limit@3m (dB μ V/m)
953.600	39.76	H	46.00
84.840	27.32	H	40.00
198.600	30.49	H	43.50
118.920	28.74	H	43.50
84.840	31.20	V	40.00
932.360	39.75	V	46.00
32.040	34.96	V	40.00
119.960	32.82	V	43.50

Test Figure:

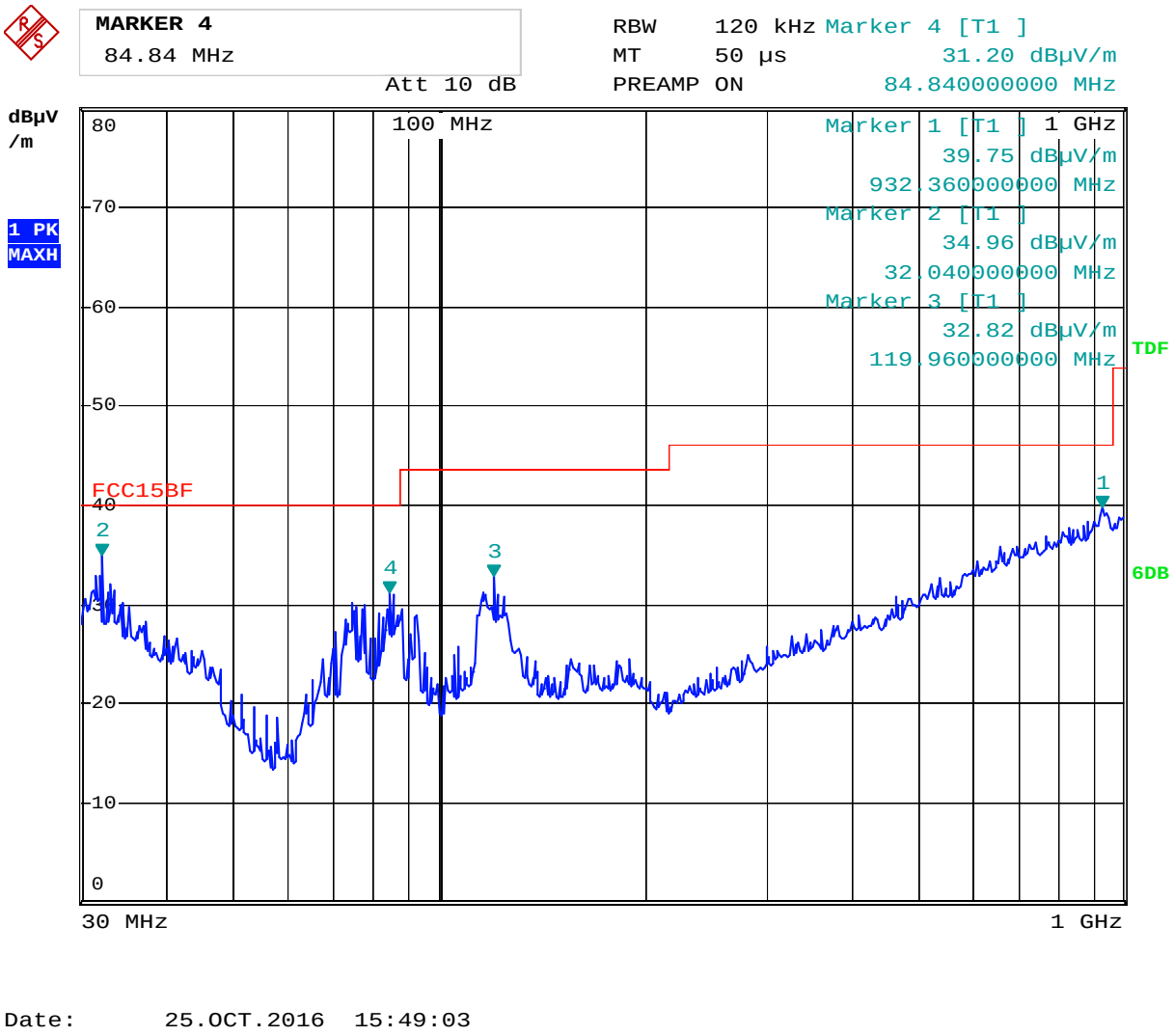
H



Date: 25.OCT.2016 15:45:03

Test Figure:

V



Date: 25.OCT.2016 15:49:03

Operation Mode: Transmitting under Low Channel (2410.875MHz)

Frequency (MHz)	Level@3m (dB μ V/m)	Antenna Polarity	Limit@3m (dB μ V/m)
2410.875	--	H	Fundamental Frequency
2410.875	--	V	
4821.750	--	H	74(Peak)/ 54(AV)
4821.750	--	V	74(Peak)/ 54(AV)
7232.625	--	H/V	74(Peak)/ 54(AV)
9643.500	--	H/V	74(Peak)/ 54(AV)
12054.375	--	H/V	74(Peak)/ 54(AV)
14465.250	--	H/V	74(Peak)/ 54(AV)
16876.125	--	H/V	74(Peak)/ 54(AV)
19287.000	--	H/V	74(Peak)/ 54(AV)
21697.875	--	H/V	74(Peak)/ 54(AV)
24108.750	--	H/V	74(Peak)/ 54(AV)

Note: 1. Level = Reading + AF + Cable - Preamp + Filter - Dist, Margin = Level - Limit
2. Remark "---" means that the emissions level is too low to be measured

Operation Mode: Transmitting g under Middle Channel (2441.25MHz)

Frequency (MHz)	Level@3m (dB μ V/m)	Antenna Polarity	Limit@3m (dB μ V/m)
2441.25	--	H	Fundamental Frequency
2441.25	--	V	
4882.50	--	H	74(Peak)/ 54(AV)
4882.50	--	V	74(Peak)/ 54(AV)
7323.75	--	H/V	74(Peak)/ 54(AV)
9765.00	--	H/V	74(Peak)/ 54(AV)
12206.25	--	H/V	74(Peak)/ 54(AV)
14647.50	--	H/V	74(Peak)/ 54(AV)
17088.75	--	H/V	74(Peak)/ 54(AV)
19530.00	--	H/V	74(Peak)/ 54(AV)
21971.25	--	H/V	74(Peak)/ 54(AV)
24412.50	--	H/V	74(Peak)/ 54(AV)

Note: 1. Level = Reading + AF + Cable - Preamp + Filter - Dist, Margin = Level - Limit
2. Remark "---" means that the emissions level is too low to be measured

Operation Mode: Transmitting under High Channel (2471.625MHz)

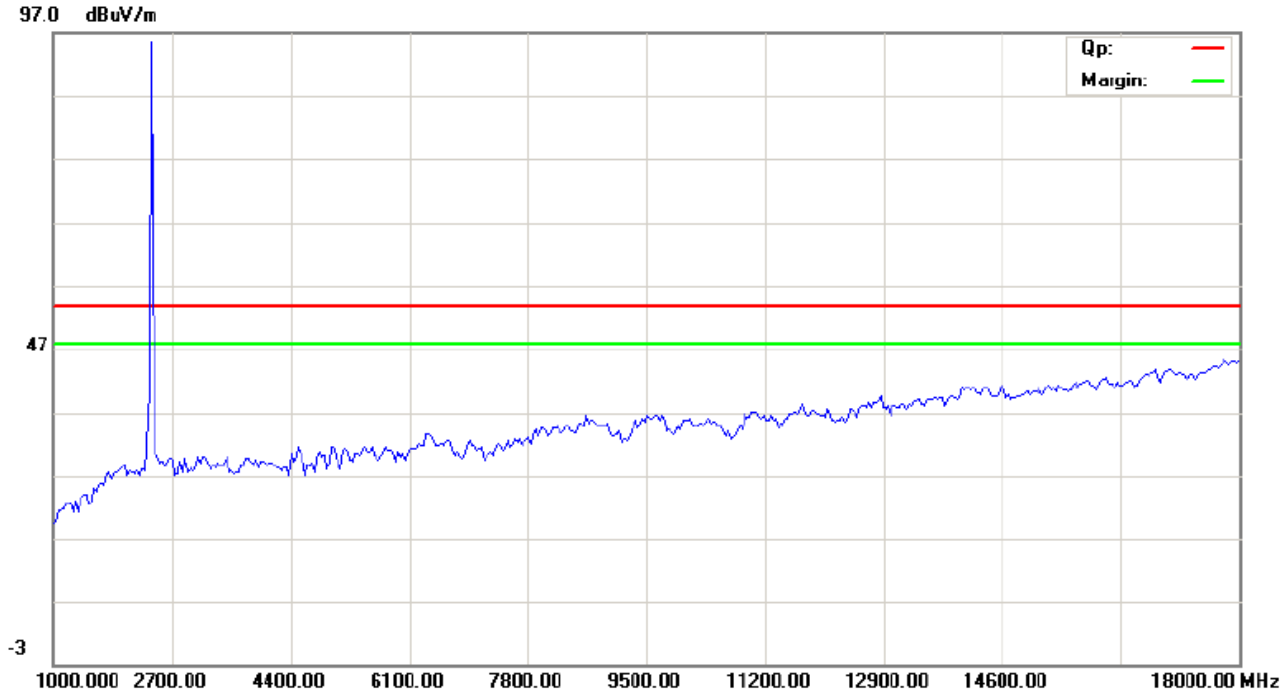
Frequency (MHz)	Level@3m (dB μ V/m)	Antenna Polarity	Limit@3m (dB μ V/m)
2471.625	--	H	Fundamental Frequency
2471.625	--	V	
4943.250	-	H	74(Peak)/ 54(AV)
4943.250	--	V	74(Peak)/ 54(AV)
7414.875	--	H/V	74(Peak)/ 54(AV)
9886.500	--	H/V	74(Peak)/ 54(AV)
12358.125	--	H/V	74(Peak)/ 54(AV)
14829.750	--	H/V	74(Peak)/ 54(AV)
17301.375	--	H/V	74(Peak)/ 54(AV)
19773.000	--	H/V	74(Peak)/ 54(AV)
22244.625	--	H/V	74(Peak)/ 54(AV)
24716.250	--	H/V	74(Peak)/ 54(AV)

Note: 1. Level = Reading + AF + Cable - Preamp + Filter - Dist, Margin = Level - Limit

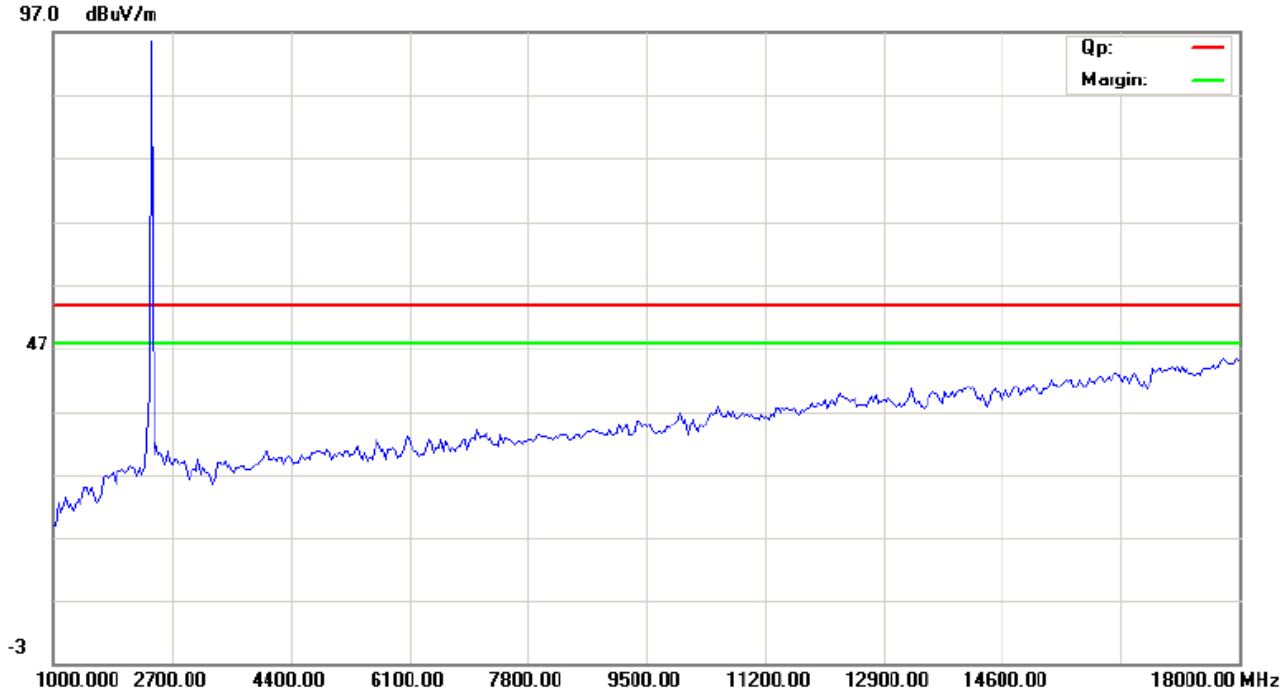
2. Remark “---” means that the emissions level is too low to be measured

Please refer to the following test plots for details:

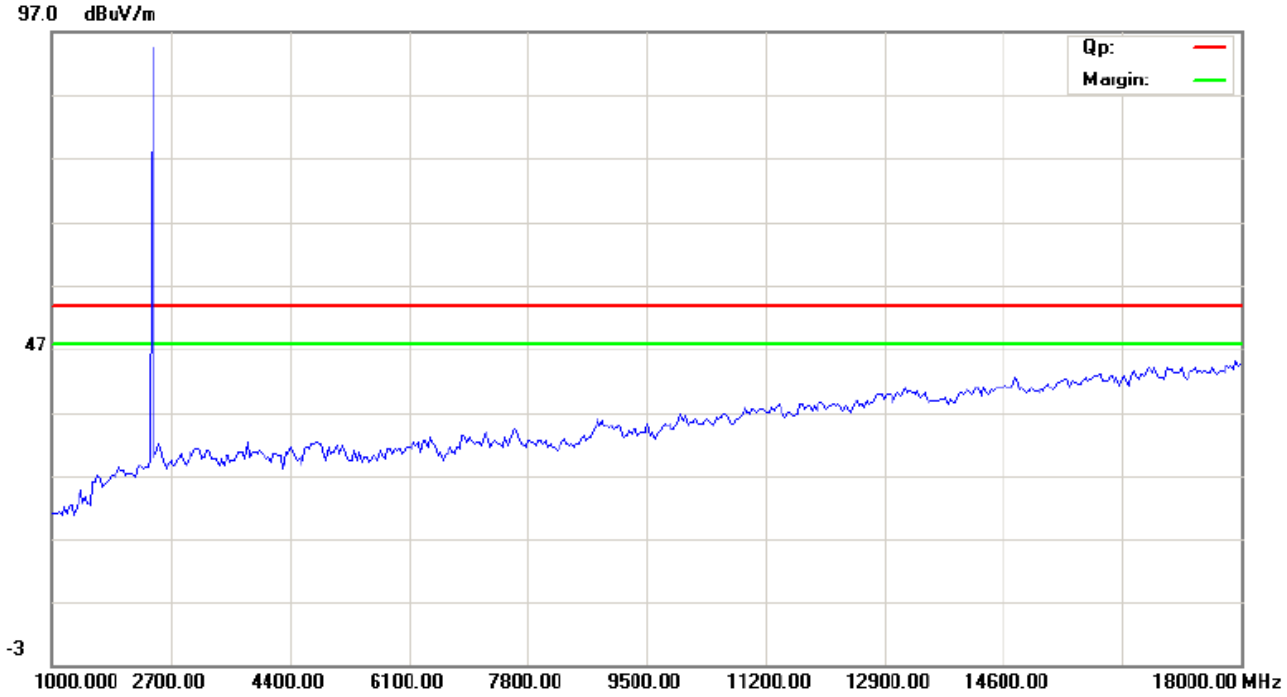
Low Channel: Horizontal



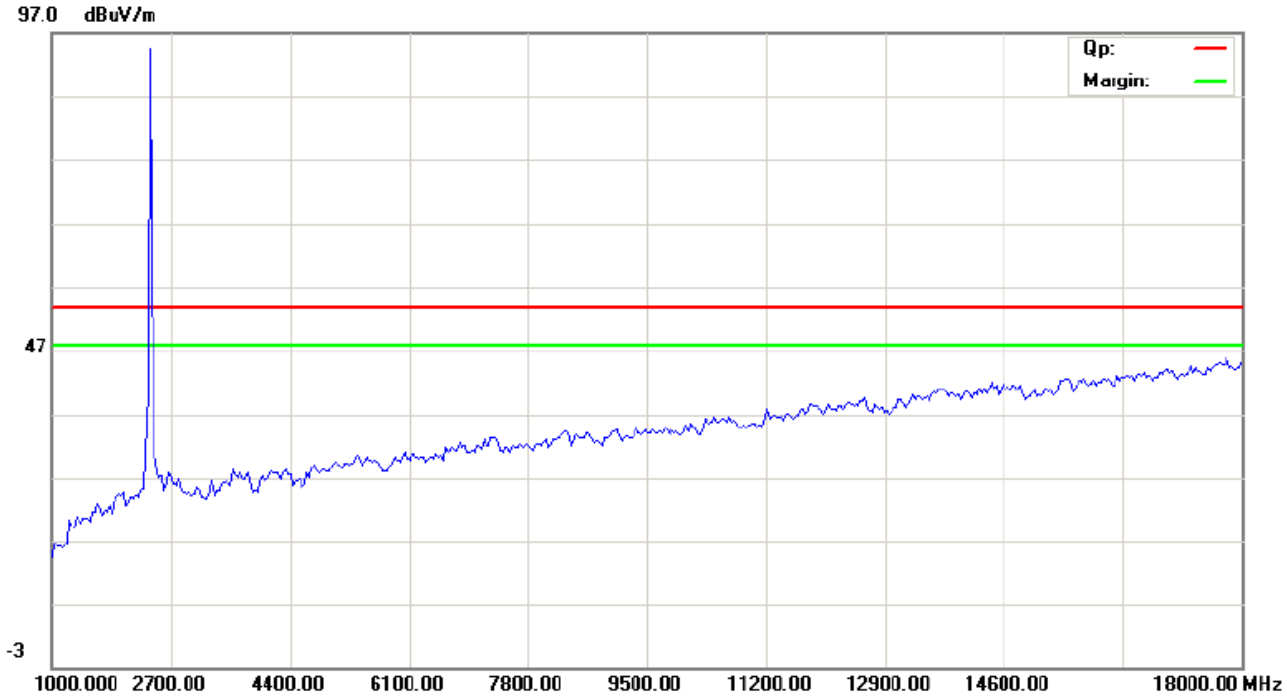
Low Channel : Vertical



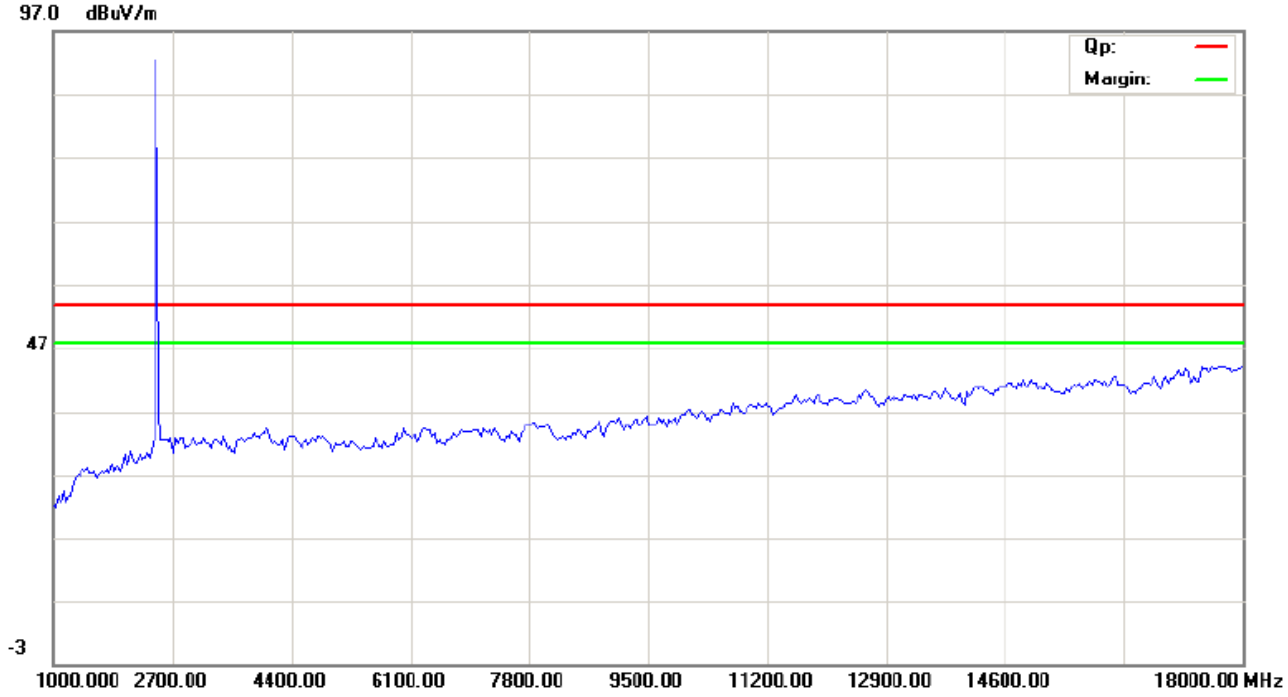
Middle Channel : Horizontal



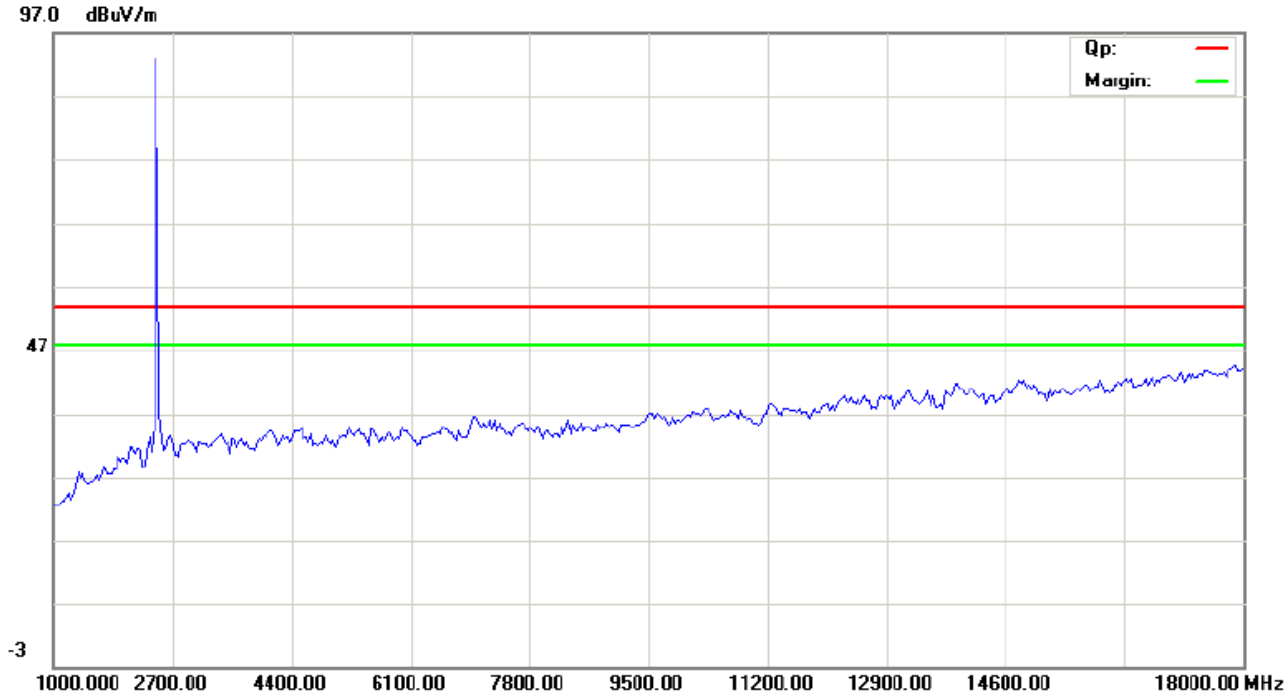
Middle Channel : Vertical



High Channel : Horizontal



High Channel : Vertical



Note: for the radiated emissions above 18G, it is the floor noise.

7.0 20dB Bandwidth Measurement

7.1 Regulation

Intentional radiators operating under the alternative provisions to the general emission limits, as contained in §§ 15.217 through 15.257 and in Subpart E of this part, must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated.

7.2 Limits of 20dB Bandwidth Measurement

N/A

7.3 Test Procedure.

1. Check the calibration of the measuring instrument (spectrum analyzer) using either an internal calibrator or a known signal from an external generator.
2. Set the spectrum analyzer as follows: Span =10MHz, RBW =50kHz, VBW=100kHz, Sweep = auto Detector function = peak ,Trace = max hold
3. Measure the highest amplitude appearing on spectral display and record the level to calculate results. 6. Repeat above procedures until all frequencies measured were complete.

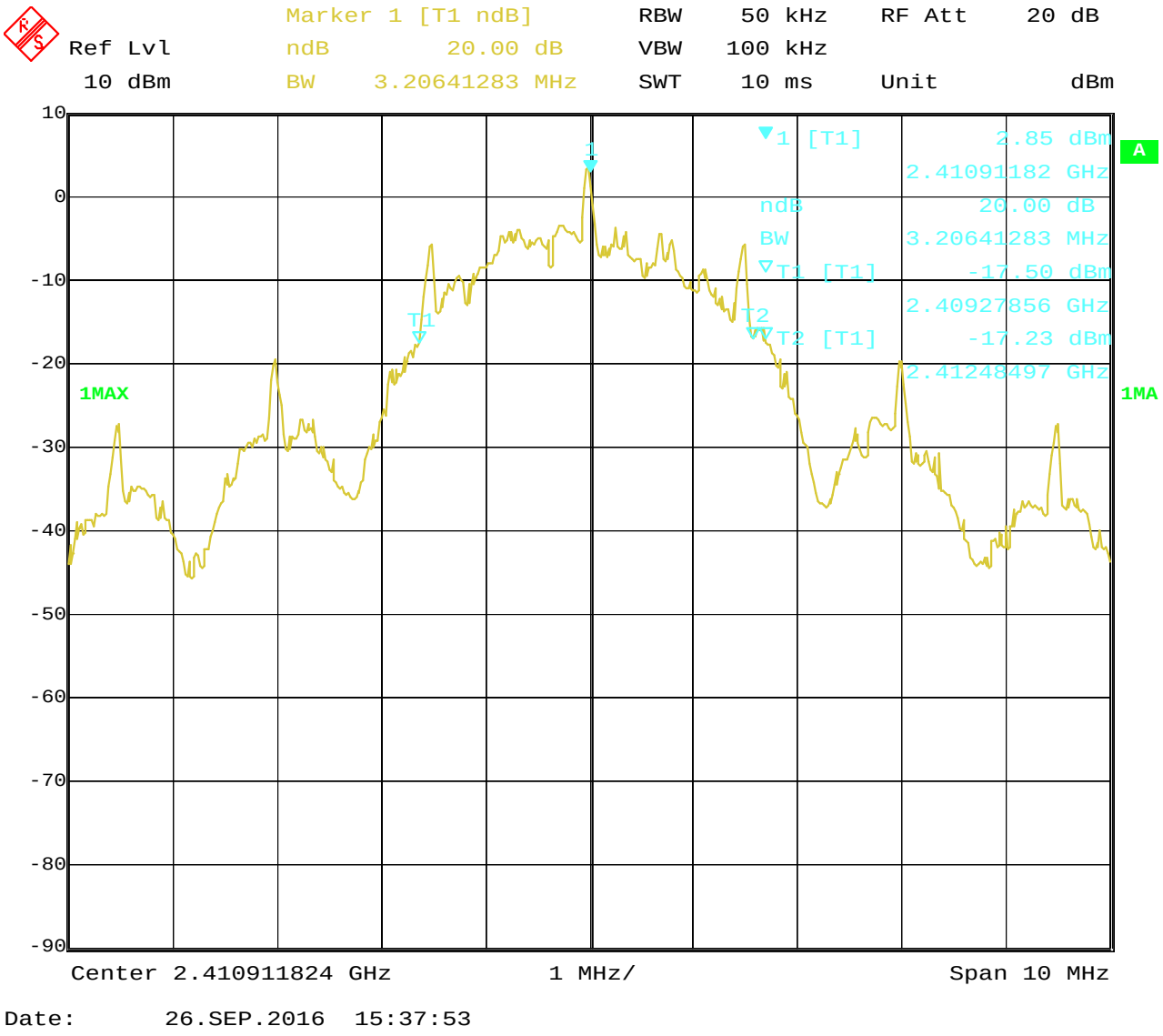
7.4 Test Result

EUT	Wireless Door Viewer--camera	Model	KDB307
Mode	Keep Transmitting	Input Voltage	DC3.7V
Temperature	24 deg. C,	Humidity	56% RH

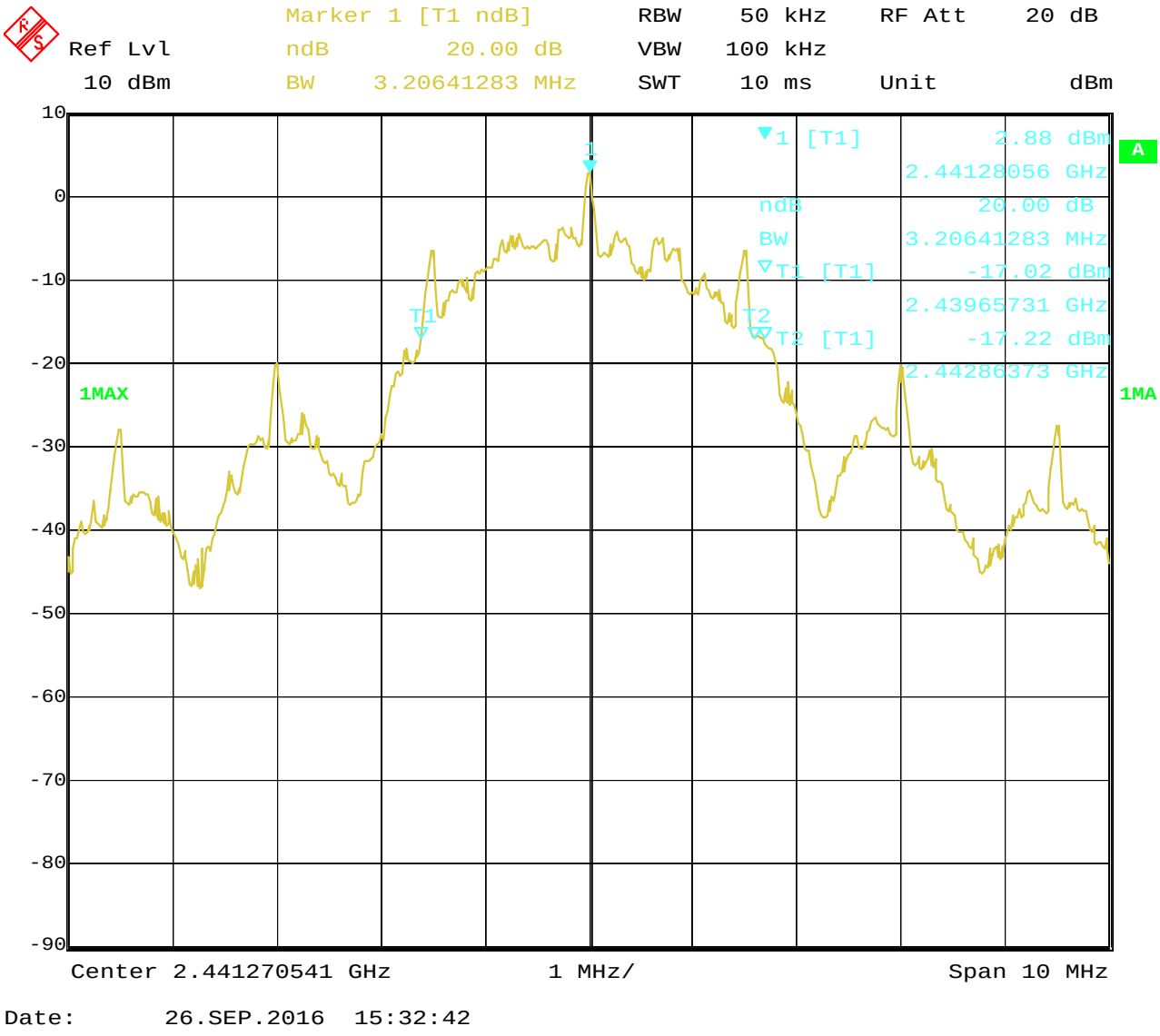
Channel	Channel Frequency (MHz)	20 dB Bandwidth (kHz)	Maximum Limit (kHz)	Pass/ Fail
Low	2410.875	3206	--	Pass
Middle	2441.250	3206	--	Pass
High	2471.625	3206	--	Pass

Test Figure:

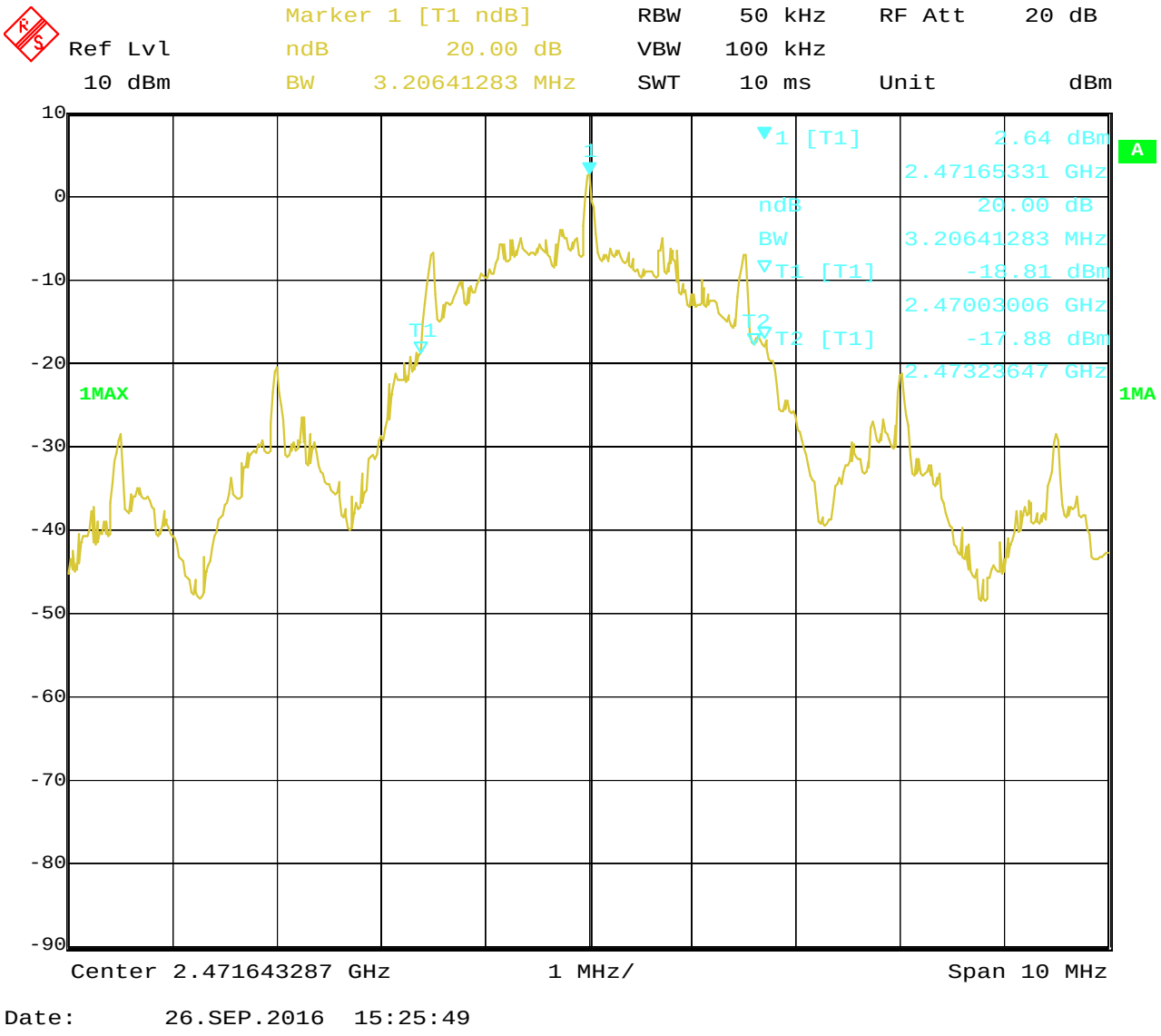
1. Condition: Low Channel



2. Condition: Middle Channel



3. High Channel

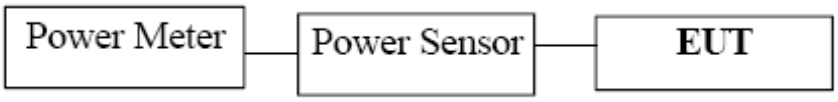


8. Maximum Peak Output Power

8.1 Regulation

According to §15.247(b)(1), for frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 75 non-overlapping hopping channels, and all frequency hopping systems in the 5725-5850 MHz band: 1 watt. For all other frequency hopping systems in the 2400-2483.5MHz band:0.125 watts. According to §15.247(b)(4), the conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

8.2 Test Setup



8.3 Test Procedure

The RF power output was measured with a Power meter connected to the RF Antenna connector (conducted measurement) while EUT was operating in transmit mode at the appropriate centre frequency.

Note: the peak power was measured

8.4Test Results

EUT	Wireless Door Viewer--camera	Model	KDB307
Mode	Keep Transmitting	Input Voltage	DC3.7V
Temperature	24 deg. C,	Humidity	56% RH

Channel	Channel Frequency (MHz)	Peak Power Output (dBm)	Peak Power Limit (dBm)	Pass/ Fail
Low	2410.875	**3.96**	21	Pass
Middle	2441.250	3.56	21	Pass
High	2471.625	3.21	21	Pass

Note: 1. the result basic equation calculation as follow:

Peak Power Output = Peak Power Reading + Cable loss + Attenuator

2. Worse case was recorded

9. Carrier Frequency Separation

9.1 Regulation

According to §15.247(a)(1), frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater. Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW.

9.2 Limits of Carrier Frequency Separation

The minimum Carrier Frequency Separation is 25kHz or two-thirds of the 20dB bandwidth of the hopping Channel which is great.

9.3 Test Procedure

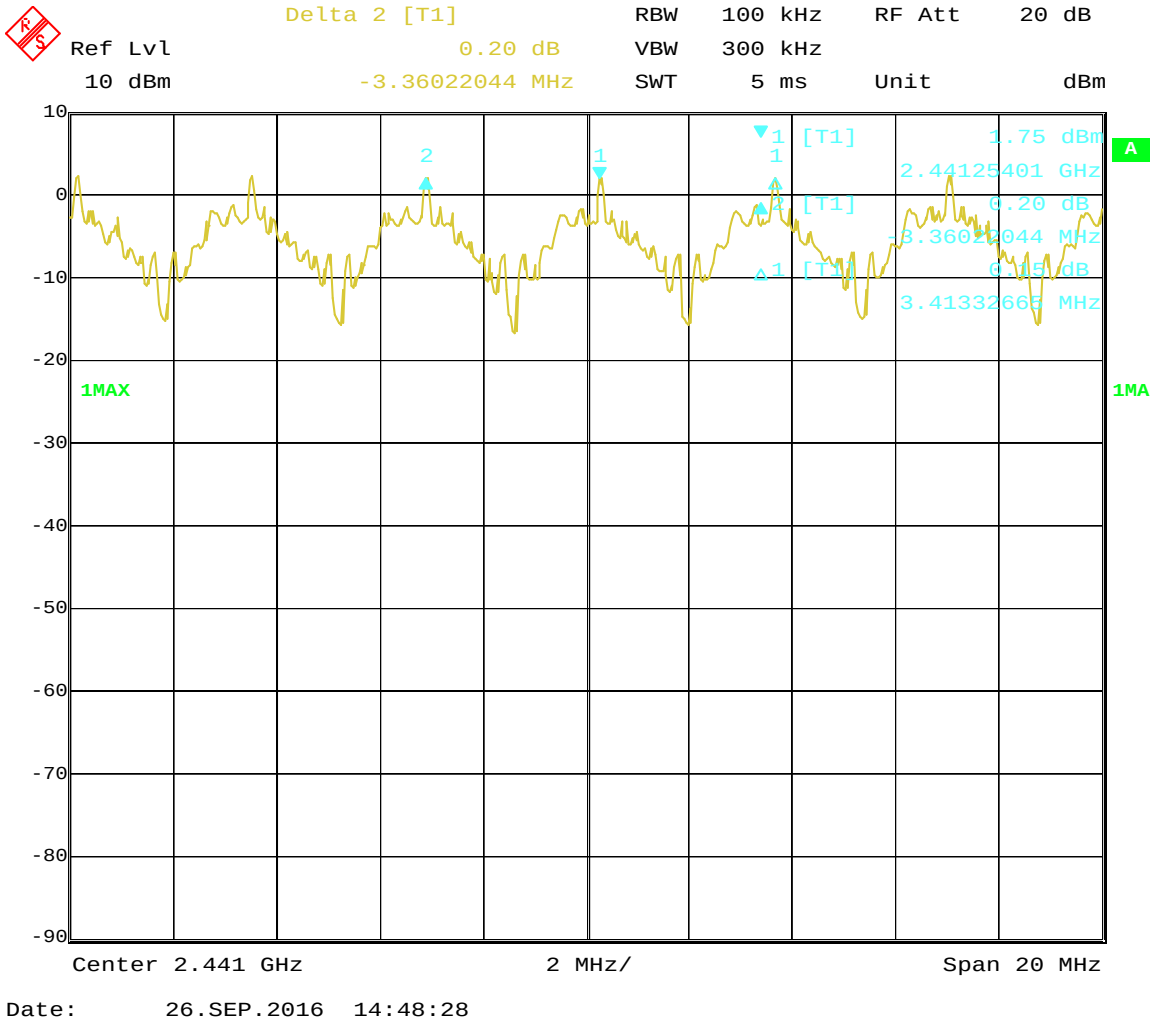
1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Set the spectrum analyzer as follows: Span = wide enough to capture the peaks of two adjacent channels: Resolution (or IF) Bandwidth (RBW) ≥ 1% of the span; Video (or Average) Bandwidth (VBW) ≥ RBW; Sweep = auto; Detector function = peak; Trace = max hold
3. Measure the separation between the peaks of the adjacent channels using the marker-delta function.
4. Repeat above procedures until all frequencies measured were complete.

9.4Test Result

EUT	Wireless Door Viewer--camera	Model	KDB307
Mode	Hopping On	Input Voltage	DC3.7V
Temperature	24 deg. C,	Humidity	56% RH

Carrier Frequency Separation	Limit	Pass/ Fail
3360kHz	⩾ 25 kHz or 2/3 of 20 dB bandwidth	Pass

Test Plots



10. Number of Hopping Channels

10.1 Regulation

According to §15.247(a)(1)(iii), frequency hopping systems in the 2400-2483.5 MHz band shall use at least 15 channels. The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed. Frequency hopping systems may avoid or suppress transmissions on a particular hopping frequency provided that a minimum of 15 channels are used. According to §15.247(b)(1), for frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 75 non-overlapping hopping channels, and all frequency hopping systems in the 5725-5850 MHz band: 1 watt. For all other frequency hopping systems in the 2400-2483.5 MHz band: 0.125 watts.

10.2 Limits of Number of Hopping Channels

The frequency hopping systems in the 2400-2483.5MHz band shall use at least 15 channels.

10.3 Test Procedure

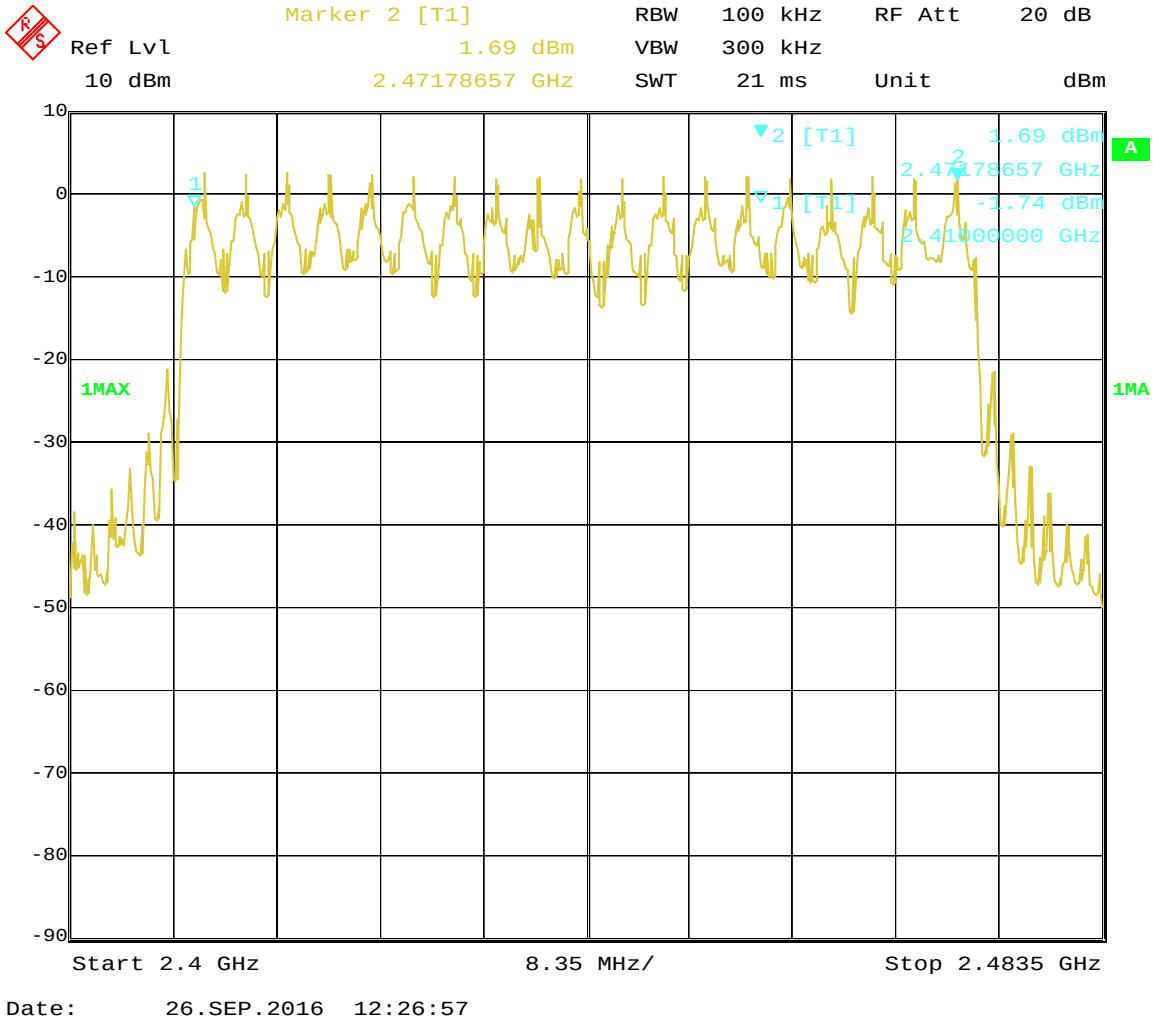
1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Set the spectrum analyzer as follows: Span = the frequency band of operation; RBW=100 kHz, VBW= 300 kHz;
Sweep = auto; Detector function = peak; Trace = max hold
3. Record the number of hopping channels.

10.4Test Result

EUT	Wireless Door Viewer--camera	Model	KDB307
Mode	Hopping On	Input Voltage	DC3.7V
Temperature	24 deg. C,	Humidity	56% RH

Operating Frequency	Number of hopping channels	Limit	Pass/ Fail
2410.875-2471.625MHz	19	≥ 15	Pass

Test Plot



11. Time of Occupancy (Dwell Time)

11.1 Regulation

According to §15.247(a)(1)(iii), frequency hopping systems in the 2400-2483.5 MHz band shall use at least 15 channels. The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed. Frequency hopping systems may avoid or suppress transmissions on a particular hopping frequency provided that a minimum of 15 channels are used.

11.2 Limits of Carrier Frequency Separation

The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed

11.3 Test Procedure

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Set the spectrum analyzer as follows: Span = zero span, centered on a hopping channel; RBW = 1 MHz; VBW ≥ RBW; Sweep = as necessary to capture the entire dwell time per hopping channel; Detector function = peak; Trace = max hold
3. Measure the dwell time using the marker-delta function.
4. Repeat above procedures until all frequencies measured were complete.
5. Repeat this test for different modes of operation (e.g., data rate, modulation format, etc.), if applicable.

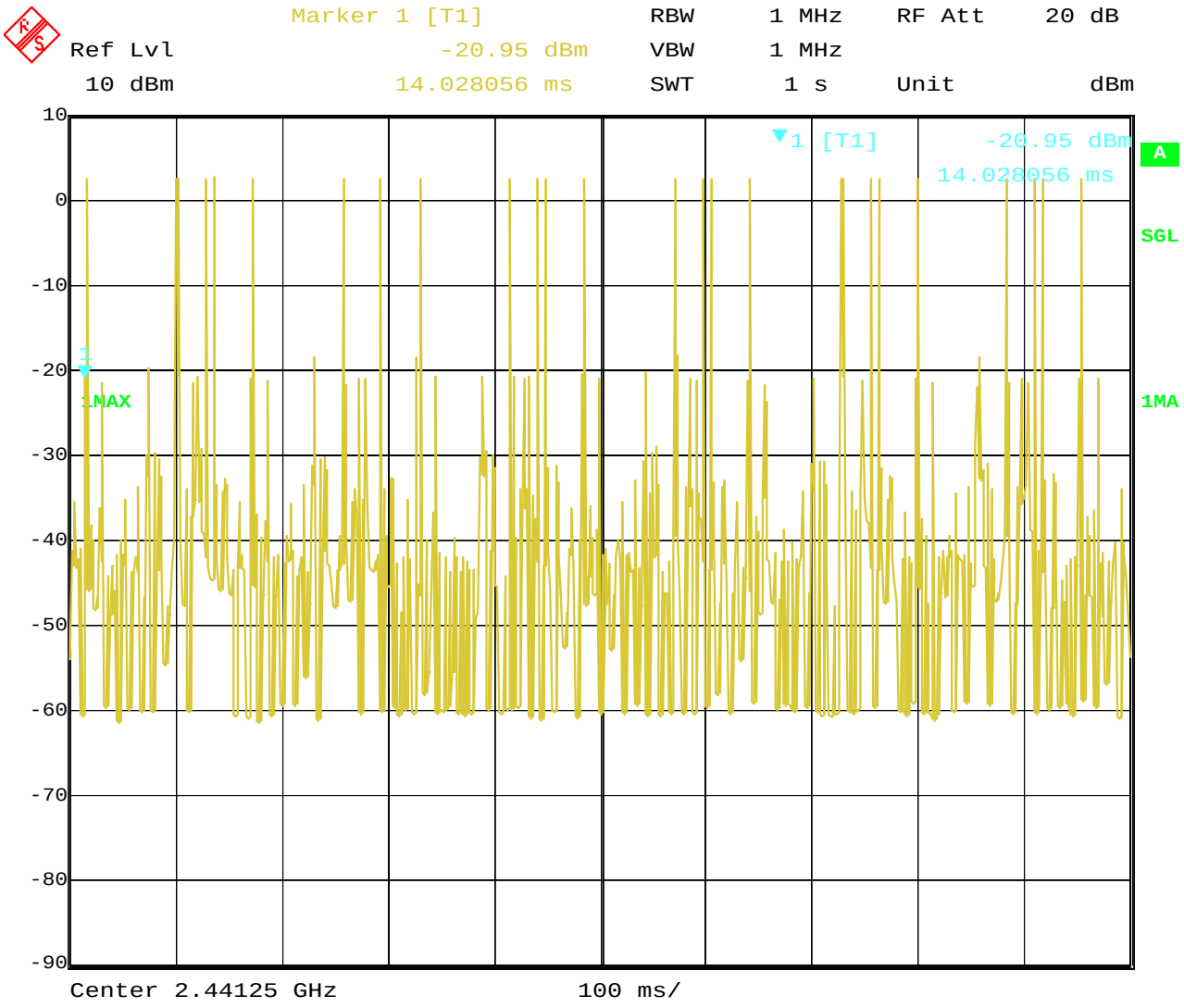
11.4 Test Result

EUT	Wireless Door Viewer--camera	Model	KDB307
Mode	Keep Transmitting	Input Voltage	DC3.7V
Temperature	24 deg. C,	Humidity	56% RH

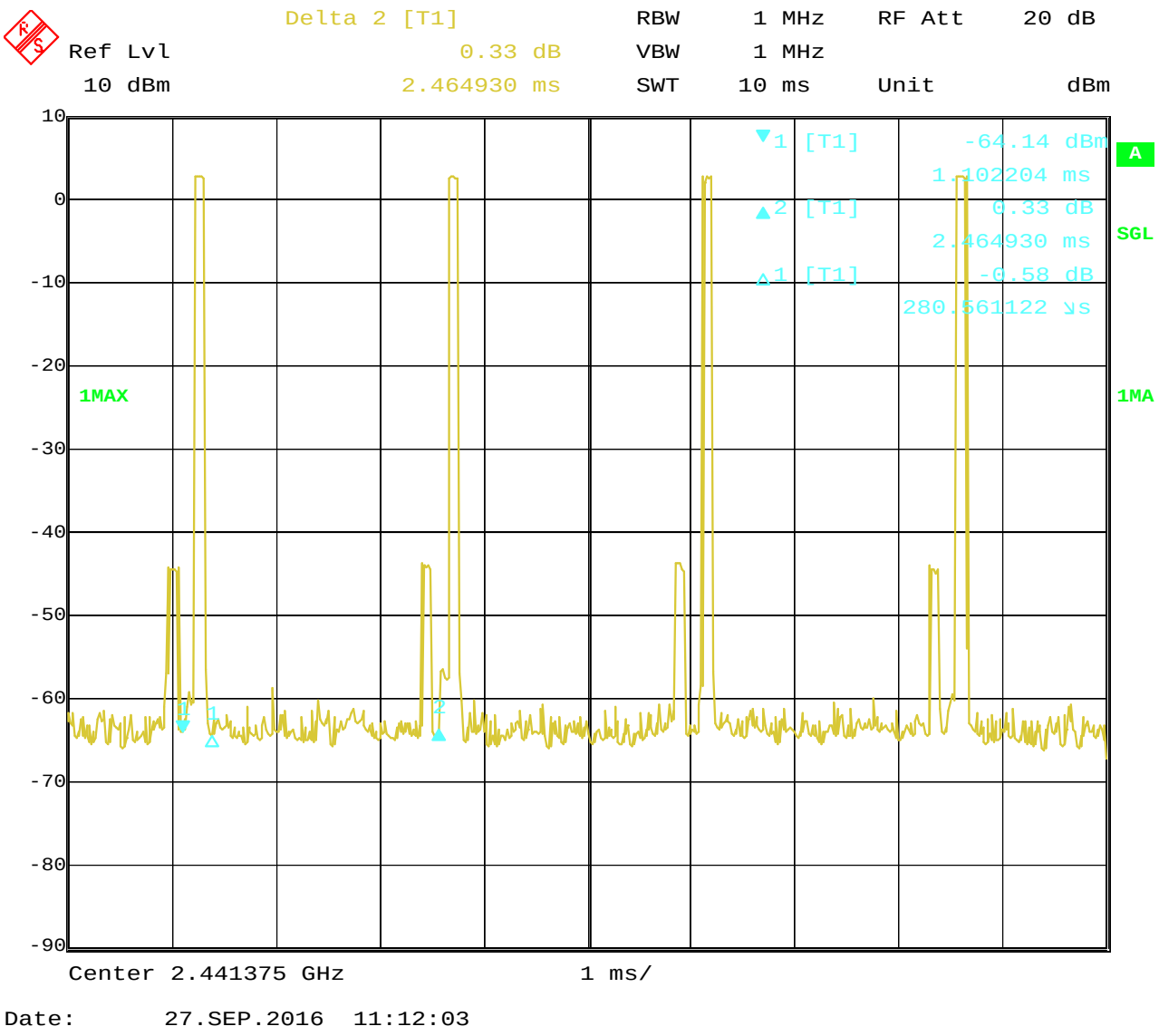
Channel	Actual	Limit
Middle	0.0513	0.4s

Actual = (0.4*19/1) * 24 *0.281=51.3ms

Test Plots:

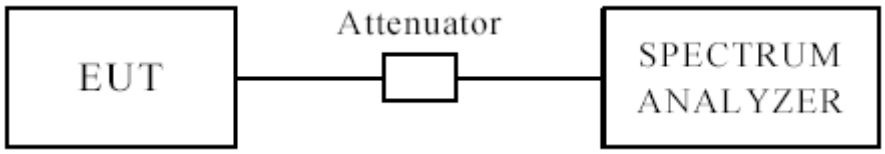


Date: 28.SEP.2016 12:19:08



12 Out of Band Measurement

12.1 Test Setup



The restricted band requirement based on radiated emission test; please see the clause 6 for the test setup

12.2 Limits of Out of Band Emissions Measurement

1. Below –20dB of the highest emission level of operating band (in 100kHz Resolution Bandwidth).
2. Fall in the restricted bands listed in section 15.205. The maximum permitted average field strength is listed in section 15.209.

12.3 Test Procedure

For signals in the restricted bands above and below the 2.4-2.483GHz allocated band a measurement was made of Radiated emission test. Peak values with RBW=VBW=1MHz and PK detector.

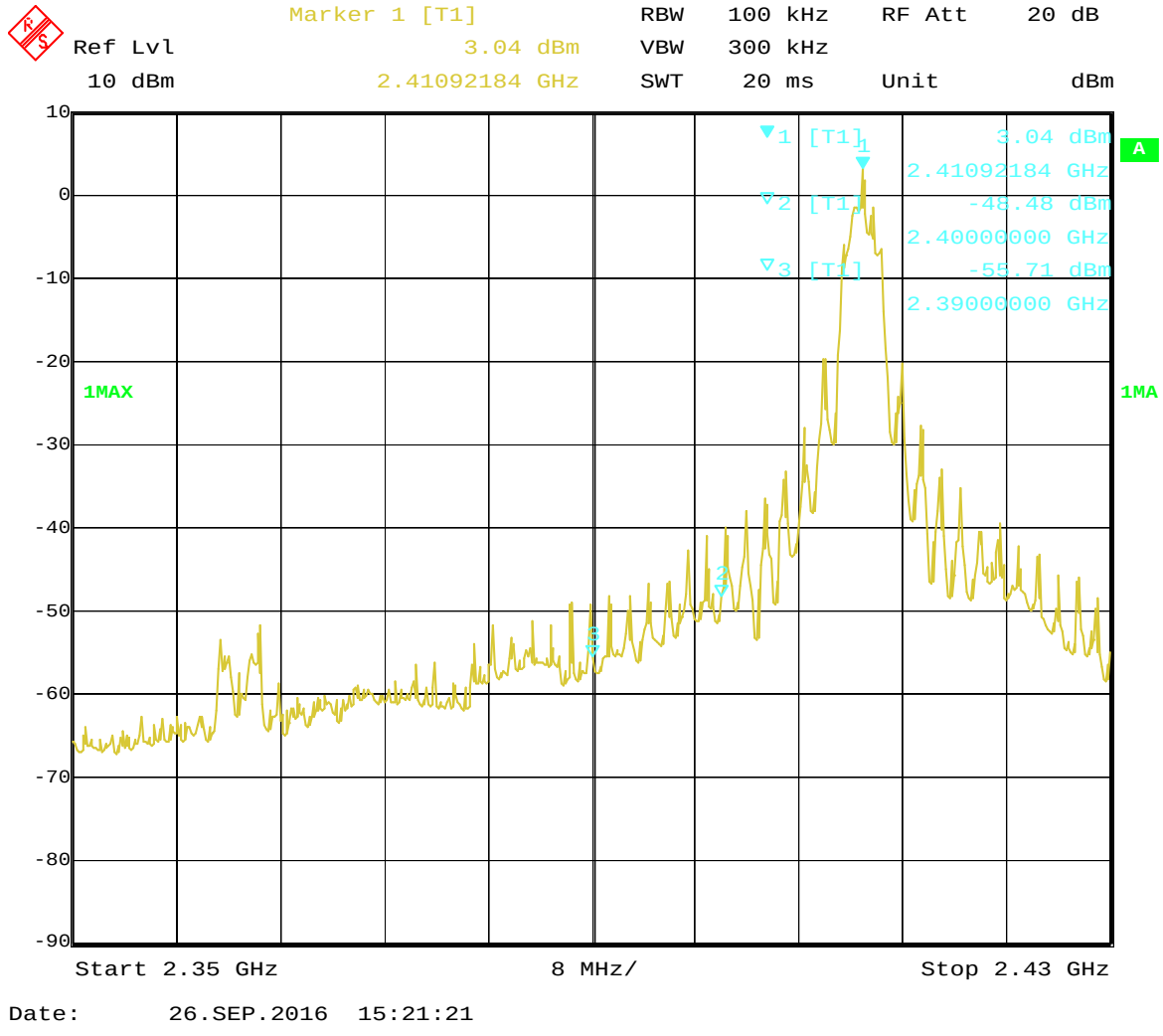
For bandage test, the spectrum set as follows: RBW=100 kHz, VBW=300 kHz. A conducted measurement used

Note: For band-edge measurement, the frequency from 30MHz-25GHz was tested. And It met the FCC rule.

12.4 Out of Band Test Result

Product:	Wireless Door Viewer--camera		Test Mode:	Low Channel
Mode	Keeping Transmitting		Input Voltage	DC3.7V
Temperature	24 deg. C		Humidity	56% RH
Test Result:	Pass		Detector	PK
The Max. FS in Restrict Band 2390MHz	PK (dBμV/m)	46.4	Limit	74(dBμV/m)
	AV(dBμV/m)	--		54(dBμV/m)

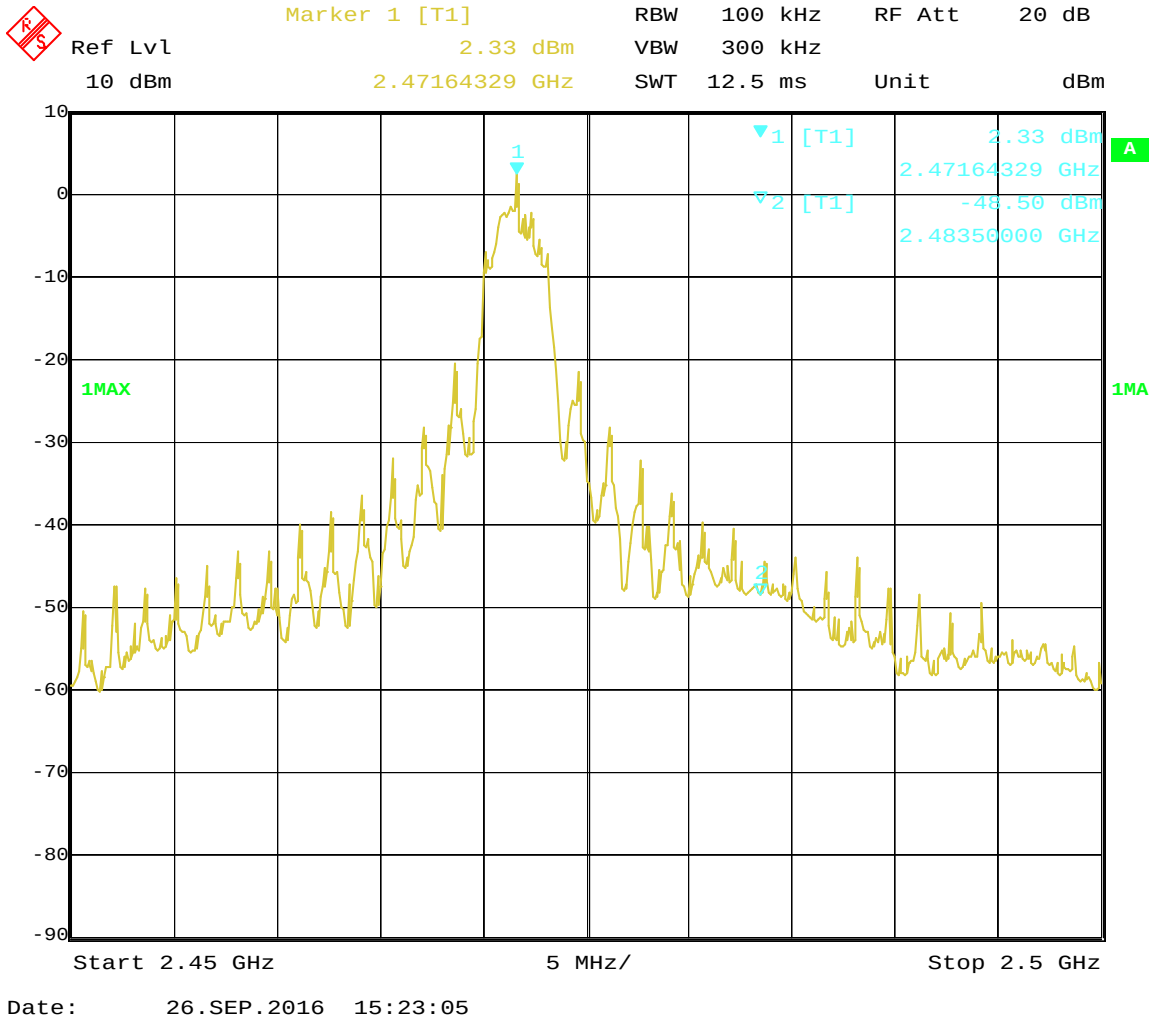
Test Figure:



12.4 Out of Band Test Result

Product:	Wireless Door Viewer--camera		Test Mode:	High Channel
Mode	Keeping Transmitting		Input Voltage	DC3.7V
Temperature	24 deg. C,		Humidity	56% RH
Test Result:	Pass		Detector	PK
The Max. FS in Restrict Band 2483.5MHz	PK (dBμV/m)	47.6	Limit	74(dBμV/m)
	AV(dBμV/m)	--		54(dBμV/m)

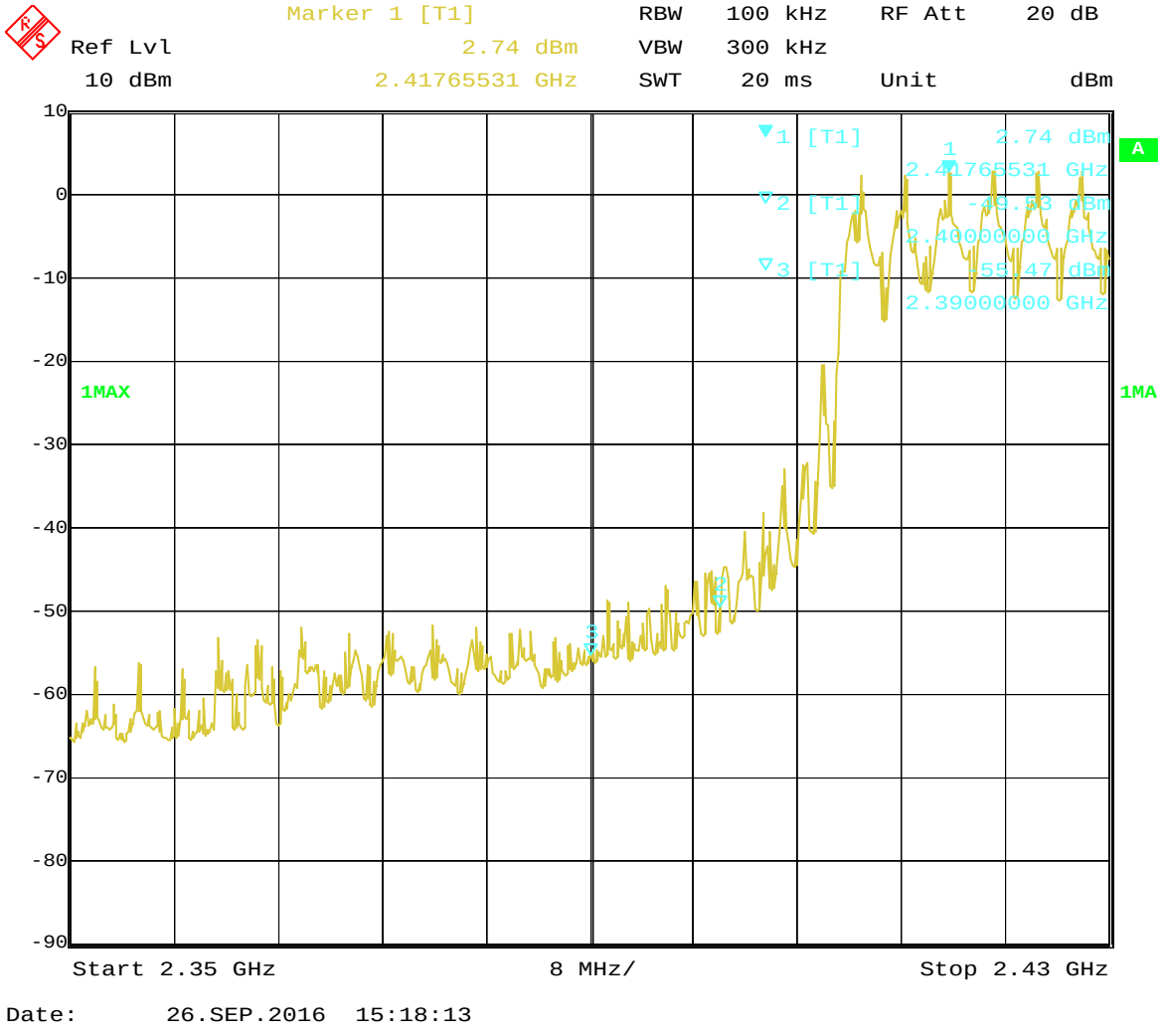
Test Figure:



12.4 Out of Band Test Result

Product:	Wireless Door Viewer--camera		Test Mode:	Hopping mode
Mode	Hopping On		Input Voltage	DC3.7V
Temperature	24 deg. C,		Humidity	56% RH
Test Result:	Pass		Detector	PK
The Max. FS in Restrict Band 2390MHz	PK (dBμV/m)	45.5	Limit	74(dBμV/m)
	AV(dBμV/m)	--		54(dBμV/m)

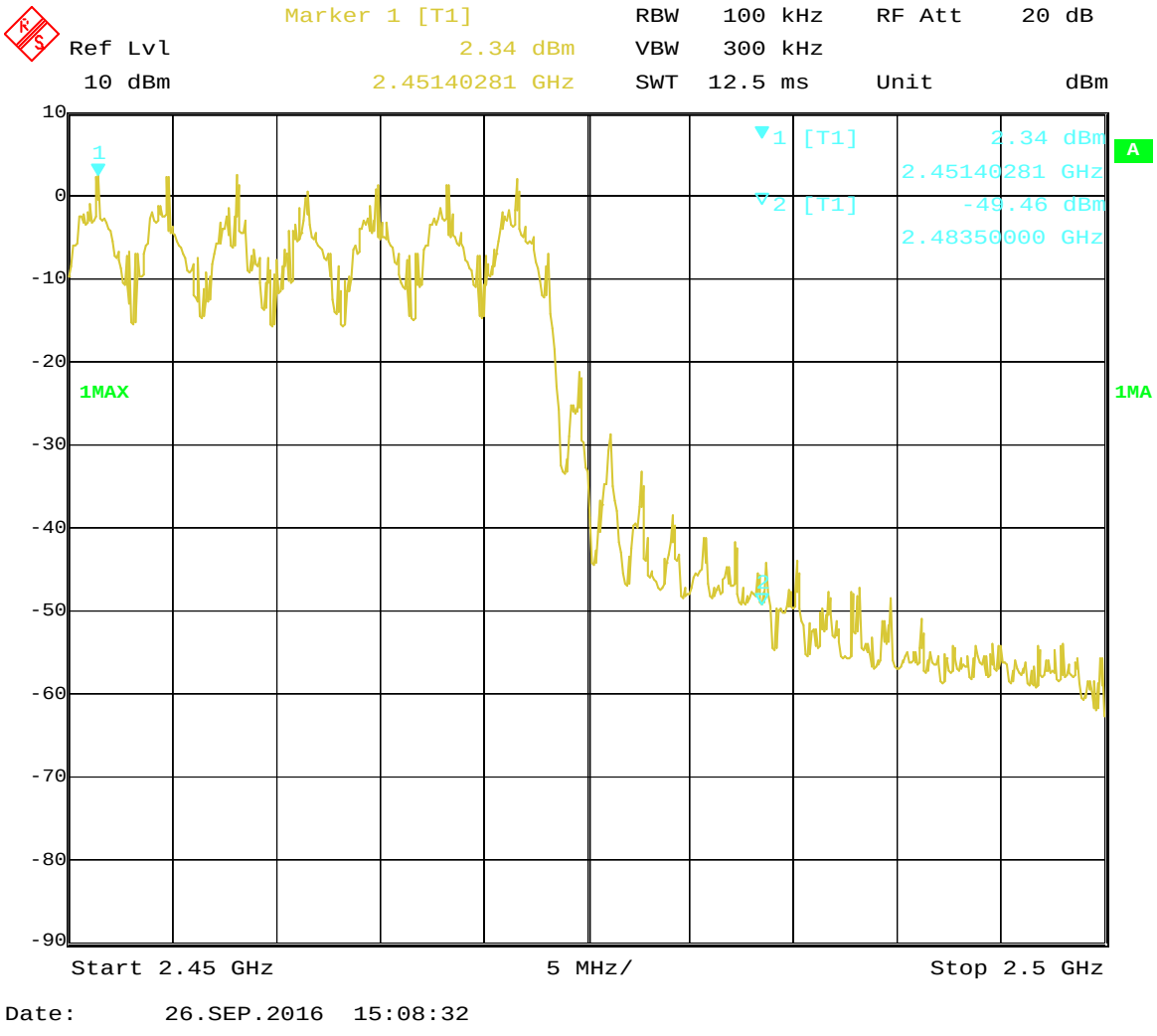
Test Figure:



12.4 Out of Band Test Result

Product:	Wireless Door Viewer--camera		Test Mode:	Hopping mode
Mode	Hopping On		Input Voltage	DC3.7V
Temperature	24 deg. C,		Humidity	56% RH
Test Result:	Pass		Detector	PK
The Max. FS in Restrict Band 2483.5MHz	PK (dBμV/m)	46.3	Limit	74(dBμV/m)
	AV(dBμV/m)	--		54(dBμV/m)

Test Figure:



13.0 **Antenna Requirement**

13.1 Standard Applicable

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.

And according to FCC 47 CFR Section 15.247 (b), if transmitter antennas of directional gain greater than 6 dBi are used, the power shall be reduced by the mount in dB that the directional gain of the antenna exceeds 6 dBi.

13.2 Antenna Connected constructions

Integral Antenna used. The maximum Gain of this antenna is 2.0dBi

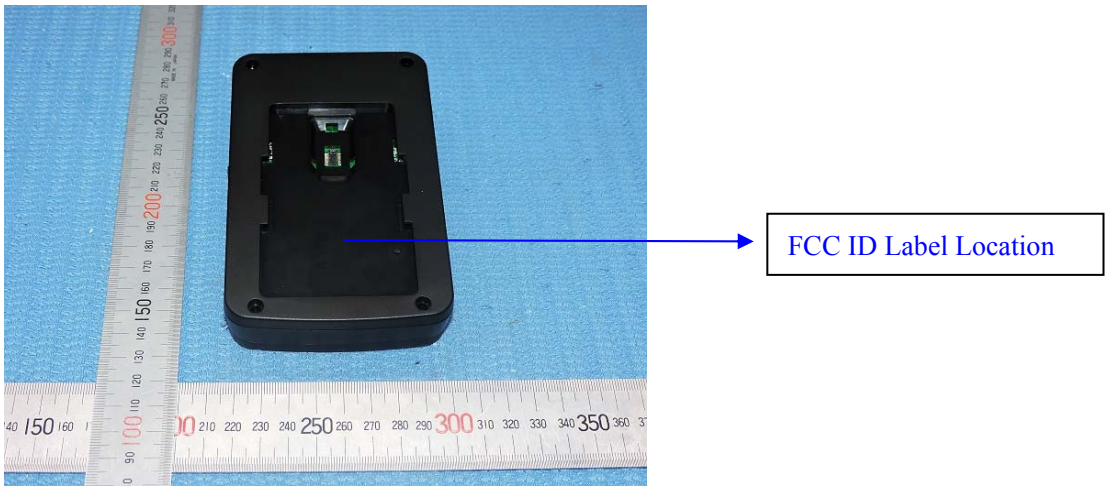
14.0 FCC ID Label

FCC ID: 2AKAJ307

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

The label must not be a stick-on paper label. The label on these products must be permanently affixed to the product and readily visible at the time of purchase and must last the expected lifetime of the equipment not be readily detachable.

Mark Location:



15.0 Photo of testing

Conducted Emission Test Setup:

Radiated Emission Test Setup:

Photo for the EUT

Photo for the EUT

Photo for the EUT

Photo for the EUT

Photo for the EUT

Photo for the EUT

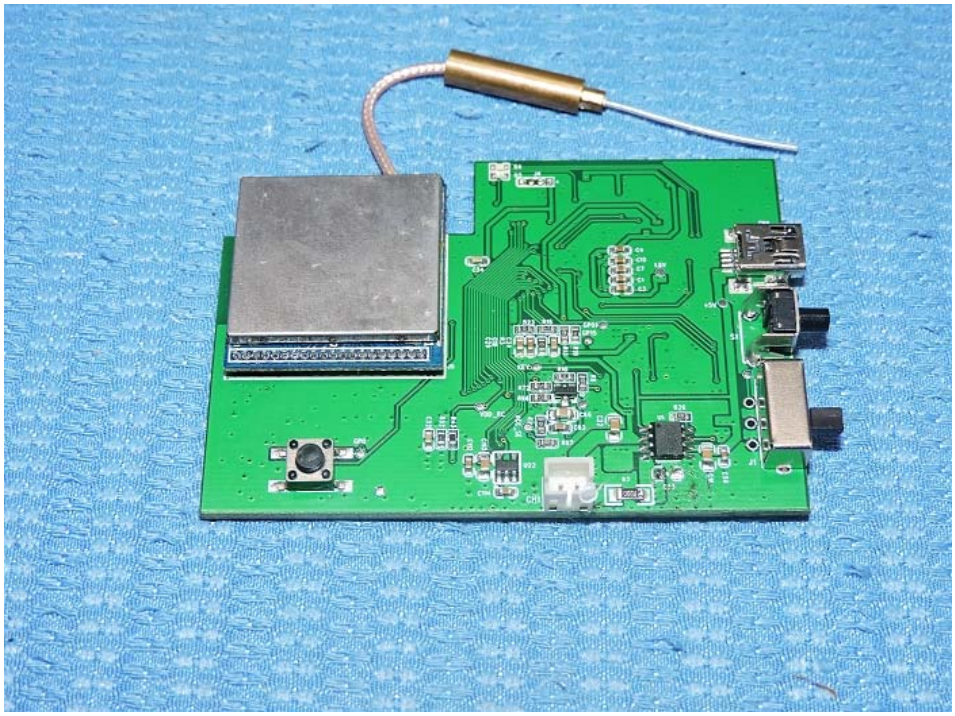
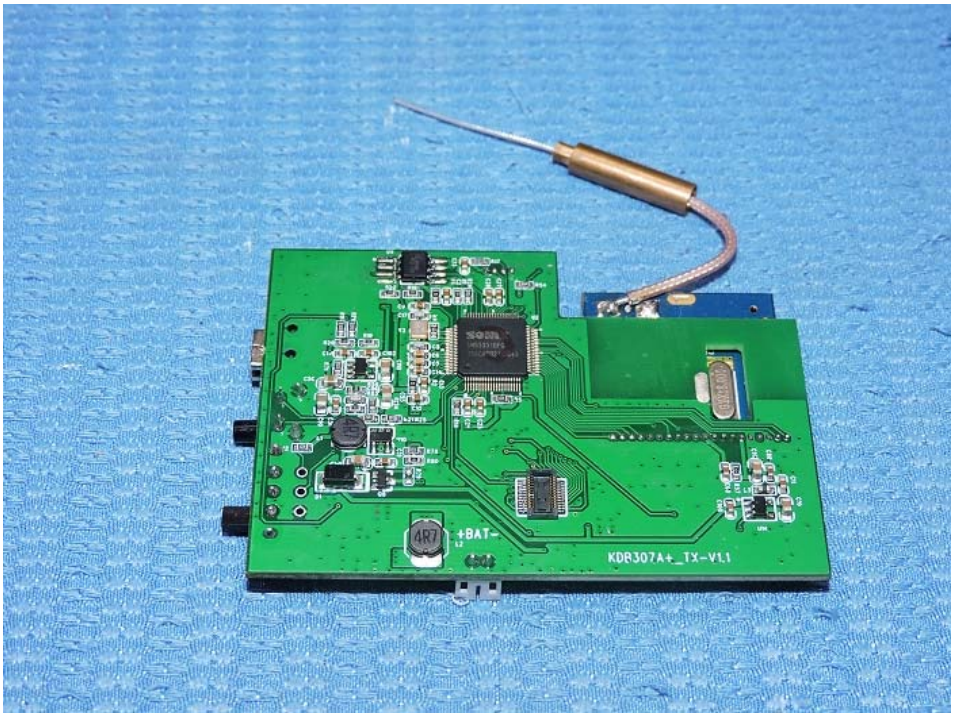
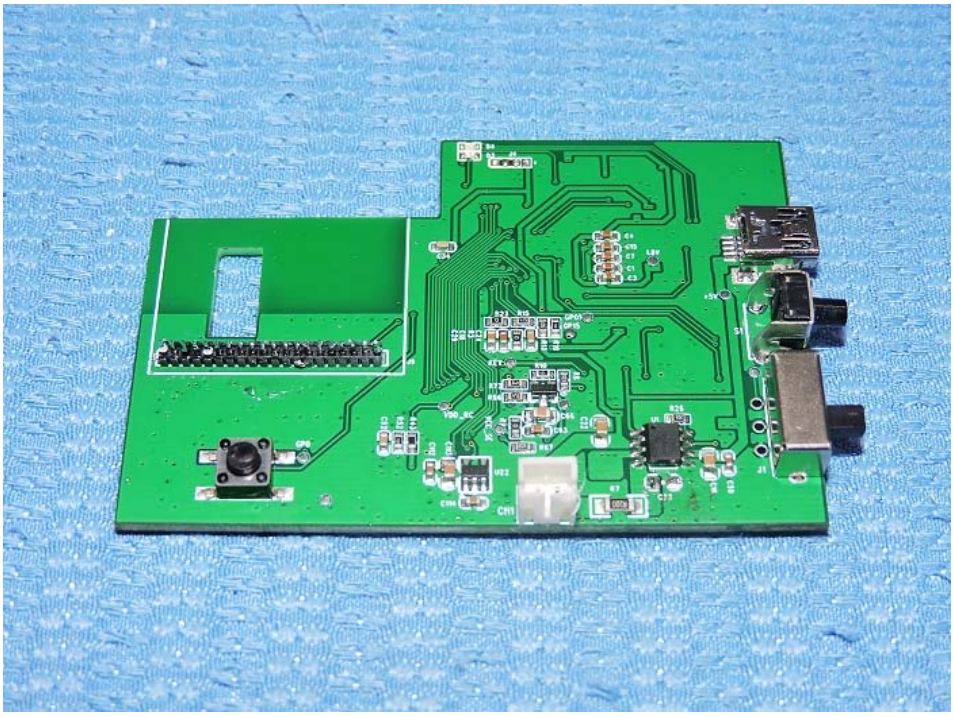


Photo for the EUT





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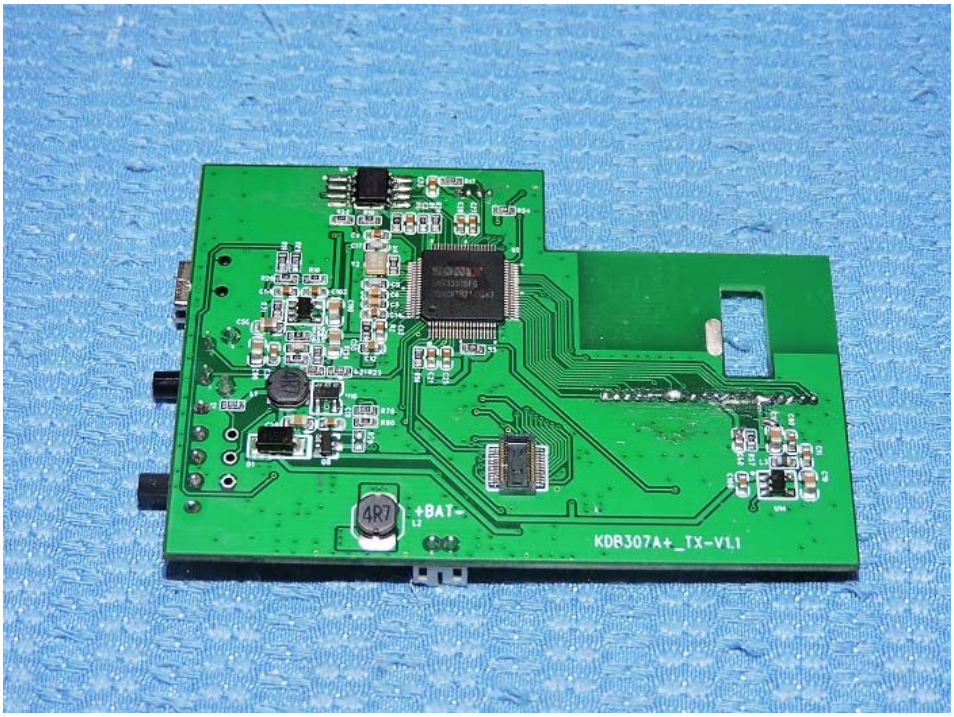

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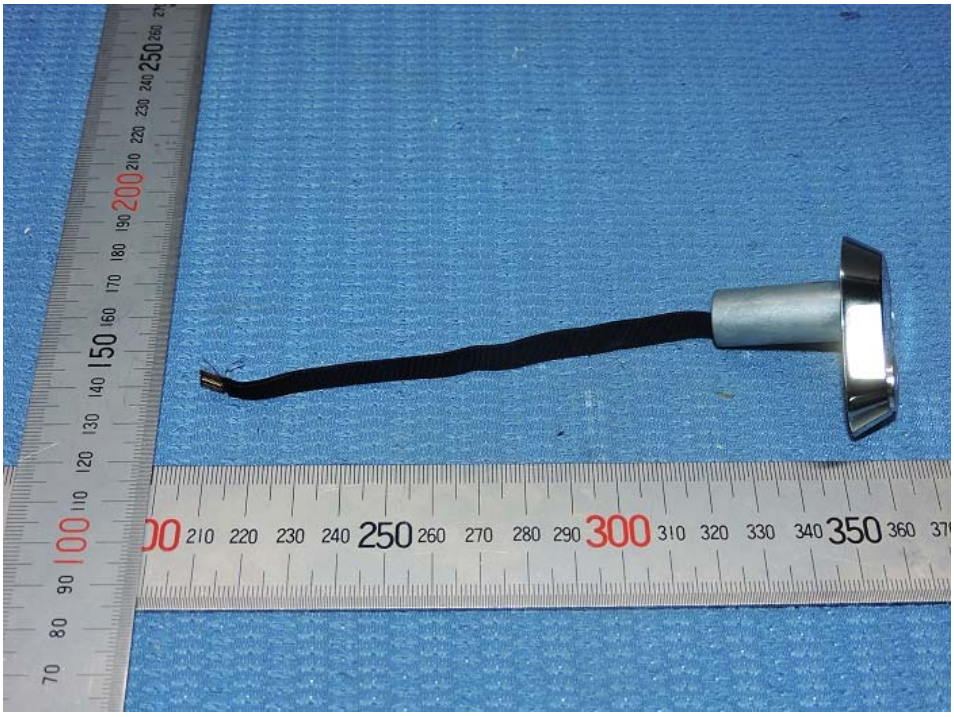
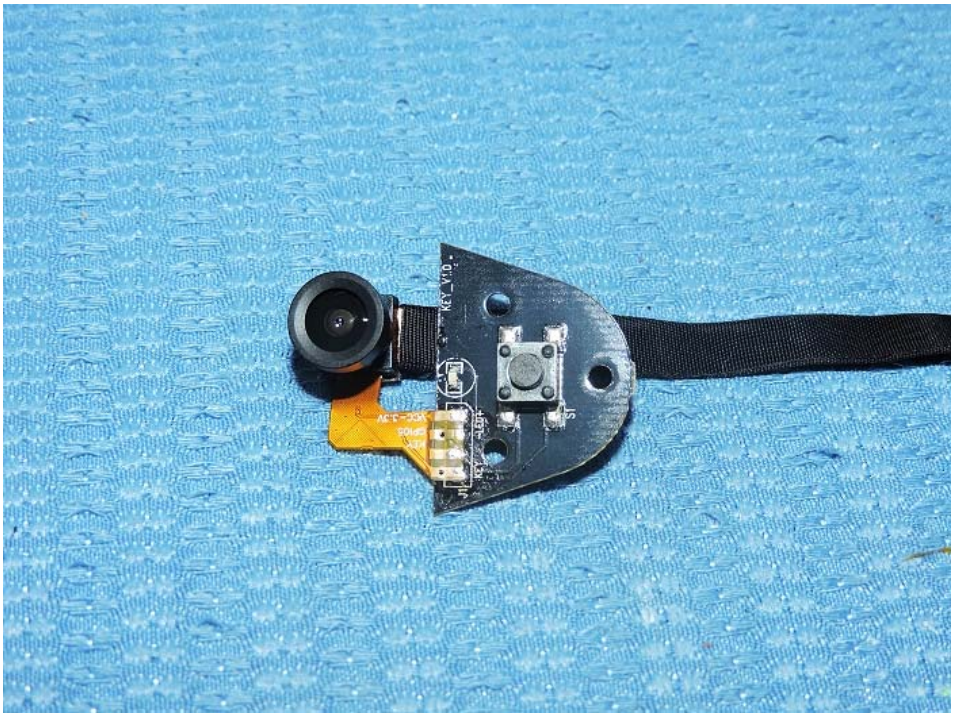
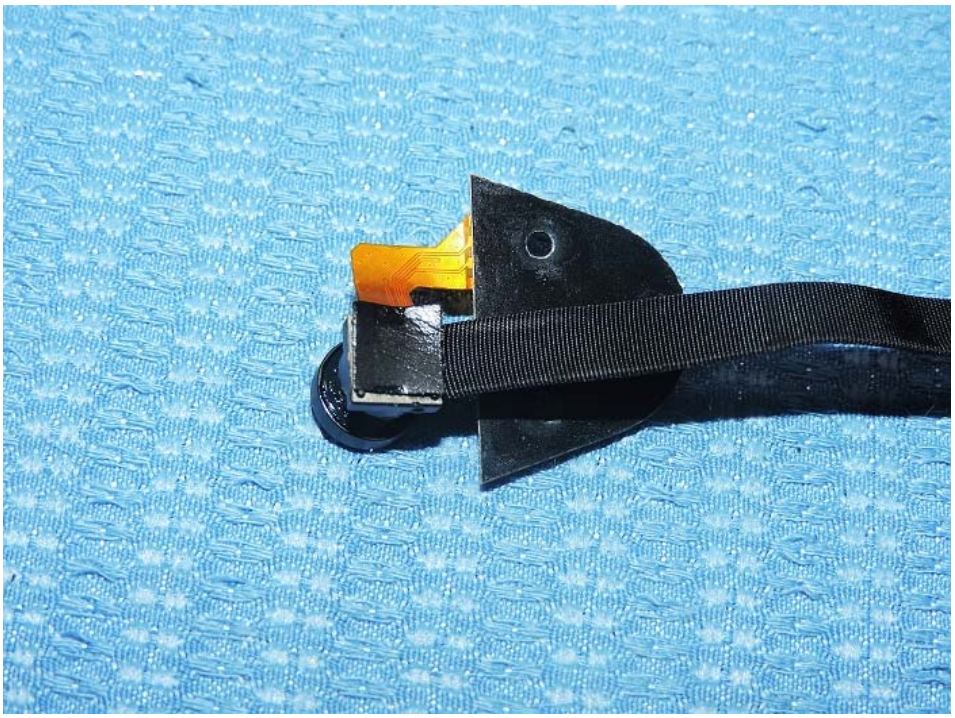


Photo for the EUT

Photo for the EUT





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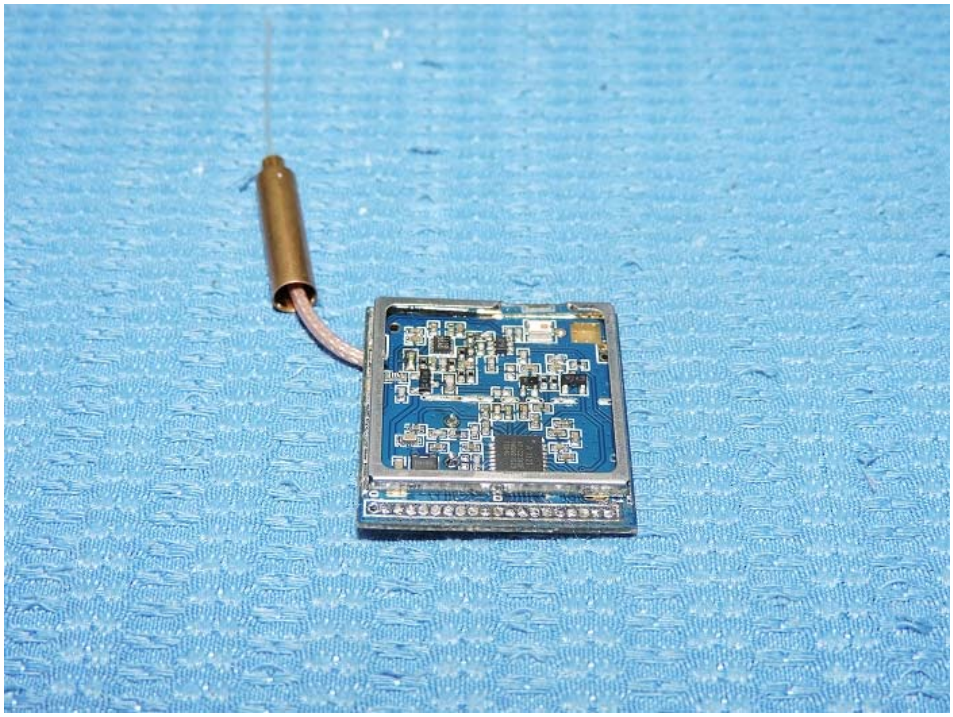

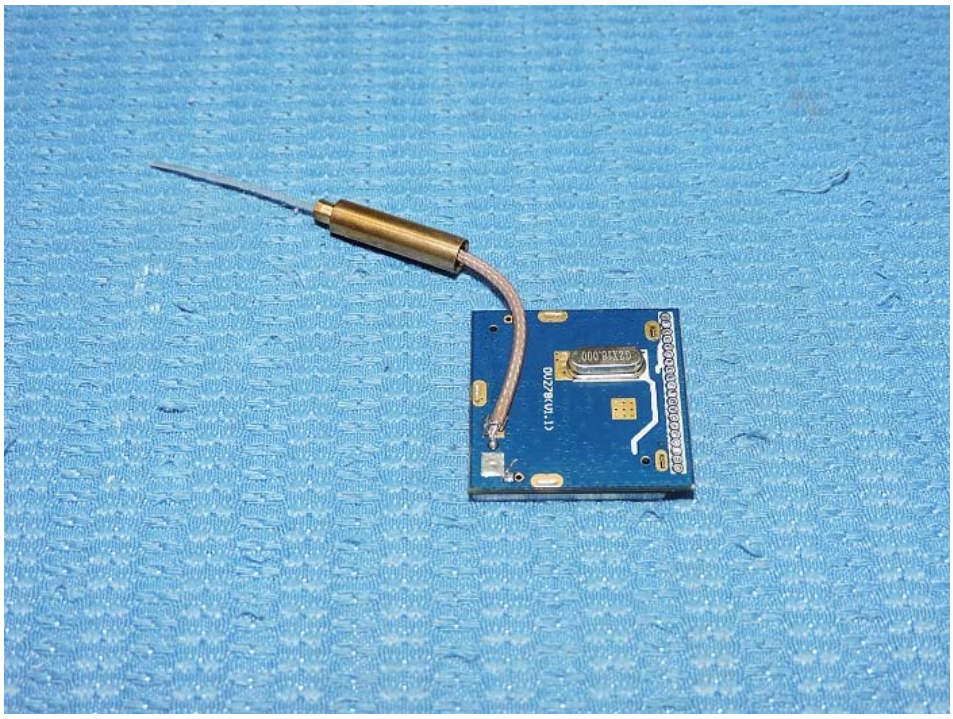

End of the report