TEST REPORT

Reference No.	:	WTS17S0990685-1E V3
FCC ID	:	2ANYZ-ESKY007324
Applicant	:	Shenzhen Hongda International Trade Co.,Ltd
Address	:	Room#609, Block A, Dachong Business Center, Nanshan District, Shenzhen, China.
Manufacturer	:	The same as above
Address	:	The same as above
Product	:	ESKY Remote Controller
Model(s)	:	ESKY007324
Brand Name	:	Esky
Standards	:	FCC CFR47 Part 15.247: 2016
Date of Receipt sample	:	2017-09-20
Date of Test	:	2017-09-25 to 2017-11-23
Date of Issue	:	2017-11-23
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.

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Approved by:

Philo Zhong

Philo Zhong / Manager

2 Laboratories Introduction

Waltek Services Test Group Ltd. is one of the largest and the most comprehensive third party testing organizations in China, our headquarter located in Shenzhen (CNAS Registration No. L3110, A2LA Certificate Number: 4243.01) and have branches in Foshan (CNAS Registration No. L6478), Dongguan (CNAS Registration No. L9950), Zhongshan, Suzhou (CNAS Registration No. L7754), Ningbo and Hong Kong, Our test capability covered four large fields: safety test. Electronic Magnetic Compatibility(EMC), reliability and energy performance, Chemical test. Meanwhile, Waltek has got recognition as registration and accreditation laboratory from EMSD (Electrical and Mechanical Services Department), and American Energy star, FCC(The Federal Communications Commission), CPSC(Consumer Product Safety Commission), CEC(California energy efficiency), IC(Industry Canada) and ELI(Efficient Lighting Initiative). It's the strategic partner and data recognition laboratory of international authoritative organizations, such as UL, Intertek(ETL-SEMKO), CSA, TÜV Rheinland, TÜV SÜD, etc. As a professional, comprehensive, justice international test organization, we still keep the scientific and rigorous work attitude to help each client satisfy the international standards and assist their product enter into globe market smoothly.

Waltek Services (Shenzhen) Co., Ltd.

A. Accreditations for Conformity Assessment (International)

Country/Region	Accreditation Body	Scope	Note
USA	**CNAS (Registration No.: L3110) A2LA (Certificate No.: 4243.01)**	FCC ID \ DOC \ VOC	1
Canada		IC ID \ VOC	2
Japan		MIC-T \ MIC-R	-
Europe		EMCD \ RED	-
Taiwan		NCC	-
Hong Kong		OFCA	-
Australia		RCM	-
India	**International Services**	WPC	-
Thailand		NTC	-
Singapore		IDA	-
Note: 1. FCC Designation No.: CN1201. Test Firm Registration No.: 523476. 2. IC Canada Registration No.: 7760A			

B. TCBs and Notify Bodies Recognized Testing Laboratory.

Recognized Testing Laboratory of …	Notify body number

TUV Rheinland	Optional.
Intertek	
TUV SUD	
SGS	
Phoenix Testlab GmbH	0700
Element Materials Technology Warwick Ltd	0891
Timco Engineering, Inc.	1177
Eurofins Product Service GmbH	0681

3 Contents

4 Revision History

Test report No.	Date of Receipt sample	Date of Test	Date of Issue	Purpose	Comment	Approved
WTS17S0990685-1E	2017-09-20	2017-09-25 to 2017-11-16	2017-11-20	original	-	Replaced
WTS17S0990685-1E V1	2017-09-20	2017-09-25 to 2017-11-16	2017-11-22	Version 1	Updated	Replaced
WTS17S0990685-1E V2	2017-09-20	2017-09-25 to 2017-11-20	2017-11-23	Version 2	Updated	Replaced
WTS17S0990685-1E V3	2017-09-20	2017-09-25 to 2017-11-23	2017-11-23	Version 3	Updated	Valid

5 General Information

5.1 General Description of E.U.T.

Product:	ESKY Remote Controller
Model(s):	ESKY007324
Model Description:	N/A
Hardware Version:	CT00032099
Software Version:	V1

5.2 Details of E.U.T.

Operation Frequency:	2406~2475MHz
Max. RF output power:	19.54dBm
Type of Modulation:	GFSK
Antenna installation:	Fixed antenna
Antenna Gain:	2.0dBi
Ratings:	DC 6V from battery

5.3 Channel List

Normal

Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)
0	2406	1	2407	2	2408	3	2409
4	2410	5	2411	6	2412	7	2413
8	2414	9	2415	10	2416	11	2417
12	2418	13	2419	14	2420	15	2421
16	2422	17	2423	18	2424	19	2425
20	2426	21	2427	22	2428	23	2429
24	2430	25	2431	26	2432	27	2433
28	2434	29	2435	30	2436	31	2437
32	2438	33	2439	34	2440	35	2441
36	2442	37	2443	38	2444	39	2445
40	2446	41	2447	42	2448	43	2449
44	2450	45	2451	46	2452	47	2453
48	2454	49	2455	50	2456	51	2457
52	2458	53	2459	54	2460	55	2461
56	2462	57	2463	58	2464	59	2465
60	2466	61	2467	62	2468	63	2469
64	2470	65	2471	66	2472	67	2473
68	2474	69	2475				

5.4 Test Mode

All test mode(s) and condition(s) mentioned were considered and evaluated respectively by performing full tests; the worst data were recorded and reported.

Test mode	Low channel	Middle channel	High channel
Transmitting	2406MHz	2440MHz	2475MHz

6 Test Summary

Test Items	Test Requirement	Result
Radiated Spurious Emissions	15.205(a) 15.209 15.247(d)	PASS*
Conducted Spurious emissions	15.247(d)	PASS*
Band edge	15.247(d) 15.205(a)	PASS
Conducted Emission	15.207	PASS
20dB Bandwidth	15.247(a)(1)	PASS
Maximum Peak Output Power	15.247(b)(1)	PASS
Frequency Separation	15.247(a)(1)	PASS
Number of Hopping Frequency	15.247(a)(1)(iii)	PASS
Dwell time	15.247(a)(1)(iii)	PASS
Antenna Requirement	15.203	Complies
Maximum Permissible Exposure (Exposure of Humans to RF Fields)	1.1307(b)(1)	PASS

Note'*': For the above 18GHz parts of Radiated Spurious Emissions and Conducted Spurious emissions, the test date is from 2017-11-19 to 2017-11-23.

7 Equipment Used during Test

7.1 Equipments List

3m Semi-anechoic Chamber for Radiation Emissions Test site 1#						
Item	**Equipment**	**Manufacturer**	**Model No.**	**Serial No.**	**Last Calibration Date**	**Calibration Due Date**
1	Spectrum Analyzer	R&S	FSP	100091	2017-04-29	2018-04-28
2	Spectrum Analyzer (9kHz-40GHz)	R&S	FSP40	100501	2017-10-20	2018-10-19
3	Active Loop Antenna	Beijing Dazhi	ZN30900A	-	2017-04-09	2018-04-08
4	Trilog Broadband Antenna	SCHWARZBECK	VULB9163	336	2017-04-09	2018-04-08
5	Coaxial Cable (below 1GHz)	Top	TYPE16(13M)	-	2017-09-12	2018-09-11
6	Broad-band Horn Antenna	SCHWARZBECK	BBHA 9120 D	667	2017-04-09	2018-04-08
6	Broad-band Horn Antenna(18-40G)	SCHWARZBECK	BBHA 9170	335	2017-10-25	2018-10-24
7	Microwave Broadband Preamplifier	SCHWARZBECK	BBV 9721	100472	2017-10-25	2018-10-24
8	Signal Generator	Anritsu	68177C	010309	2017-10-25	2018-10-24
9	Coaxial Cable	Top	18GHz-40GHz	-	2017-10-25	2018-10-24
10	Broadband Preamplifier	COMPLIANCE DIRECTION	PAP-1G18	2004	2017-04-13	2018-04-12
11	Coaxial Cable (above 1GHz)	Top	1GHz-25GHz	EW02014-7	2017-04-13	2018-04-12
3m Semi-anechoic Chamber for Radiation Emissions Test site 2#						
Item	**Equipment**	**Manufacturer**	**Model No.**	**Serial No**	**Last Calibration Date**	**Calibration Due Date**
1	Test Receiver	R&S	ESCI	101296	2017-04-13	2018-04-12
2	Trilog Broadband Antenna	SCHWARZBECK	VULB9160	9160-3325	2017-04-09	2018-04-08
3	Amplifier	Compliance pirection systems inc	PAP-0203	22024	2017-04-13	2018-04-12
4	Cable	HUBER+SUHNER	CBL2	525178	2017-04-13	2018-04-12
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	2017-09-12	2018-09-11
2	Spectrum Analyzer (9kHz-40GHz)	R&S	FSP40	100501	2017-10-20	2018-10-19
3	Spectrum Analyzer (9k-6GHz)	R&S	FSL6	100959	2017-09-12	2018-09-11

4	Signal Analyzer (9k~26.5GHz)	Agilent	N9010A	MY50520207	2017-09-12	2018-09-11

7.2 Description of Support Units

Equipment	Manufacturer	Model No.	Series No.
/	/	/	/

7.3 Measurement Uncertainty

Parameter	Uncertainty
Conducted Emission	± 3.64 dB(AC mains 150KHz~30MHz)
Radiated Spurious Emissions	± 5.08 dB (Bilog antenna 30M~1000MHz)
	± 4.99 dB (Horn antenna 1000M~25000MHz)
Radio Frequency	± 1 x 10^{-7} Hz
RF Power	± 0.42 dB
Dwell time	1.0%
Conducted Spurious Emissions	± 2.76 dB (9kHz~26500MHz)
Confidence interval：95%. Confidence factor:k=2	

7.4 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.

8 Radiated Spurious Emissions

Test Requirement: FCC CFR47 Part 15 Section 15.205 &15.209 & 15.247

Test Method: ANSI C63.10: 2013

Test Result: PASS

Measurement Distance: 3m

Limit:

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

8.1 EUT Operation

Operating Environment **:**

Temperature: 23.5 °C

Humidity: 51.1 % RH

Atmospheric Pressure: 101.2kPa

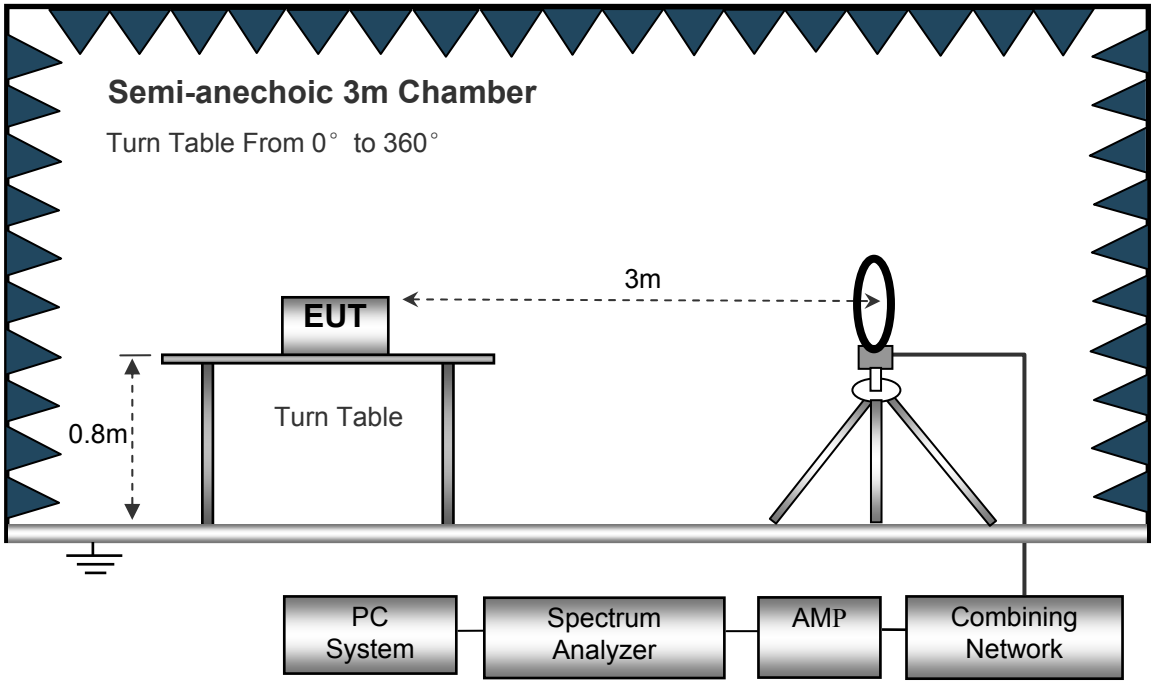
EUT Operation **:**

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

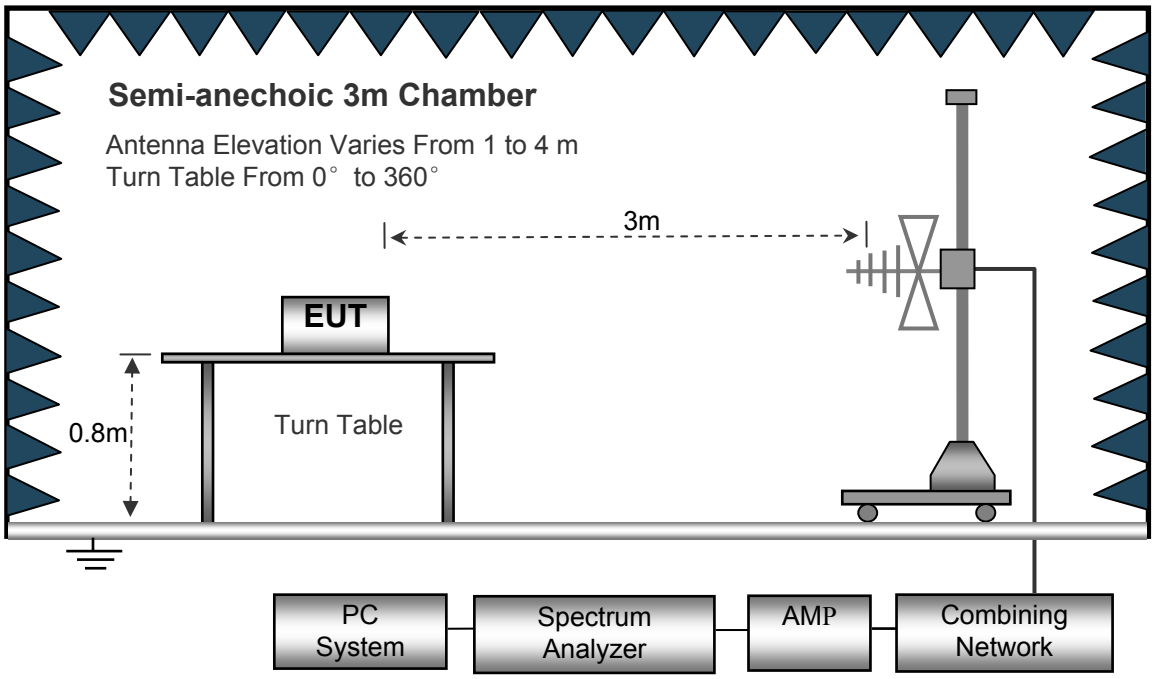
8.2 Test Setup

The radiated emission tests were performed in the 3m Semi- Anechoic Chamber test site, using the setup accordance with the ANSI C63.10: 2013.

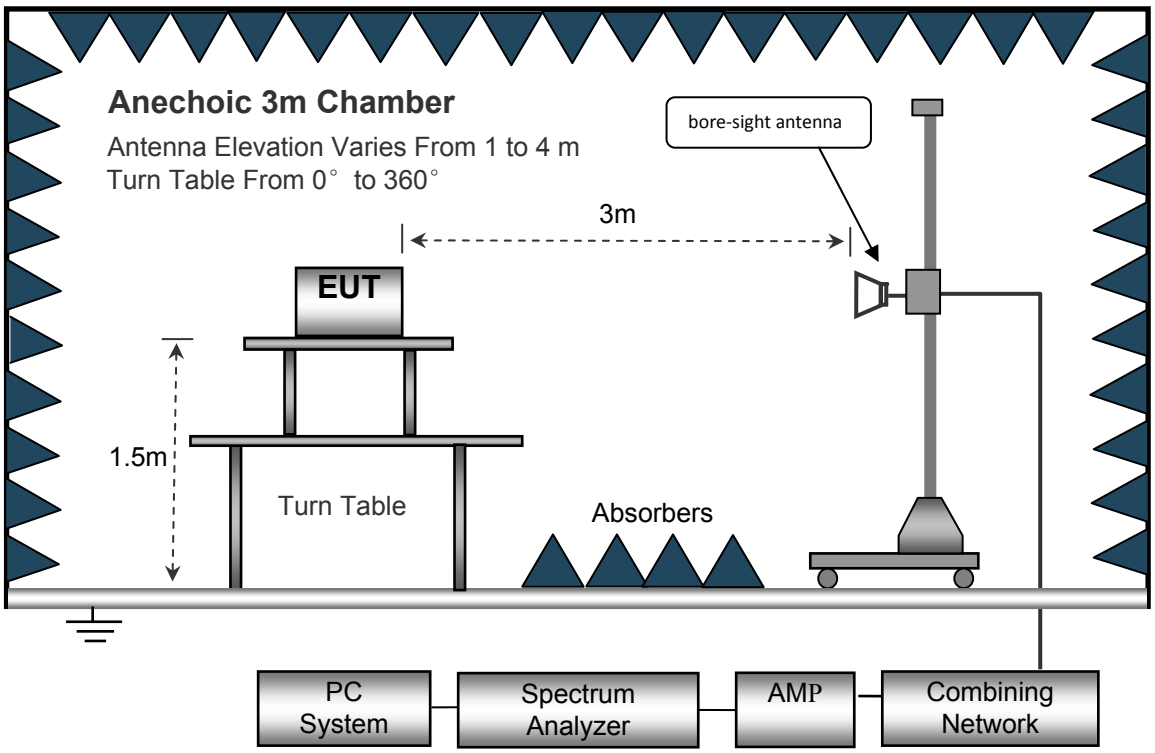
The test setup for emission measurement below 30MHz.



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

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

8.4 Test Procedure

1. The EUT is placed on a turntable, which is 0.8m above ground plane for below 1GHz and 1.5m for above 1GHz.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is moved from 1m to 4m to find out the maximum emissions. The spectrum was investigated from the lowest radio frequency signal generated in the device, without going below 9 kHz, up to the tenth harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower.
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 tested under 3-axes(X,Y,Z) position(X denotes lying on the table, Y denotes side stand and Z denotes vertical stand), After pre-test, It was found that the worse radiation emission was get at the Z position. So the data shown was the Z position only.

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: 9KHz~30MHz

Remark: All test data were reported and only the worst case (Low channel mode) test data were showed in test report.

Frequency	Measurement results dBμV @3m	Detector PK/QP	Correct factor dB/m	Extrapolation factor dB	Measurement results (calculated) dBμV/m @30m	Limits dBμV/m @30m	Margin dB
(MHz)	Measurement results	Detector	Correct factor	Extrapolation factor	Measurement results (calculated)	Limits	Margin
6.032	24.03	QP	21.84	40.00	5.87	29.54	-23.67
8.051	25.62	QP	21.02	40.00	6.64	29.54	-22.90
26.215	24.27	QP	20.55	40.00	4.82	29.54	-24.72

.

Test Frequency: 30MHz ~ 18GHz

Frequency	Receiver Reading	Detector	Turn table Angle	RX Antenna		Corrected Factor	Corrected Amplitude	Limit	Margin
				Height	Polar				
(MHz)	(dBμV)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
GFSK Low Channel									
268.33	38.19	QP	280	1.9	H	-13.22	24.97	43.53	-18.56
268.33	39.99	QP	302	1.5	V	-13.22	26.77	43.53	-16.76
4812.00	58.23	PK	20	2.0	V	-1.06	57.17	74.00	-16.83
4812.00	46.48	Ave	20	2.0	V	-1.06	45.42	54.00	-8.58
7218.00	58.52	PK	219	1.0	H	1.32	59.84	74.00	-14.16
7218.00	45.50	Ave	219	1.0	H	1.32	46.82	54.00	-7.18
2342.10	46.59	PK	229	1.6	V	-13.26	33.33	74.00	-40.67
2342.10	38.11	Ave	229	1.6	V	-13.26	24.85	54.00	-29.15
2353.85	42.35	PK	300	1.8	H	-13.02	29.33	74.00	-44.67
2353.85	37.58	Ave	300	1.8	H	-13.02	24.56	54.00	-29.44
2489.61	43.48	PK	360	1.2	V	-13.20	30.28	74.00	-43.72
2489.61	36.28	Ave	360	1.2	V	-13.20	23.08	54.00	-30.92

Frequency	Receiver Reading	Detector	Turn table Angle	RX Antenna		Corrected Factor	Corrected Amplitude	Limit	Margin
				Height	Polar				
(MHz)	(dBμV)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
GFSK Middle Channel									
268.33	39.04	QP	263	1.1	H	-13.22	25.82	43.53	-17.71
268.33	38.37	QP	91	1.6	V	-13.22	25.15	43.53	-18.38
4880.00	56.38	PK	19	1.8	V	-0.62	55.76	74.00	-18.24
4880.00	44.12	Ave	19	1.8	V	-0.62	43.50	54.00	-10.50
7320.00	50.17	PK	31	2.0	H	2.21	52.38	74.00	-21.62
7320.00	41.07	Ave	31	2.0	H	2.21	43.28	54.00	-10.72
2331.65	45.01	PK	166	1.9	V	-13.19	31.82	74.00	-42.18
2331.65	38.14	Ave	166	1.9	V	-13.19	24.95	54.00	-29.05
2365.68	42.34	PK	162	2.0	H	-13.14	29.20	74.00	-44.80
2365.68	37.81	Ave	162	2.0	H	-13.14	24.67	54.00	-29.33
2485.70	43.56	PK	261	1.1	V	-13.08	30.48	74.00	-43.52
2485.70	37.47	Ave	261	1.1	V	-13.08	24.39	54.00	-29.61

Frequency	Receiver Reading	Detector	Turn table Angle	RX Antenna		Corrected Factor	Corrected Amplitude	Limit	Margin
				Height	Polar				
(MHz)	(dBμV)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
GFSK High Channel									
268.33	41.10	QP	331	1.6	H	-13.22	27.88	43.53	-15.65
268.33	39.54	QP	356	1.8	V	-13.22	26.32	43.53	-17.21
4950.00	56.12	PK	278	1.2	V	-0.24	55.88	74.00	-18.12
4950.00	42.10	Ave	278	1.2	V	-0.24	41.86	54.00	-12.14
7425.00	51.00	PK	281	1.4	H	2.84	53.84	74.00	-20.16
7425.00	44.19	Ave	281	1.4	H	2.84	47.03	54.00	-6.97
2310.34	46.03	PK	258	1.4	V	-13.19	32.84	74.00	-41.16
2310.34	38.86	Ave	258	1.4	V	-13.19	25.67	54.00	-28.33
2356.22	44.23	PK	92	1.2	H	-13.14	31.09	74.00	-42.91
2356.22	37.01	Ave	92	1.2	H	-13.14	23.87	54.00	-30.13
2499.41	43.70	PK	312	1.7	V	-13.08	30.62	74.00	-43.38
2499.41	36.46	Ave	312	1.7	V	-13.08	23.38	54.00	-30.62

Test Frequency: 18GHz~25GHz

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

9 Conducted Spurious Emissions

Test Requirement: FCC CFR47 Part 15 Section 15.247

Test Method: ANSI C63.10: 2013

Test Result: PASS

Limit:

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 Section 15.209(a) is not required. In addition, radiated emissions which fall in the 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)).

9.1 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:

Blow 30MHz:

RBW = 100kHz, VBW = 300kHz, Sweep = auto

Detector function = peak, Trace = max hold

Above 30MHz:

RBW = 100kHz, VBW = 300kHz, Sweep = auto

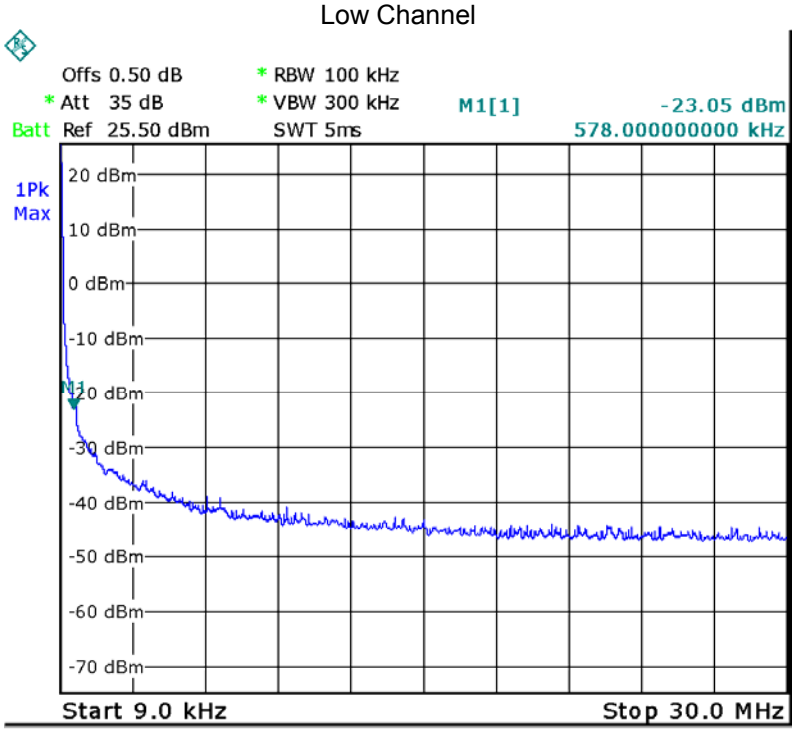
Detector function = peak, Trace = max hold

9.2 Test Result

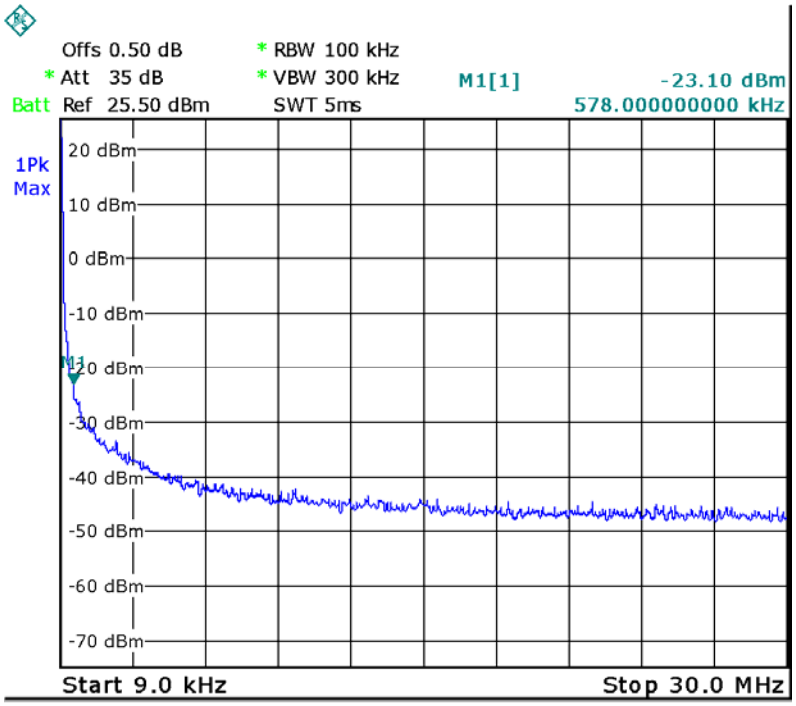
9KHz - 30MHz

GFSK

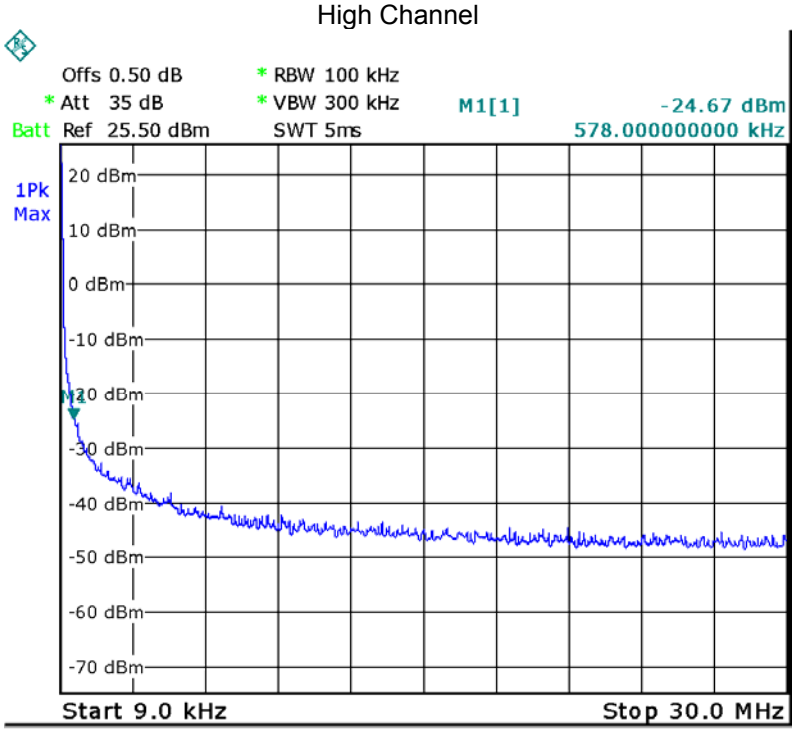
Low Channel



Middle Channel

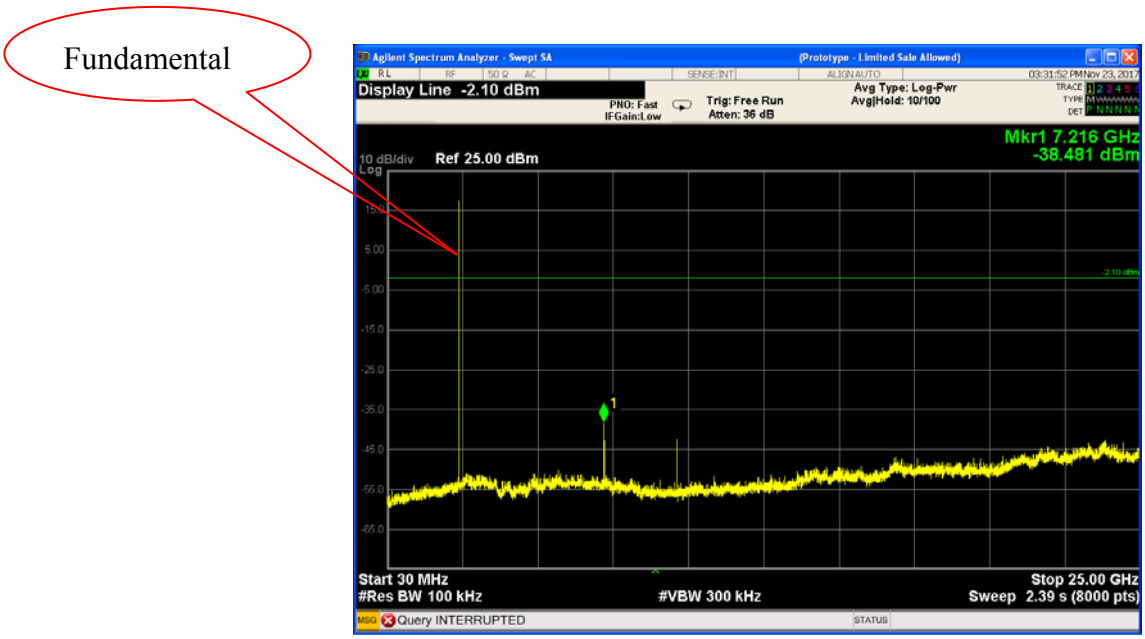


High Channel

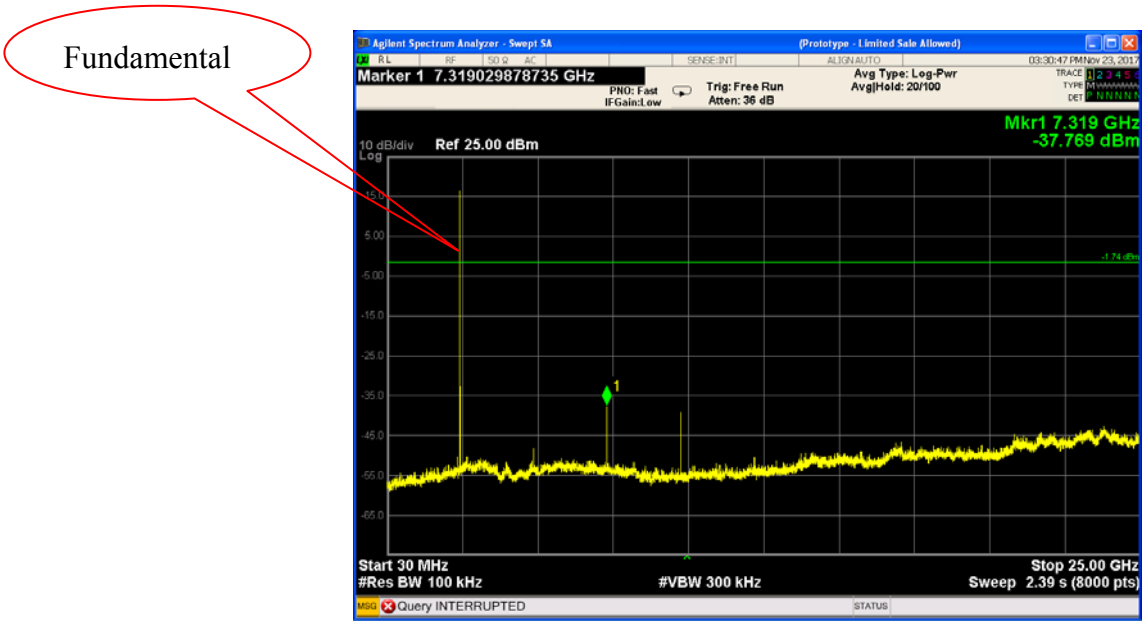


30MHz – 25GHz

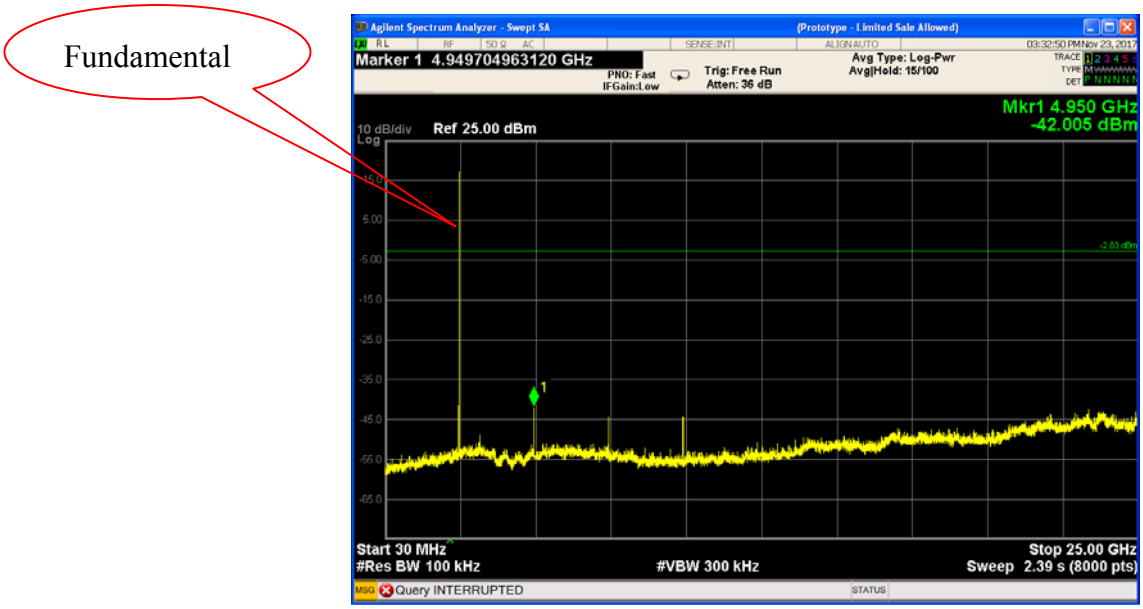
GFSK Low Channel



GFSK Middle Channel



GFSK High Channel



10 Band Edge Measurement

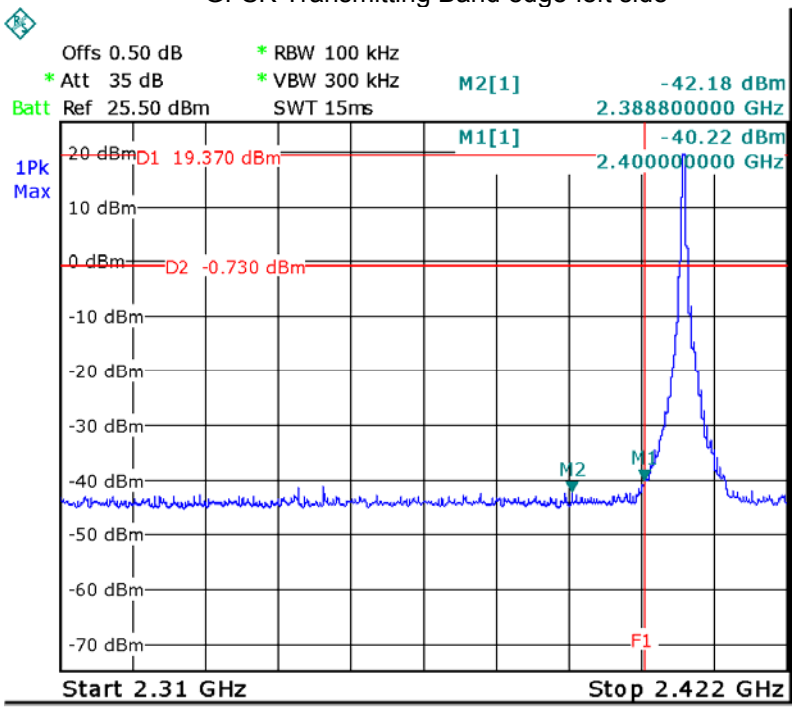
Test Requirement:	Section 15.247(d) In addition, radiated emissions which fall in the restricted bands. as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).
Test Method:	ANSI C63.10: 2013
Test Limit:	Regulation 15.247 (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

10.1 Test Procedure

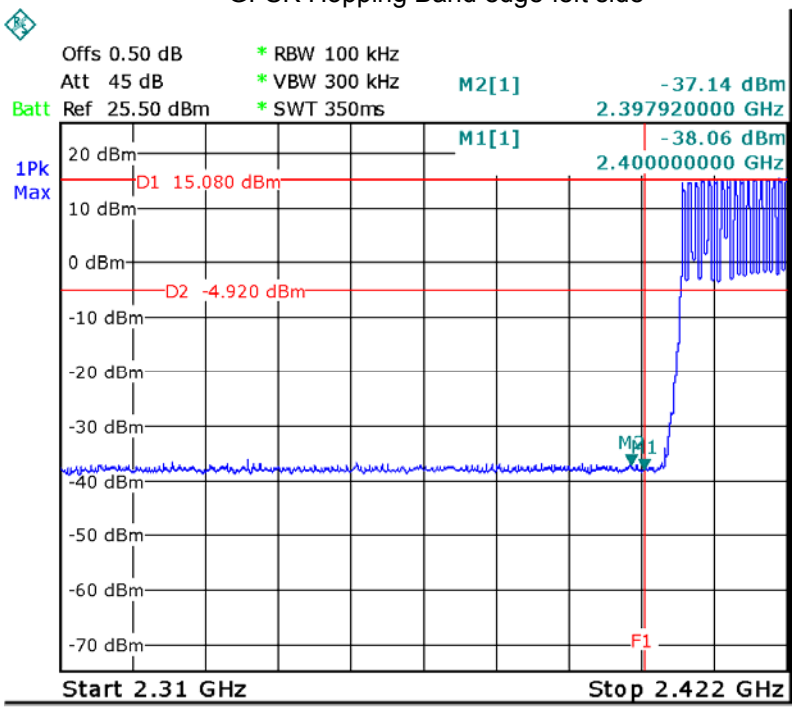
1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum;
2. Set the spectrum analyzer: RBW = 100kHz, VBW = 300kHz, Sweep = auto
   Detector function = peak, Trace = max hold

10.2 Test Result

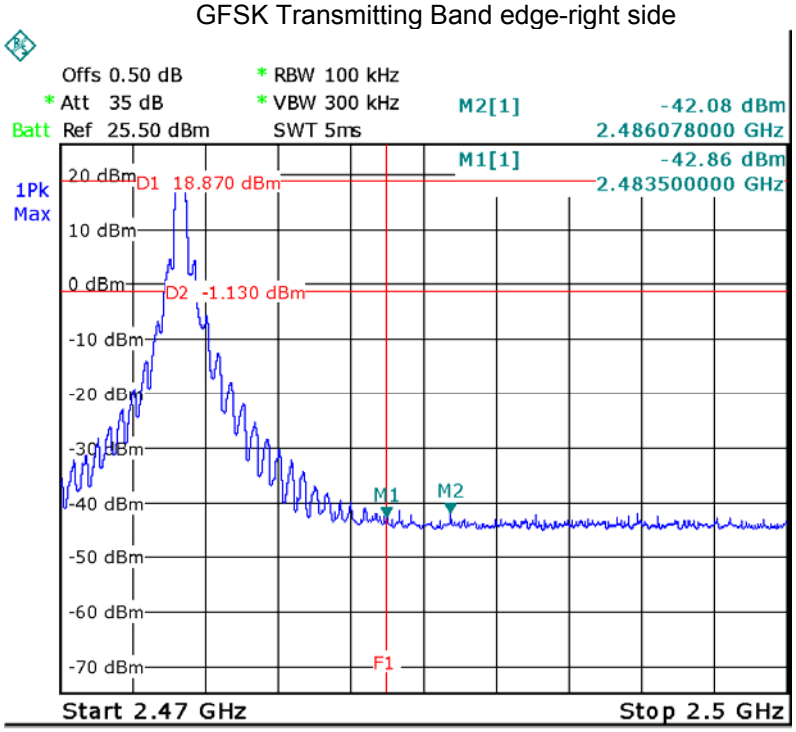
GFSK Transmitting Band edge-left side



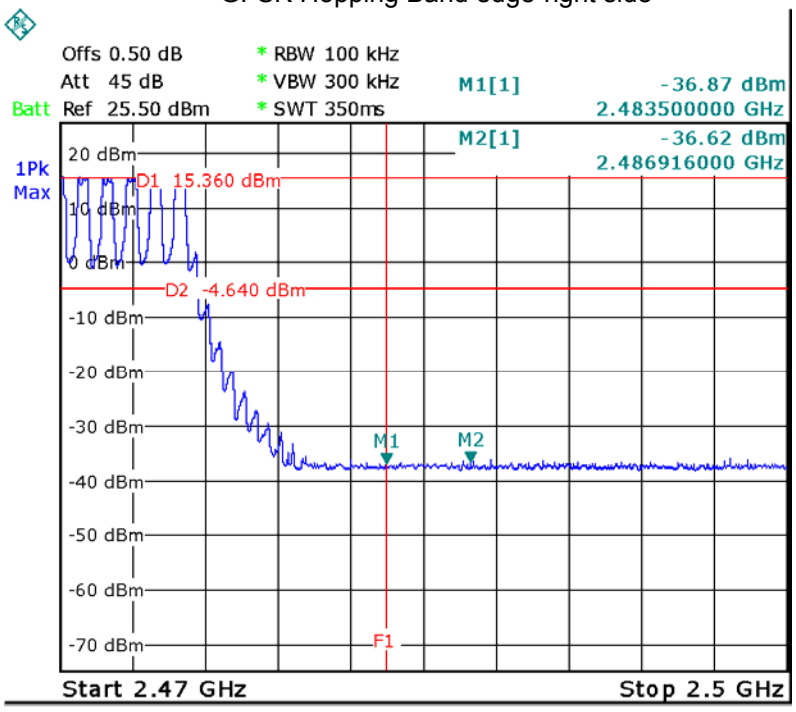
GFSK Hopping Band edge-left side



GFSK Transmitting Band edge-right side



GFSK Hopping Band edge-right side



11 20 dB Bandwidth Measurement

Test Requirement: FCC CFR47 Part 15 Section 15.247

Test Method: ANSI C63.10: 2013

Test Mode: Test in fixing operating frequency at low, Middle, high channel.

11.1 Test Procedure

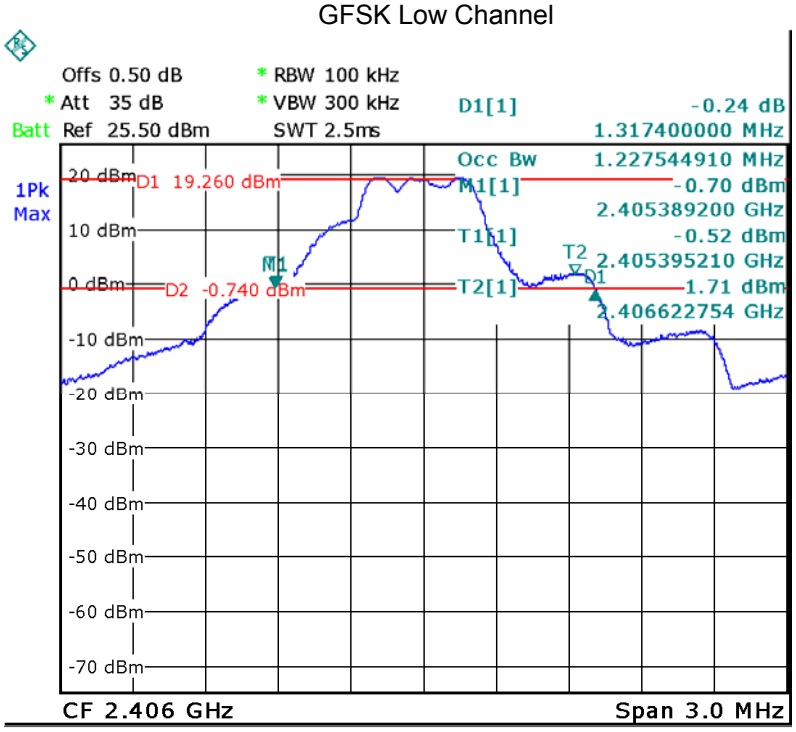
1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum;
2. Set the spectrum analyzer: RBW = 30kHz, VBW = 100kHz

11.2 Test Result

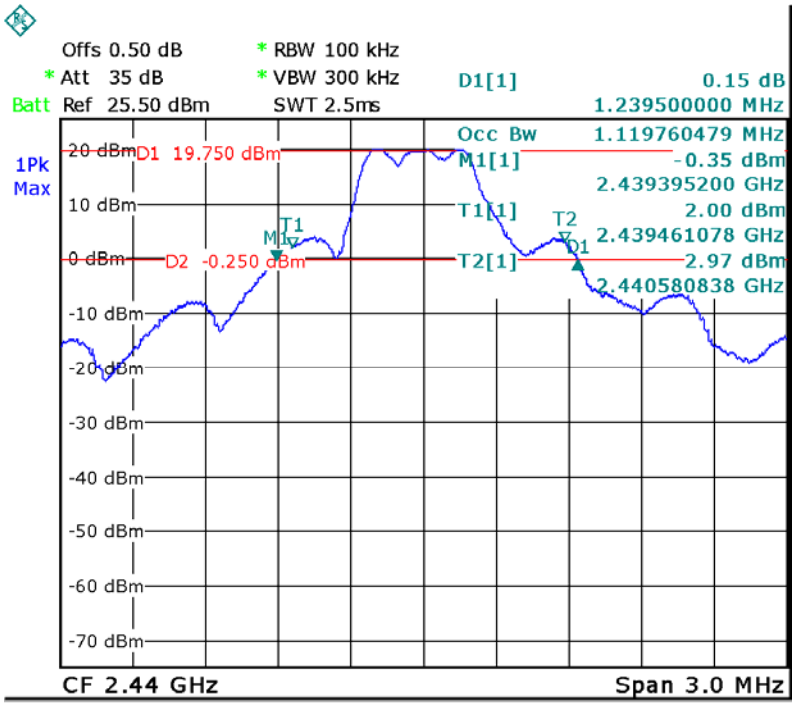
Modulation	Test Channel	Bandwidth(MHz)
GFSK	Low	1.317
GFSK	Middle	1.240
GFSK	High	1.335

Test plots

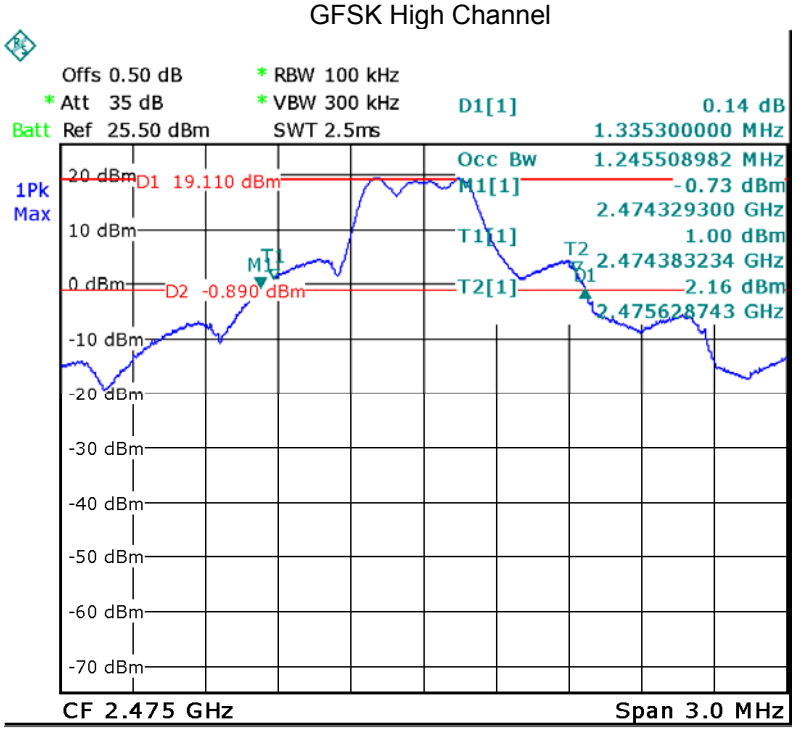
GFSK Low Channel



GFSK Middle Channel



GFSK High Channel



12 Maximum Peak Output Power

Test Requirement:	FCC CFR47 Part 15 Section 15.247
Test Method:	ANSI C63.10: 2013
Test Limit:	Regulation 15.247 (a)(1), For frequency hopping systems operating in the 2400-2483.5 MHz band by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater.: 1 watt. For all other frequency hopping systems in the 2400-2483.5 MHz band that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater: 0.125 watts..
Test mode:	Test in fixing frequency transmitting mode.

12.1 Test Procedure

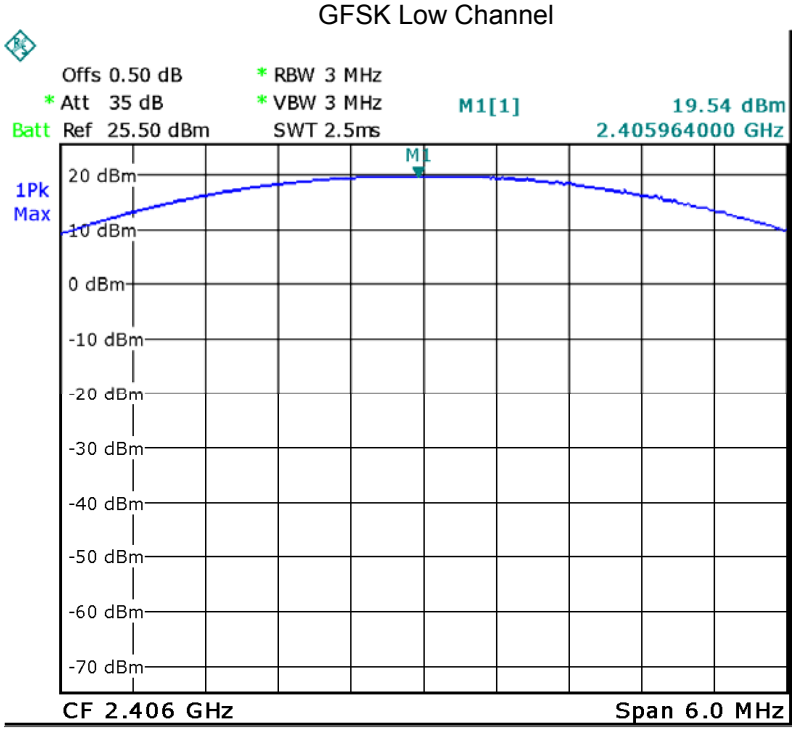
1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum.
2. Set the spectrum analyzer: RBW = 3MHz. VBW = 3MHz. Sweep = auto; Detector Function = Peak.
3. Keep the EUT in transmitting at lowest, medium and highest channel individually. Record the max value.///

12.2 Test Result

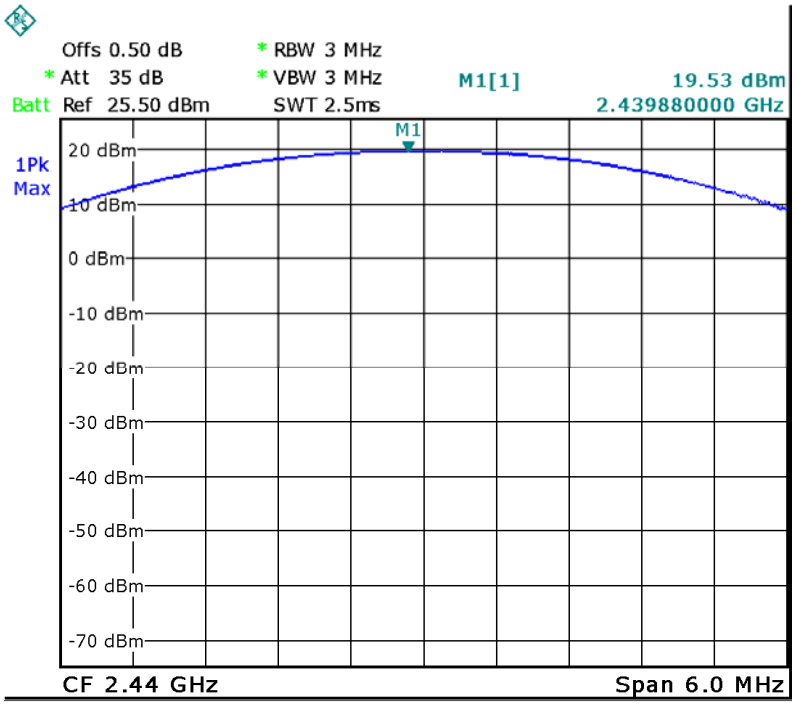
Modulation	Test Channel	Output Power (dBm)	Limit (dBm)
GFSK	Low	19.54	21
GFSK	Middle	19.53	21
GFSK	High	18.51	21

Test plots

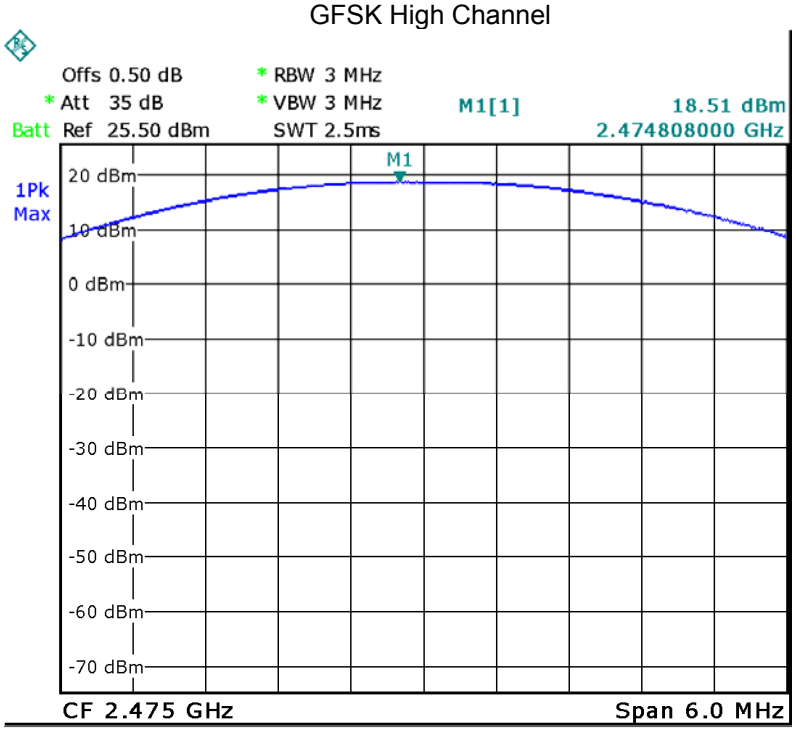
GFSK Low Channel



GFSK Middle Channel



GFSK High Channel



13 Hopping Channel Separation

Test Requirement: FCC CFR47 Part 15 Section 15.247

Test Method: ANSI C63.10: 2013

Test Limit: Regulation 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 0.125W.

Test Mode: Test in hopping transmitting operating mode.

13.1 Test Procedure

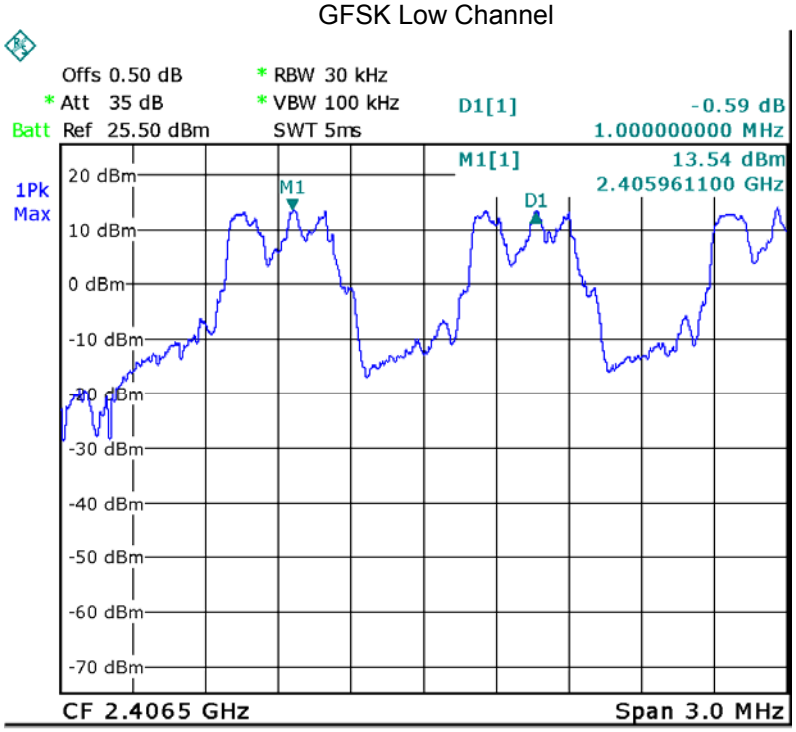
1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum.
2. Set the spectrum analyzer: RBW = 30kHz. VBW = 100kHz , Span = 3.0MHz. Sweep = auto; Detector Function = Peak. Trace = Max hold.
3. Allow the trace to stabilize. Use the marker-delta function to 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.

13.2 Test Result

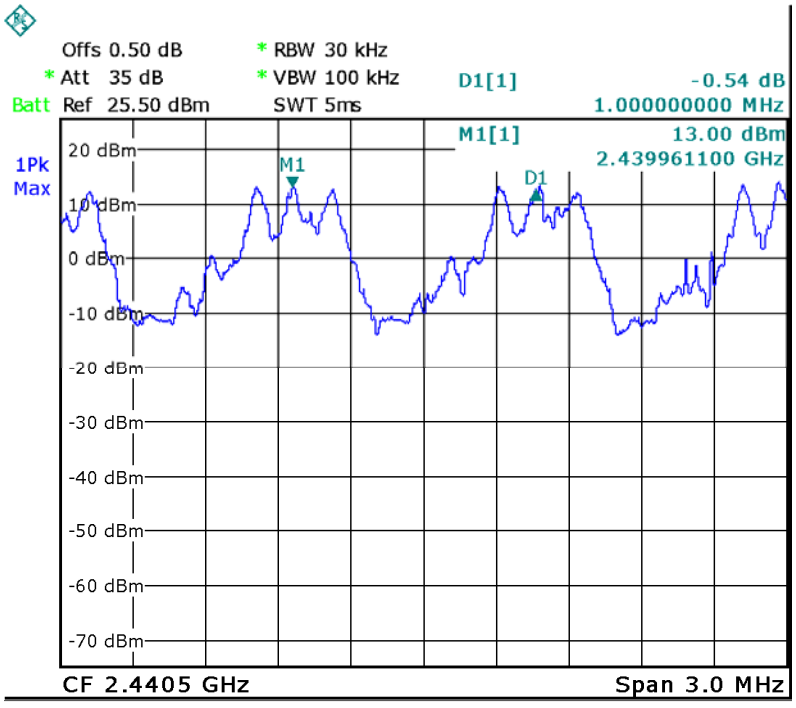
Modulation	Test Channel	Separation (MHz)	Limit(MHz)	Result
GFSK	Low	1.000	0.878	PASS
GFSK	Middle	1.000	0.827	PASS
GFSK	High	1.000	0.890	PASS

Test plots

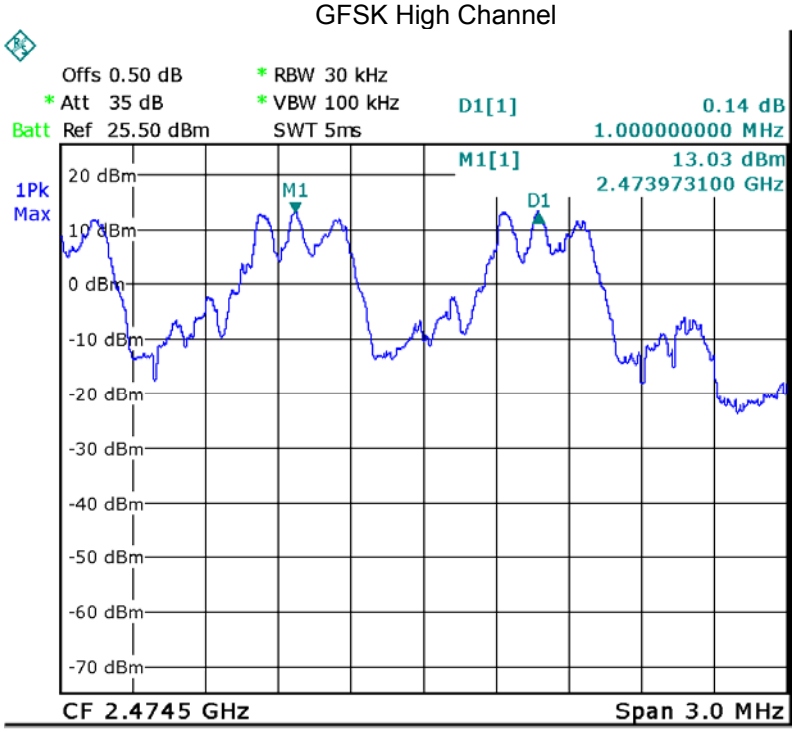
GFSK Low Channel



GFSK Middle Channel



GFSK High Channel



14 Number of Hopping Frequency

Test Requirement:	FCC CFR47 Part 15 Section 15.247
Test Method:	ANSI C63.10: 2013
Test Limit:	Regulation 15.247 (a)(1)(iii) Frequency hopping systems in the 2400-2483.5 MHz band shall use at least 15 channels.
Test Mode:	Test in hopping transmitting operating mode.

14.1 Test Procedure

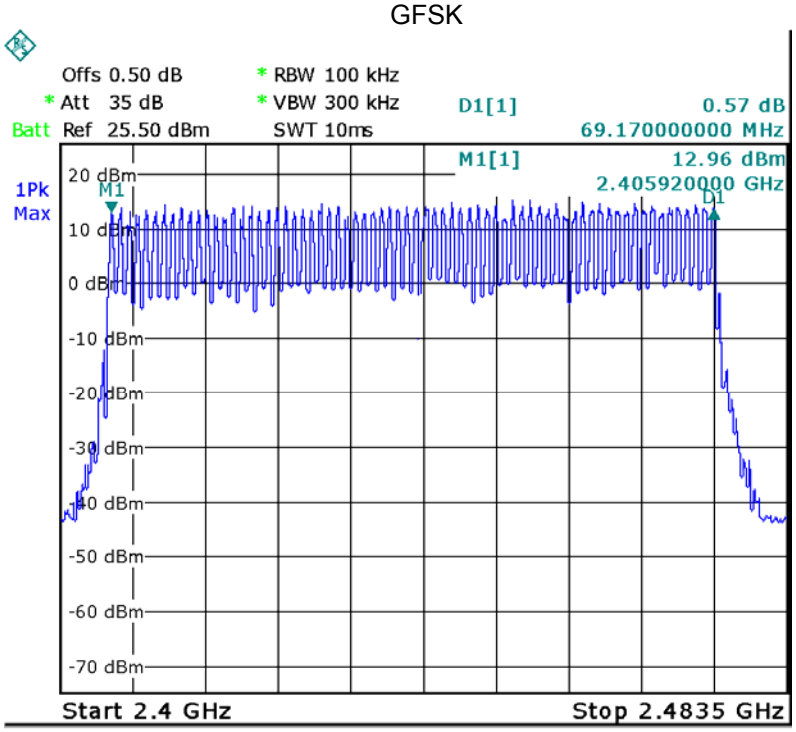
1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum.
2. Set the spectrum analyzer: RBW = 100kHz. VBW = 300kHz. Sweep = auto; Detector Function = Peak. Trace = Max hold.
3. Allow the trace to stabilize. It may prove necessary to break the span up to sections. in order to clearly show all of the hopping frequencies. The limit is specified in one of the subparagraphs of this Section.
4. Set the spectrum analyzer: Start Frequency = 2.4GHz, Stop Frequency = 2.4835GHz. Sweep=auto;

14.2 Test Result

Test Plots:

70 Channels in total

GFSK



15 Dwell Time

Test Requirement:	FCC CFR47 Part 15 Section 15.247
Test Method:	ANSI C63.10: 2013
Test Limit:	Regulation 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.
Test Mode:	Test in hopping transmitting operating mode.

15.1 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 spectrum analyzer span = 0. Centred on a hopping channel;
3. Set RBW = 1MHz and VBW = 3MHz.Sweep = as necessary to capture the entire dwell time per hopping channel.
4. Use the marker-delta function to determine the dwell time. If this value varies with different modes of operation (e.g.. data rate. modulation format. etc.). repeat this test for each variation. The limit is specified in one of the subparagraphs of this Section. Submit this plot(s).

15.2 Test Result

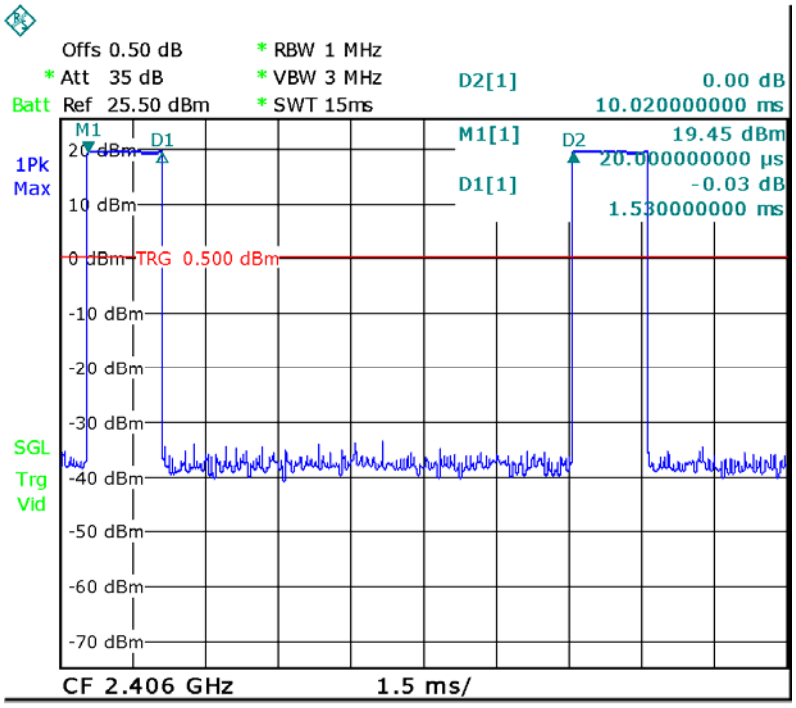
Modulation	Channel	Pulse time(ms)	Dwell Time(s)	Limits(s)
GFSK	Low	1.53	0.028	0.4
	middle	1.53	0.028	0.4
	High	1.53	0.028	0.4

Remark: The manufacturer claims the device trasmitting every 11ms ,

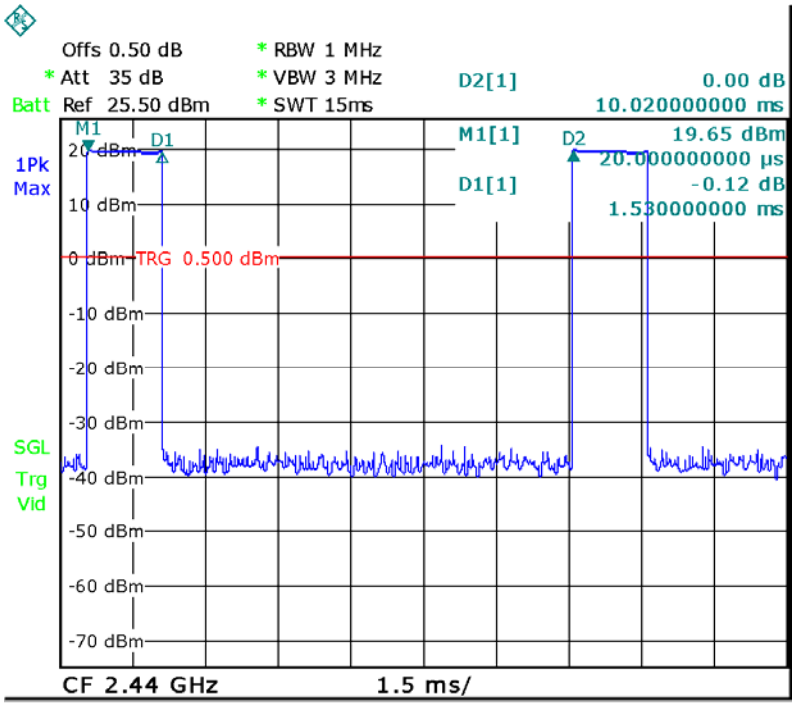
Dwell Time = 1000/11/70/2*0.4*70*(MkrDelta)/1000

Test Plots

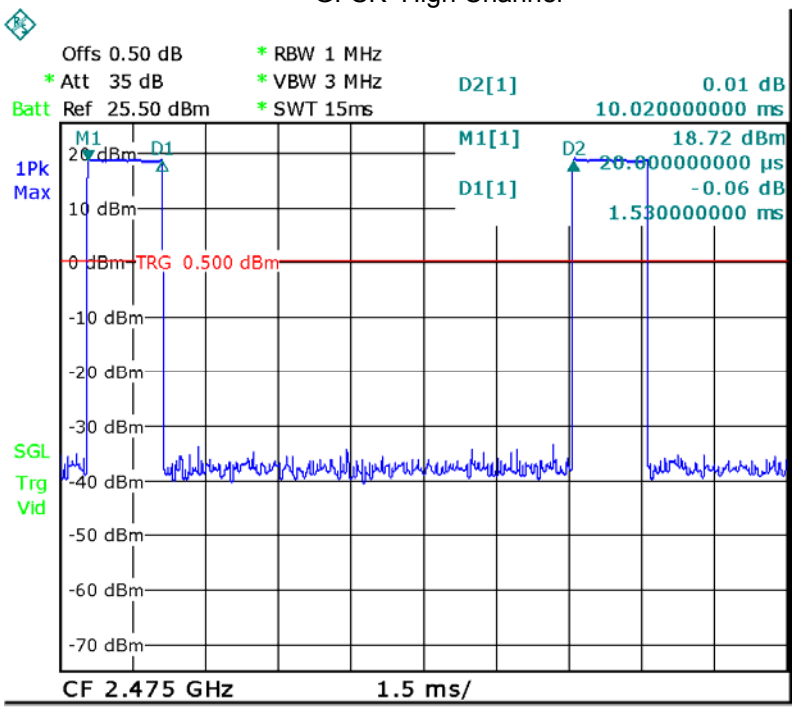
GFSK Low Channel



GFSK Middle Channel



GFSK High Channel



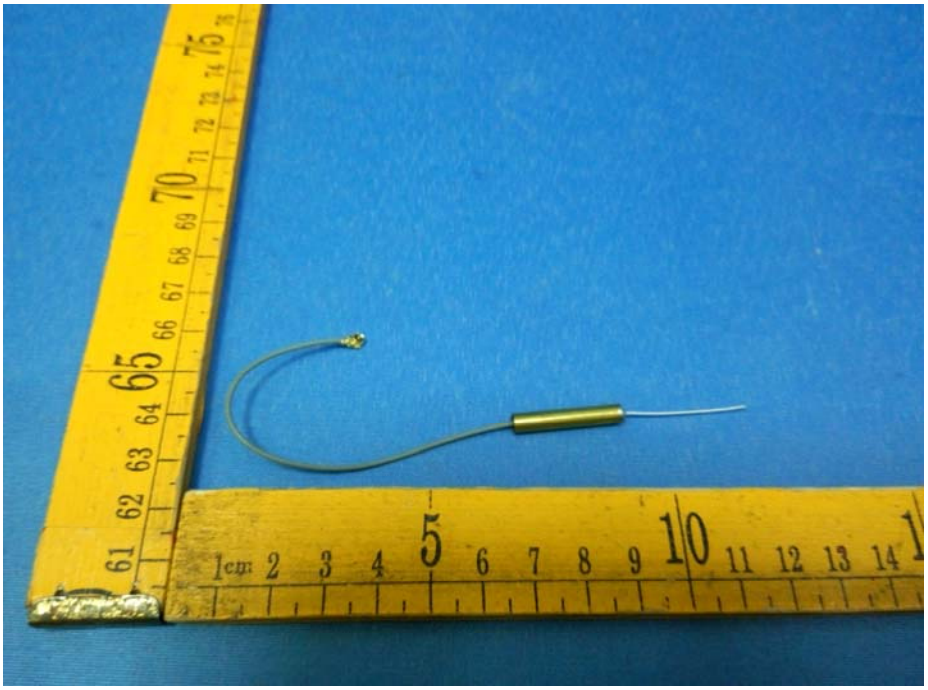
16 Antenna Requirement

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 Fixed antenna, the gain is 0 dBi. meets the requirements of FCC 15.203.



17 RF Exposure

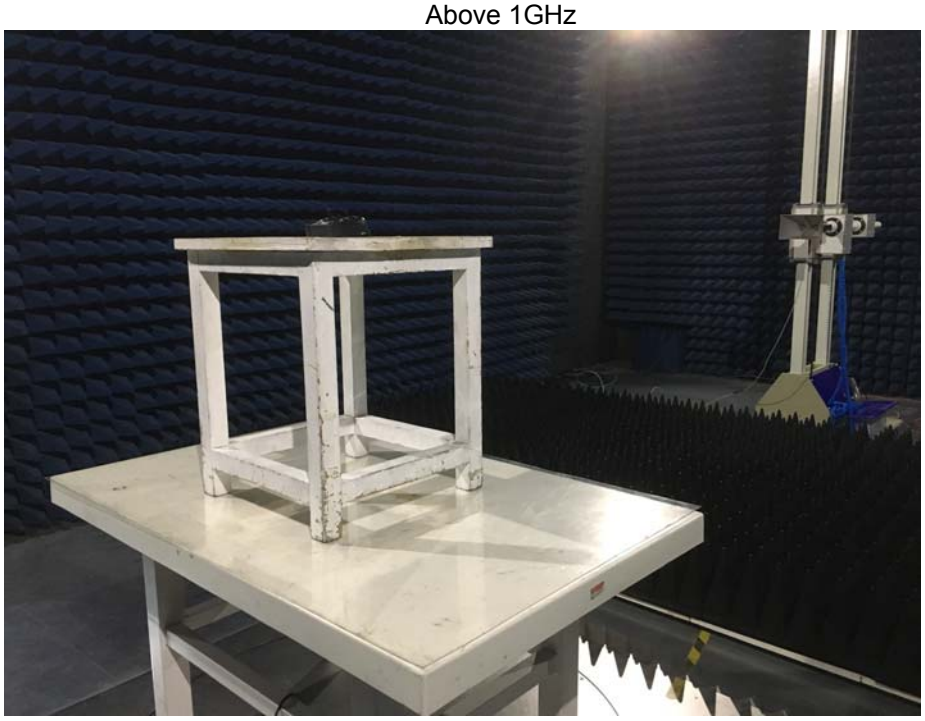
Remark: refer to SAR test report: WTS17S0990685-2E V1.

18 Photographs of test setup and EUT.

18.1 Radiation Spurious Emission Test Setup Model ESKY007324 FCC ID: 2ANYZ-ESKY007324

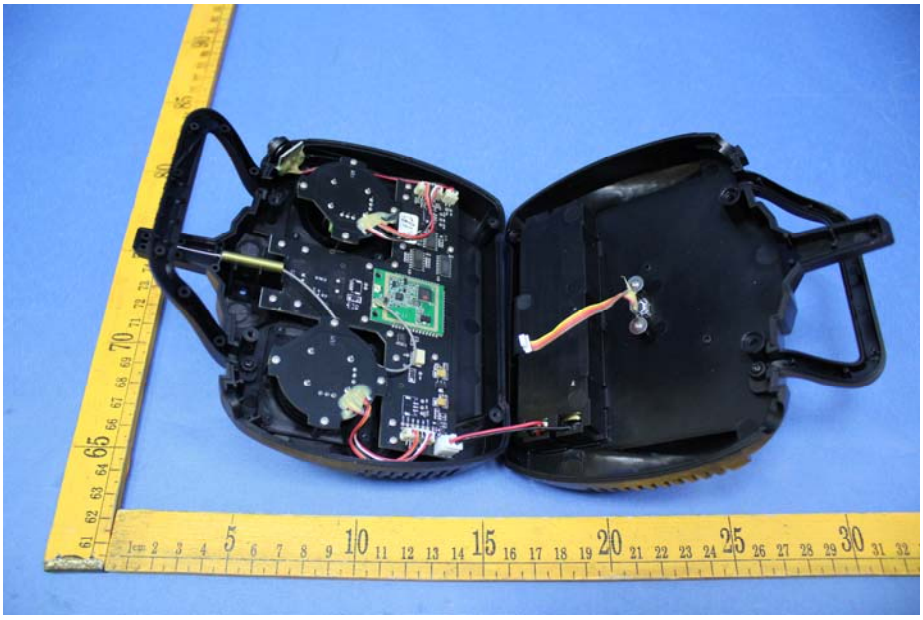
30MHz-1GHz

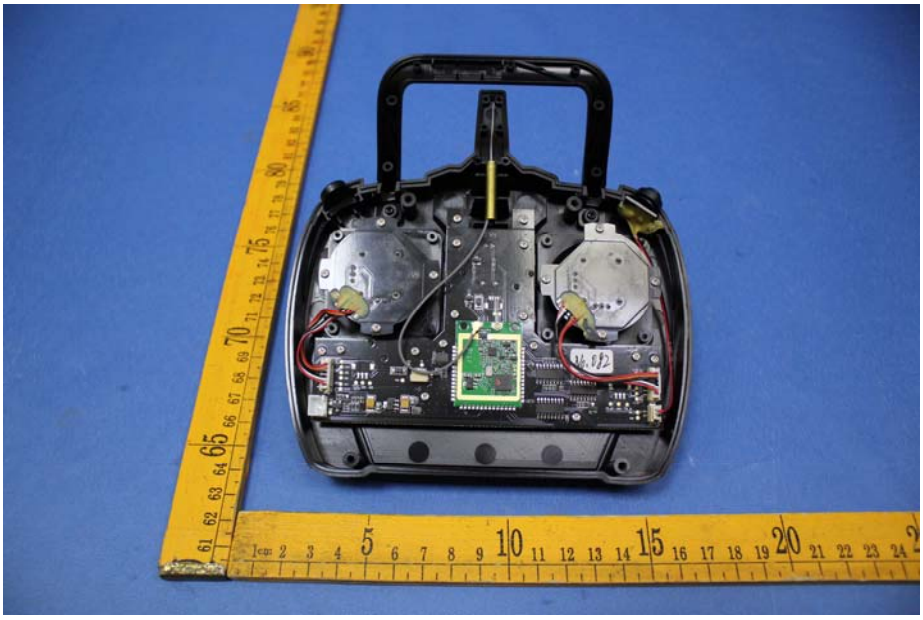
Above 1GHz

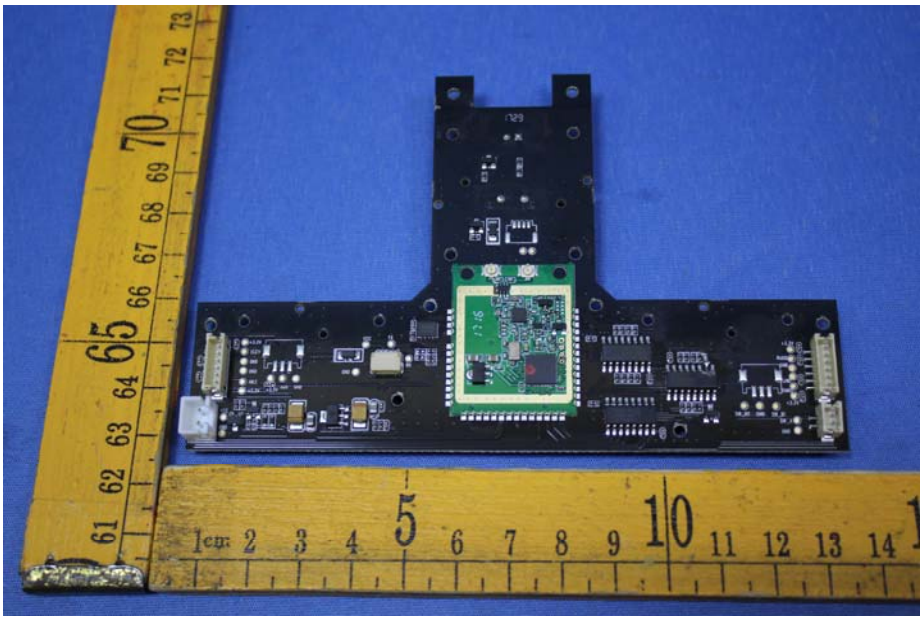


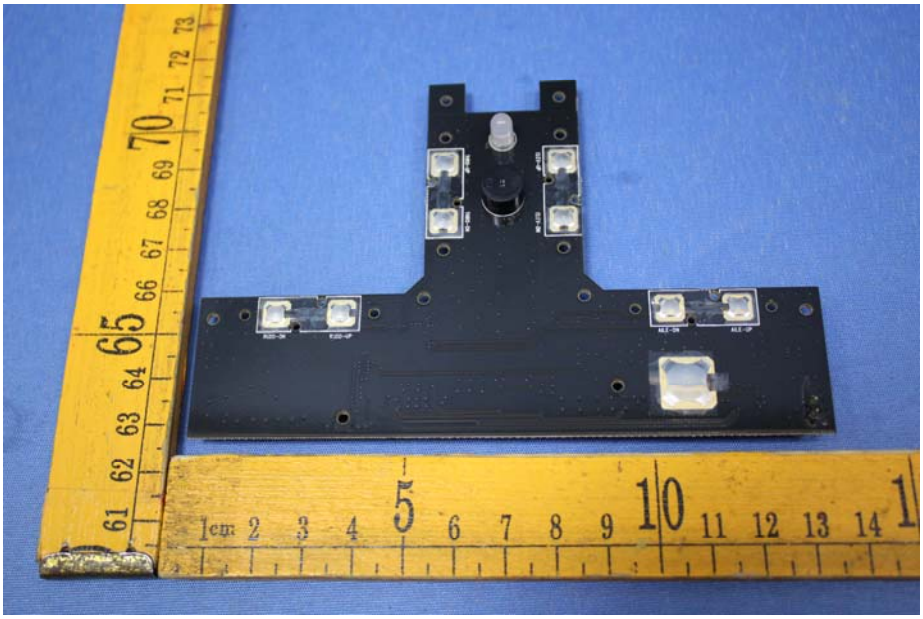
18.2 EUT External View Model ESKY007324 FCC ID: 2ANYZ-ESKY007324

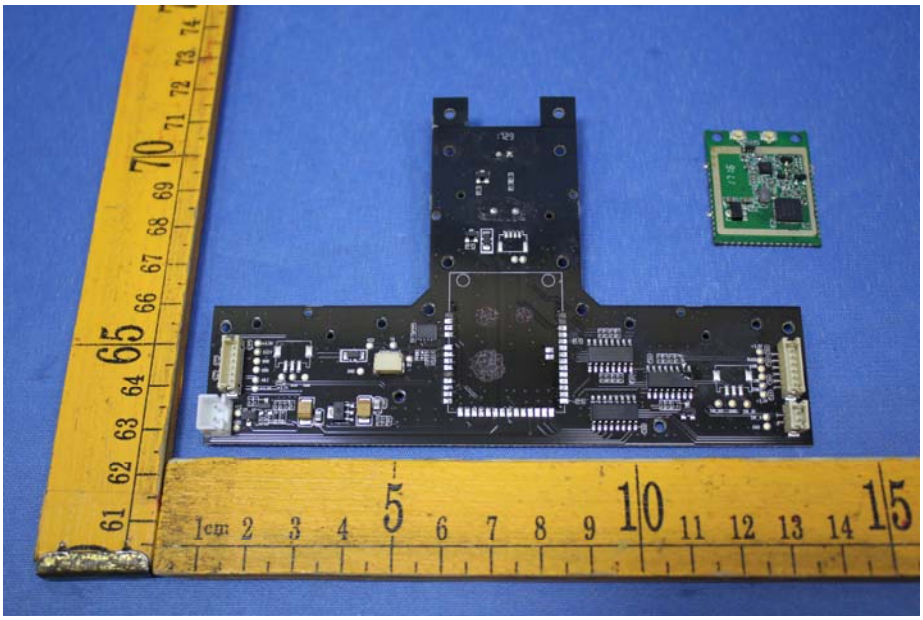
18.3 EUT Internal View Model ESKY007324 FCC ID: 2ANYZ-ESKY007324

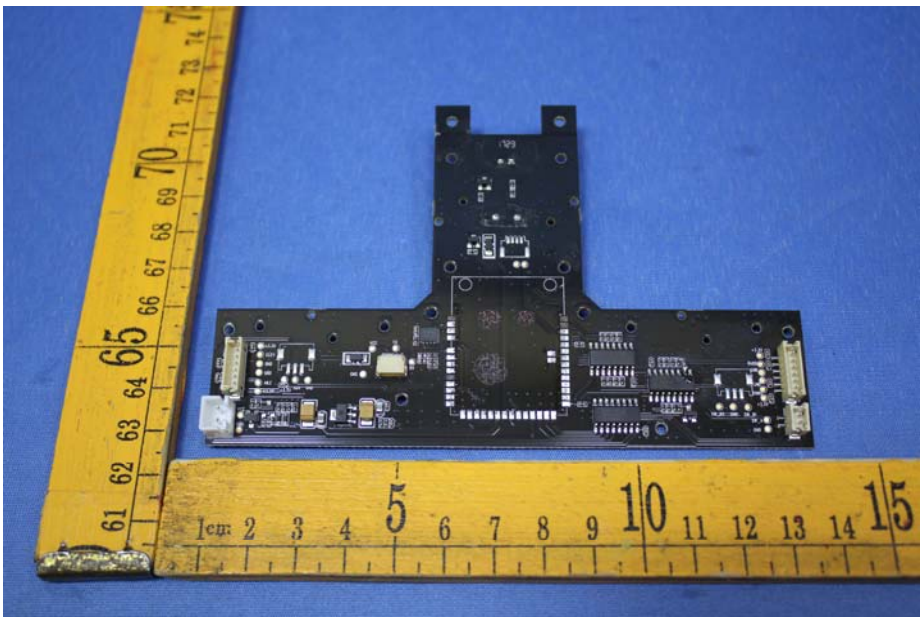


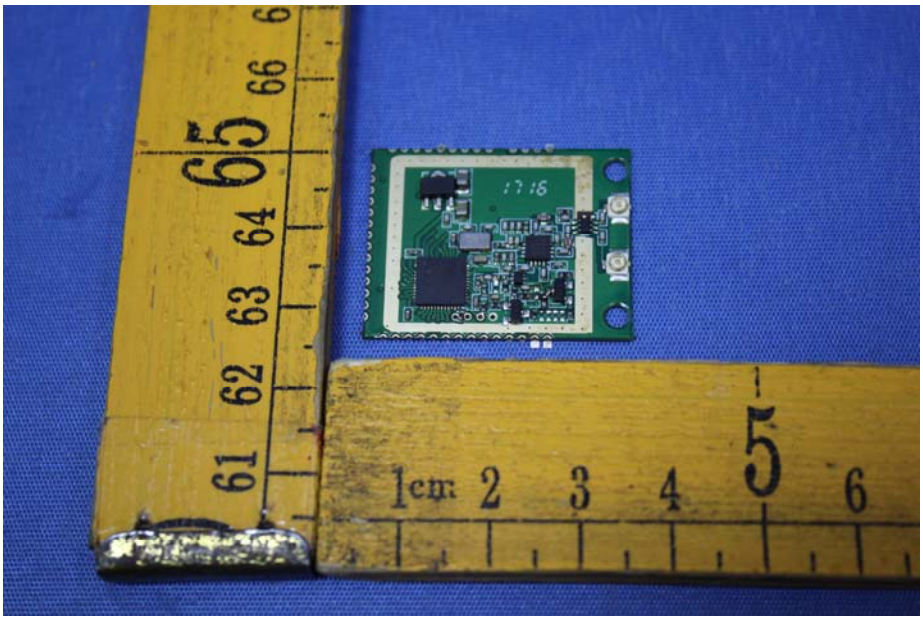


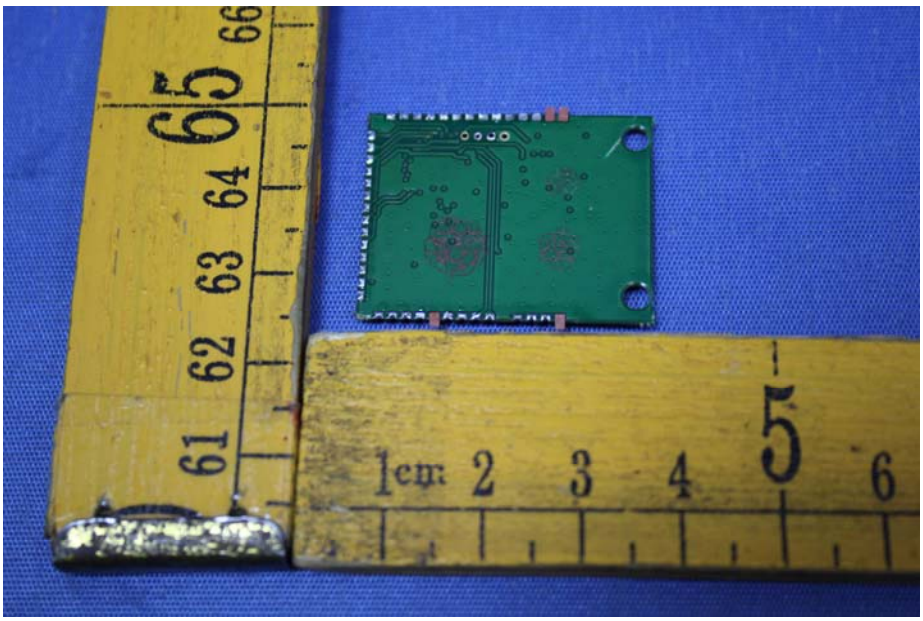


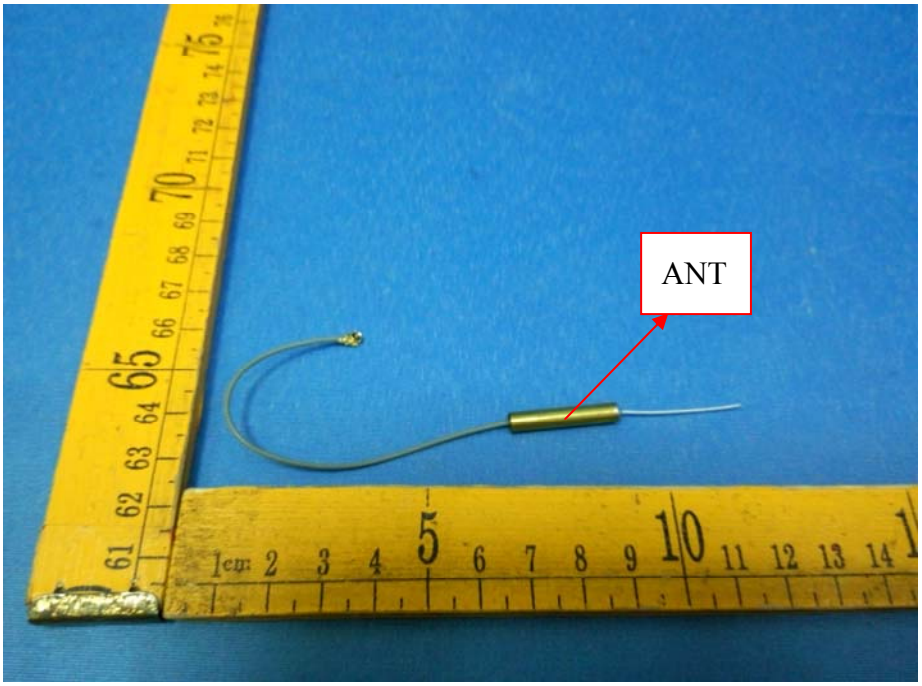







1716
1cm 2 3 4 5 6
61 62 63 64 65 66


1cm 2 3 4 5 6
61 62 63 64 65 66



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