





<b>RADIO REPORT</b> <b>FCC 47 CFR Part 15C</b> <b>ISED Canada RSS-247</b> <b>Digital transmission systems operating within the 2400.0 MHz - 2483.5 MHz band</b>	
<b>Report Reference No</b>	G0M-2011-9488-TFC247WF-V01
<b>Testing Laboratory</b>	Eurofins Product Service GmbH
<b>Address</b>	Storkower Str. 38c 15526 Reichenwalde Germany
<b>Accreditation</b>	 <p>DAkkS - Registration number : D-PL-12092-01-03 (ISED)                      ISED Testing Laboratory site: 3470A                      DAkkS - Registration number : D-PL-12092-01-04 (FCC)                      FCC Filed Test Laboratory, Reg.-No.: 96970</p>
<b>Applicant</b>	Leica Geosystems AG
<b>Address</b>	Heinrich-Wild-Strasse 9435 Heerbrugg SWITZERLAND
<b>Test Specification</b>	47 CFR Part 15C RSS-247, Issue 2, 2017-02 RSS-Gen, Issue 5, Amendment 1, 2019-03
<b>Non-Standard Test Method</b>	None
<b>Equipment under Test (EUT):</b>	
<b>Product Description</b>	UAV 3D measurement device
<b>Model(s)</b>	BLK2FLY
<b>Additional Model(s)</b>	None
<b>Brand Name(s)</b>	Leica Geosystems AG
<b>Hardware Version(s)</b>	Rev. D
<b>Software Version(s)</b>	0.13.0
<b>FCC ID</b>	RFD-BLK2FLY
<b>IC</b>	3177A-BLK2FLY
<b>Test Result</b>	<b>PASSED</b>

Possible test case verdicts:		
Required by standard but not tested	N/T	
Not required by standard	N/R	
Not applicable to EUT	N/A	
Test object does meet the requirement	P(PASS)	
Test object does not meet the requirement	F(FAIL)	
Testing:		
Test Lab Temperature	20 °C - 30 °C	
Test Lab Humidity	25 % - 55 %	
Date of receipt of test item	2021-07-19	
Report:		
Compiled by	Toralf Jahn	
Tested by (+ signature)	Jens Degenhardt	
Tested by (+ signature) (Responsible for Test)	Toralf Jahn	
Approved by (+ signature) (Test Lab Engineer)	Wilfried Treffke	
Date of Issue	2022-01-18	
Total number of pages	192	
General Remarks:		
<p>The test results presented in this report relate only to the object tested.</p> <p>The results contained in this report reflect the results for this particular model and serial number. It is the responsibility of the manufacturer to ensure that all production models meet the intent of the requirements detailed within this report.</p> <p>This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory.</p>		
Additional Comments:		

## VERSION HISTORY

Version History			
Version	Issue Date	Remarks	Revised By
01	2022-01-18	Initial Release	

**ABBREVIATIONS AND ACRONYMS**

Acronyms	
Acronym	Description
BPSK	Binary Phase Shift Keying
DSSS	Direct Sequence Spread Spectrum
EUT	Equipment Under Test
FCC	Federal Communications Commission
HT	High Throughput
IEEE 802.11	MAC and PHY Layer for WiFi
ISED	Innovation, Science and Economic Development Canada
OFDM	Orthogonal Frequency Division Multiplexing
QAM	Quadrature Amplitude Modulation
QPSK	Quadrature Phase Shift Keying
RBW	Resolution bandwidth
RMS	Root mean square
VBW	Video bandwidth
V <sub>NOM</sub>	Nominal supply voltage

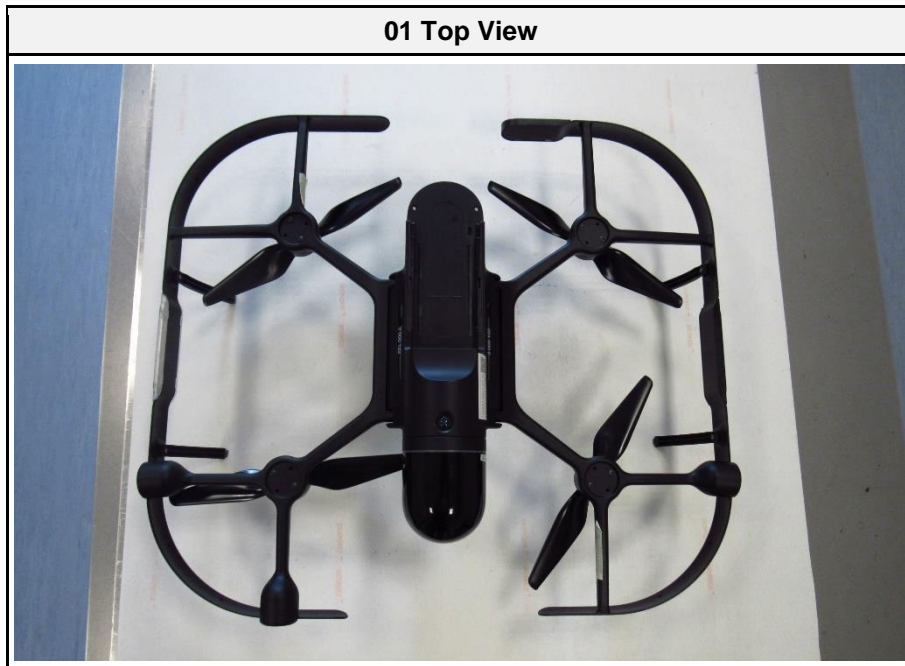
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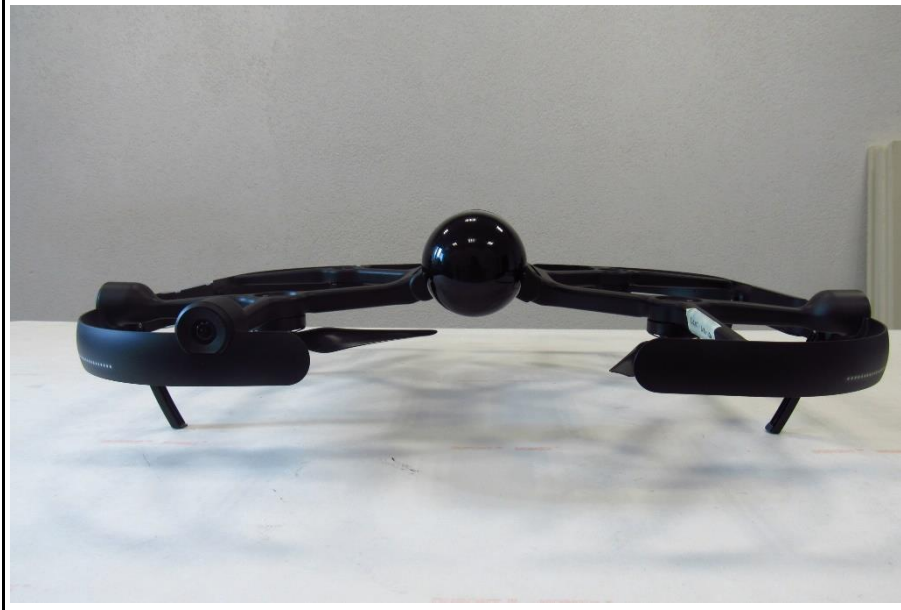
## 1 Equipment (Test Item) Under Test

Description	UAV 3D measurement device	
Model	BLK2FLY	
Additional Model(s)	None	
Brand Name(s)	Leica Geosystems AG	
Serial Number(s)	Conducted: None (Sample ID 34982) Radiated: 3000102 (Sample ID 35554) USB-Mode: 3000104 (Sample ID 35709)	
Hardware Version(s)	Rev. D	
Software Version(s)	0.13.0	
PMN	BLK2FLY	
HVIN	938405	
FVIN	N/A	
HMN	N/A	
FCC ID	RFD-BLK2FLY	
IC	3177A-BLK2FLY	
Equipment type	End Product	
Radio type	Transceiver	
Assigned frequency bands	2400.0 MHz - 2483.5 MHz	
Radio technology	IEEE 802.11 b/g/n (HT20 + HT40)	
Modulation	BPSK, QPSK, 16-QAM, 64-QAM	
Number of antenna ports	2	
Antenna 1	Type	External
	Model	SZ1784V
	Manufacturer	Pulse
	Gain	3.5 dBi (manufacturer declaration)
Antenna 2	Type	External
	Model	SZ1679W
	Manufacturer	Pulse
	Gain	1.9 dBi (manufacturer declaration)
Supply Voltage	V <sub>NOM</sub>	14.8 VDC
Operating Temperature	T <sub>NOM</sub>	25 °C
AC/DC-Adaptor	None	
Manufacturer	Leica Geosystems AG Heinrich-Wild-Strasse 9435 Heerbrugg SWITZERLAND	

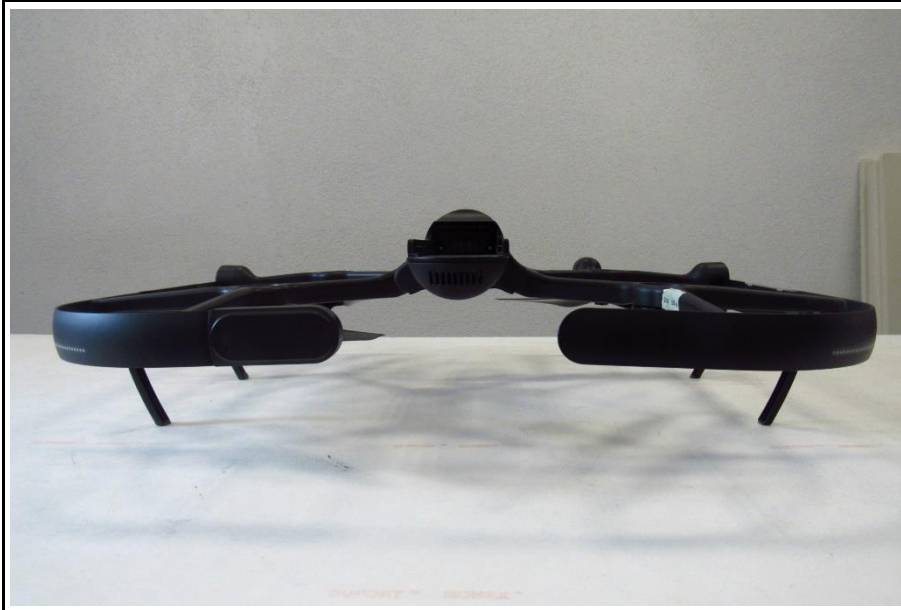
1.1 Photos – Equipment External



03 Front View



04 Rear View

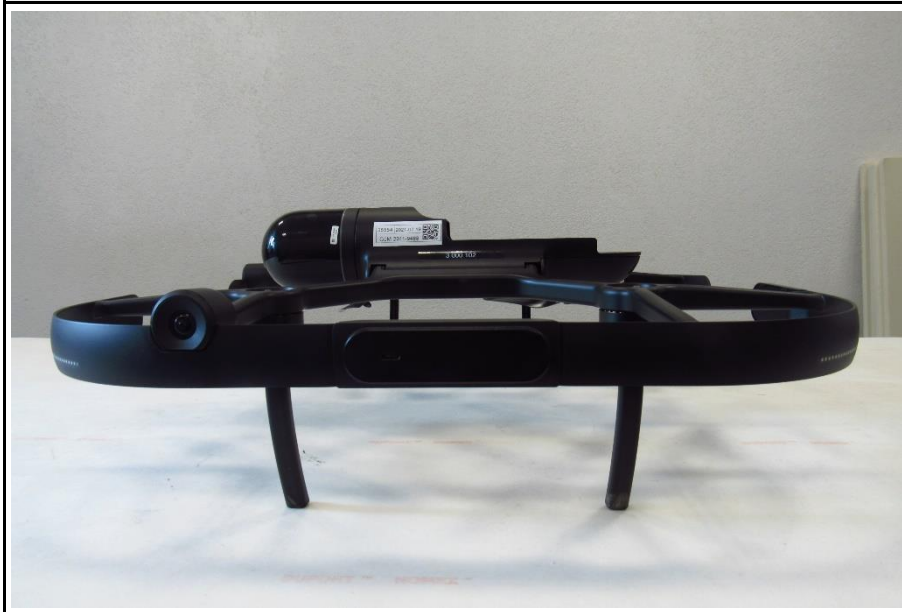




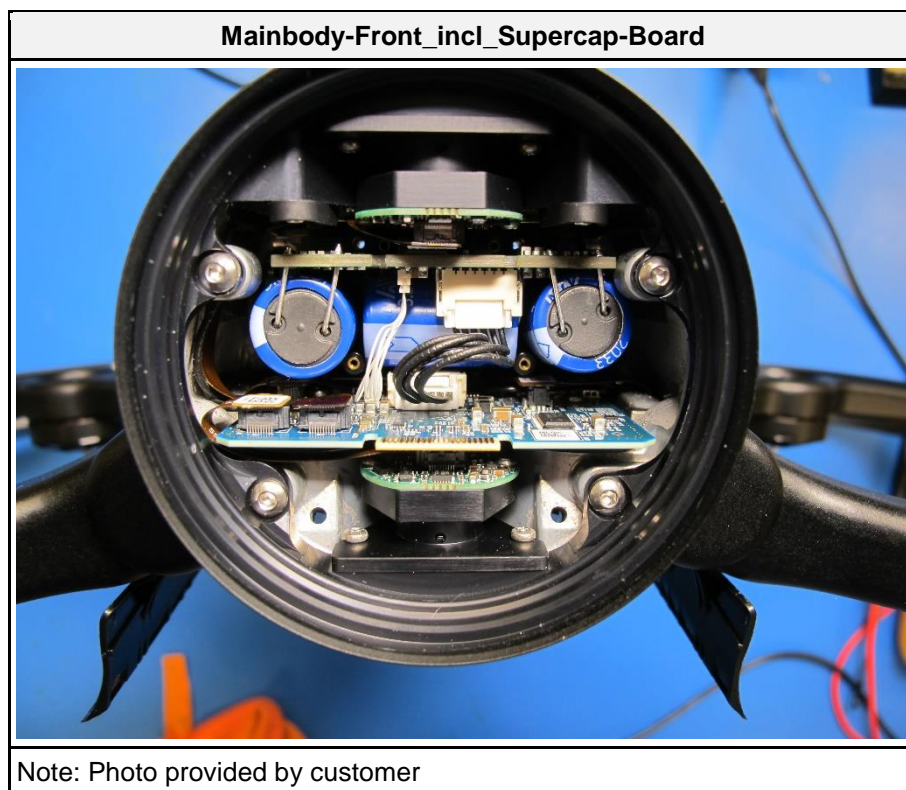
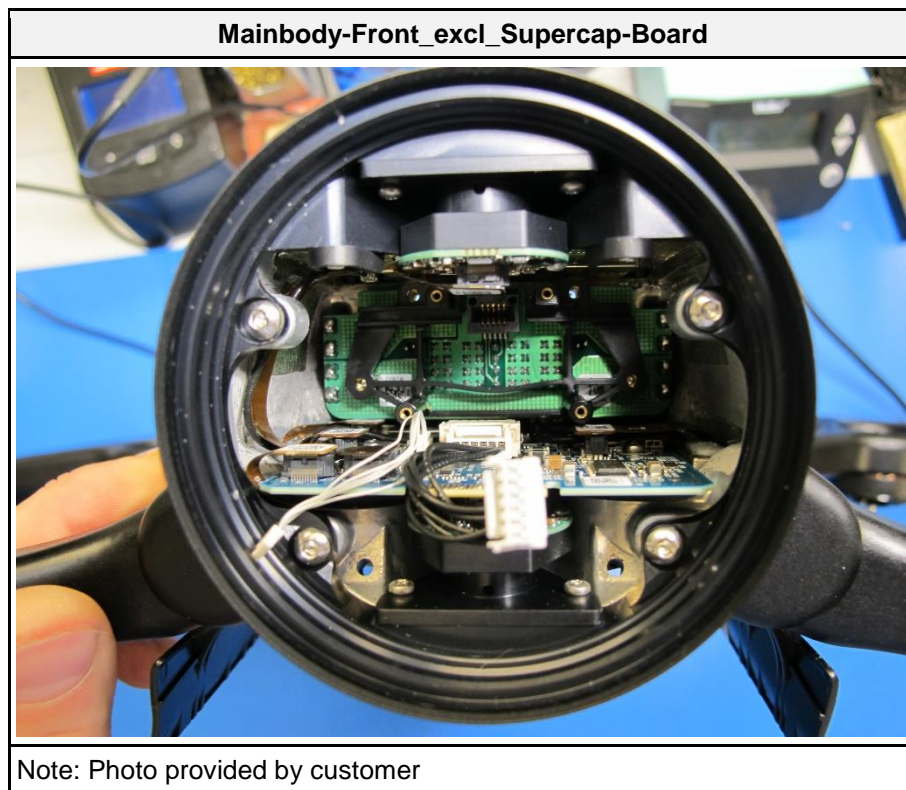
05 Right View



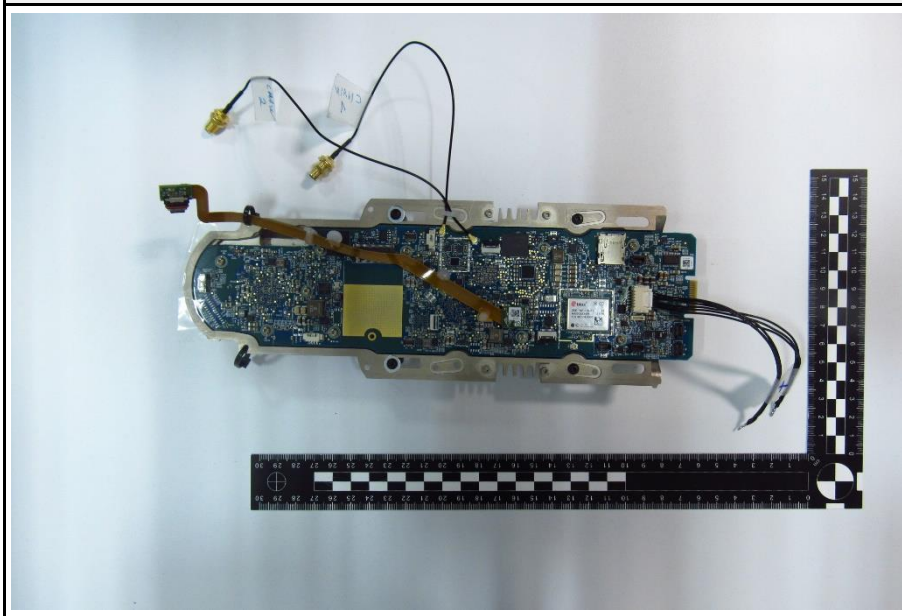
06 Left View



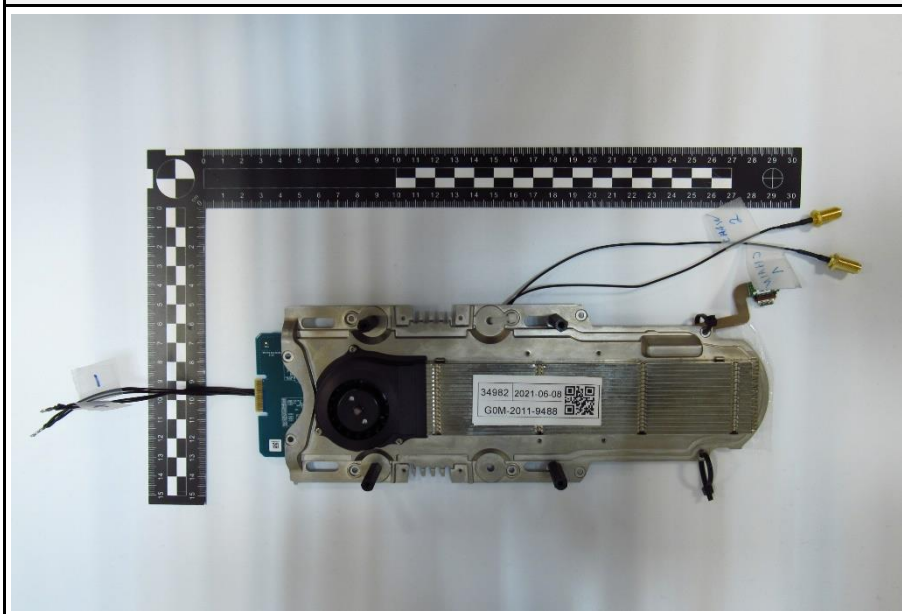
## 1.2 Photos – Equipment Internal



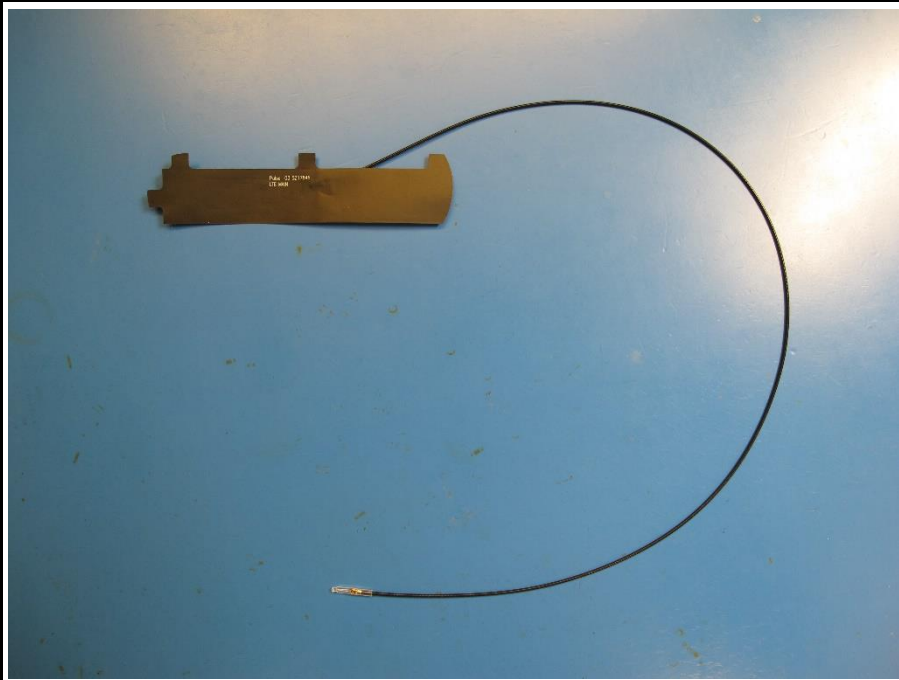
07 Conducted WLAN Sample1



08 Conducted WLAN Sample2

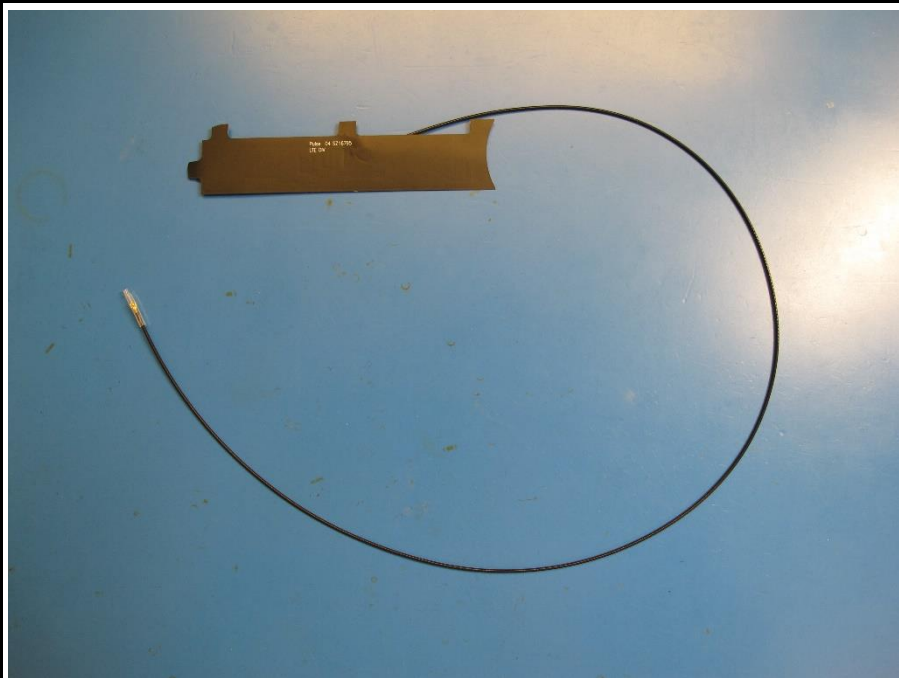


**890108\_LTE-Main\_OVERVIEW**



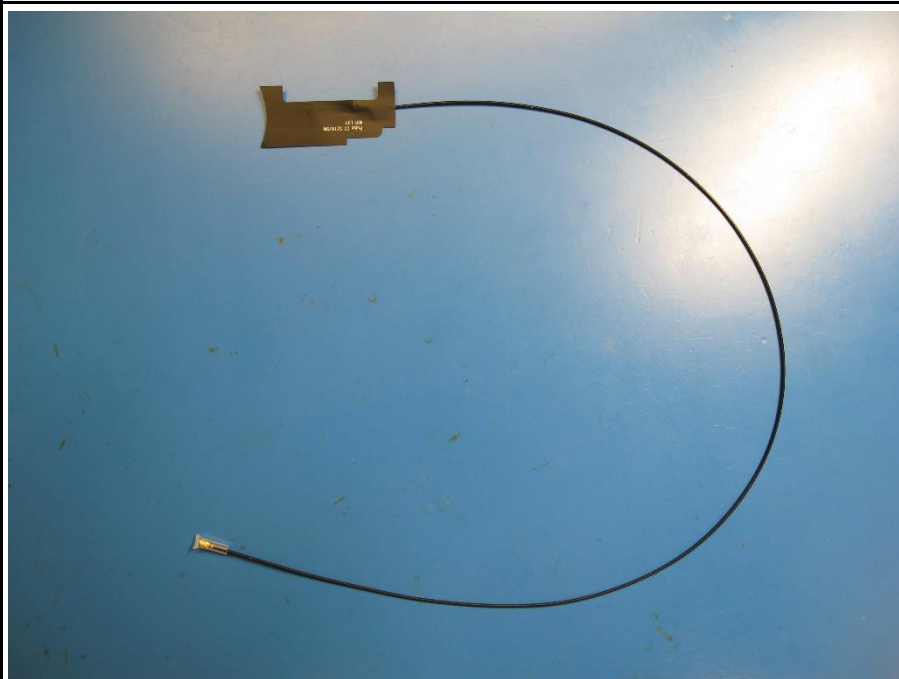
Note: Photo provided by customer

**891349\_LTE-Div\_OVERVIEW**



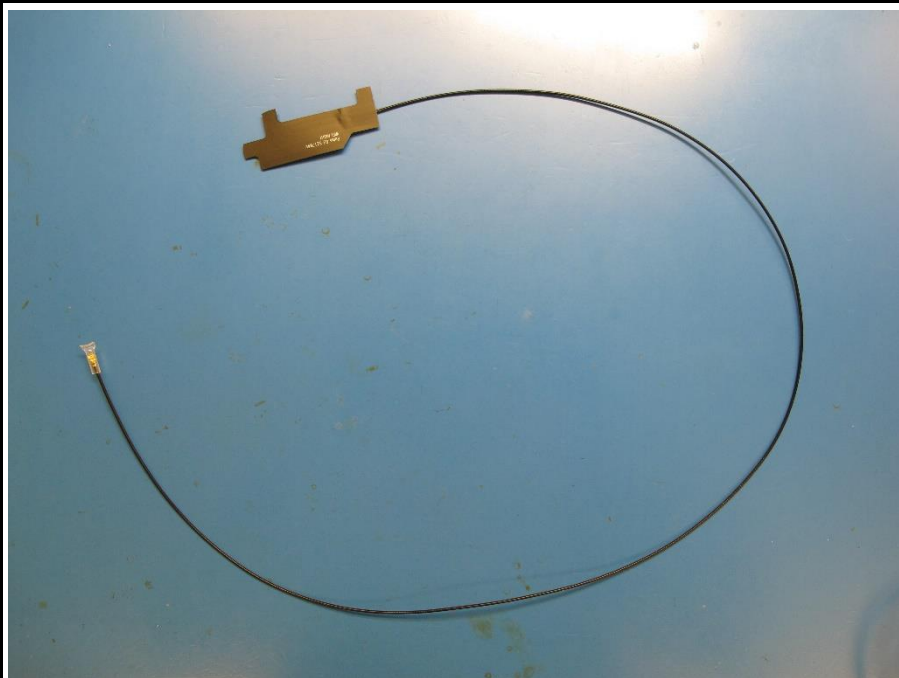
Note: Photo provided by customer

**896802\_Wifi-Left\_OVERVIEW**



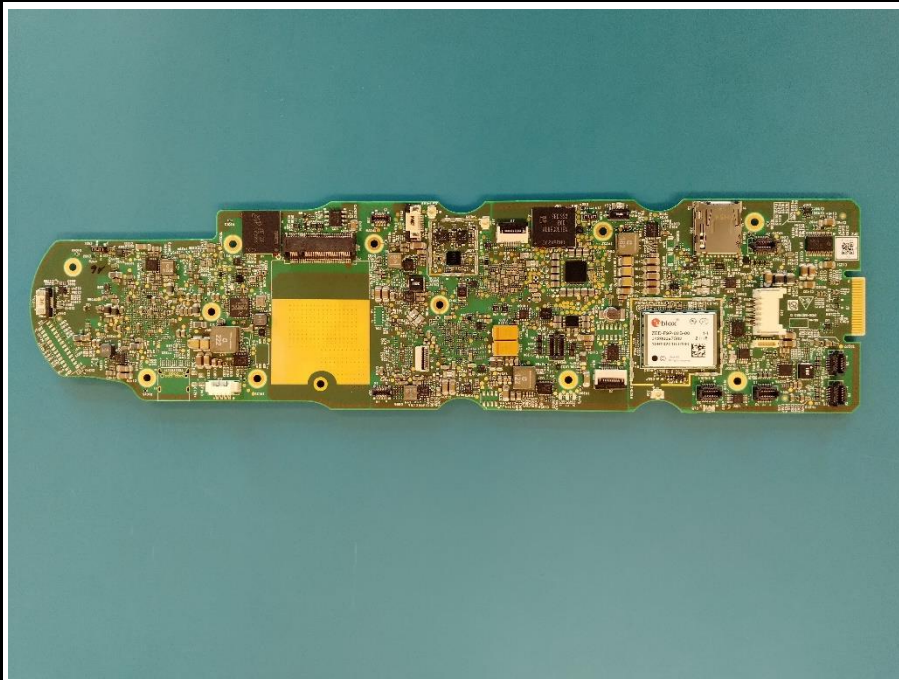
Note: Photo provided by customer

**896802\_Wifi-Right\_OVERVIEW**



Note: Photo provided by customer

**892583\_mainboard\_top**



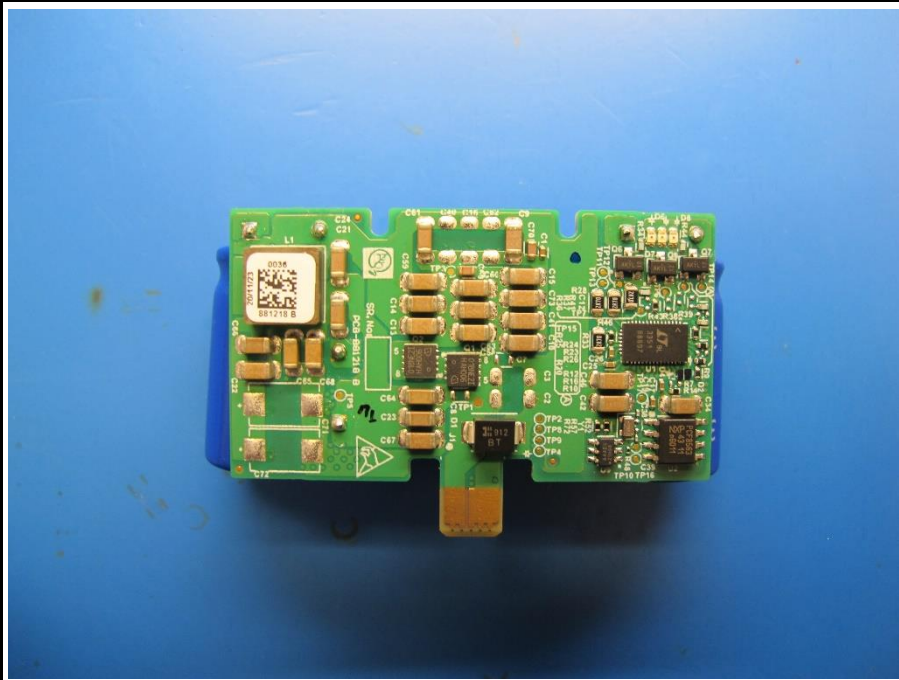
Note: Photo provided by customer

**892583\_mainboard\_bottom**



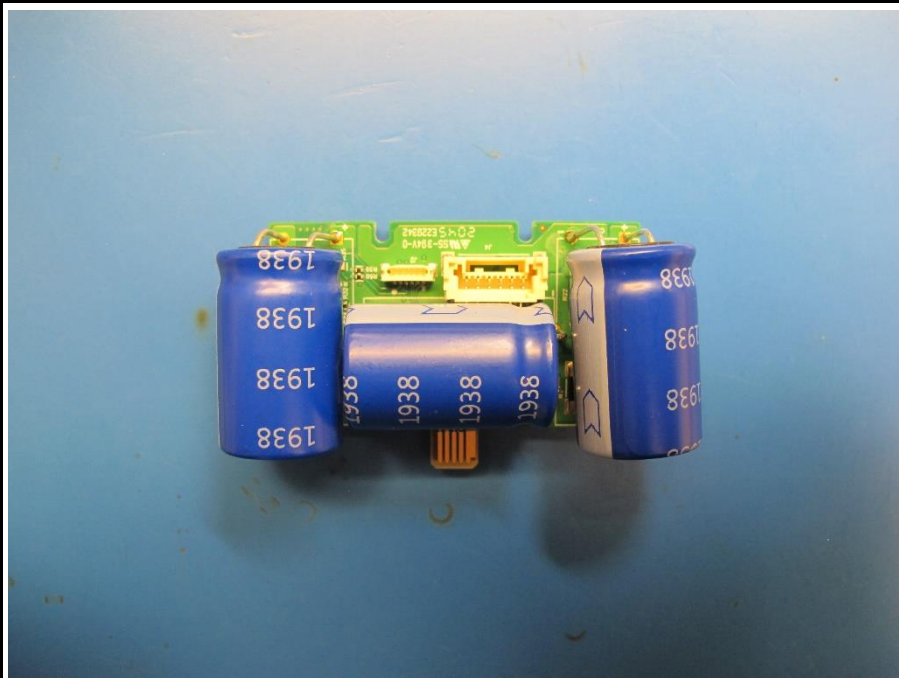
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881218\_Supercap-Board-TOP



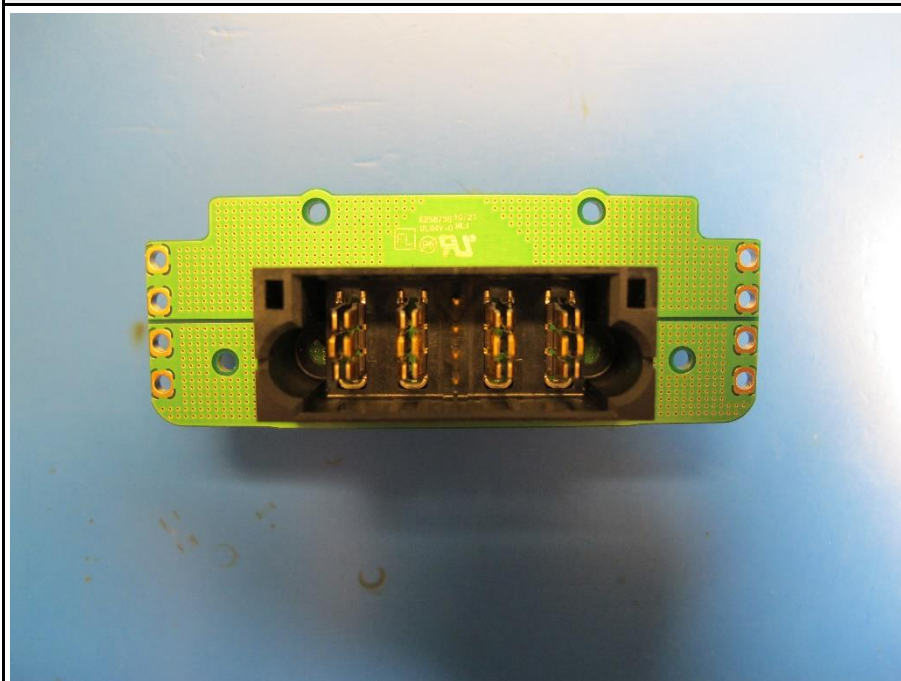
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881218\_Supercap-Board-BOTTOM



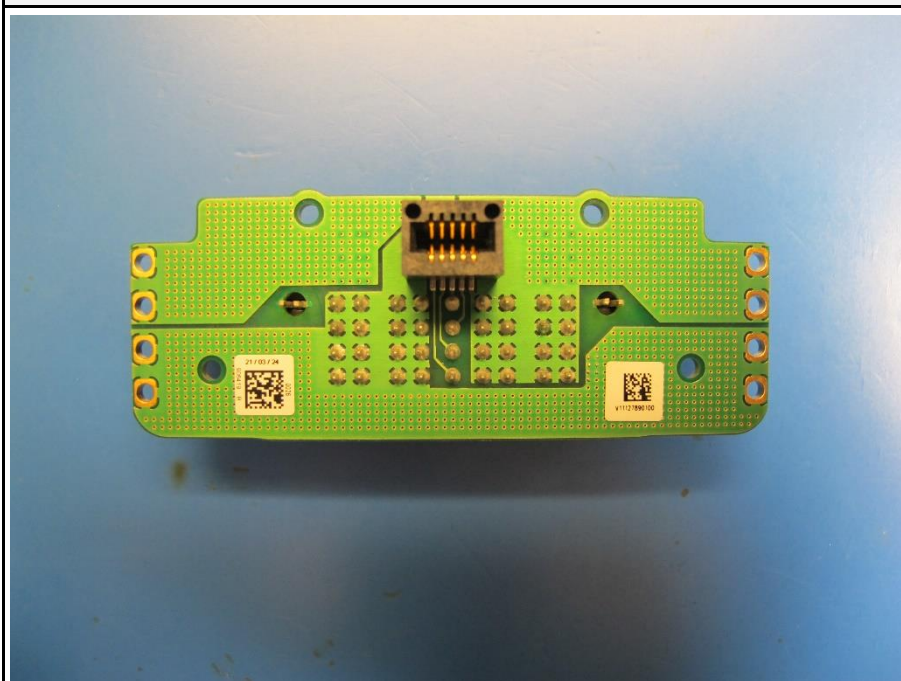
Note: Photo provided by customer

906419\_Battery-Connector-Board\_TOP



Note: Photo provided by customer

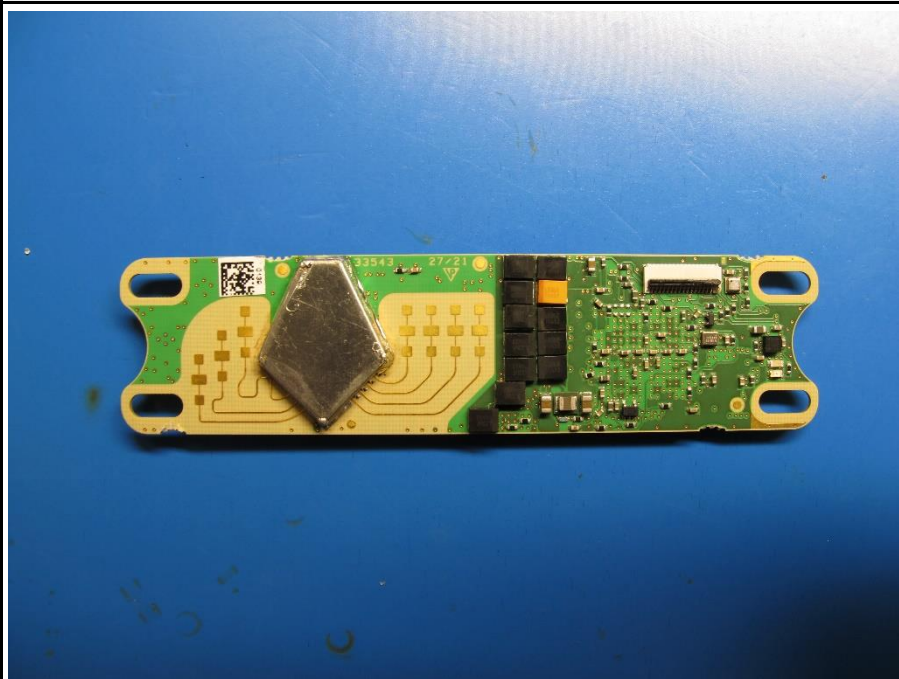
906419\_Battery-Connector-Board\_BOTTOM



Note: Photo provided by customer

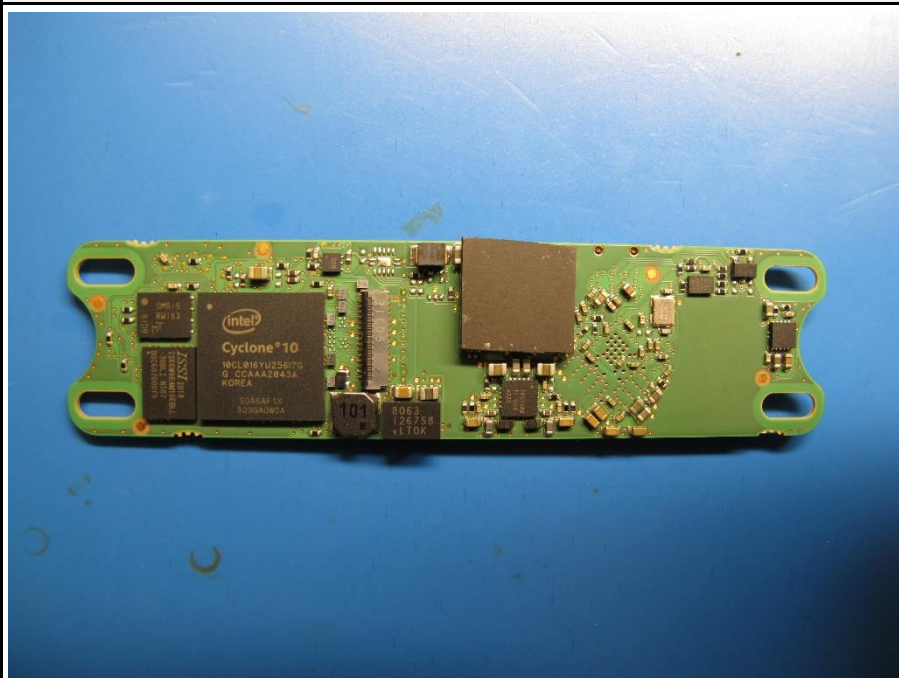


880880\_Master\_Radar-Board\_TOP



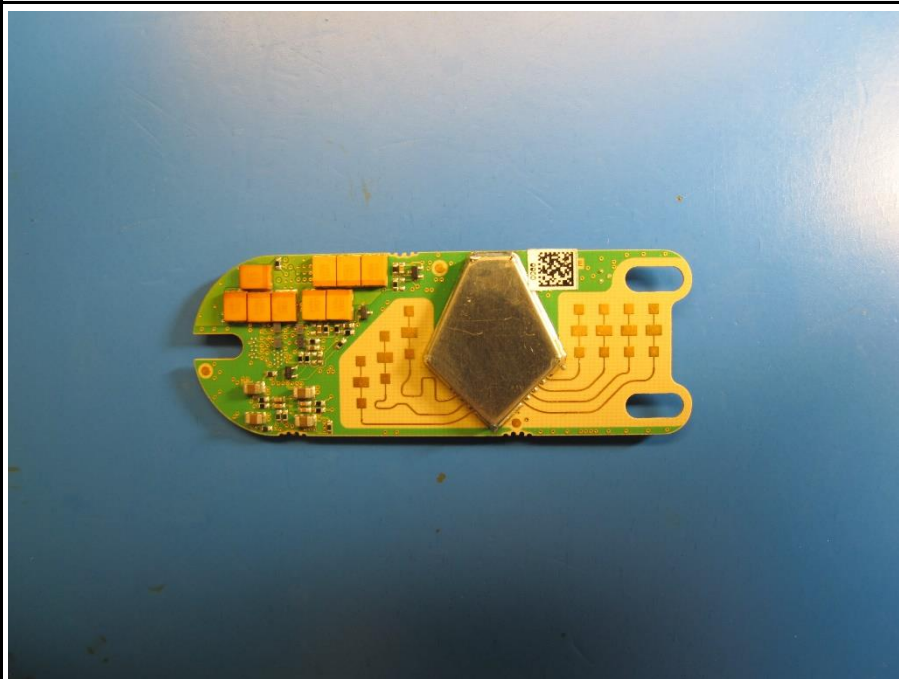
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880880\_Master\_Radar-Board\_BOTTOM



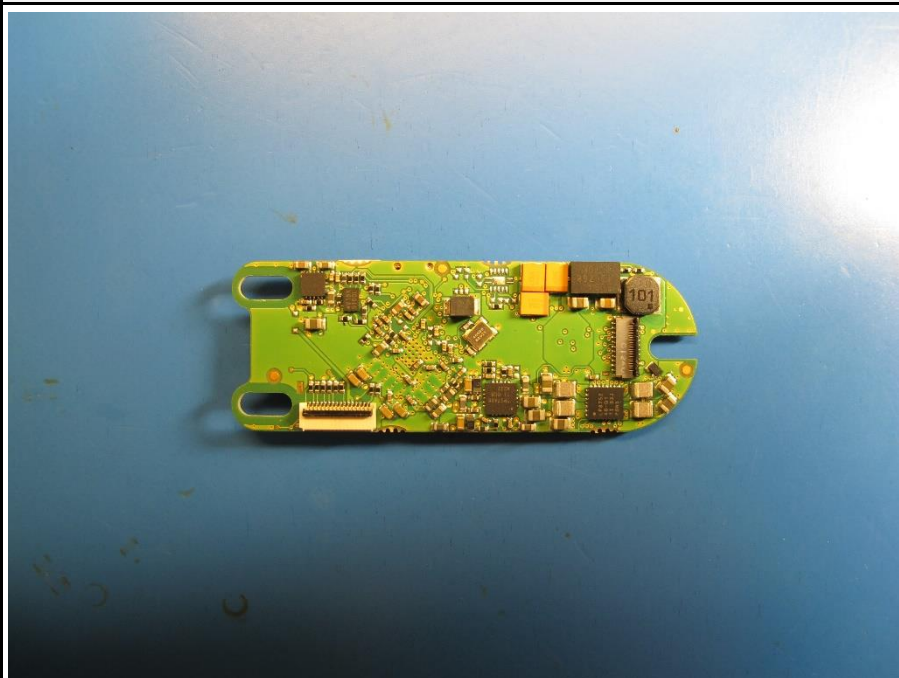
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**880870\_Slave\_Radar-Board\_TOP**



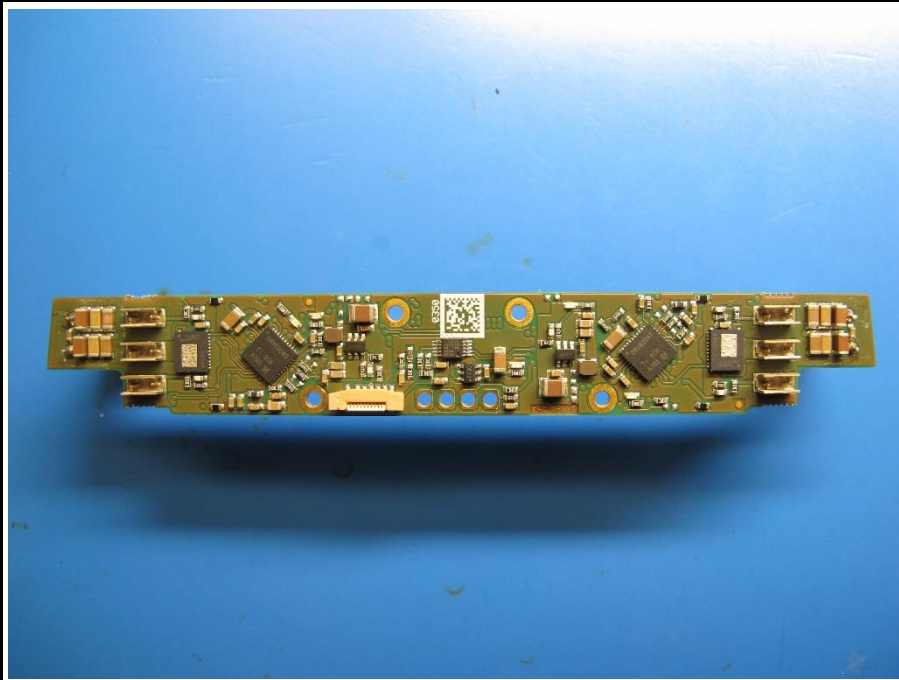
Note: Photo provided by customer

**880870\_Slave\_Radar-Board\_BOTTOM**



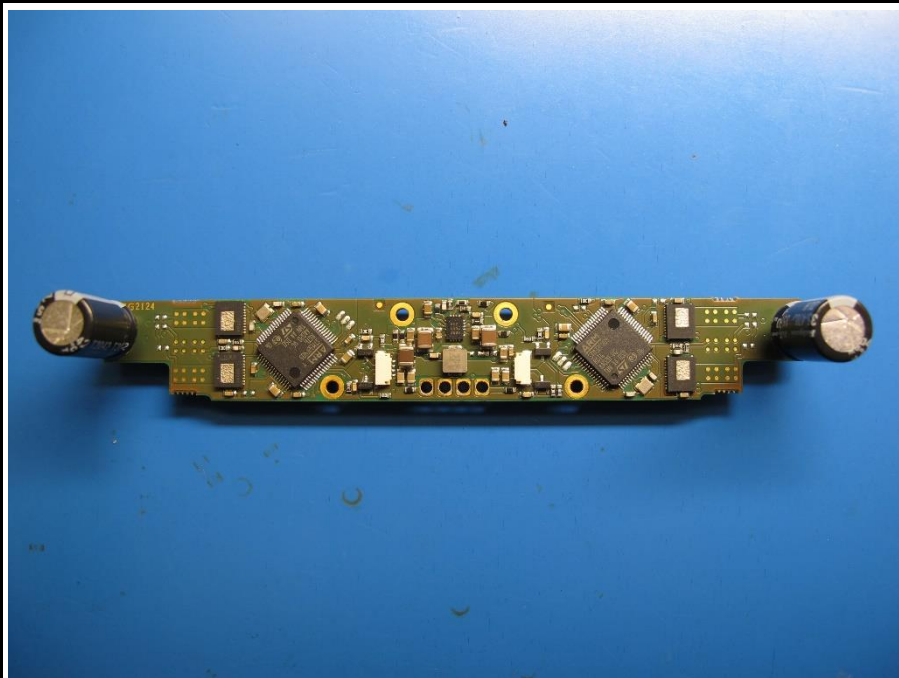
Note: Photo provided by customer

891019\_ESC-Board\_TOP



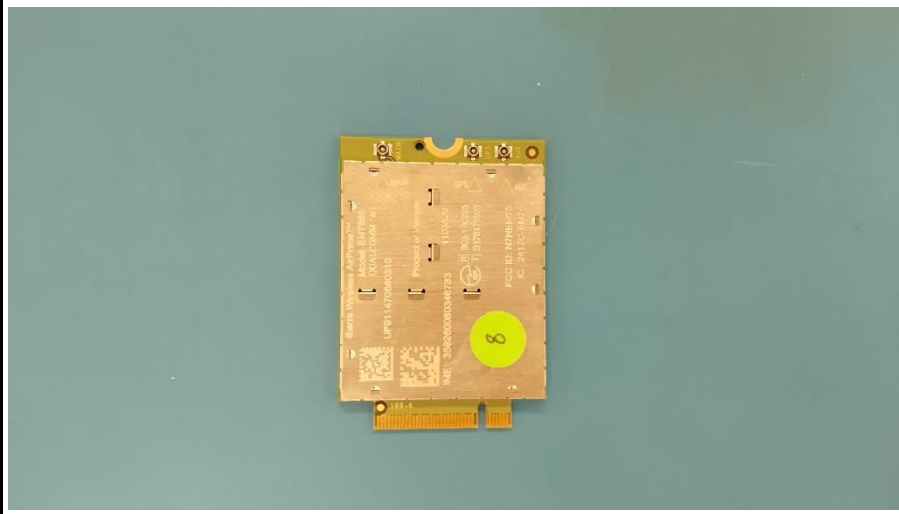
Note: Photo provided by customer

891019\_ESC-Board\_BOTTOM



Note: Photo provided by customer

897756\_LTE\_top



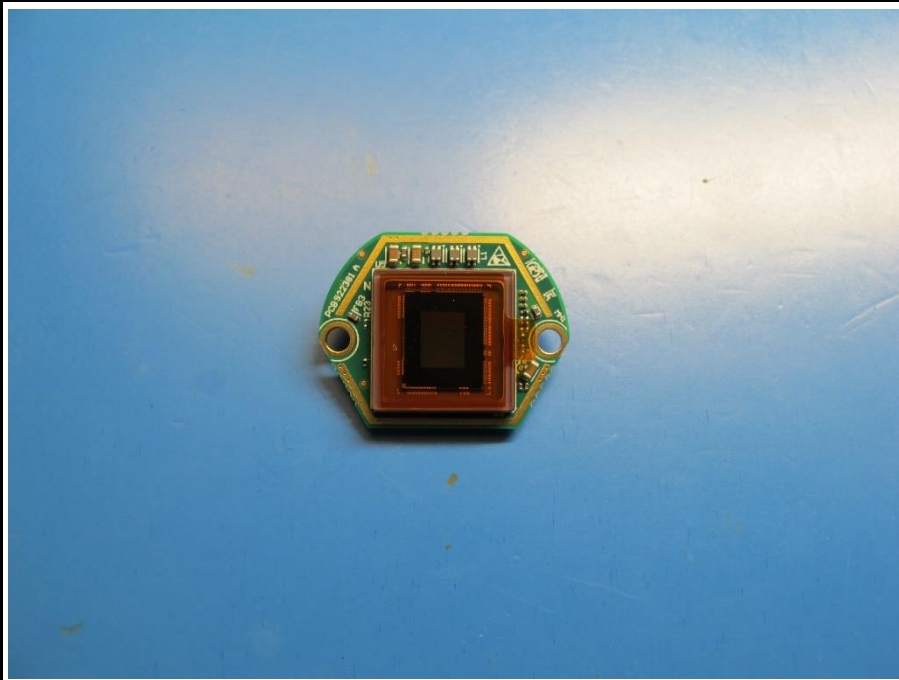
Note: Photo provided by customer

897756\_LTE\_bottom



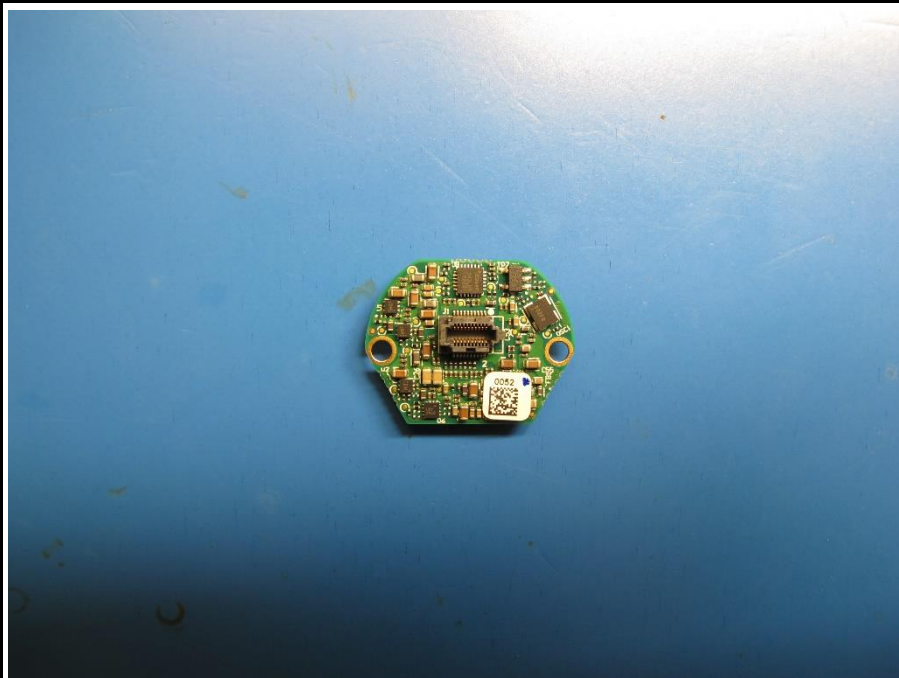
Note: Photo provided by customer

**922381\_Camera-Board\_Portrait\_TOP**



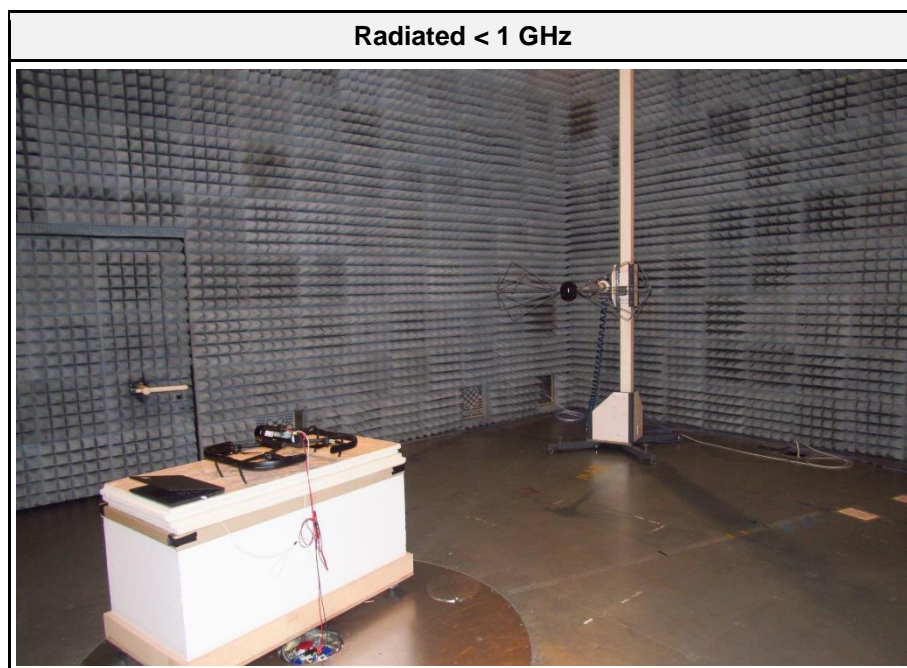
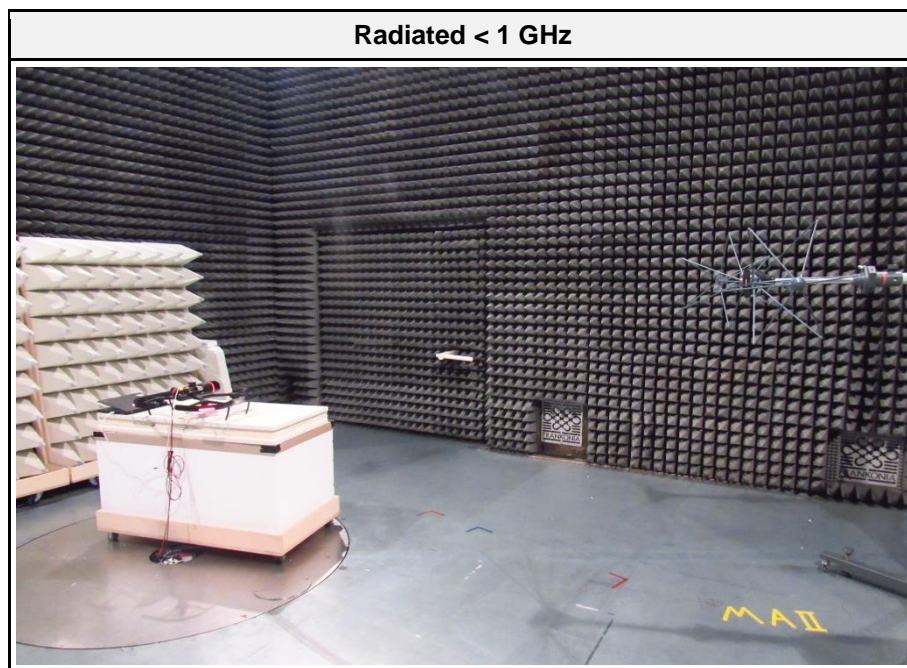
Note: Photo provided by customer

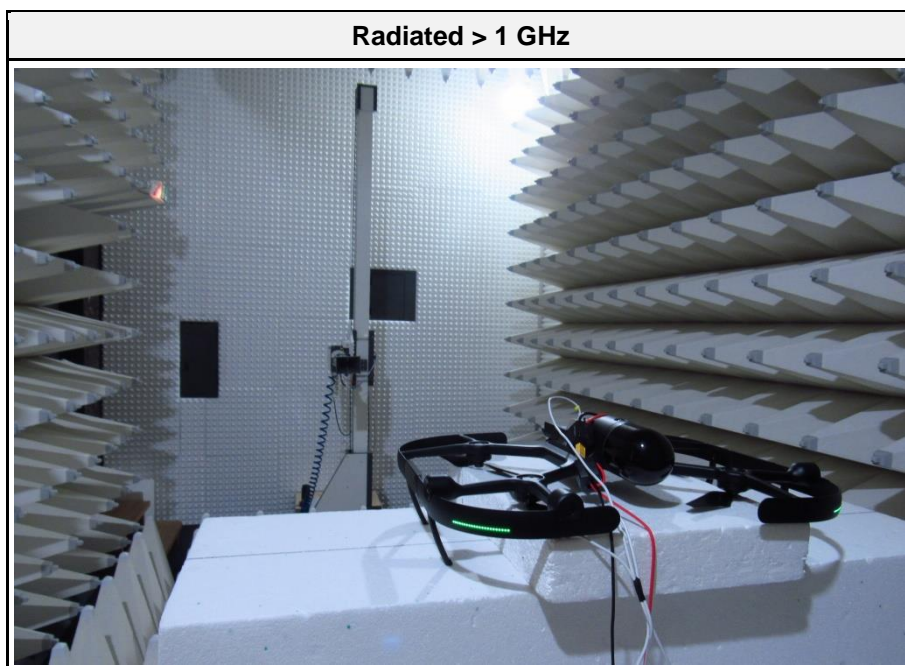
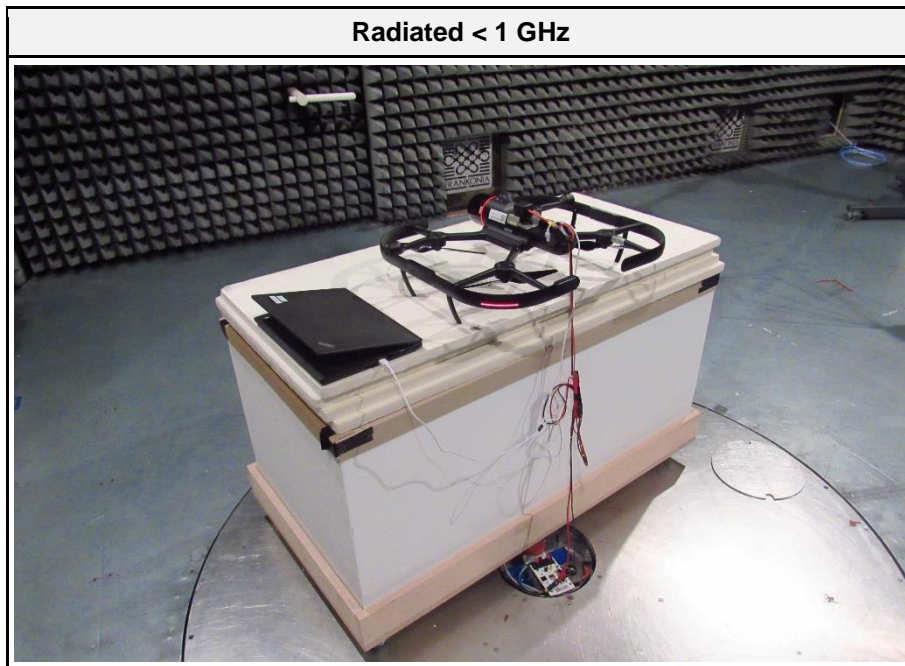
**922381\_Camera-Board\_Portrait\_BOTTOM**



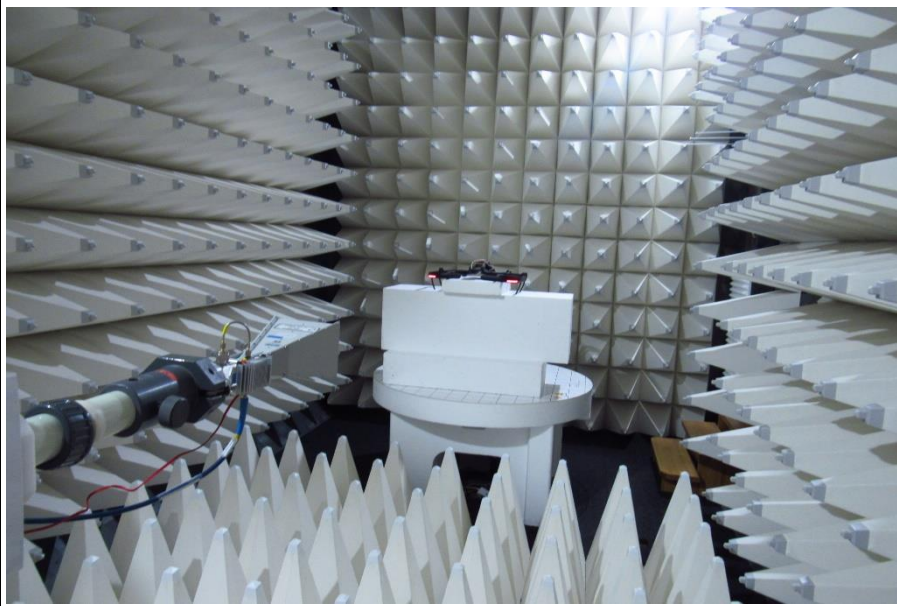
Note: Photo provided by customer

### 1.3 Photos – Test Setup





**Radiated > 1 GHz**



**AC Powerline**





#### 1.4 Support Equipment

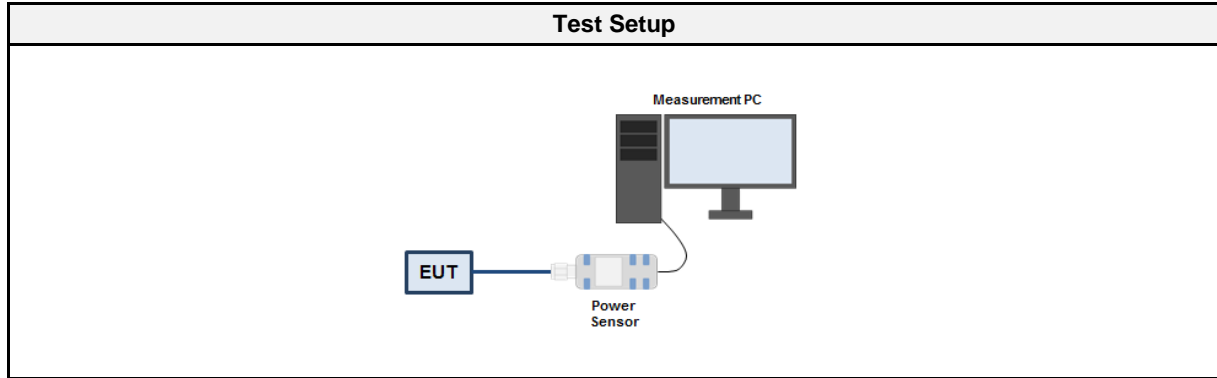
Product Type	Device	Manufacturer	Model	Comment
SFT	Test software	Qualcomm	QRCT 4.0	To enabling test modes
AE	Laptop	Lenovo	T420s	To enabling test modes
AE	AC Adapter	Lenovo	42T5292	For laptop
CBL	USB cable	Unspecified	USB 3	To enabling test modes
Description:				
AE	Auxiliary Equipment			
SIM	Simulator			
CBL	Connecting Cable			
SFT	Software			
Comment:				

## 1.5 Test mode output power

### 1.5.1 Information

Test Information	
Measurement Method	ANSI C63.10 11.9, 14.3

### 1.5.2 Setup



### 1.5.3 Equipment

Test Equipment					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Power sensor	R&S	NRP-Z81	EF01732	2021-04	2022-04

### 1.5.4 Procedure

Test Procedure
<ol style="list-style-type: none"> <li>1. EUT set to test mode</li> <li>2. The peak power is measured with the wideband power sensor</li> <li>3. The power is measured for the lowest data rate on all three channels</li> <li>4. For the channel with the highest power the power is also measured for all data rates</li> <li>5. The data rate with the highest output power is selected for test mode</li> </ol>

## 1.5.5 Results

Results – DSSS			
Data Rate [Mbps]	Power [dBm] Channel 2412 [MHz]	Power [dBm] Channel 2437 [MHz]	Power [dBm] Channel 2462 [MHz]
1	15.57	15.82	15.55
2_S	15.71	16.15	15.75
5.5_S	15.76	15.99	15.74
11_S	<b>15.76</b>	<b>16.00</b>	<b>15.75</b>

Results - OFDM			
Data Rate [Mbps]	Power [dBm] Channel 2412 [MHz]	Power [dBm] Channel 2437 [MHz]	Power [dBm] Channel 2462 [MHz]
6	17.46	17.72	17.67
9	17.41	17.66	17.61
12	17.36	17.54	17.56
18	20.07	19.77	20.07
24	19.88	19.80	20.06
36	23.00	22.90	23.94
48	<b>23.50</b>	<b>23.21</b>	<b>24.11</b>
54	23.10	23.10	23.86

Results - HT20			
MCS	Power [dBm] Channel 2412 [MHz]	Power [dBm] Channel 2437 [MHz]	Power [dBm] Channel 2462 [MHz]
0	17.50	17.70	17.77
1	17.82	17.70	17.82
2	20.01	19.97	20.06
3	19.91	19.86	20.05
4	<b>23.93</b>	<b>23.37</b>	<b>24.29</b>
5	23.02	22.78	23.66
6	23.48	23.07	23.92
7	23.22	22.85	23.62
8	-	20.72	-
9	-	20.68	-
10	-	22.79	-
11	-	22.80	-
12	-	25.63	-
13	-	<b>26.02</b>	-
14	-	25.68	-
15	-	25.58	-

Results - HT40			
MCS	Power [dBm] Channel 2422 [MHz]	Power [dBm] Channel 2437 [MHz]	Power [dBm] Channel 2452 [MHz]
0	20.13	20.03	20.16
1	20.16	20.08	20.20
2	21.06	21.05	21.03
3	20.52	20.42	20.44
4	<b>23.52</b>	<b>23.64</b>	<b>23.77</b>
5	23.22	23.52	23.74
6	23.20	23.32	23.37
7	23.17	23.18	23.32
8	-	22.76	-
9	-	22.86	-
10	-	23.76	-
11	-	23.25	-
12	-	26.39	-
13	-	25.93	-
14	-	26.05	-
15	-	<b>26.46</b>	-

## 1.6 Test mode duty cycle

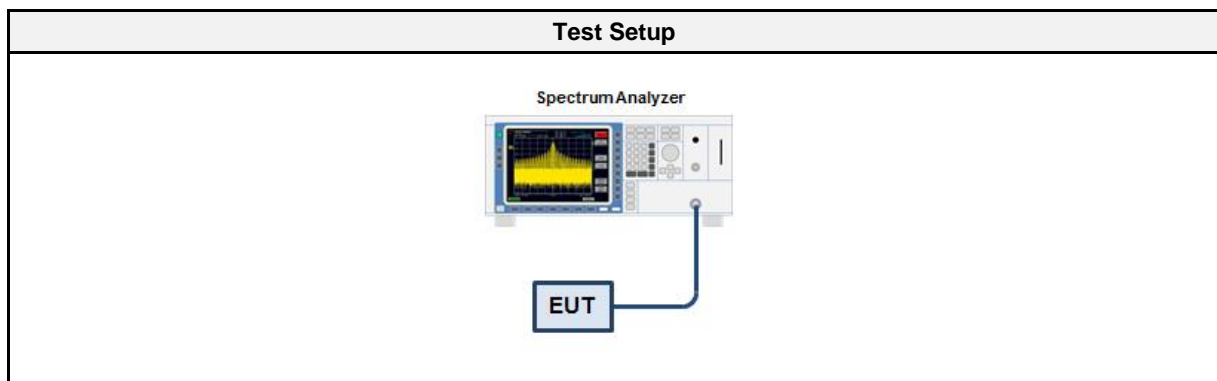
### 1.6.1 Information

Test Information	
Measurement Method	ANSI C63.10 11.6

### 1.6.2 Requirements

Requirements	
Duty cycle	Duty cycle correction
≥ 98 %	No correction required
< 98 %	Correction required ( $10 \times \log_{10}(1/DC)$ )

### 1.6.3 Setup



### 1.6.4 Equipment

Test Equipment					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum Analyzer	R&S	FSW 43	EF00896	2021-07	2022-07

### 1.6.5 Procedure

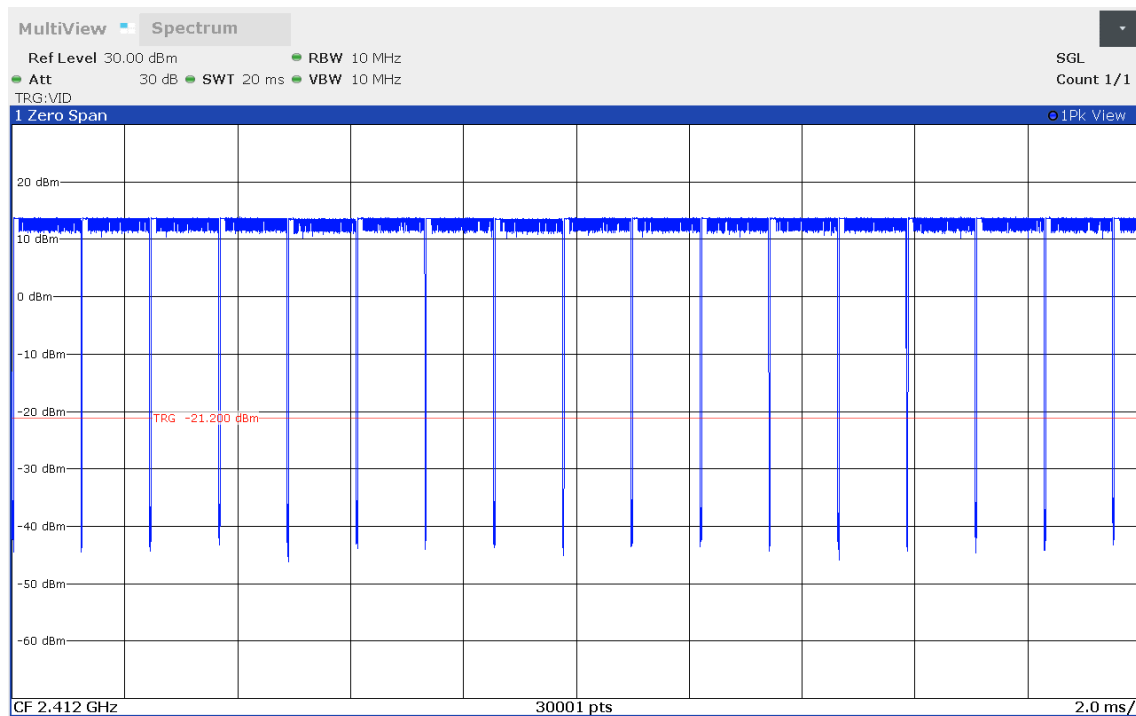
Test Procedure
<ol style="list-style-type: none"> <li>1. EUT set to test mode</li> <li>2. Span is set to zero span</li> <li>3. Detector set to peak</li> <li>4. Sweep time is set long enough to capture at least 5 bursts</li> <li>5. Envelope peak value of emission spectrum is selected</li> <li>6. The maximum burst duration <math>T_{ON}</math> is measured using two markers set to the start and the end of the longest burst</li> <li>7. The minimum idle duration <math>T_{OFF}</math> is measured using two markers set to the start and the end of the shortest idle period</li> <li>8. The duty cycle is calculated by <math>DC = T_{ON} / (T_{ON} + T_{OFF})</math></li> <li>9. The duty cycle correction is calculated by <math>DC = 10 \times \log_{10}(T_{ON} / (T_{ON} + T_{OFF}))</math></li> </ol>

### 1.6.6 Results

<b>Duty Cycle Results</b>		
Mode	Duty Cycle	Correction Factor [dB]
DSSS	0.97	-0.26
OFDM	0.97	-0.26
HT20	0.91	-0.82
HT40	0.79	-2.05

## Duty Cycle

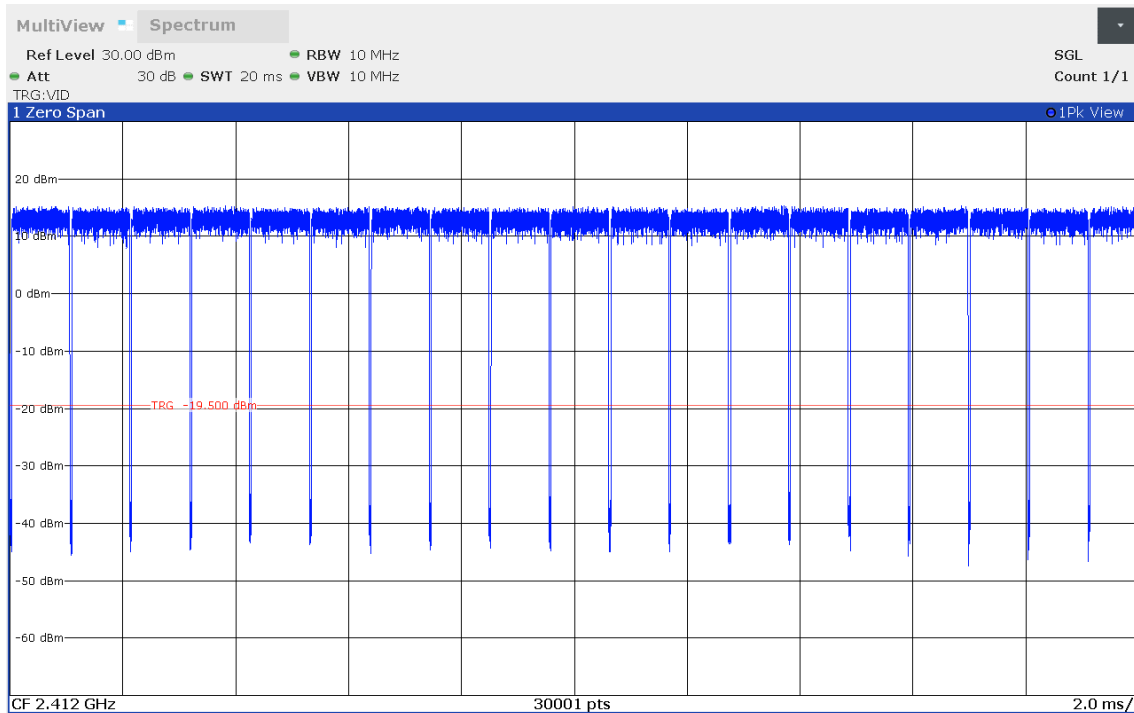
Project Number:	G0M-2011-9488
Applicant:	Leica Geosystems AG
Model Description:	UAV 3D measurement device
Model:	BLK2FLY
Test Sample ID:	34982
Reference Standards:	ANSI C63.10:2013
Reference Method:	ANSI C63.10:2013, Section 7.5
Operating Frequency:	2412 MHz
Operating Conditions:	Tnom/Vnom
Operator:	Toralf Jahn
Test Site:	Eurofins Product Service GmbH
Test Date:	2021-09-11
Note:	DSSS Data Rate 11_S Mbps
Duty Cycle Period [ms]:	20
Maximum Duty Cycle:	0.97
Maximum Duty Cycle [%]:	97
Duty Cycle Correction [dB]:	-0.26



08:55:10 11.09.2021

## Duty Cycle

Project Number:	G0M-2011-9488
Applicant:	Leica Geosystems AG
Model Description:	UAV 3D measurement device
Model:	BLK2FLY
Test Sample ID:	34982
Reference Standards:	ANSI C63.10:2013
Reference Method:	ANSI C63.10:2013, Section 7.5
Operating Frequency:	2412 MHz
Operating Conditions:	Tnom/Vnom
Operator:	Toralf Jahn
Test Site:	Eurofins Product Service GmbH
Test Date:	2021-09-11
Note:	OFDM Data Rate 48 Mbps
Duty Cycle Period [ms]:	20
Maximum Duty Cycle:	0.97
Maximum Duty Cycle [%]:	97
Duty Cycle Correction [dB]:	-0.26

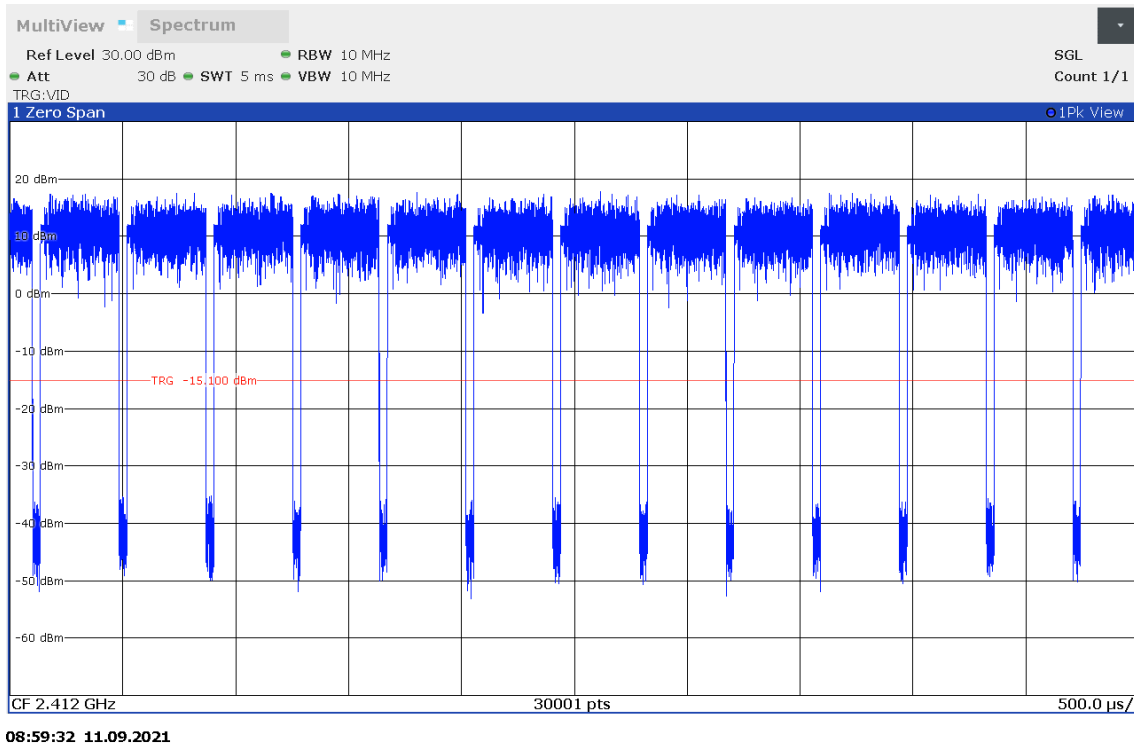


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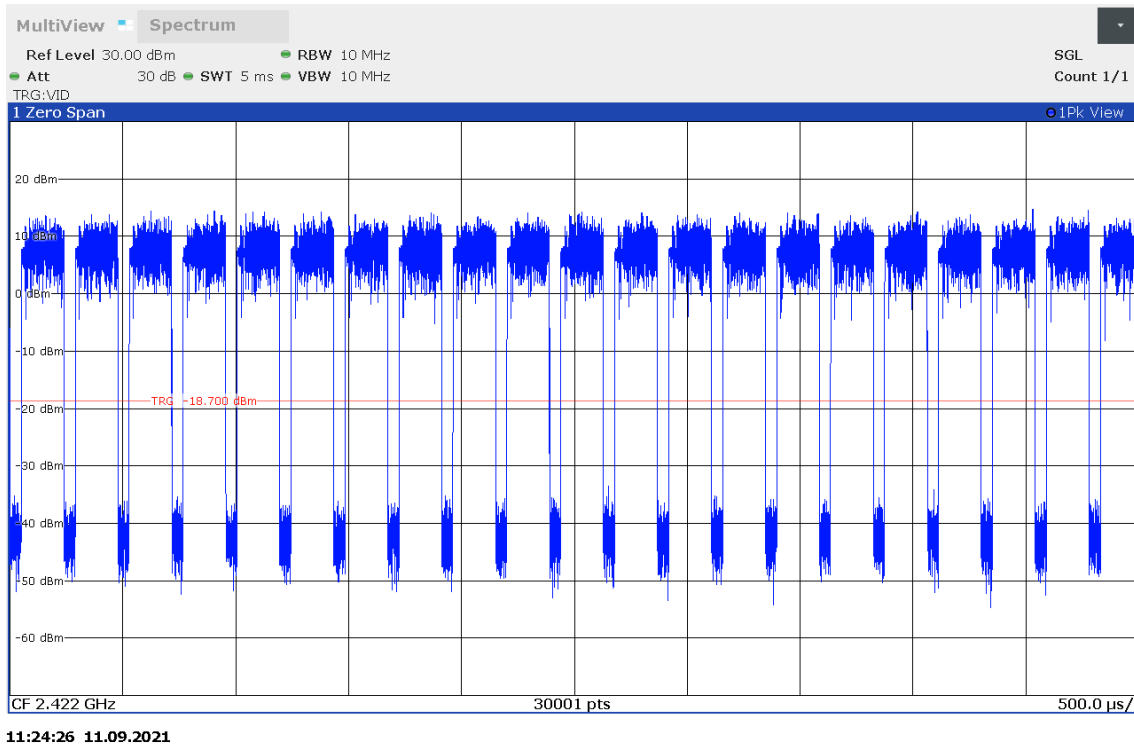
## Duty Cycle

Project Number:	G0M-2011-9488
Applicant:	Leica Geosystems AG
Model Description:	UAV 3D measurement device
Model:	BLK2FLY
Test Sample ID:	34982
Reference Standards:	ANSI C63.10:2013
Reference Method:	ANSI C63.10:2013, Section 7.5
Operating Frequency:	2412 MHz
Operating Conditions:	Tnom/Vnom
Operator:	Toralf Jahn
Test Site:	Eurofins Product Service GmbH
Test Date:	2021-09-11
Note:	HT20 MCS4
Duty Cycle Period [ms]:	5
Maximum Duty Cycle:	0.91
Maximum Duty Cycle [%]:	91
Duty Cycle Correction [dB]:	-0.82



## Duty Cycle

Project Number:	G0M-2011-9488
Applicant:	Leica Geosystems AG
Model Description:	UAV 3D measurement device
Model:	BLK2FLY
Test Sample ID:	34982
Reference Standards:	ANSI C63.10:2013
Reference Method:	ANSI C63.10:2013, Section 7.5
Operating Frequency:	2422 MHz
Operating Conditions:	Tnom/Vnom
Operator:	Toralf Jahn
Test Site:	Eurofins Product Service GmbH
Test Date:	2021-09-11
Note:	HT40 MCS4
Duty Cycle Period [ms]:	5
Maximum Duty Cycle:	0.79
Maximum Duty Cycle [%]:	79
Duty Cycle Correction [dB]:	-2.05



**1.7 Test Modes**

Mode	Description
DSSS (IEEE 802.11b)	Mode = Transmit Spreading = DSSS Bandwidth = 20 MHz Duty cycle = 97% Power setting = 13 Data rate = 11_S Mbps
OFDM (IEEE 802.11g)	Mode = Transmit Bandwidth = 20 MHz Duty cycle = 97% Power setting = 13 Data rate = 48 Mbps
HT20 (IEEE 802.11n)	Mode = Transmit Bandwidth = 20 MHz Duty cycle = 91% Power setting (1 Simultaneous Tx) = 13 Power setting (2 Simultaneous Tx) = 13 MCS (1 Simultaneous Tx) = 4 MCS (2 Simultaneous Tx) = 13
HT40 (IEEE 802.11n)	Mode = Transmit Bandwidth = 40 MHz Duty cycle = 63% Power setting (1 Simultaneous Tx) = 13 Power setting (2 Simultaneous Tx) = 13 MCS (1 Simultaneous Tx) = 4 MCS (2 Simultaneous Tx) = 15
Receive	Mode = Receive
USB	Mode = Transmit Spreading = DSSS Bandwidth = 20 MHz Duty cycle = 97% Power setting = 13 Data rate = 11_S Mbps Connected via USB cable, Laptop, AC Adapter to AC Power Line
Comment: The above settings were found as worst case during pre-tests.	

## 1.8 Test Frequencies

Designator	Mode	Channel	Frequency [MHz]
F1	Tx / Rx	1	2412
F2	Tx / Rx	3	2422
F3	Tx / Rx	6	2437
F4	Tx / Rx	9	2452
F5	Tx / Rx	11	2462

### 1.9 Sample emission level calculation

The following is a description of terms and a sample calculation, as appears in the radiated emissions data table. The numbers used in the calculation are for example only. There is no direct correlation to the specific data taken for the product described in this document:

Reading:

This is the reading obtained on the spectrum analyzer in dB $\mu$ V. Any external preamplifiers used are taken into account through internal analyzer settings.

A.F.:

This is the antenna factor for the receiving antenna. It is a conversion factor, which converts electric fields strengths to voltages, which can be measured directly on the spectrum analyzer. It is treated as a loss in dB. Cable losses have been included with the A.F. to simplify the calculations. The antenna factor is used in calculations as follows:

$$\text{Reading on Analyzer (dB}\mu\text{V)} + \text{A.F. (dB/m)} = \text{Net field strength (dB}\mu\text{V/m)}$$

Net:

This is the net field strength measurement (as shown above).

Limit:

This is the FCC Class B radiated emission limit (in units of dB $\mu$ V/m). The FCC limits are given in units of  $\mu$ V/m. The following formula is used to convert the units of  $\mu$ V/m to dB $\mu$ V/m:

$$\text{Limit (dB}\mu\text{V/m)} = 20 * \log (\mu\text{V/m})$$

Margin:

This is the margin of compliance below the FCC limit. The units are given in dB. A negative margin indicates the emission was below the limit. A positive margin indicates that the emission exceeds the limit.

Example only:

Reading + AF	=	Net Reading	:	Net reading - FCC limit	=	Margin
+21.5 dB $\mu$ V + 26 dB/m		= 47.5 dB $\mu$ V/m		47.5 dB $\mu$ V/m - 57.0 dB $\mu$ V/m		= -9.5 dB

## 2 Result Summary

FCC 47 CFR Part 15C, ISED RSS-247				
Product Standard Reference	Requirement	Reference Method	Result	Remarks
ISED RSS-Gen, Issue 5 (section 6.7)	Occupied Bandwidth	ANSI C63.10-2013	N/R	Informational only
FCC § 15.247(a)(2) ISED RSS-247, Issue 2 (section 5.2)	6 dB Bandwidth	ANSI C63.10-2013	PASS	
FCC § 15.247(b) ISED RSS-247, Issue 2 (section 5.4)	Maximum peak conducted power	ANSI C63.10-2013	PASS	
FCC § 15.247(e) ISED RSS-247, Issue 2 (section 5.2)	Power spectral density	ANSI C63.10-2013	PASS	
FCC § 15.207 ISED RSS-247, Issue 2 (section 3.1)	AC power line conducted emissions	ANSI C63.10-2013	PASS	
FCC § 15.247(d) ISED RSS-247, Issue 2 (section 5.5)	Band edge compliance	ANSI C63.10-2013	PASS	
FCC § 15.247(d) ISED RSS-247, Issue 2 (section 5.5)	Conducted spurious emissions	ANSI C63.10-2013	PASS	
FCC § 15.247(d) FCC § 15.209 ISED RSS-Gen, Issue 5 (section 6.13)	Transmitter radiated spurious emissions	ANSI C63.10-2013	PASS	
ISED RSS-247, Issue 2 (section 3.1)	Receiver radiated spurious emissions	ANSI C63.10-2013	PASS	
Comment:				

Possible Test Case Verdicts	
PASS	Test object does meet the requirements
FAIL	Test object does not meet the requirements
N/T	Required by standard but not tested
N/R	Not required by standard for the test object

### 3 Test Conditions and Results

#### 3.1 Test Conditions and Results - Occupied bandwidth

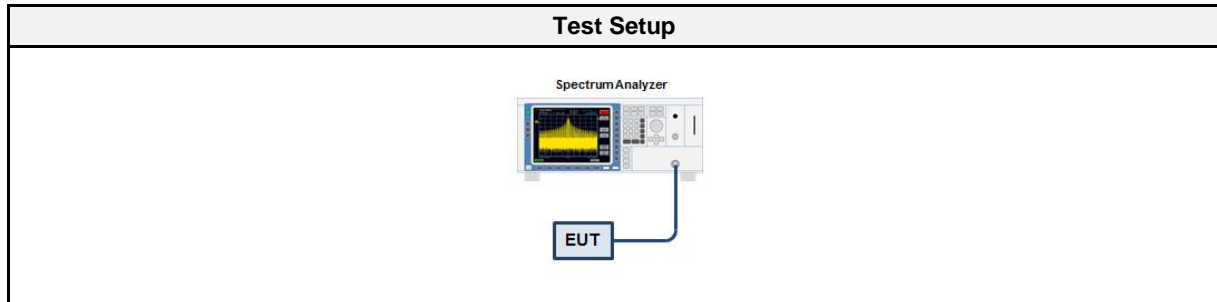
##### 3.1.1 Information

Test Information	
Reference	ISED RSS-Gen, Issue 5 (section 6.7)
Measurement Method	ANSI C63.10 6.9.3
Measurement Uncertainty	$\pm 1.26 \%$
Operator	Toralf Jahn
Date	2021-09-11

##### 3.1.2 Limits

Limits
None (Informational only)

##### 3.1.3 Setup



##### 3.1.4 Equipment

Test Equipment					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum Analyser	R&S	FSW 43	EF00896	2021-07	2022-07
Cable (diverse)	– (diverse)	– (diverse)	EF00779 CAABD	2020-12	2021-12

##### 3.1.5 Procedure

Test Procedure
<ol style="list-style-type: none"> <li>1. EUT transmitter is activated in test mode under normal conditions</li> <li>2. The spectrum analyzer is set to peak detection and maximum hold with a span twice the emission spectrum</li> <li>3. The resolution bandwidth is set to the range of 1 % to 5 % of the occupied bandwidth</li> <li>4. The occupied bandwidth is measured with the build-in analyzer function</li> </ol>

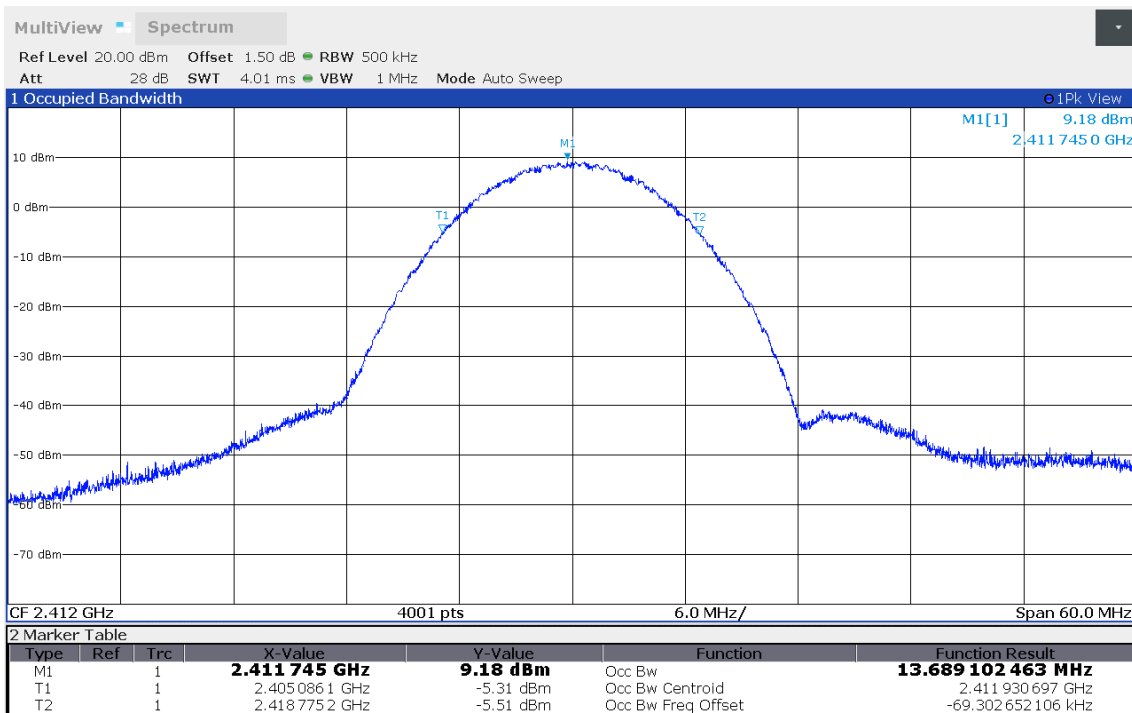
## 3.1.6 Results

Test Results		
Mode	Frequency [MHz]	Bandwidth [MHz]
DSSS	2412	13.689
DSSS	2437	13.519
DSSS	2462	13.722
OFDM	2412	17.158
OFDM	2437	16.999
OFDM	2462	17.139
HT20	2412	18.501
HT20	2437	18.291
HT20	2462	18.496
HT40	2422	36.447
HT40	2437	36.234
HT40	2452	36.364



### Occupied Bandwidth

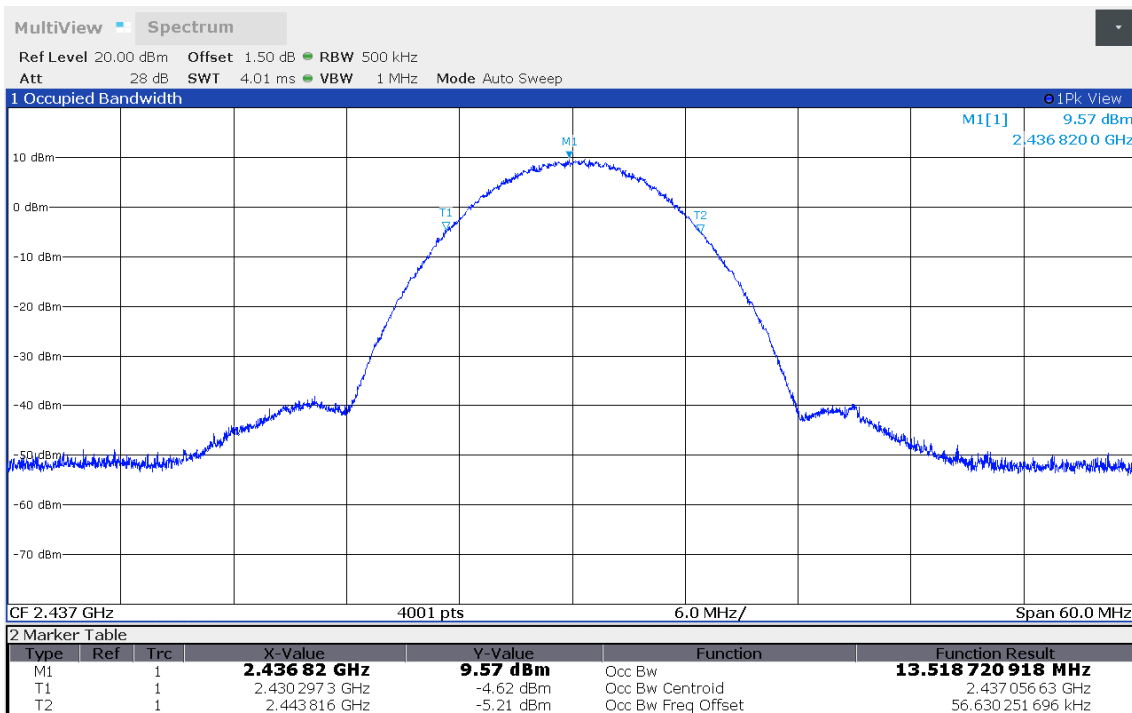
Project Number: G0M-2011-9488  
 Applicant: Leica Geosystems AG  
 Model Description: UAV 3D measurement device  
 Model: BLK2FLY  
 Test Sample ID: 34982  
 Reference Method: ANSI C63.10:2013, Section 6.9.3  
 Operational Mode: IEEE 802.11 b, Channel: 1, 2412  
 Operating Conditions: Tnom/Vnom  
 Operator: Toralf Jahn  
 Test Site: Eurofins Product Service GmbH  
 Test Date: 2021-09-11  
 Antenna port: 2  
 Occupied Bandwidth [MHz]: 13.689



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### Occupied Bandwidth

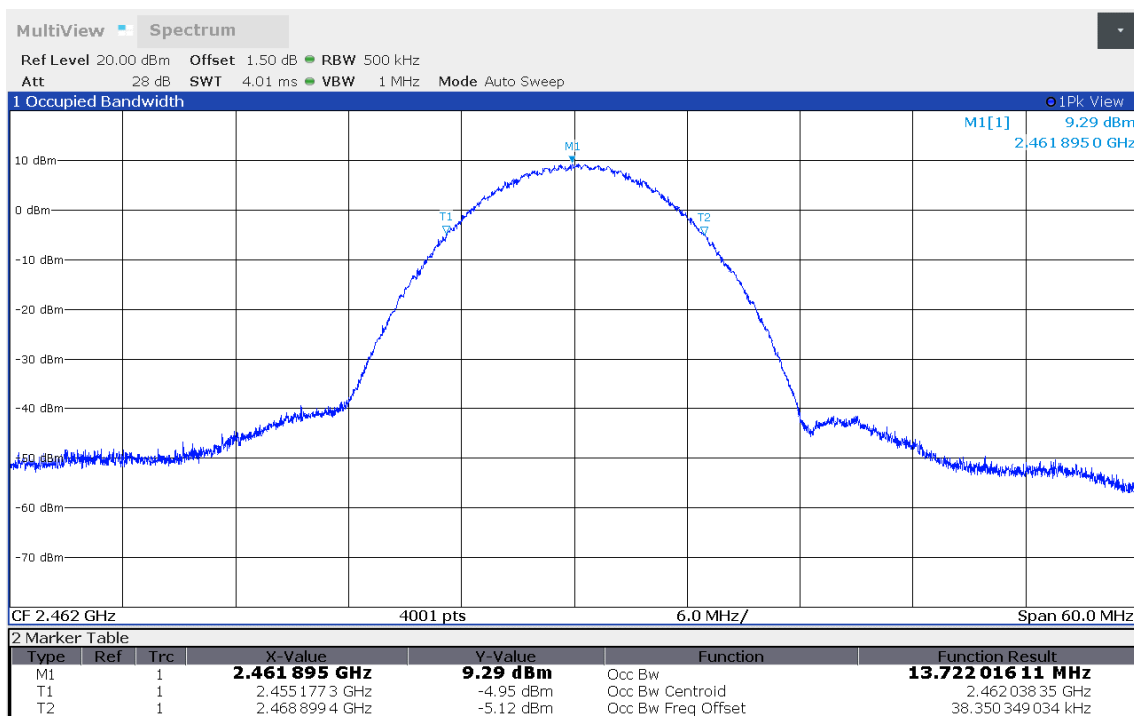
Project Number: G0M-2011-9488  
 Applicant: Leica Geosystems AG  
 Model Description: UAV 3D measurement device  
 Model: BLK2FLY  
 Test Sample ID: 34982  
 Reference Method: ANSI C63.10:2013, Section 6.9.3  
 Operational Mode: IEEE 802.11 b, Channel: 6, 2437  
 Operating Conditions: Tnom/Vnom  
 Operator: Toralf Jahn  
 Test Site: Eurofins Product Service GmbH  
 Test Date: 2021-09-11  
 Antenna port: 2  
 Occupied Bandwidth [MHz]: 13.519



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## Occupied Bandwidth

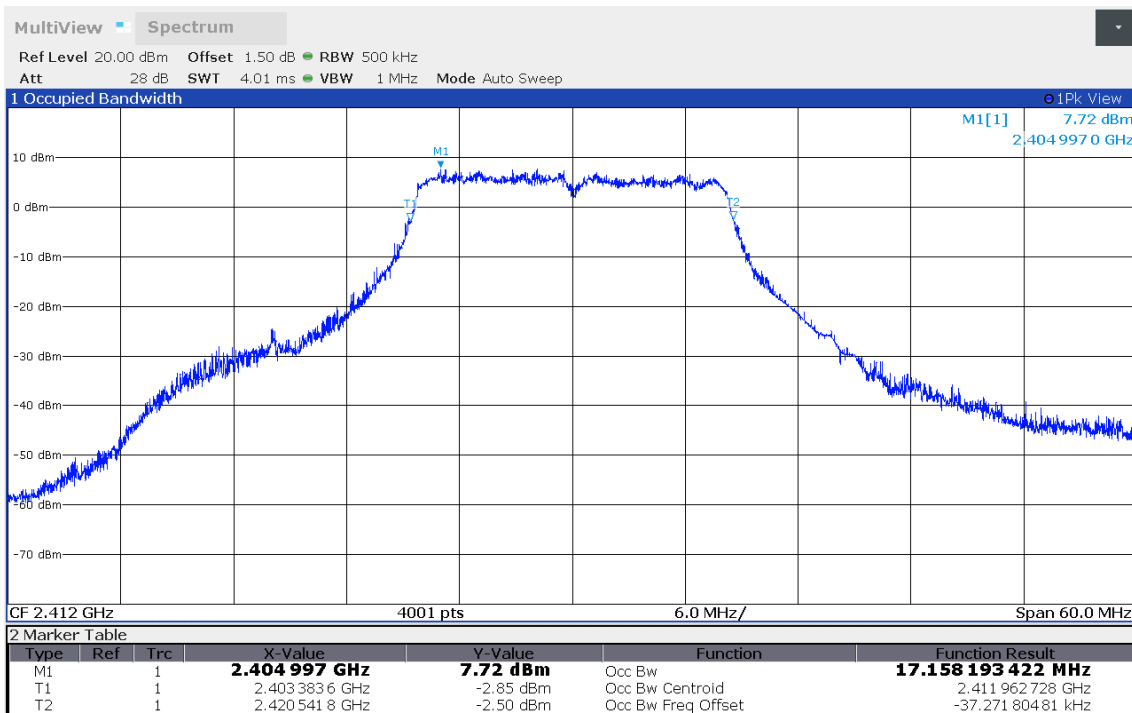
Project Number: G0M-2011-9488  
 Applicant: Leica Geosystems AG  
 Model Description: UAV 3D measurement device  
 Model: BLK2FLY  
 Test Sample ID: 34982  
 Reference Method: ANSI C63.10:2013, Section 6.9.3  
 Operational Mode: IEEE 802.11 b, Channel: 11, 2462  
 Operating Conditions: Tnom/Vnom  
 Operator: Toralf Jahn  
 Test Site: Eurofins Product Service GmbH  
 Test Date: 2021-09-11  
 Antenna port: 2  
 Occupied Bandwidth [MHz]: 13.722



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### Occupied Bandwidth

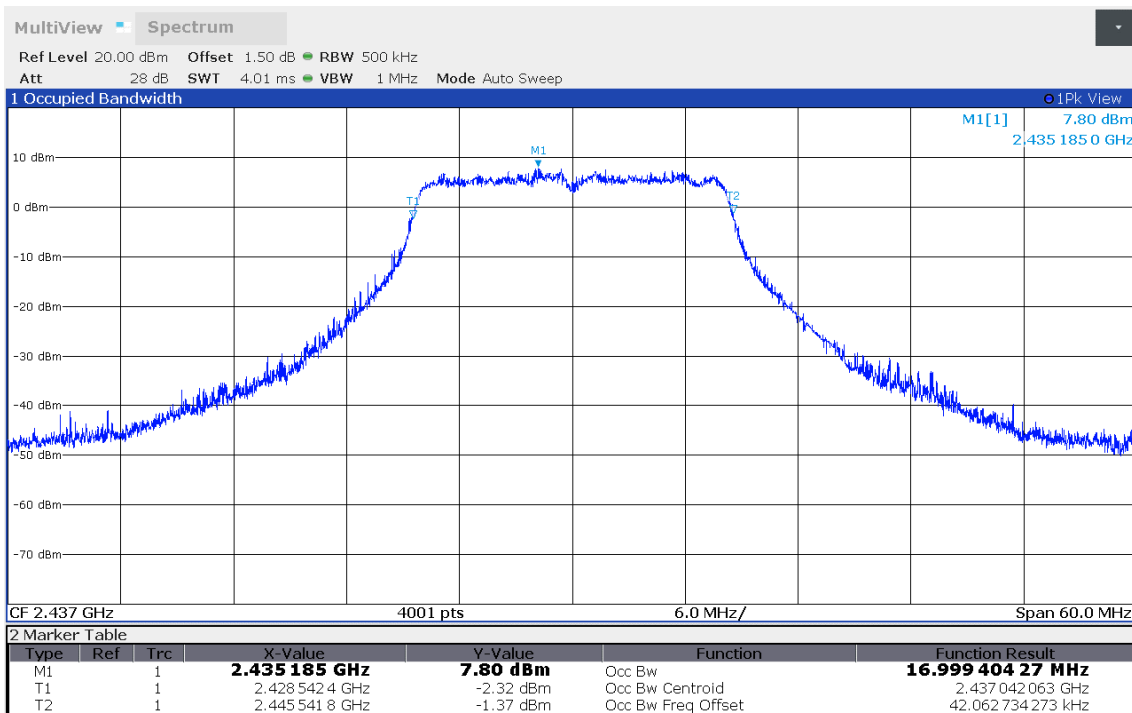
Project Number: G0M-2011-9488  
 Applicant: Leica Geosystems AG  
 Model Description: UAV 3D measurement device  
 Model: BLK2FLY  
 Test Sample ID: 34982  
 Reference Method: ANSI C63.10:2013, Section 6.9.3  
 Operational Mode: IEEE 802.11 g, Channel: 1, 2412  
 Operating Conditions: Tnom/Vnom  
 Operator: Toralf Jahn  
 Test Site: Eurofins Product Service GmbH  
 Test Date: 2021-09-11  
 Antenna port: 2  
 Occupied Bandwidth [MHz]: 17.158



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### Occupied Bandwidth

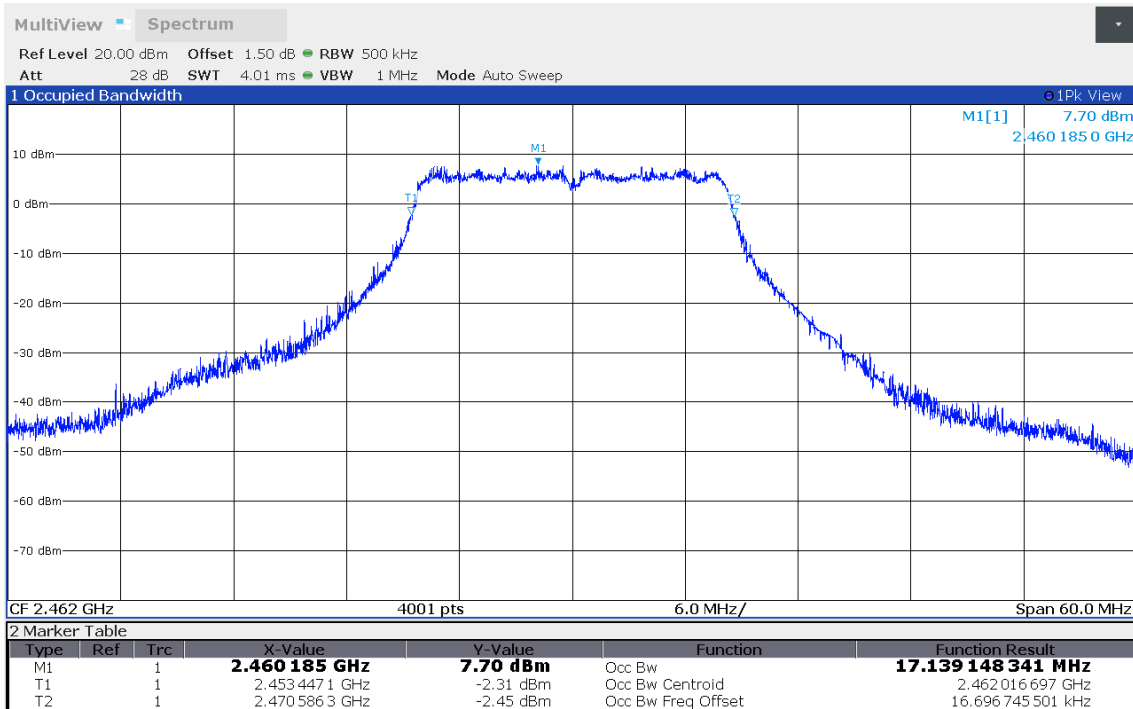
Project Number: G0M-2011-9488  
 Applicant: Leica Geosystems AG  
 Model Description: UAV 3D measurement device  
 Model: BLK2FLY  
 Test Sample ID: 34982  
 Reference Method: ANSI C63.10:2013, Section 6.9.3  
 Operational Mode: IEEE 802.11 g, Channel: 6, 2437  
 Operating Conditions: Tnom/Vnom  
 Operator: Toralf Jahn  
 Test Site: Eurofins Product Service GmbH  
 Test Date: 2021-09-11  
 Antenna port: 2  
 Occupied Bandwidth [MHz]: 16.999



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### Occupied Bandwidth

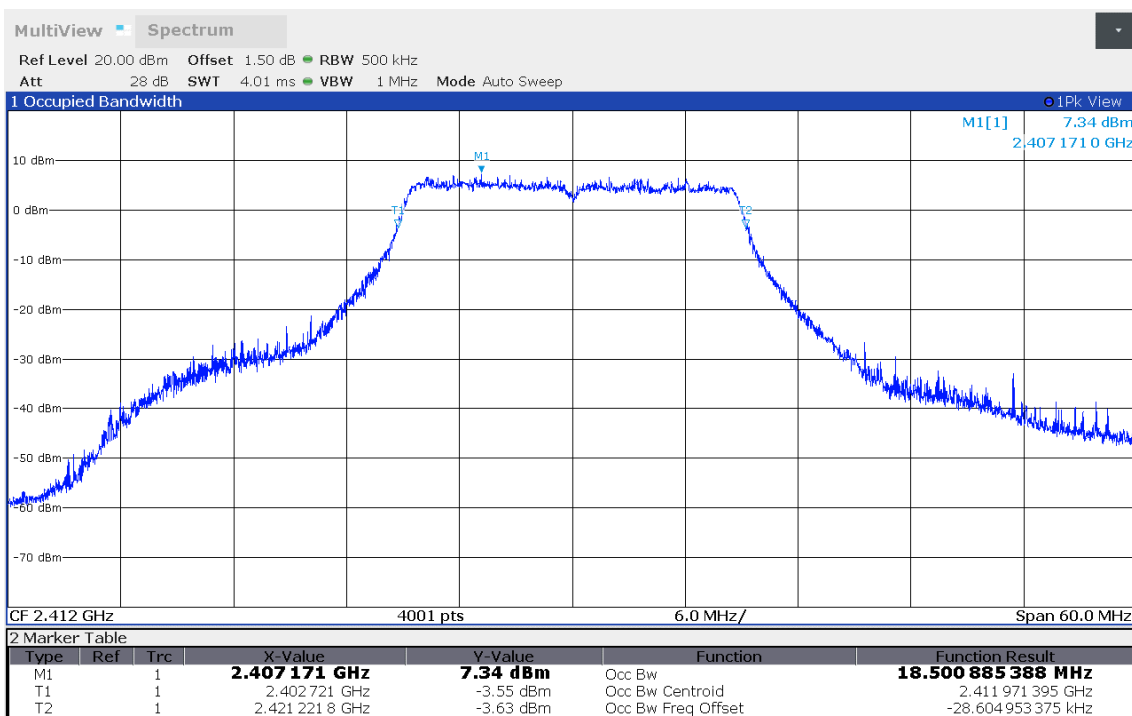
Project Number: G0M-2011-9488  
 Applicant: Leica Geosystems AG  
 Model Description: UAV 3D measurement device  
 Model: BLK2FLY  
 Test Sample ID: 34982  
 Reference Method: ANSI C63.10:2013, Section 6.9.3  
 Operational Mode: IEEE 802.11 g, Channel: 11, 2462  
 Operating Conditions: Tnom/Vnom  
 Operator: Toralf Jahn  
 Test Site: Eurofins Product Service GmbH  
 Test Date: 2021-09-11  
 Antenna port: 2  
 Occupied Bandwidth [MHz]: 17.139



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### Occupied Bandwidth

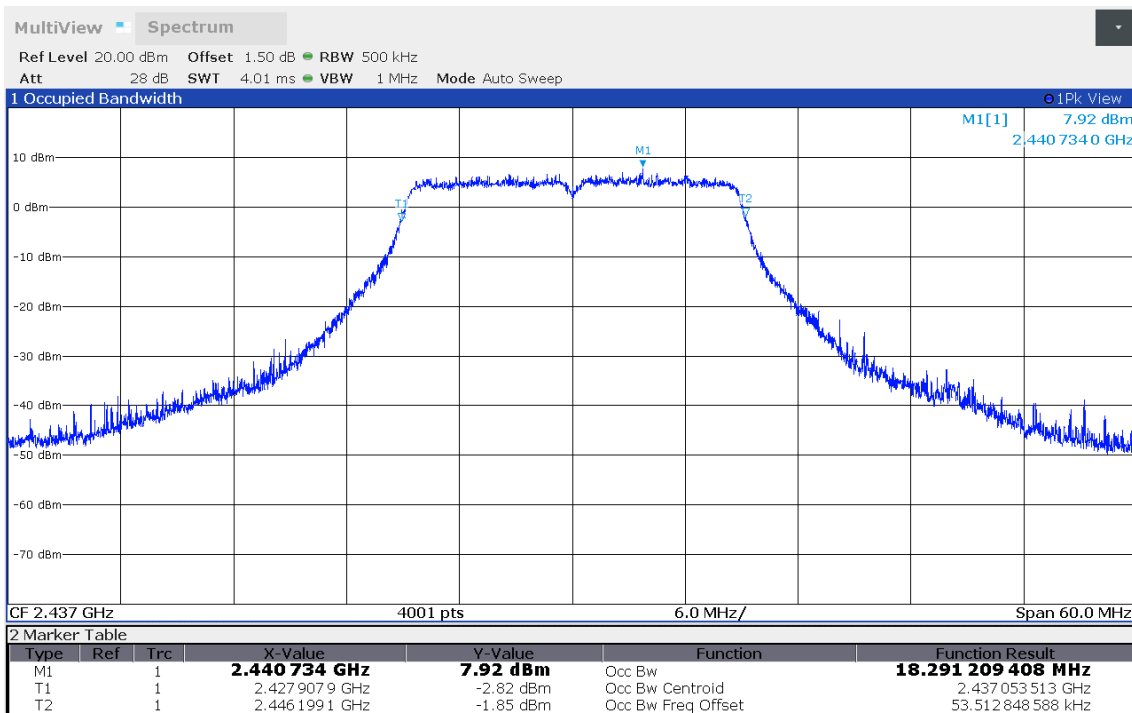
Project Number: G0M-2011-9488  
 Applicant: Leica Geosystems AG  
 Model Description: UAV 3D measurement device  
 Model: BLK2FLY  
 Test Sample ID: 34982  
 Reference Method: ANSI C63.10:2013, Section 6.9.3  
 Operational Mode: IEEE 802.11 n HT20, Channel: 1, 2412  
 Operating Conditions: Tnom/Vnom  
 Operator: Toralf Jahn  
 Test Site: Eurofins Product Service GmbH  
 Test Date: 2021-09-11  
 Antenna port: 2  
 Occupied Bandwidth [MHz]: 18.501



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## Occupied Bandwidth

Project Number: G0M-2011-9488  
 Applicant: Leica Geosystems AG  
 Model Description: UAV 3D measurement device  
 Model: BLK2FLY  
 Test Sample ID: 34982  
 Reference Method: ANSI C63.10:2013, Section 6.9.3  
 Operational Mode: IEEE 802.11 n HT20, Channel: 6, 2437  
 Operating Conditions: Tnom/Vnom  
 Operator: Toralf Jahn  
 Test Site: Eurofins Product Service GmbH  
 Test Date: 2021-09-11  
 Antenna port: 2  
 Occupied Bandwidth [MHz]: 18.291

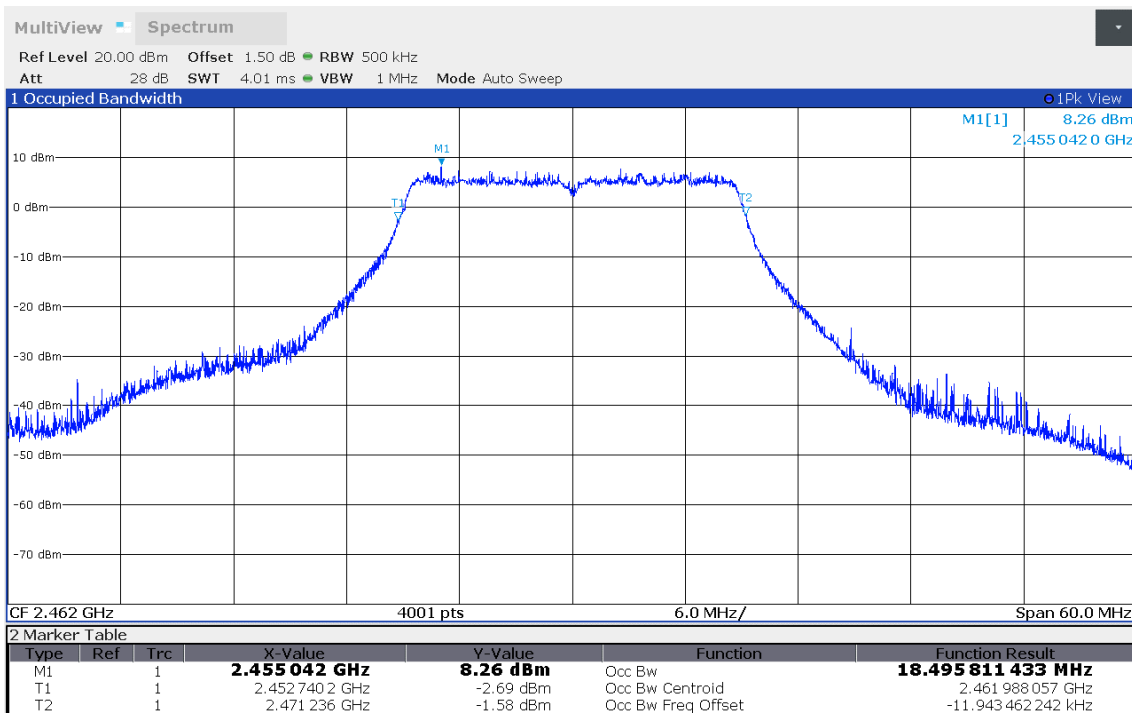


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### Occupied Bandwidth

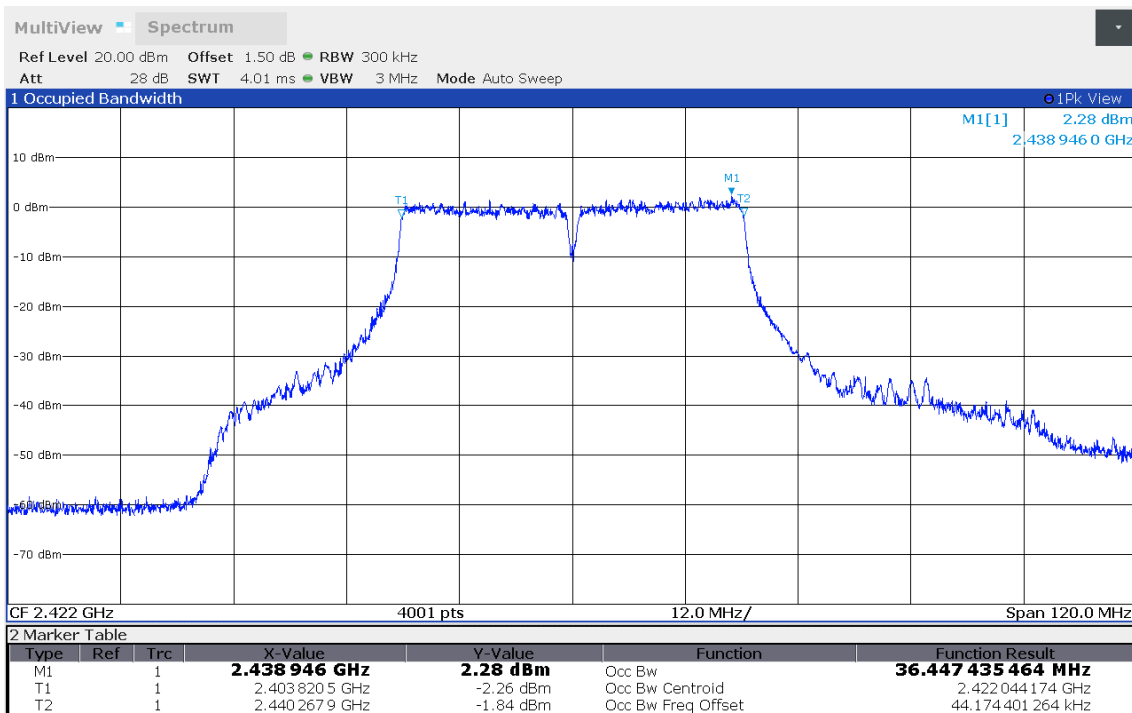
Project Number: G0M-2011-9488  
 Applicant: Leica Geosystems AG  
 Model Description: UAV 3D measurement device  
 Model: BLK2FLY  
 Test Sample ID: 34982  
 Reference Method: ANSI C63.10:2013, Section 6.9.3  
 Operational Mode: IEEE 802.11 n HT20, Channel: 11, 2462  
 Operating Conditions: Tnom/Vnom  
 Operator: Toralf Jahn  
 Test Site: Eurofins Product Service GmbH  
 Test Date: 2021-09-11  
 Antenna port: 2  
 Occupied Bandwidth [MHz]: 18.496



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### Occupied Bandwidth

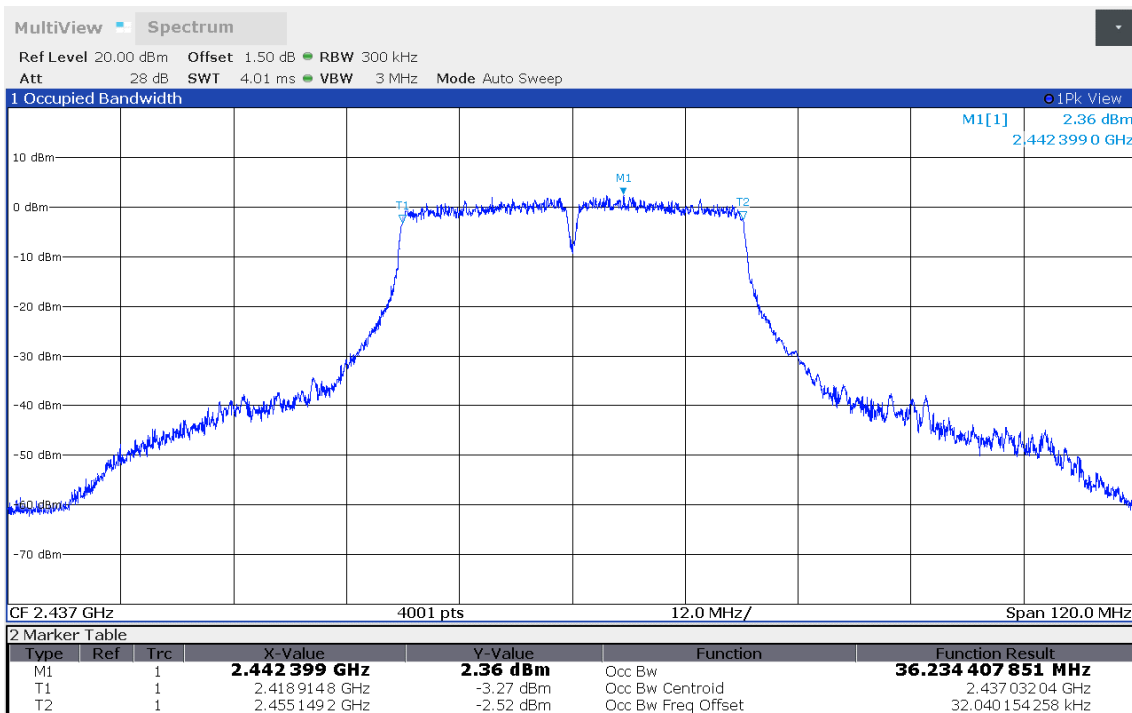
Project Number: G0M-2011-9488  
 Applicant: Leica Geosystems AG  
 Model Description: UAV 3D measurement device  
 Model: BLK2FLY  
 Test Sample ID: 34982  
 Reference Method: ANSI C63.10:2013, Section 6.9.3  
 Operational Mode: IEEE 802.11 n HT40, Channel: 3, 2422  
 Operating Conditions: Tnom/Vnom  
 Operator: Toralf Jahn  
 Test Site: Eurofins Product Service GmbH  
 Test Date: 2021-09-11  
 Antenna port: 2  
 Occupied Bandwidth [MHz]: 36.447



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### Occupied Bandwidth

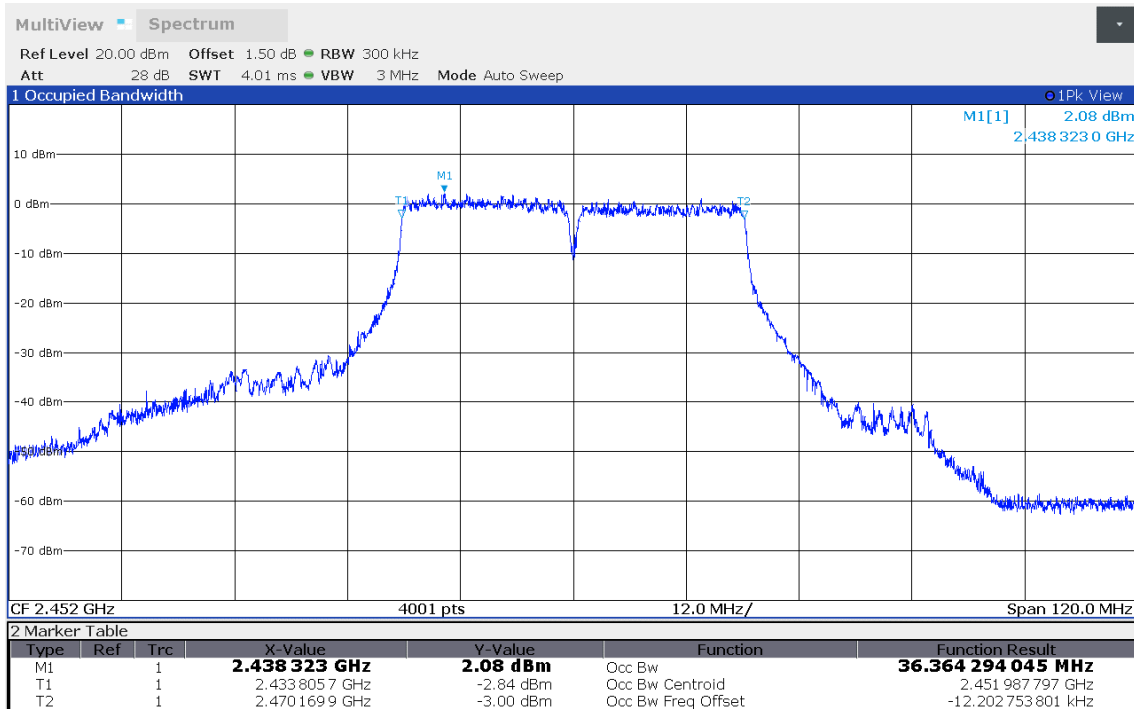
Project Number: G0M-2011-9488  
 Applicant: Leica Geosystems AG  
 Model Description: UAV 3D measurement device  
 Model: BLK2FLY  
 Test Sample ID: 34982  
 Reference Method: ANSI C63.10:2013, Section 6.9.3  
 Operational Mode: IEEE 802.11 n HT40, Channel: 6, 2437  
 Operating Conditions: Tnom/Vnom  
 Operator: Toralf Jahn  
 Test Site: Eurofins Product Service GmbH  
 Test Date: 2021-09-11  
 Antenna port: 2  
 Occupied Bandwidth [MHz]: 36.234



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## Occupied Bandwidth

Project Number: G0M-2011-9488  
 Applicant: Leica Geosystems AG  
 Model Description: UAV 3D measurement device  
 Model: BLK2FLY  
 Test Sample ID: 34982  
 Reference Method: ANSI C63.10:2013, Section 6.9.3  
 Operational Mode: IEEE 802.11 n HT40, Channel: 9, 2452  
 Operating Conditions: Tnom/Vnom  
 Operator: Toralf Jahn  
 Test Site: Eurofins Product Service GmbH  
 Test Date: 2021-09-11  
 Antenna port: 2  
 Occupied Bandwidth [MHz]: 36.364



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### 3.2 Test Conditions and Results - 6 dB bandwidth

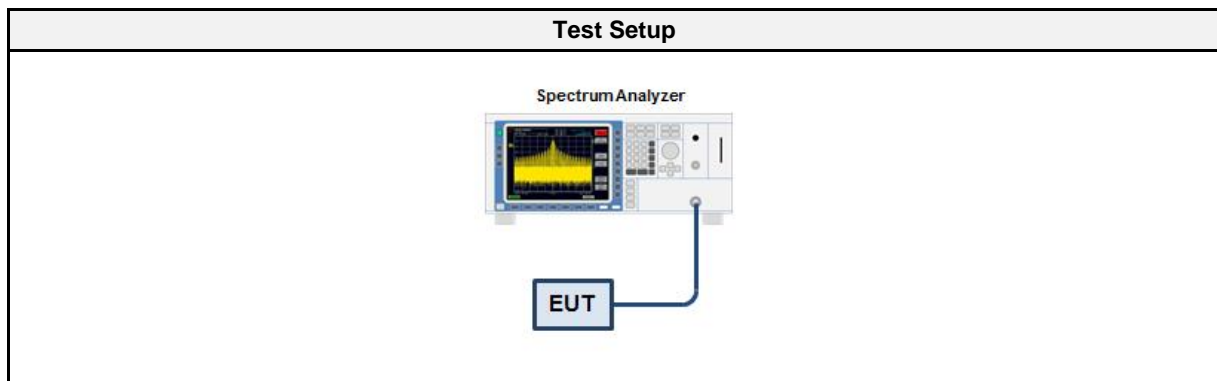
#### 3.2.1 Information

Test Information	
Reference	FCC § 15.247(a)(2); ISED RSS-247, Issue 2 (section 5.2)
Measurement Method	ANSI C63.10 11.8
Measurement Uncertainty	± 1.26 %
Operator	Toralf Jahn
Date	2021-09-11

#### 3.2.2 Limits

Limits
≥ 500kHz

#### 3.2.3 Setup



#### 3.2.4 Equipment

Test Equipment					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum Analyser	R&S	FSW 43	EF00896	2021-07	2022-07
Cable (diverse)	– (diverse)	– (diverse)	EF00779 CAABD	2020-12	2021-12

#### 3.2.5 Procedure

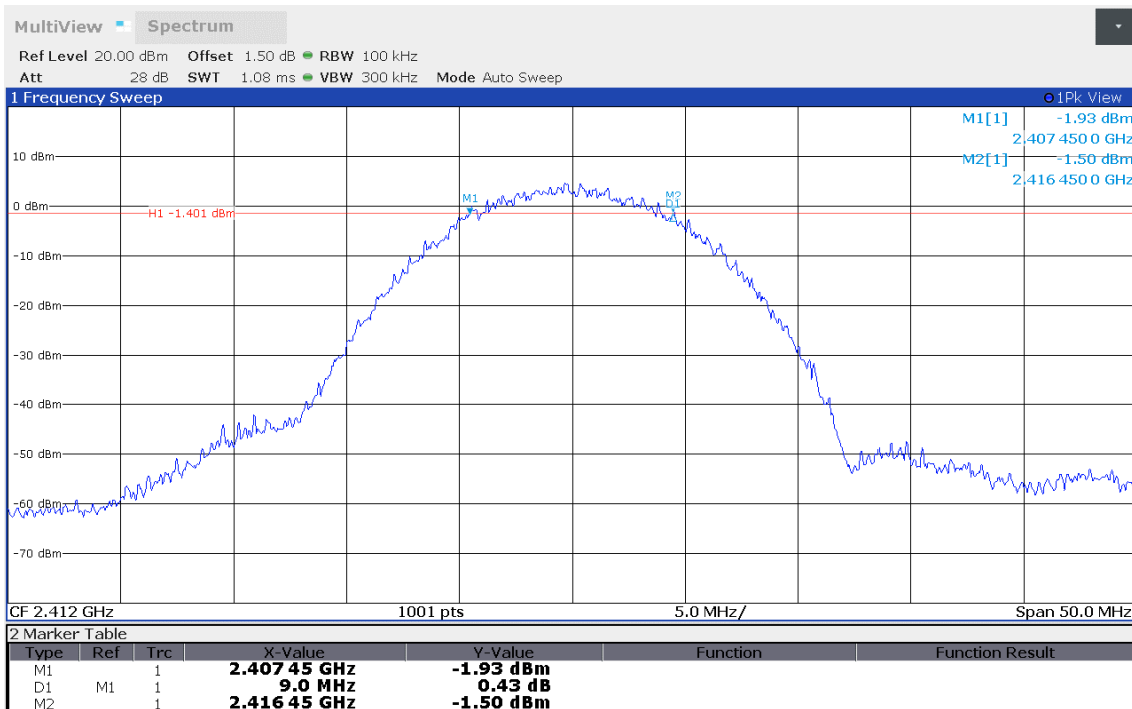
Test Procedure
<ol style="list-style-type: none"> <li>1. EUT set to test mode</li> <li>2. Span set to at least twice the emission spectrum</li> <li>3. Detector set to peak and max hold and RBW is set to 100 kHz</li> <li>4. Envelope peak value of emission spectrum is selected</li> <li>5. Marker on envelope of spectrum is set to level of -6 dB to the left of the peak</li> <li>6. Marker on envelope of spectrum is set to level of -6 dB to the right of the peak</li> <li>7. 6 dB Bandwidth is determined by marker frequency separation</li> </ol>

## 3.2.6 Results

Test Results					
Mode	Frequency [MHz]	Bandwidth Port 1 [kHz]	Bandwidth Port 2 [kHz]	Limit [kHz]	Verdict
DSSS	2412	9000	8950	500	PASS
DSSS	2437	8950	8950	500	PASS
DSSS	2462	8950	8950	500	PASS
OFDM	2412	16550	16500	500	PASS
OFDM	2437	16500	16500	500	PASS
OFDM	2462	16500	16550	500	PASS
HT20	2412	17750	17750	500	PASS
HT20	2437	17750	17750	500	PASS
HT20	2462	17800	17800	500	PASS
HT40	2422	36500	36500	500	PASS
HT40	2437	36100	36400	500	PASS
HT40	2452	36400	36400	500	PASS

### DTS (6 dB) Bandwidth

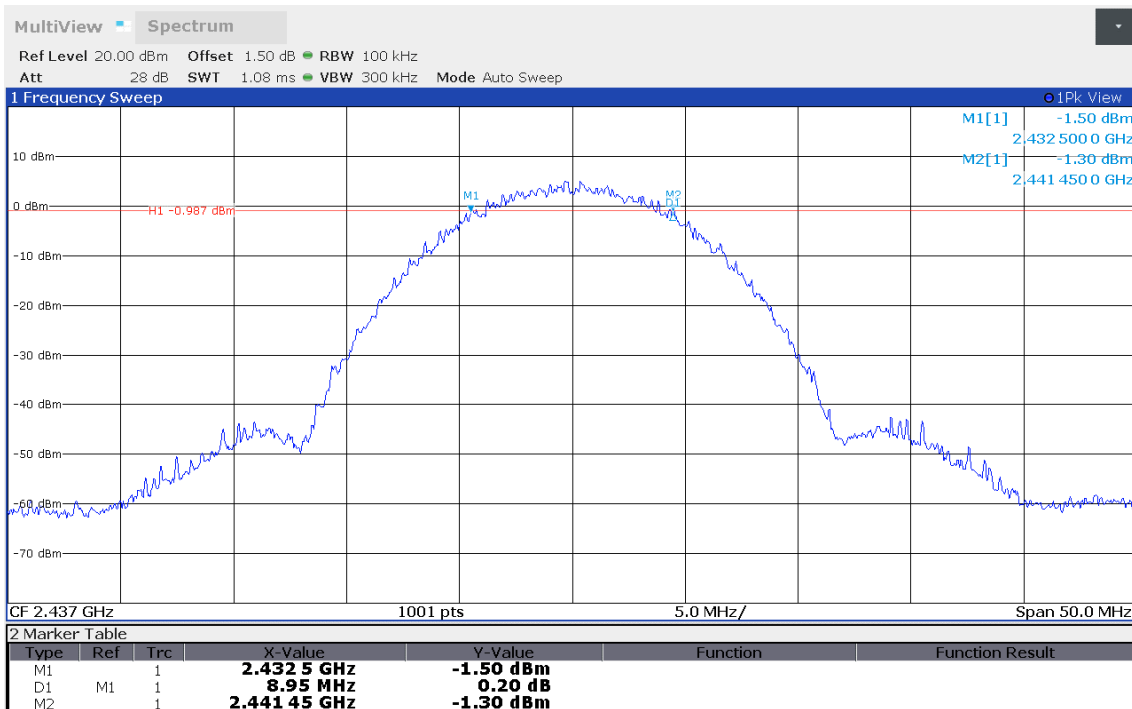
Project Number: G0M-2011-9488  
 Applicant: Leica Geosystems AG  
 Model Description: UAV 3D measurement device  
 Model: BLK2FLY  
 Test Sample ID: 34982  
 Reference Standards: FCC 15.247, RSS-247  
 Reference Method: ANSI C63.10:2013, Section 11.8.1 Option 1  
 Operational Mode: IEEE 802.11 b, Channel: 1, 2412 MHz  
 Operating Conditions: Tnom/Vnom  
 Operator: Toralf Jahn  
 Test Site: Eurofins Product Service GmbH  
 Test Date: 2021-09-11  
 Antenna port: 1  
 Lower Frequency [MHz]: 2407.450  
 Upper Frequency [MHz]: 2416.450  
 6 dB Bandwidth [kHz]: 9000



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### DTS (6 dB) Bandwidth

Project Number: G0M-2011-9488  
 Applicant: Leica Geosystems AG  
 Model Description: UAV 3D measurement device  
 Model: BLK2FLY  
 Test Sample ID: 34982  
 Reference Standards: FCC 15.247, RSS-247  
 Reference Method: ANSI C63.10:2013, Section 11.8.1 Option 1  
 Operational Mode: IEEE 802.11 b, Channel: 6, 2437 MHz  
 Operating Conditions: Tnom/Vnom  
 Operator: Toralf Jahn  
 Test Site: Eurofins Product Service GmbH  
 Test Date: 2021-09-11  
 Antenna port: 1  
 Lower Frequency [MHz]: 2432.500  
 Upper Frequency [MHz]: 2441.450  
 6 dB Bandwidth [kHz]: 8950

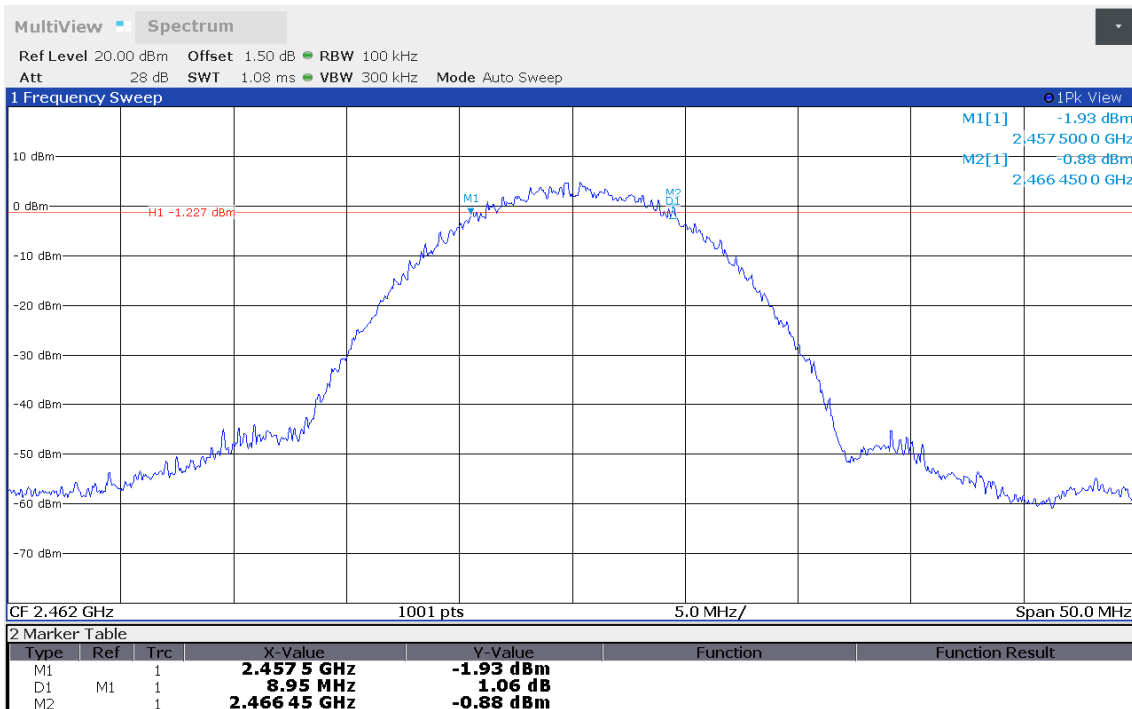


12:51:38 11.09.2021



### DTS (6 dB) Bandwidth

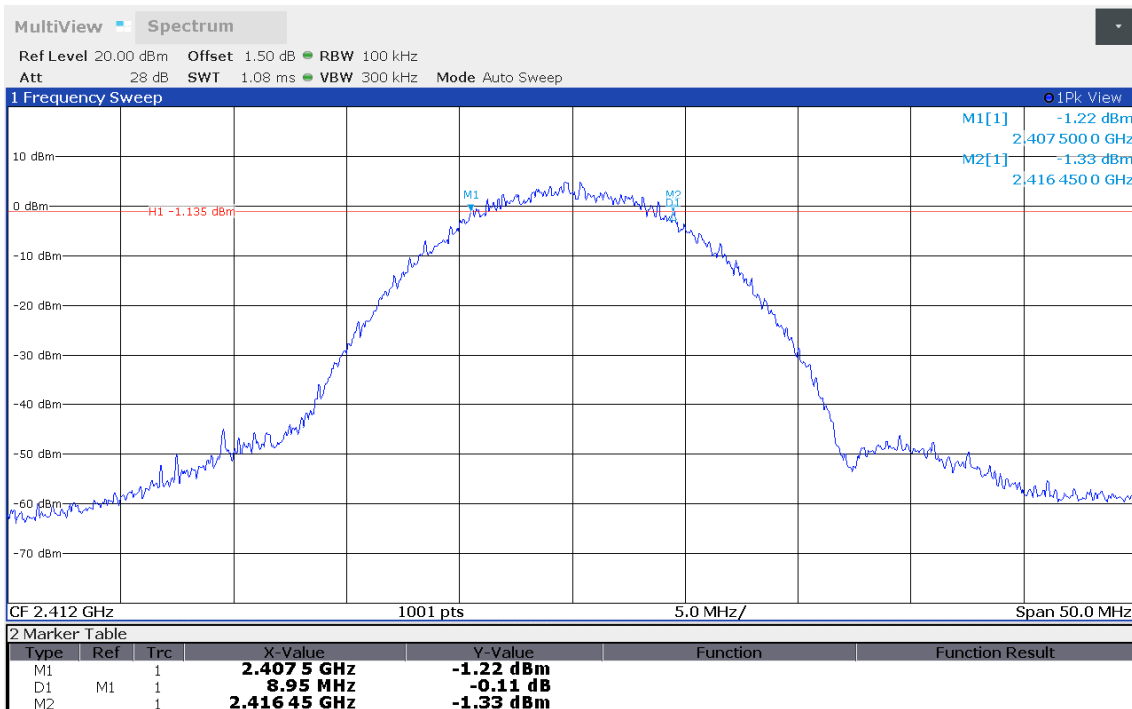
Project Number: G0M-2011-9488  
 Applicant: Leica Geosystems AG  
 Model Description: UAV 3D measurement device  
 Model: BLK2FLY  
 Test Sample ID: 34982  
 Reference Standards: FCC 15.247, RSS-247  
 Reference Method: ANSI C63.10:2013, Section 11.8.1 Option 1  
 Operational Mode: IEEE 802.11 b, Channel: 11, 2462 MHz  
 Operating Conditions: Tnom/Vnom  
 Operator: Toralf Jahn  
 Test Site: Eurofins Product Service GmbH  
 Test Date: 2021-09-11  
 Antenna port: 1  
 Lower Frequency [MHz]: 2457.500  
 Upper Frequency [MHz]: 2466.450  
 6 dB Bandwidth [kHz]: 8950



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### DTS (6 dB) Bandwidth

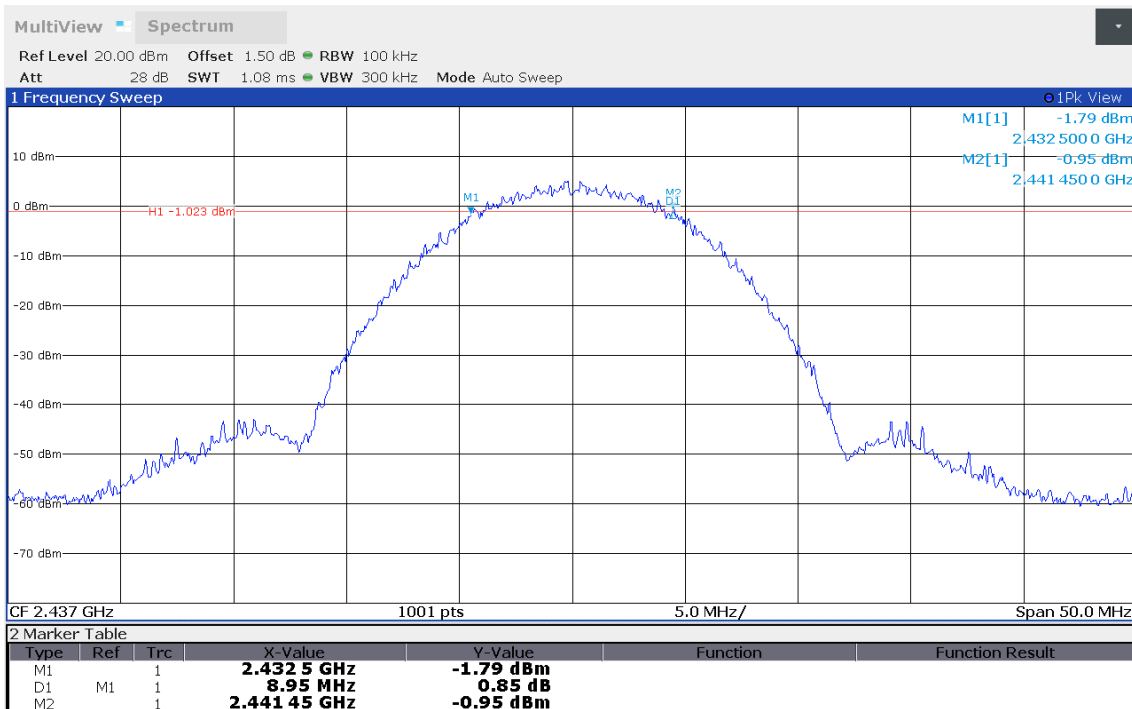
Project Number: G0M-2011-9488  
 Applicant: Leica Geosystems AG  
 Model Description: UAV 3D measurement device  
 Model: BLK2FLY  
 Test Sample ID: 34982  
 Reference Standards: FCC 15.247, RSS-247  
 Reference Method: ANSI C63.10:2013, Section 11.8.1 Option 1  
 Operational Mode: IEEE 802.11 b, Channel: 1, 2412 MHz  
 Operating Conditions: Tnom/Vnom  
 Operator: Toralf Jahn  
 Test Site: Eurofins Product Service GmbH  
 Test Date: 2021-09-11  
 Antenna port: 2  
 Lower Frequency [MHz]: 2407.500  
 Upper Frequency [MHz]: 2416.450  
 6 dB Bandwidth [kHz]: 8950



12:53:42 11.09.2021

### DTS (6 dB) Bandwidth

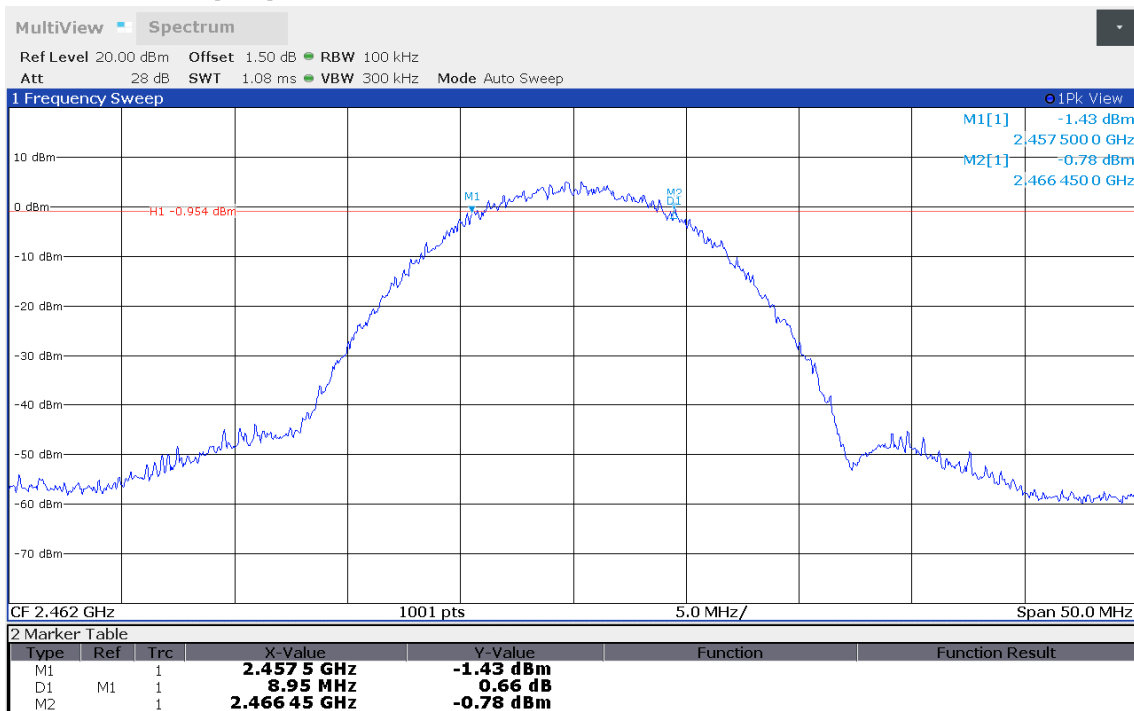
Project Number: G0M-2011-9488  
 Applicant: Leica Geosystems AG  
 Model Description: UAV 3D measurement device  
 Model: BLK2FLY  
 Test Sample ID: 34982  
 Reference Standards: FCC 15.247, RSS-247  
 Reference Method: ANSI C63.10:2013, Section 11.8.1 Option 1  
 Operational Mode: IEEE 802.11 b, Channel: 6, 2437 MHz  
 Operating Conditions: Tnom/Vnom  
 Operator: Toralf Jahn  
 Test Site: Eurofins Product Service GmbH  
 Test Date: 2021-09-11  
 Antenna port: 2  
 Lower Frequency [MHz]: 2432.500  
 Upper Frequency [MHz]: 2441.450  
 6 dB Bandwidth [kHz]: 8950



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### DTS (6 dB) Bandwidth

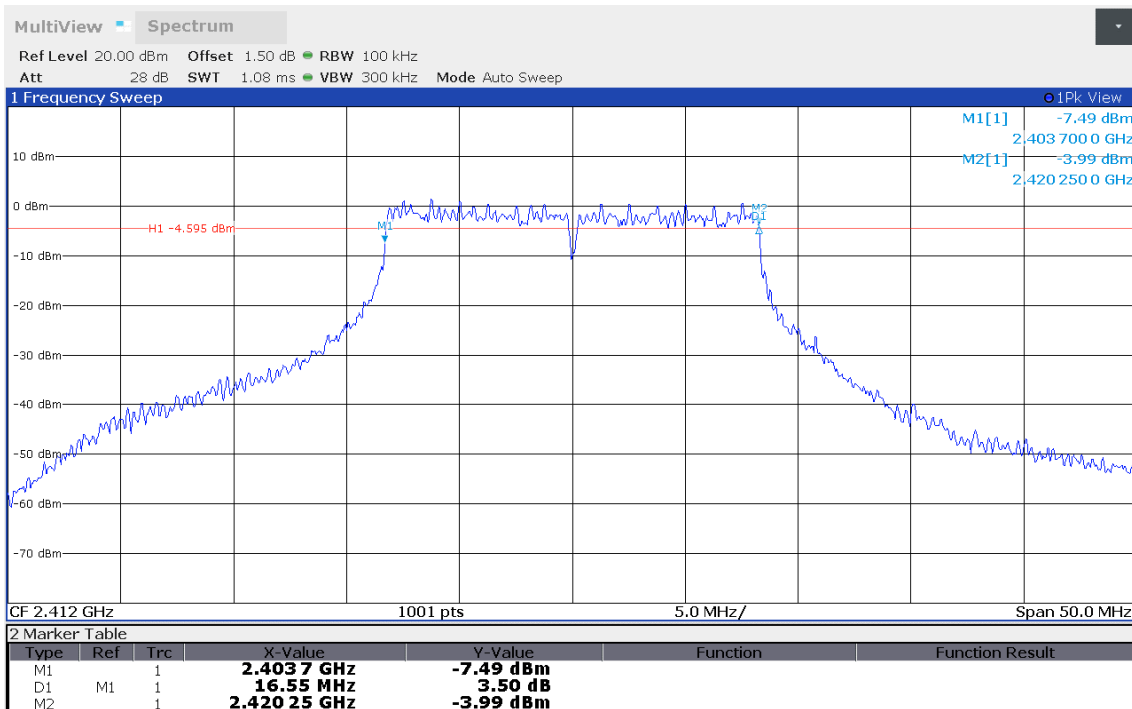
Project Number: G0M-2011-9488  
 Applicant: Leica Geosystems AG  
 Model Description: UAV 3D measurement device  
 Model: BLK2FLY  
 Test Sample ID: 34982  
 Reference Standards: FCC 15.247, RSS-247  
 Reference Method: ANSI C63.10:2013, Section 11.8.1 Option 1  
 Operational Mode: IEEE 802.11 b, Channel: 11, 2462 MHz  
 Operating Conditions: Tnom/Vnom  
 Operator: Toralf Jahn  
 Test Site: Eurofins Product Service GmbH  
 Test Date: 2021-09-11  
 Antenna port: 2  
 Lower Frequency [MHz]: 2457.500  
 Upper Frequency [MHz]: 2466.450  
 6 dB Bandwidth [kHz]: 8950



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### DTS (6 dB) Bandwidth

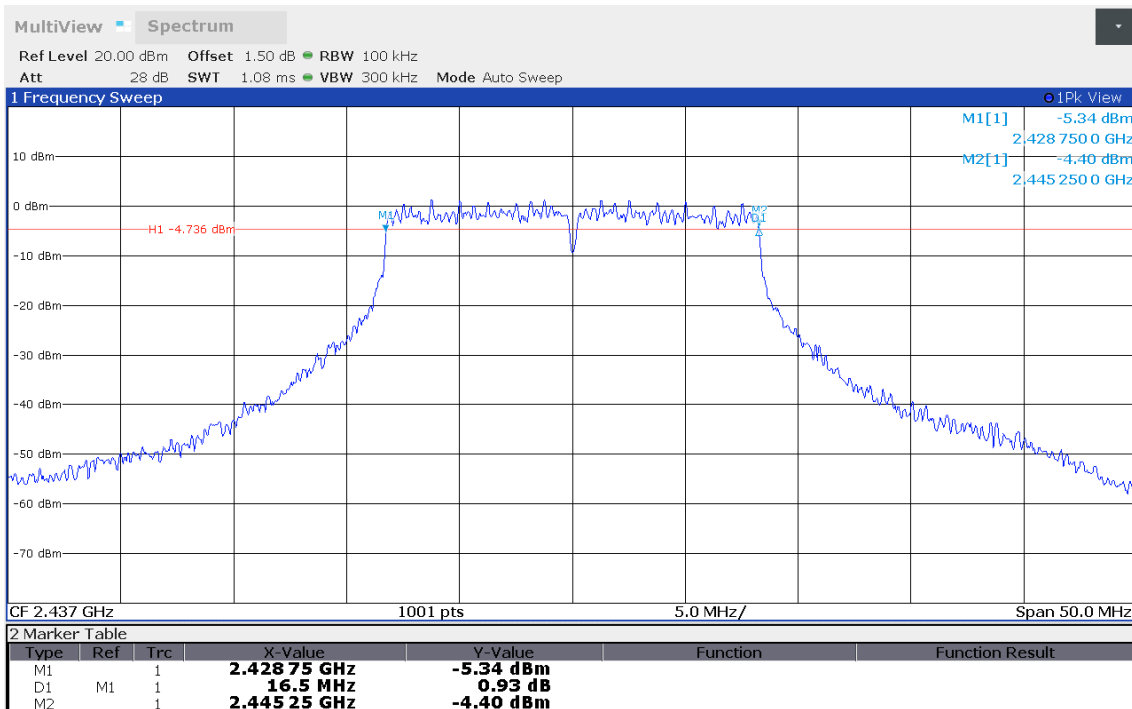
Project Number: G0M-2011-9488  
 Applicant: Leica Geosystems AG  
 Model Description: UAV 3D measurement device  
 Model: BLK2FLY  
 Test Sample ID: 34982  
 Reference Standards: FCC 15.247, RSS-247  
 Reference Method: ANSI C63.10:2013, Section 11.8.1 Option 1  
 Operational Mode: IEEE 802.11 g, Channel: 1, 2412 MHz  
 Operating Conditions: Tnom/Vnom  
 Operator: Toralf Jahn  
 Test Site: Eurofins Product Service GmbH  
 Test Date: 2021-09-11  
 Antenna port: 1  
 Lower Frequency [MHz]: 2403.700  
 Upper Frequency [MHz]: 2420.250  
 6 dB Bandwidth [kHz]: 16550



12:58:03 11.09.2021

### DTS (6 dB) Bandwidth

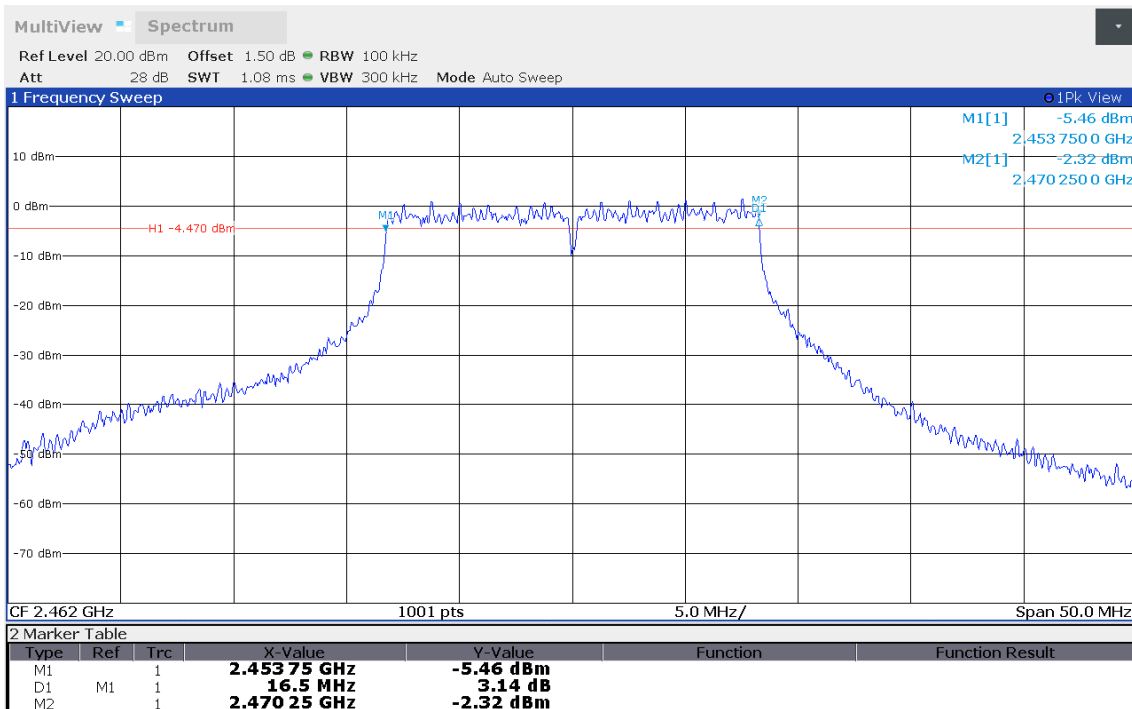
Project Number: G0M-2011-9488  
 Applicant: Leica Geosystems AG  
 Model Description: UAV 3D measurement device  
 Model: BLK2FLY  
 Test Sample ID: 34982  
 Reference Standards: FCC 15.247, RSS-247  
 Reference Method: ANSI C63.10:2013, Section 11.8.1 Option 1  
 Operational Mode: IEEE 802.11 g, Channel: 6, 2437 MHz  
 Operating Conditions: Tnom/Vnom  
 Operator: Toralf Jahn  
 Test Site: Eurofins Product Service GmbH  
 Test Date: 2021-09-11  
 Antenna port: 1  
 Lower Frequency [MHz]: 2428.750  
 Upper Frequency [MHz]: 2445.250  
 6 dB Bandwidth [kHz]: 16500



12:58:41 11.09.2021

### DTS (6 dB) Bandwidth

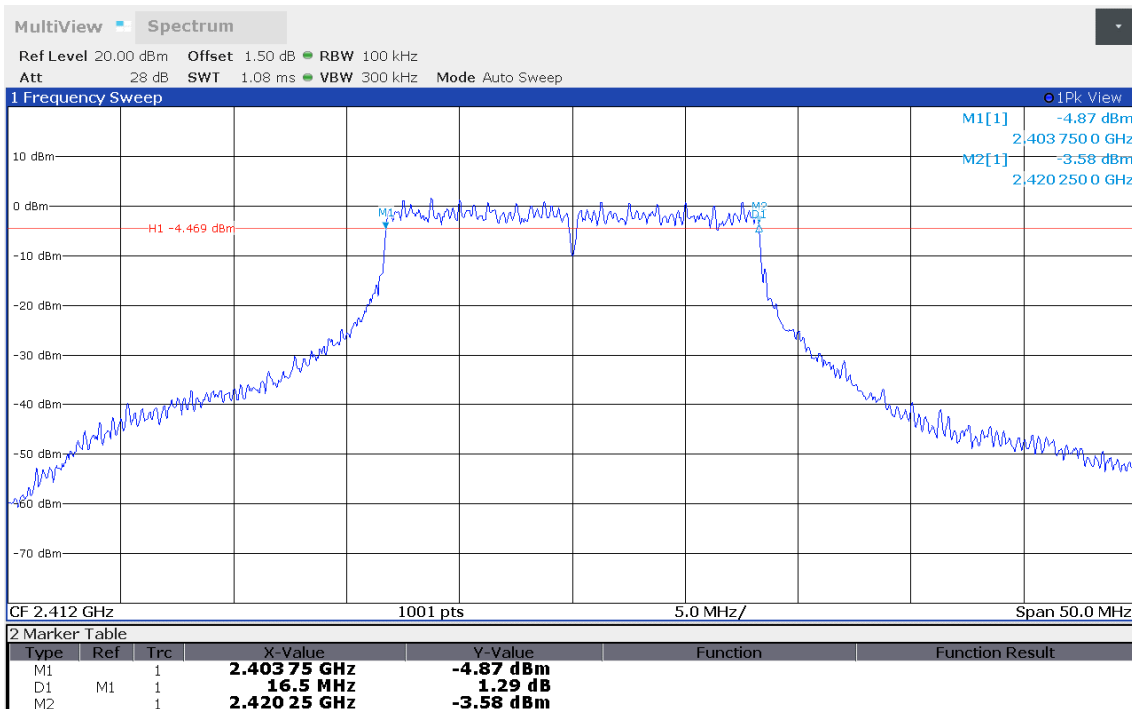
Project Number: G0M-2011-9488  
 Applicant: Leica Geosystems AG  
 Model Description: UAV 3D measurement device  
 Model: BLK2FLY  
 Test Sample ID: 34982  
 Reference Standards: FCC 15.247, RSS-247  
 Reference Method: ANSI C63.10:2013, Section 11.8.1 Option 1  
 Operational Mode: IEEE 802.11 g, Channel: 11, 2462 MHz  
 Operating Conditions: Tnom/Vnom  
 Operator: Toralf Jahn  
 Test Site: Eurofins Product Service GmbH  
 Test Date: 2021-09-11  
 Antenna port: 1  
 Lower Frequency [MHz]: 2453.750  
 Upper Frequency [MHz]: 2470.250  
 6 dB Bandwidth [kHz]: 16500



12:59:20 11.09.2021

### DTS (6 dB) Bandwidth

Project Number: G0M-2011-9488  
 Applicant: Leica Geosystems AG  
 Model Description: UAV 3D measurement device  
 Model: BLK2FLY  
 Test Sample ID: 34982  
 Reference Standards: FCC 15.247, RSS-247  
 Reference Method: ANSI C63.10:2013, Section 11.8.1 Option 1  
 Operational Mode: IEEE 802.11 g, Channel: 1, 2412 MHz  
 Operating Conditions: Tnom/Vnom  
 Operator: Toralf Jahn  
 Test Site: Eurofins Product Service GmbH  
 Test Date: 2021-09-11  
 Antenna port: 2  
 Lower Frequency [MHz]: 2403.750  
 Upper Frequency [MHz]: 2420.250  
 6 dB Bandwidth [kHz]: 16500

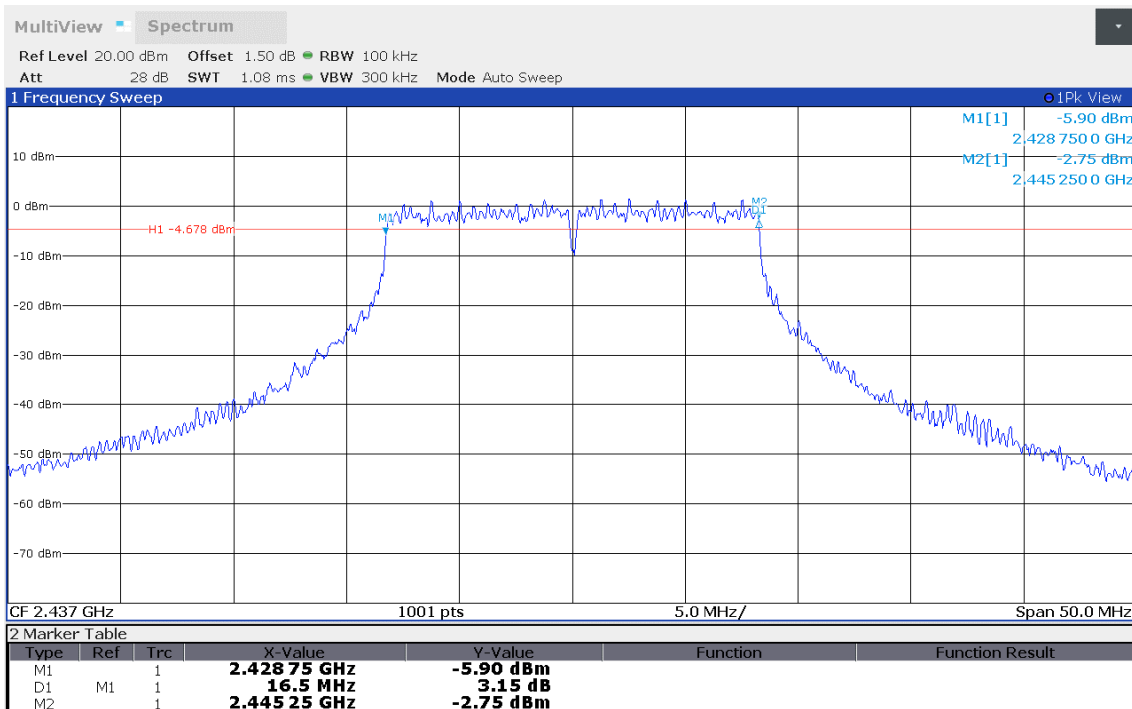


13:00:53 11.09.2021



### DTS (6 dB) Bandwidth

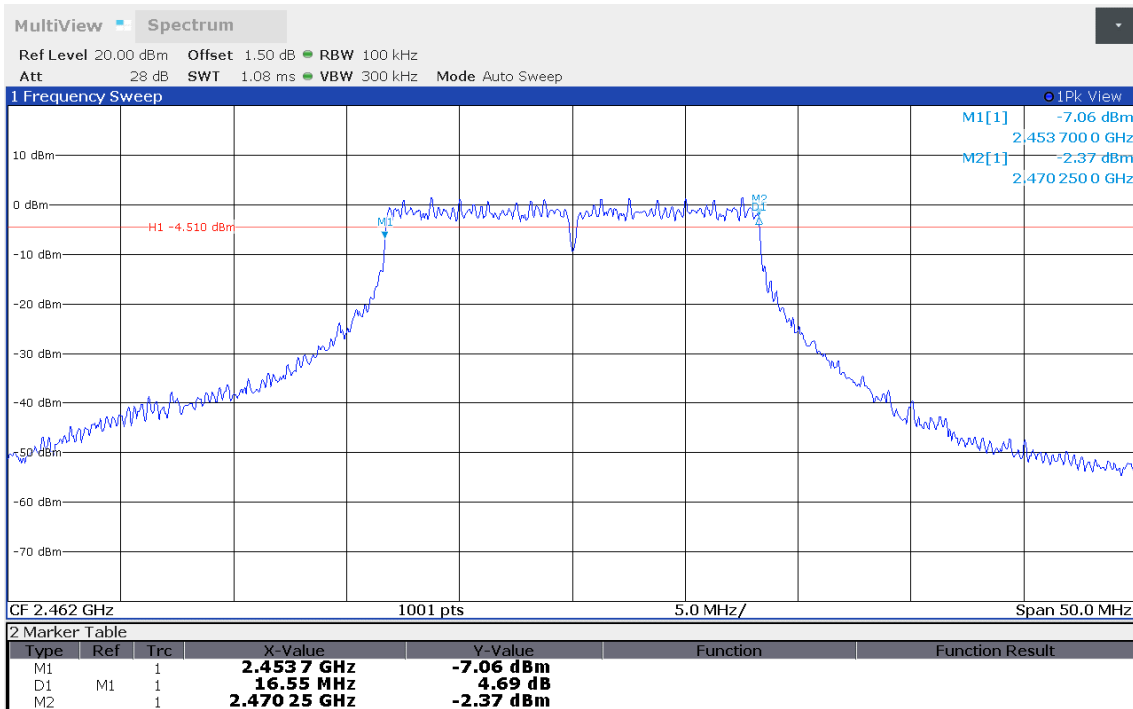
Project Number: G0M-2011-9488  
 Applicant: Leica Geosystems AG  
 Model Description: UAV 3D measurement device  
 Model: BLK2FLY  
 Test Sample ID: 34982  
 Reference Standards: FCC 15.247, RSS-247  
 Reference Method: ANSI C63.10:2013, Section 11.8.1 Option 1  
 Operational Mode: IEEE 802.11 g, Channel: 6, 2437 MHz  
 Operating Conditions: Tnom/Vnom  
 Operator: Toralf Jahn  
 Test Site: Eurofins Product Service GmbH  
 Test Date: 2021-09-11  
 Antenna port: 2  
 Lower Frequency [MHz]: 2428.750  
 Upper Frequency [MHz]: 2445.250  
 6 dB Bandwidth [kHz]: 16500



13:01:29 11.09.2021

### DTS (6 dB) Bandwidth

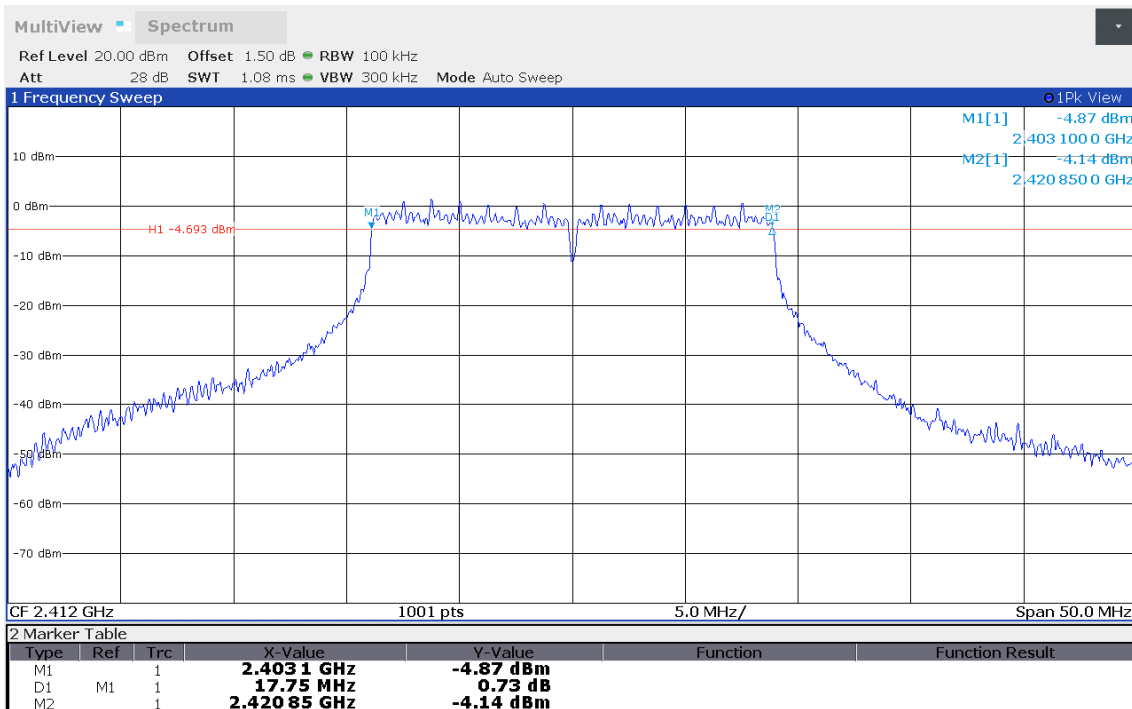
Project Number: G0M-2011-9488  
 Applicant: Leica Geosystems AG  
 Model Description: UAV 3D measurement device  
 Model: BLK2FLY  
 Test Sample ID: 34982  
 Reference Standards: FCC 15.247, RSS-247  
 Reference Method: ANSI C63.10:2013, Section 11.8.1 Option 1  
 Operational Mode: IEEE 802.11 g, Channel: 11, 2462 MHz  
 Operating Conditions: Tnom/Vnom  
 Operator: Toralf Jahn  
 Test Site: Eurofins Product Service GmbH  
 Test Date: 2021-09-11  
 Antenna port: 2  
 Lower Frequency [MHz]: 2453.700  
 Upper Frequency [MHz]: 2470.250  
 6 dB Bandwidth [kHz]: 16550



13:02:07 11.09.2021

### DTS (6 dB) Bandwidth

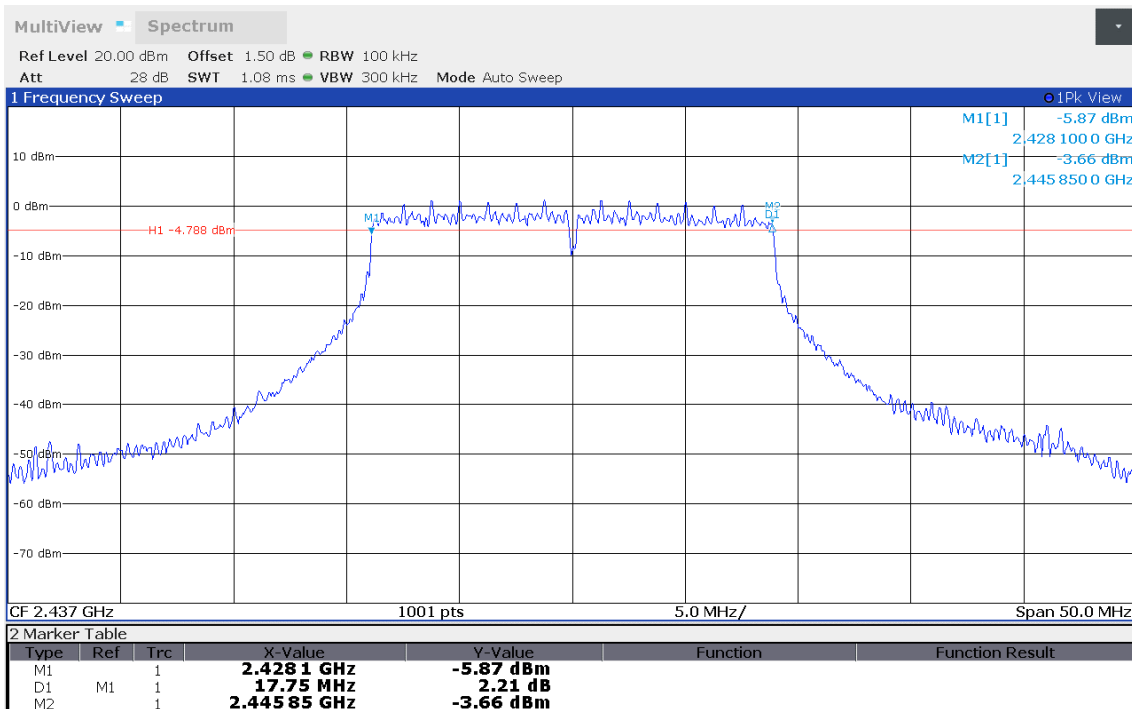
Project Number: G0M-2011-9488  
 Applicant: Leica Geosystems AG  
 Model Description: UAV 3D measurement device  
 Model: BLK2FLY  
 Test Sample ID: 34982  
 Reference Standards: FCC 15.247, RSS-247  
 Reference Method: ANSI C63.10:2013, Section 11.8.1 Option 1  
 Operational Mode: IEEE 802.11 n HT20, Channel: 1, 2412 MHz  
 Operating Conditions: Tnom/Vnom  
 Operator: Toralf Jahn  
 Test Site: Eurofins Product Service GmbH  
 Test Date: 2021-09-11  
 Antenna port: 1  
 Lower Frequency [MHz]: 2403.100  
 Upper Frequency [MHz]: 2420.850  
 6 dB Bandwidth [kHz]: 17750



13:04:11 11.09.2021

### DTS (6 dB) Bandwidth

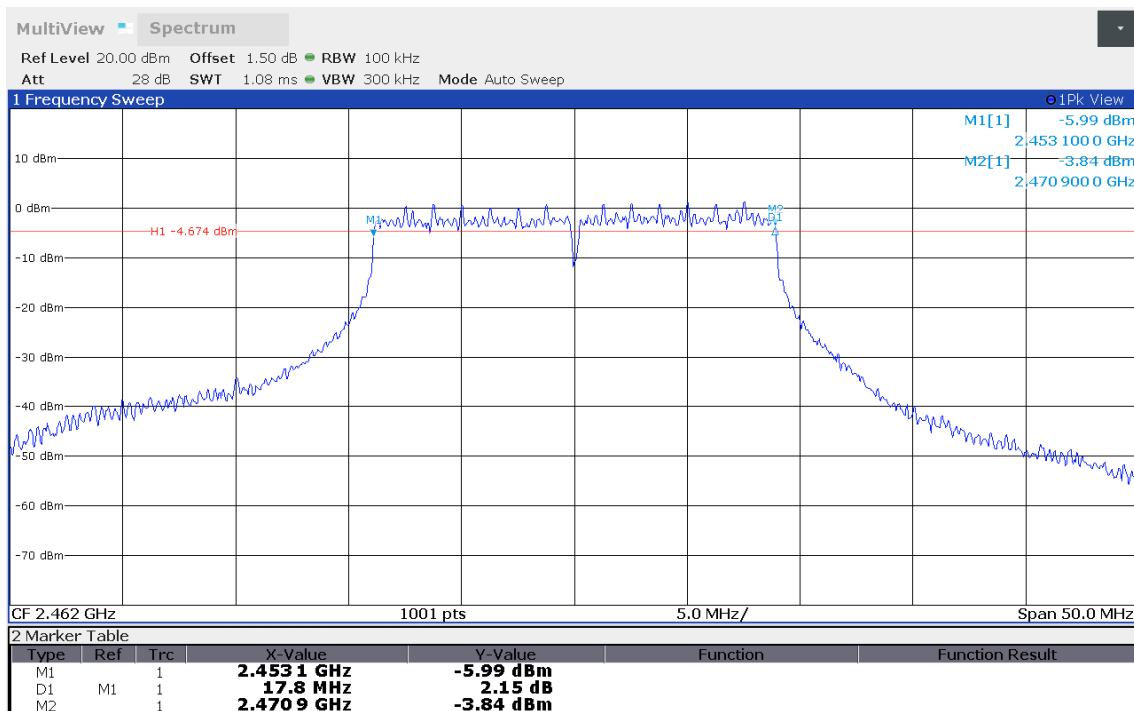
Project Number: G0M-2011-9488  
 Applicant: Leica Geosystems AG  
 Model Description: UAV 3D measurement device  
 Model: BLK2FLY  
 Test Sample ID: 34982  
 Reference Standards: FCC 15.247, RSS-247  
 Reference Method: ANSI C63.10:2013, Section 11.8.1 Option 1  
 Operational Mode: IEEE 802.11 n HT20, Channel: 6, 2437 MHz  
 Operating Conditions: Tnom/Vnom  
 Operator: Toralf Jahn  
 Test Site: Eurofins Product Service GmbH  
 Test Date: 2021-09-11  
 Antenna port: 1  
 Lower Frequency [MHz]: 2428.100  
 Upper Frequency [MHz]: 2445.850  
 6 dB Bandwidth [kHz]: 17750



13:04:45 11.09.2021

### DTS (6 dB) Bandwidth

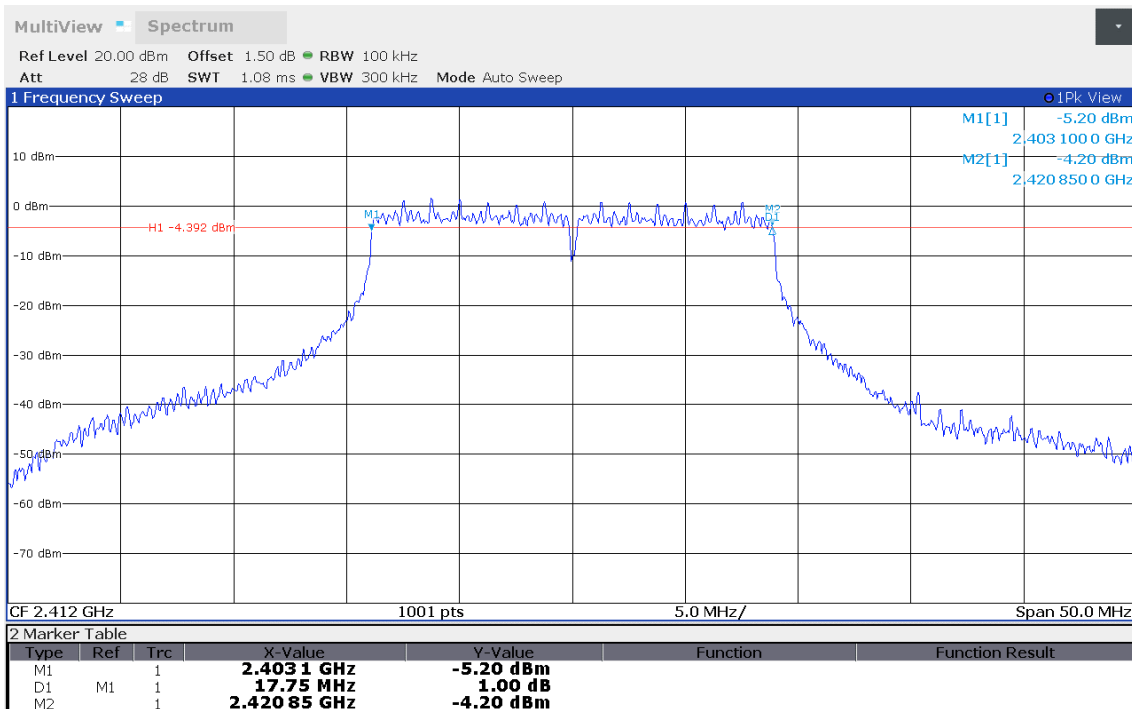
Project Number: G0M-2011-9488  
 Applicant: Leica Geosystems AG  
 Model Description: UAV 3D measurement device  
 Model: BLK2FLY  
 Test Sample ID: 34982  
 Reference Standards: FCC 15.247, RSS-247  
 Reference Method: ANSI C63.10:2013, Section 11.8.1 Option 1  
 Operational Mode: IEEE 802.11 n HT20, Channel: 11, 2462 MHz  
 Operating Conditions: Tnom/Vnom  
 Operator: Toralf Jahn  
 Test Site: Eurofins Product Service GmbH  
 Test Date: 2021-09-11  
 Antenna port: 1  
 Lower Frequency [MHz]: 2453.100  
 Upper Frequency [MHz]: 2470.900  
 6 dB Bandwidth [kHz]: 17800



13:05:17 11.09.2021

### DTS (6 dB) Bandwidth

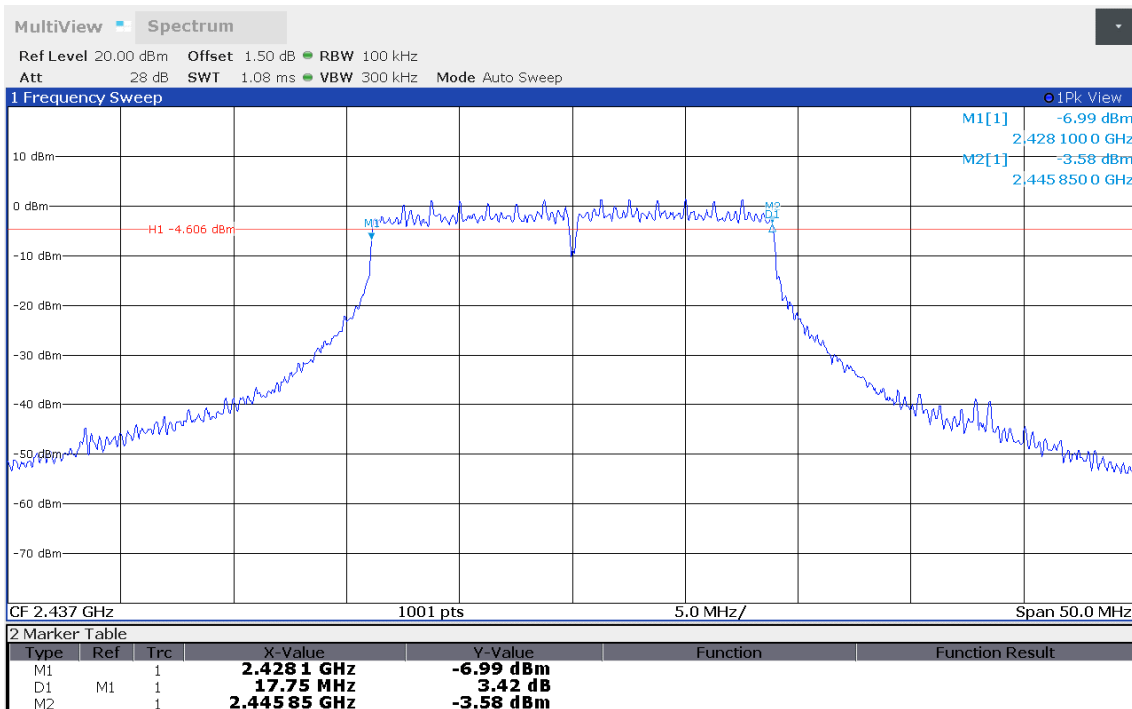
Project Number: G0M-2011-9488  
 Applicant: Leica Geosystems AG  
 Model Description: UAV 3D measurement device  
 Model: BLK2FLY  
 Test Sample ID: 34982  
 Reference Standards: FCC 15.247, RSS-247  
 Reference Method: ANSI C63.10:2013, Section 11.8.1 Option 1  
 Operational Mode: IEEE 802.11 n HT20, Channel: 1, 2412 MHz  
 Operating Conditions: Tnom/Vnom  
 Operator: Toralf Jahn  
 Test Site: Eurofins Product Service GmbH  
 Test Date: 2021-09-11  
 Antenna port: 2  
 Lower Frequency [MHz]: 2403.100  
 Upper Frequency [MHz]: 2420.850  
 6 dB Bandwidth [kHz]: 17750



13:42:54 11.09.2021

### DTS (6 dB) Bandwidth

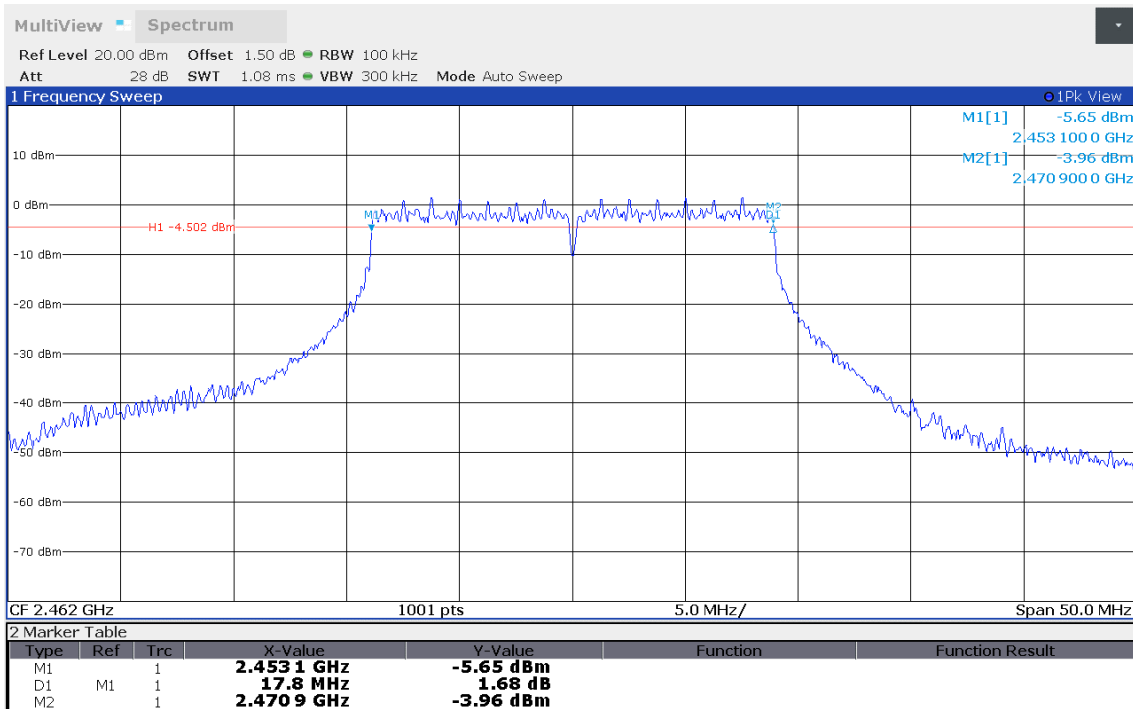
Project Number: G0M-2011-9488  
 Applicant: Leica Geosystems AG  
 Model Description: UAV 3D measurement device  
 Model: BLK2FLY  
 Test Sample ID: 34982  
 Reference Standards: FCC 15.247, RSS-247  
 Reference Method: ANSI C63.10:2013, Section 11.8.1 Option 1  
 Operational Mode: IEEE 802.11 n HT20, Channel: 6, 2437 MHz  
 Operating Conditions: Tnom/Vnom  
 Operator: Toralf Jahn  
 Test Site: Eurofins Product Service GmbH  
 Test Date: 2021-09-11  
 Antenna port: 2  
 Lower Frequency [MHz]: 2428.100  
 Upper Frequency [MHz]: 2445.850  
 6 dB Bandwidth [kHz]: 17750



13:43:40 11.09.2021

### DTS (6 dB) Bandwidth

Project Number: G0M-2011-9488  
 Applicant: Leica Geosystems AG  
 Model Description: UAV 3D measurement device  
 Model: BLK2FLY  
 Test Sample ID: 34982  
 Reference Standards: FCC 15.247, RSS-247  
 Reference Method: ANSI C63.10:2013, Section 11.8.1 Option 1  
 Operational Mode: IEEE 802.11 n HT20, Channel: 11, 2462 MHz  
 Operating Conditions: Tnom/Vnom  
 Operator: Toralf Jahn  
 Test Site: Eurofins Product Service GmbH  
 Test Date: 2021-09-11  
 Antenna port: 2  
 Lower Frequency [MHz]: 2453.100  
 Upper Frequency [MHz]: 2470.900  
 6 dB Bandwidth [kHz]: 17800

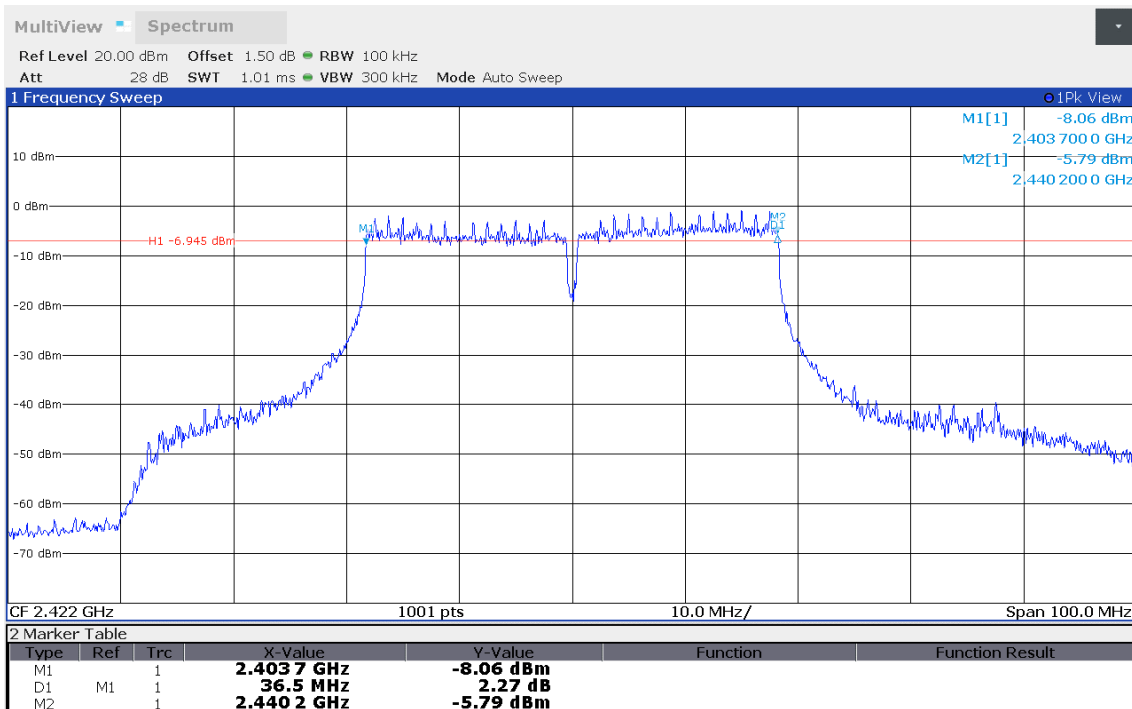


13:44:18 11.09.2021



### DTS (6 dB) Bandwidth

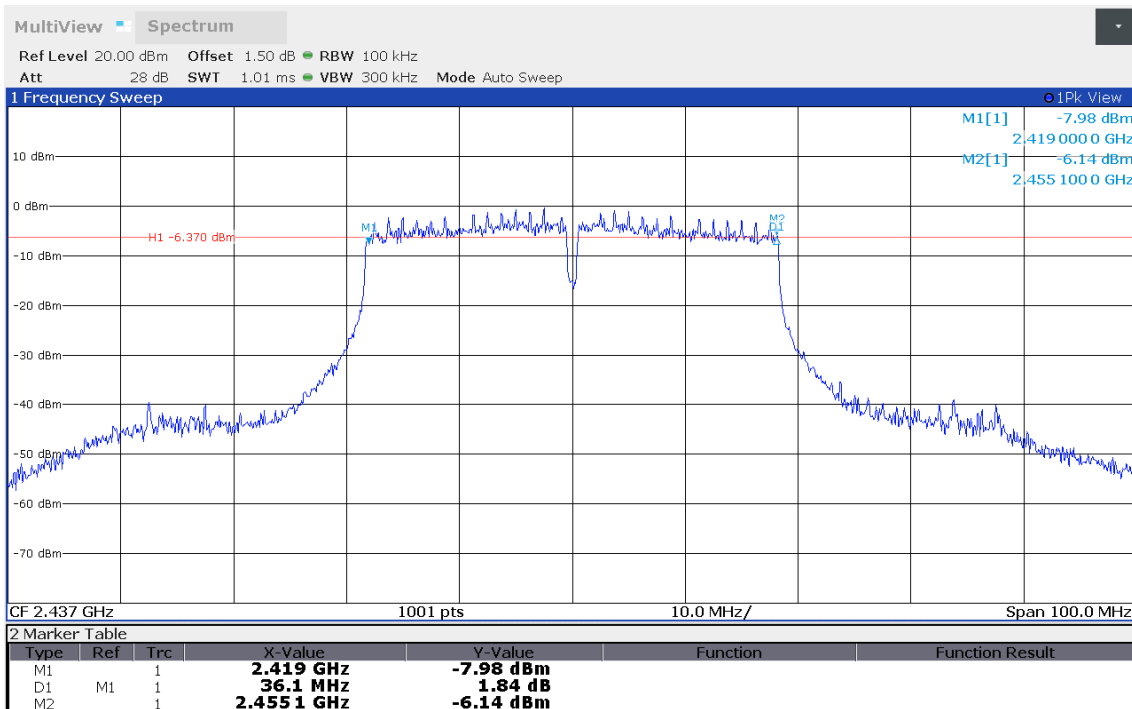
Project Number: G0M-2011-9488  
 Applicant: Leica Geosystems AG  
 Model Description: UAV 3D measurement device  
 Model: BLK2FLY  
 Test Sample ID: 34982  
 Reference Standards: FCC 15.247, RSS-247  
 Reference Method: ANSI C63.10:2013, Section 11.8.1 Option 1  
 Operational Mode: IEEE 802.11 n HT40, Channel: 3, 2422 MHz  
 Operating Conditions: Tnom/Vnom  
 Operator: Toralf Jahn  
 Test Site: Eurofins Product Service GmbH  
 Test Date: 2021-09-11  
 Antenna port: 1  
 Lower Frequency [MHz]: 2403.700  
 Upper Frequency [MHz]: 2440.200  
 6 dB Bandwidth [kHz]: 36500



13:46:14 11.09.2021

### DTS (6 dB) Bandwidth

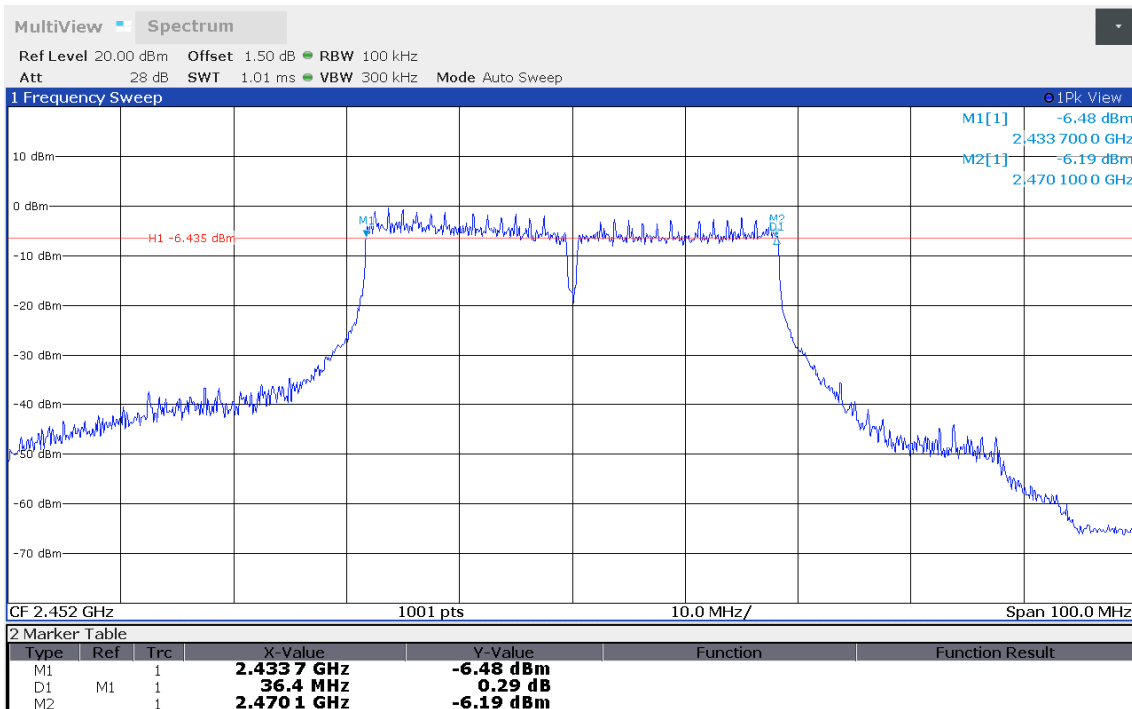
Project Number: G0M-2011-9488  
 Applicant: Leica Geosystems AG  
 Model Description: UAV 3D measurement device  
 Model: BLK2FLY  
 Test Sample ID: 34982  
 Reference Standards: FCC 15.247, RSS-247  
 Reference Method: ANSI C63.10:2013, Section 11.8.1 Option 1  
 Operational Mode: IEEE 802.11 n HT40, Channel: 6, 2437 MHz  
 Operating Conditions: Tnom/Vnom  
 Operator: Toralf Jahn  
 Test Site: Eurofins Product Service GmbH  
 Test Date: 2021-09-11  
 Antenna port: 1  
 Lower Frequency [MHz]: 2419.000  
 Upper Frequency [MHz]: 2455.100  
 6 dB Bandwidth [kHz]: 36100



13:47:49 11.09.2021

### DTS (6 dB) Bandwidth

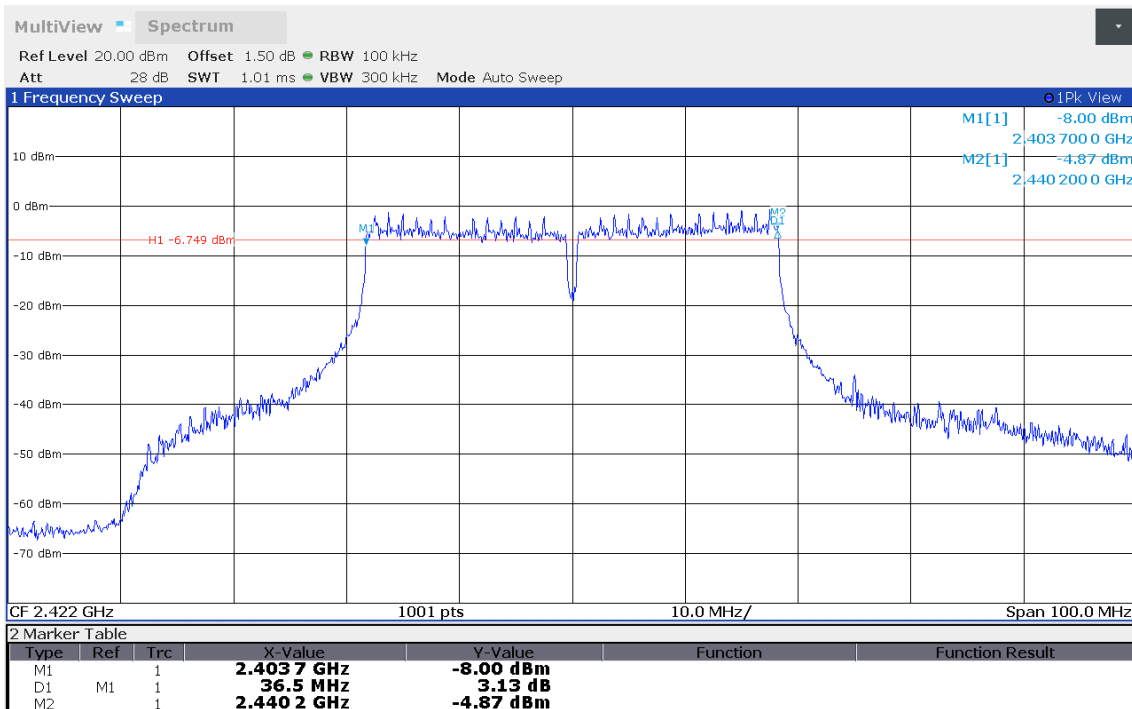
Project Number: G0M-2011-9488  
 Applicant: Leica Geosystems AG  
 Model Description: UAV 3D measurement device  
 Model: BLK2FLY  
 Test Sample ID: 34982  
 Reference Standards: FCC 15.247, RSS-247  
 Reference Method: ANSI C63.10:2013, Section 11.8.1 Option 1  
 Operational Mode: IEEE 802.11 n HT40, Channel: 9, 2452 MHz  
 Operating Conditions: Tnom/Vnom  
 Operator: Toralf Jahn  
 Test Site: Eurofins Product Service GmbH  
 Test Date: 2021-09-11  
 Antenna port: 1  
 Lower Frequency [MHz]: 2433.700  
 Upper Frequency [MHz]: 2470.100  
 6 dB Bandwidth [kHz]: 36400



13:48:22 11.09.2021

### DTS (6 dB) Bandwidth

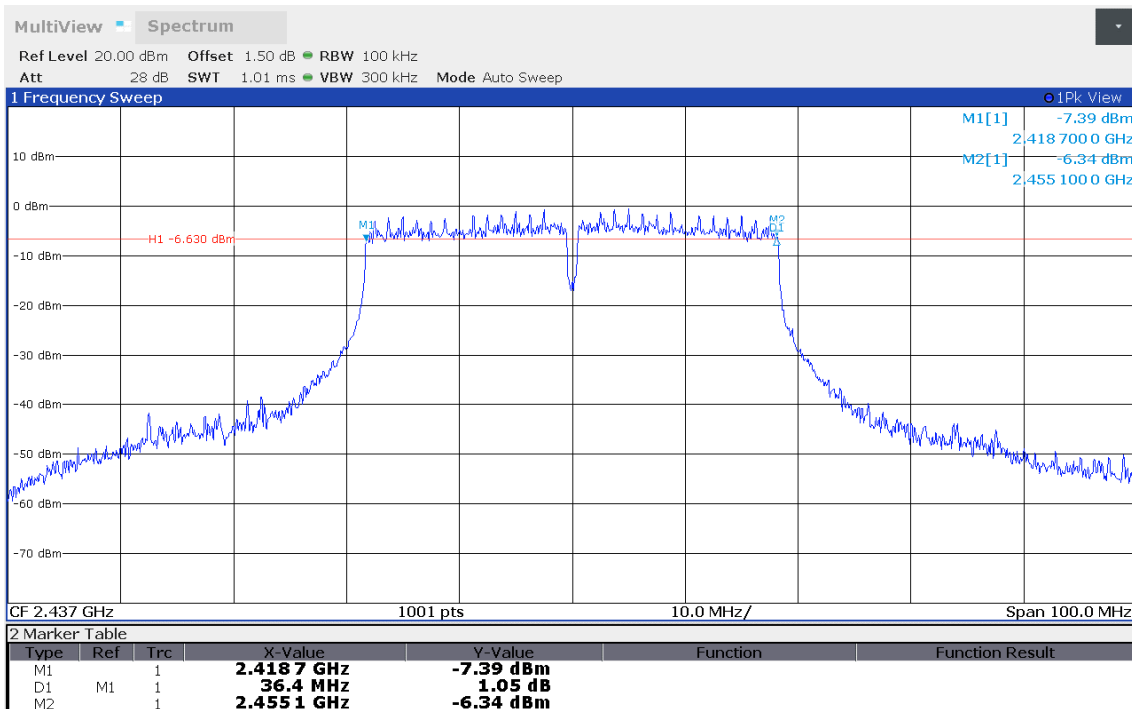
Project Number: G0M-2011-9488  
 Applicant: Leica Geosystems AG  
 Model Description: UAV 3D measurement device  
 Model: BLK2FLY  
 Test Sample ID: 34982  
 Reference Standards: FCC 15.247, RSS-247  
 Reference Method: ANSI C63.10:2013, Section 11.8.1 Option 1  
 Operational Mode: IEEE 802.11 n HT40, Channel: 3, 2422 MHz  
 Operating Conditions: Tnom/Vnom  
 Operator: Toralf Jahn  
 Test Site: Eurofins Product Service GmbH  
 Test Date: 2021-09-11  
 Antenna port: 2  
 Lower Frequency [MHz]: 2403.700  
 Upper Frequency [MHz]: 2440.200  
 6 dB Bandwidth [kHz]: 36500



13:49:25 11.09.2021

### DTS (6 dB) Bandwidth

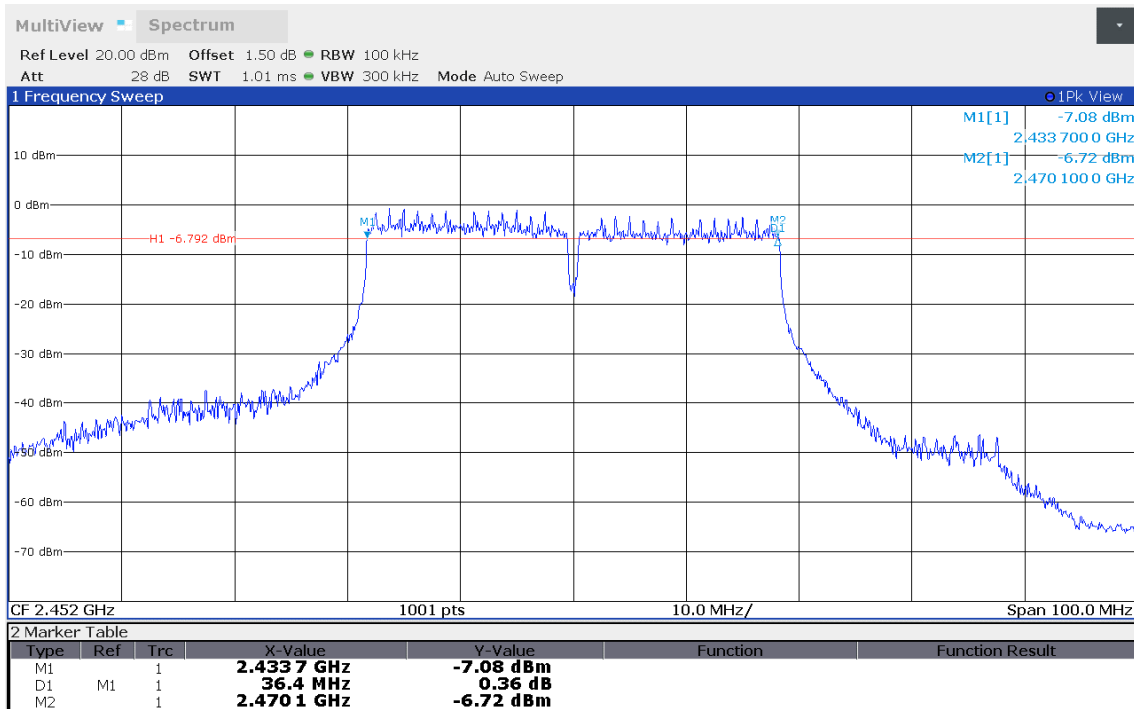
Project Number: G0M-2011-9488  
 Applicant: Leica Geosystems AG  
 Model Description: UAV 3D measurement device  
 Model: BLK2FLY  
 Test Sample ID: 34982  
 Reference Standards: FCC 15.247, RSS-247  
 Reference Method: ANSI C63.10:2013, Section 11.8.1 Option 1  
 Operational Mode: IEEE 802.11 n HT40, Channel: 6, 2437 MHz  
 Operating Conditions: Tnom/Vnom  
 Operator: Toralf Jahn  
 Test Site: Eurofins Product Service GmbH  
 Test Date: 2021-09-11  
 Antenna port: 2  
 Lower Frequency [MHz]: 2418.700  
 Upper Frequency [MHz]: 2455.100  
 6 dB Bandwidth [kHz]: 36400



13:49:58 11.09.2021

### DTS (6 dB) Bandwidth

Project Number: G0M-2011-9488  
 Applicant: Leica Geosystems AG  
 Model Description: UAV 3D measurement device  
 Model: BLK2FLY  
 Test Sample ID: 34982  
 Reference Standards: FCC 15.247, RSS-247  
 Reference Method: ANSI C63.10:2013, Section 11.8.1 Option 1  
 Operational Mode: IEEE 802.11 n HT40, Channel: 9, 2452 MHz  
 Operating Conditions: Tnom/Vnom  
 Operator: Toralf Jahn  
 Test Site: Eurofins Product Service GmbH  
 Test Date: 2021-09-11  
 Antenna port: 2  
 Lower Frequency [MHz]: 2433.700  
 Upper Frequency [MHz]: 2470.100  
 6 dB Bandwidth [kHz]: 36400



13:50:38 11.09.2021

### 3.3 Test Conditions and Results - Maximum peak conducted output power

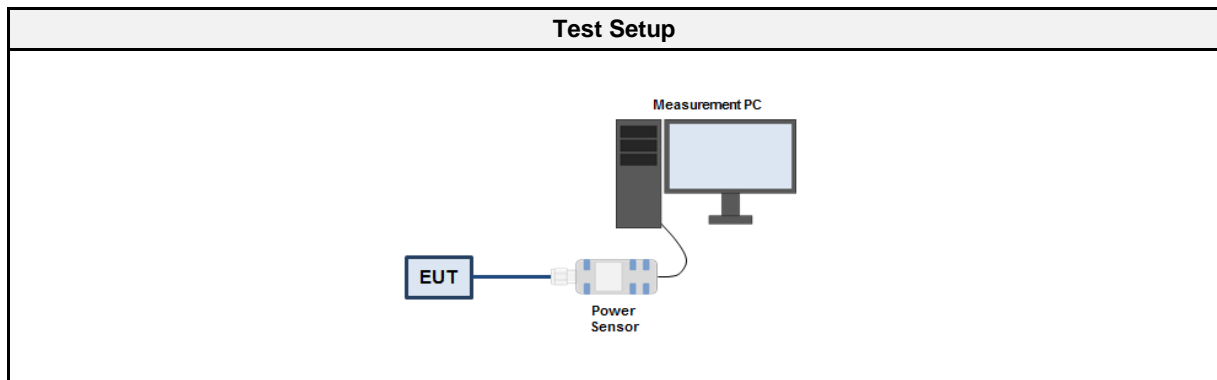
#### 3.3.1 Information

Test Information	
Reference	FCC § 15.247(b); ISED RSS-247, Issue 2 (section 5.4)
Measurement Method	ANSI C63.10 11.9.1
Measurement Uncertainty	± 2.86 dB
Operator	Toralf Jahn
Date	2021-09-11

#### 3.3.2 Limits

Limits
1 W (30 dBm)
The conducted output power limit specified above is based on the use of antennas with directional gains that do not exceed 6 dBi. 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 the table, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

#### 3.3.3 Setup



#### 3.3.4 Equipment

Test Equipment					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Power Sensor	R&S	NRP-Z81	EF00830	2021-08	2022-08
Power Sensor	R&S	NRP-Z81	EF01732	2021-04	2022-04

#### 3.3.5 Procedure

Test Procedure
<ol style="list-style-type: none"> <li>1. EUT set to test mode (Communication tester is used if needed)</li> <li>2. The EUT antenna port is connected to a wideband power sensor</li> <li>3. The peak power is measured with the power sensor</li> <li>4. If the EUT has more than one transmit chain the procedure is repeated for each transmit chain and the power is summed up</li> </ol>

## 3.3.6 Results

Test Results - DSSS				
Channel [MHz]	Power Port 1 [dBm]	Power Port 2 [dBm]	Limit [dBm]	Verdict
2412	15.52	15.76	30	PASS
2437	15.91	16.00	30	PASS
2462	15.68	15.75	30	PASS

Test Results - OFDM				
Channel [MHz]	Power Port 1 [dBm]	Power Port 2 [dBm]	Limit [dBm]	Verdict
2412	23.40	23.50	30	PASS
2437	23.06	23.21	30	PASS
2462	23.84	24.11	30	PASS

Test Results - HT20					
Channel [MHz]	Power Port 1 [dBm]	Power Port 2 [dBm]	Power Port 1+2 simultaneous [dBm]	Limit [dBm]	Verdict
2412	23.77	23.93	<b>26.69</b>	30	PASS
2437	23.31	23.37	26.02	30	PASS
2462	24.06	24.29	26.96	30	PASS

Test Results - HT40					
Channel [MHz]	Power Port 1 [dBm]	Power Port 2 [dBm]	Power Port 1+2 simultaneous [dBm]	Limit [dBm]	Verdict
2422	23.30	23.52	26.32	30	PASS
2437	23.63	23.64	26.46	30	PASS
2452	23.56	23.77	26.70	30	PASS



### 3.4 Test Conditions and Results - Power spectral density

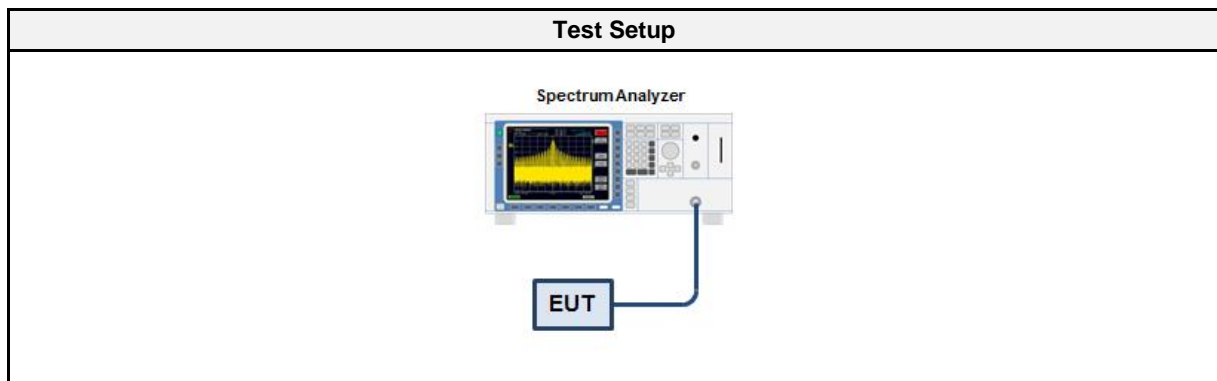
#### 3.4.1 Information

Test Information	
Reference	FCC § 15.247(e); ISED RSS-247, Issue 2 (section 5.2)
Measurement Method	ANSI C63.10 11.10.2, 14.3.2
Measurement Uncertainty	± 2.86 dB
Operator	Toralf Jahn
Date	2021-09-11

#### 3.4.2 Limits

Limits
8 dBm / 3 kHz

#### 3.4.3 Setup



#### 3.4.4 Equipment

Test Equipment					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum Analyser	R&S	FSW 43	EF00896	2021-07	2022-07
Cable (diverse)	– (diverse)	– (diverse)	EF00779 CAABD	2020-12	2021-12

#### 3.4.5 Procedure

Test Procedure
<ol style="list-style-type: none"> <li>1. EUT set to test mode</li> <li>2. The analyzer is set to DTS channel center frequency with a span of 1.5 times the DTS bandwidth</li> <li>3. The RBW is set to 100 kHz with VBW ≥ RBW and the detector is set to peak with max hold</li> <li>4. After the trace has stabilized a marker is set to the envelope maximum</li> <li>5. If the power spectral density is above the limit the RBW is reduced (not lower than 3 kHz) and the measurement is repeated</li> <li>6. If the EUT has more than one transmit chain the procedure is repeated for each transmit chain</li> </ol>

## 3.4.6 Results

Test Results - DSSS				
Channel [MHz]	PSD Port 1 [dBm/RBW]	PSD Port 2 [dBm/RBW]	Limit [dBm/3kHz]	Verdict
2412	4.575	4.718	8.0	PASS
2437	4.929	5.028	8.0	PASS
2462	4.723	5.008	8.0	PASS

Test Results - OFDM				
Channel [MHz]	PSD Port 1 [dBm/RBW]	PSD Port 2 [dBm/RBW]	Limit [dBm/3kHz]	Verdict
2412	1.587	1.587	8.0	PASS
2437	1.322	1.332	8.0	PASS
2462	1.542	1.417	8.0	PASS

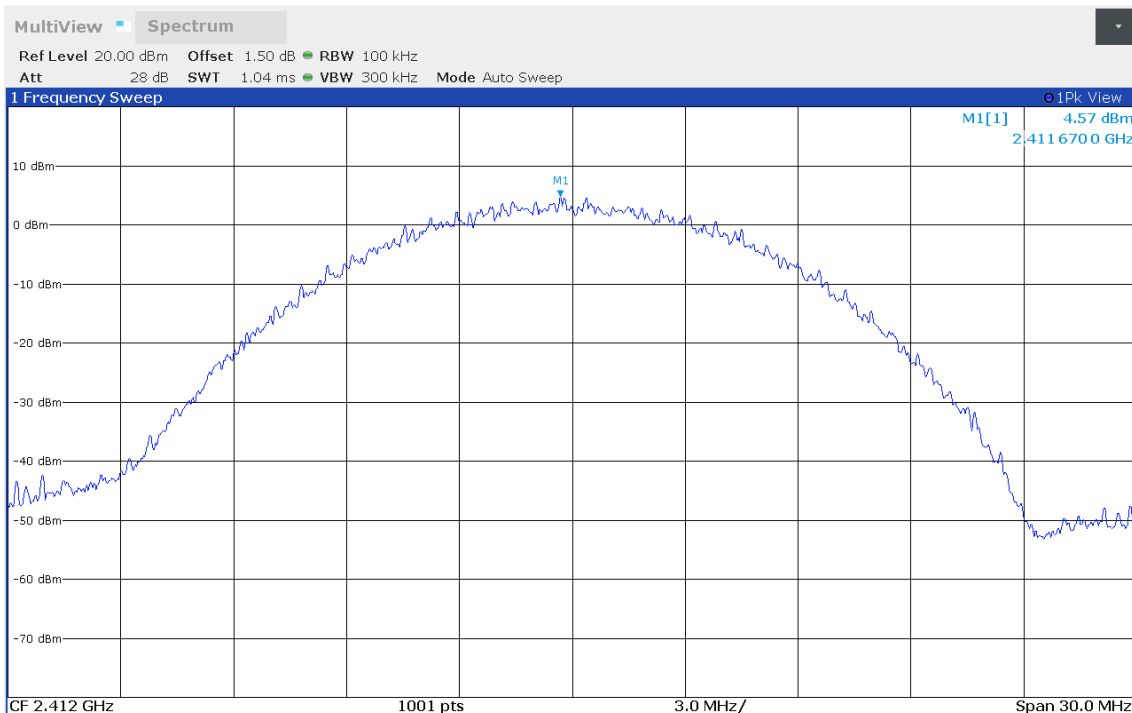
Test Results - HT20					
Channel [MHz]	PSD Port 1 [dBm/RBW]	PSD Port 2 [dBm/RBW]	Total PSD [dBm/RBW]	Limit [dBm/3kHz]	Verdict
2412	1.680	1.727	4.714	8.0	PASS
2437	1.483	1.485	4.494	8.0	PASS
2462	1.577	1.542	4.570	8.0	PASS

Test Results - HT40					
Channel [MHz]	PSD Port 1 [dBm/RBW]	PSD Port 2 [dBm/RBW]	Total PSD [dBm/RBW]	Limit [dBm/3kHz]	Verdict
2422	-0.945	-0.688	2.196	8.0	PASS
2437	-0.421	-0.566	2.517	8.0	PASS
2452	-0.287	-0.662	2.540	8.0	PASS

RBW = 100 kHz

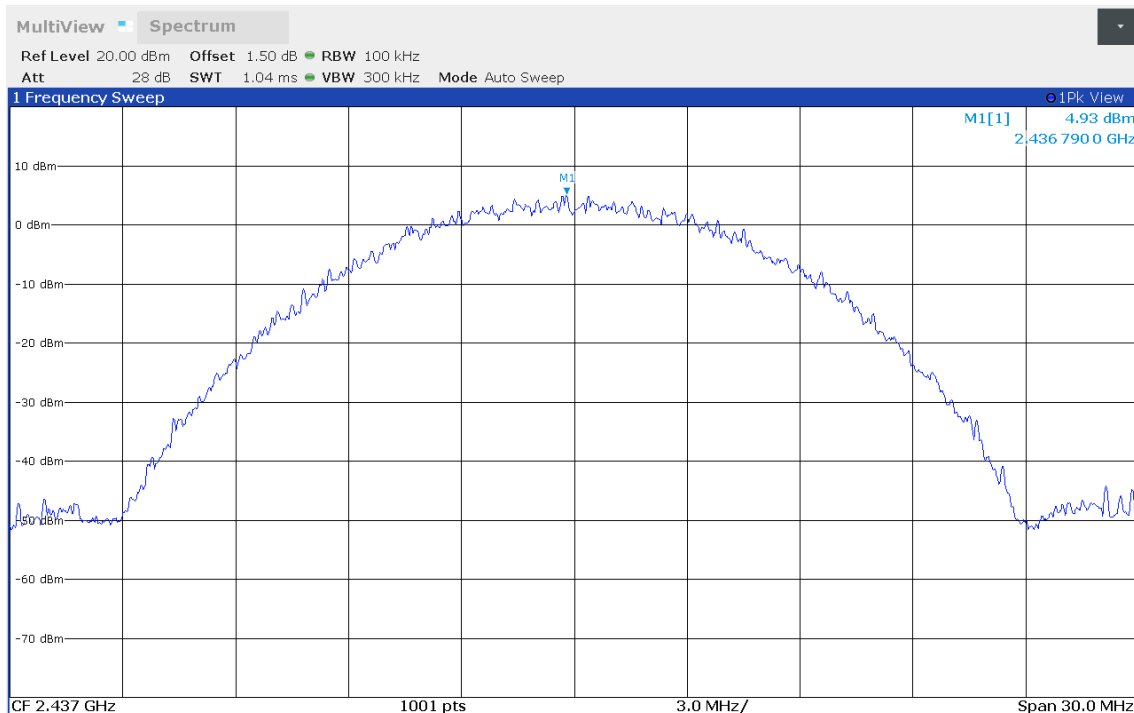
## Peak Power Spectral Density

Project Number: G0M-2011-9488  
 Applicant: Leica Geosystems AG  
 Model Description: UAV 3D measurement device  
 Model: BLK2FLY  
 Test Sample ID: 34982  
 Reference Standards: FCC 15.247, RSS-247  
 Reference Method: ANSI C63.10:2013, Section 11.10.2  
 Operational Mode: IEEE 802.11 b, Channel: 1, 2412 MHz  
 Operating Conditions: Tnom/Vnom  
 Operator: Toralf Jahn  
 Test Site: Eurofins Product Service GmbH  
 Test Date: 2021-09-11  
 Antenna port: 1  
 Peak Frequency [MHz]: 2411.670  
 Spectral Density [dBm/RBW]: 4.575  
 Resolution Bandwidth [kHz]: 100 kHz



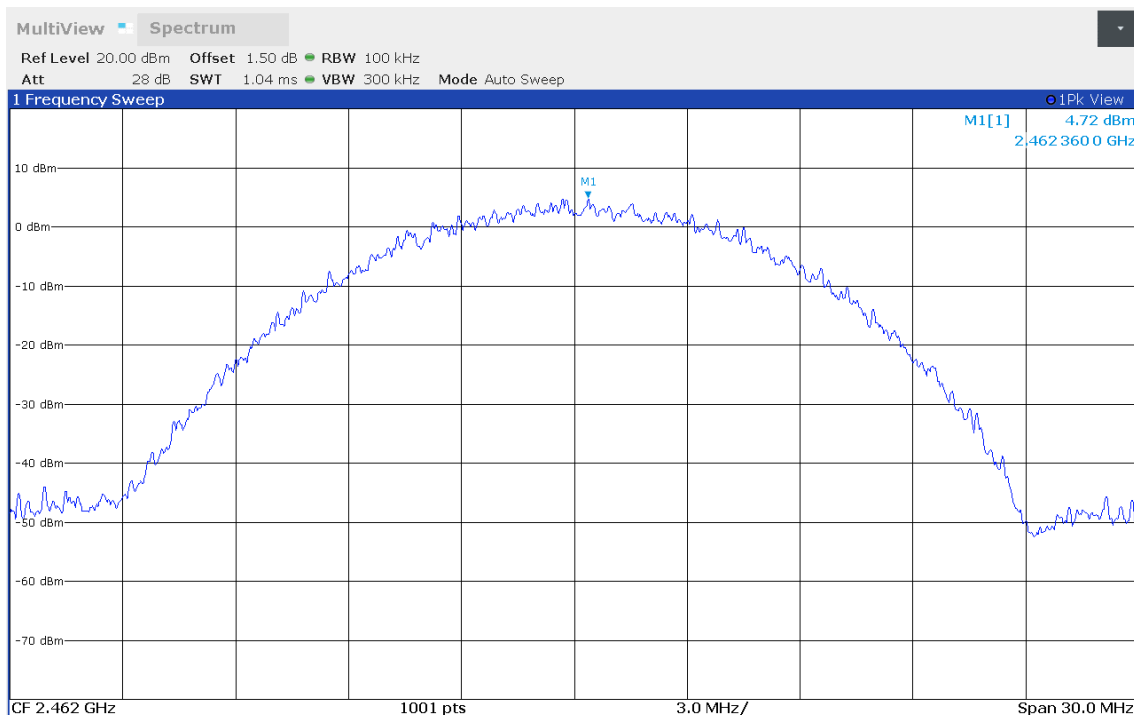
### Peak Power Spectral Density

Project Number: G0M-2011-9488  
 Applicant: Leica Geosystems AG  
 Model Description: UAV 3D measurement device  
 Model: BLK2FLY  
 Test Sample ID: 34982  
 Reference Standards: FCC 15.247, RSS-247  
 Reference Method: ANSI C63.10:2013, Section 11.10.2  
 Operational Mode: IEEE 802.11 b, Channel: 6, 2437 MHz  
 Operating Conditions: Tnom/Vnom  
 Operator: Toralf Jahn  
 Test Site: Eurofins Product Service GmbH  
 Test Date: 2021-09-11  
 Antenna port: 1  
 Peak Frequency [MHz]: 2436.790  
 Spectral Density [dBm/RBW]: 4.929  
 Resolution Bandwidth [kHz]: 100 kHz



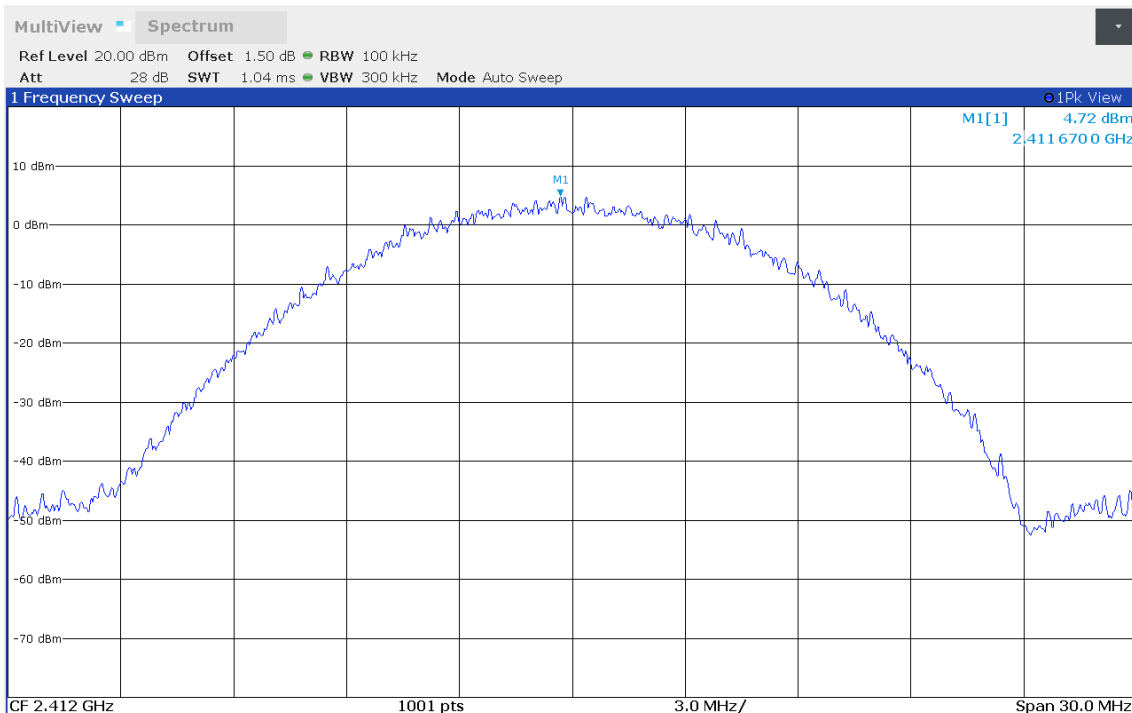
## Peak Power Spectral Density

Project Number: G0M-2011-9488  
 Applicant: Leica Geosystems AG  
 Model Description: UAV 3D measurement device  
 Model: BLK2FLY  
 Test Sample ID: 34982  
 Reference Standards: FCC 15.247, RSS-247  
 Reference Method: ANSI C63.10:2013, Section 11.10.2  
 Operational Mode: IEEE 802.11 b, Channel: 11, 2462 MHz  
 Operating Conditions: Tnom/Vnom  
 Operator: Toralf Jahn  
 Test Site: Eurofins Product Service GmbH  
 Test Date: 2021-09-11  
 Antenna port: 1  
 Peak Frequency [MHz]: 2462.360  
 Spectral Density [dBm/RBW]: 4.723  
 Resolution Bandwidth [kHz]: 100 kHz



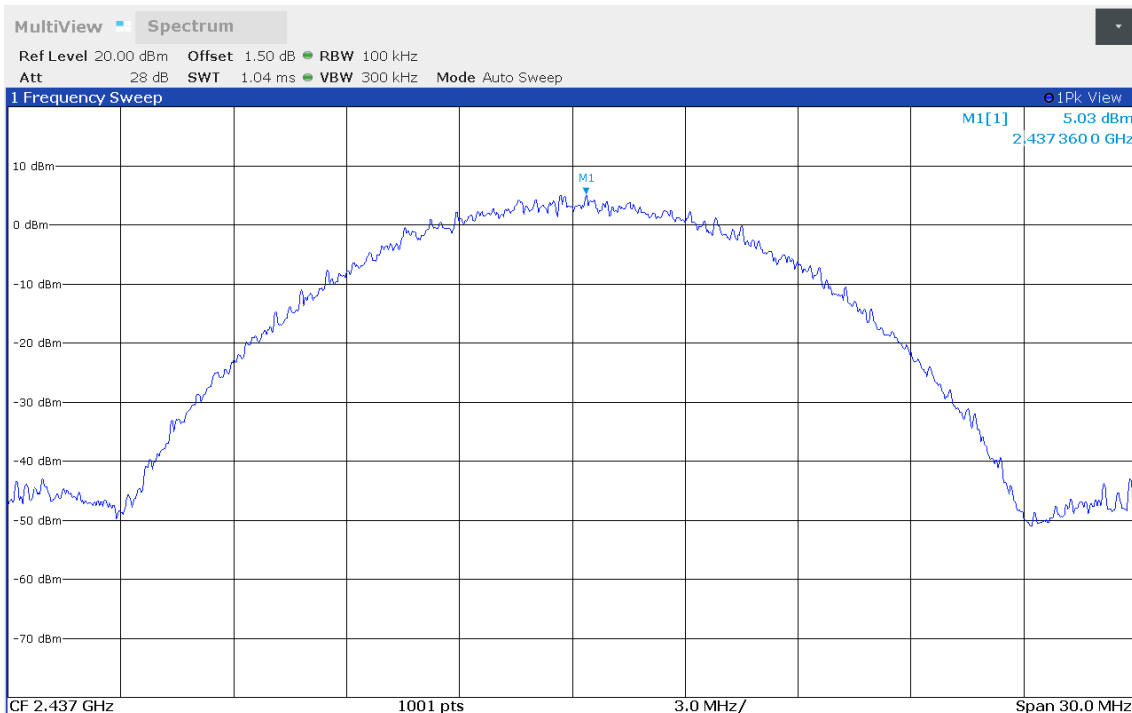
## Peak Power Spectral Density

Project Number: G0M-2011-9488  
 Applicant: Leica Geosystems AG  
 Model Description: UAV 3D measurement device  
 Model: BLK2FLY  
 Test Sample ID: 34982  
 Reference Standards: FCC 15.247, RSS-247  
 Reference Method: ANSI C63.10:2013, Section 11.10.2  
 Operational Mode: IEEE 802.11 b, Channel: 1, 2412 MHz  
 Operating Conditions: Tnom/Vnom  
 Operator: Toralf Jahn  
 Test Site: Eurofins Product Service GmbH  
 Test Date: 2021-09-11  
 Antenna port: 2  
 Peak Frequency [MHz]: 2411.670  
 Spectral Density [dBm/RBW]: 4.718  
 Resolution Bandwidth [kHz]: 100 kHz



### Peak Power Spectral Density

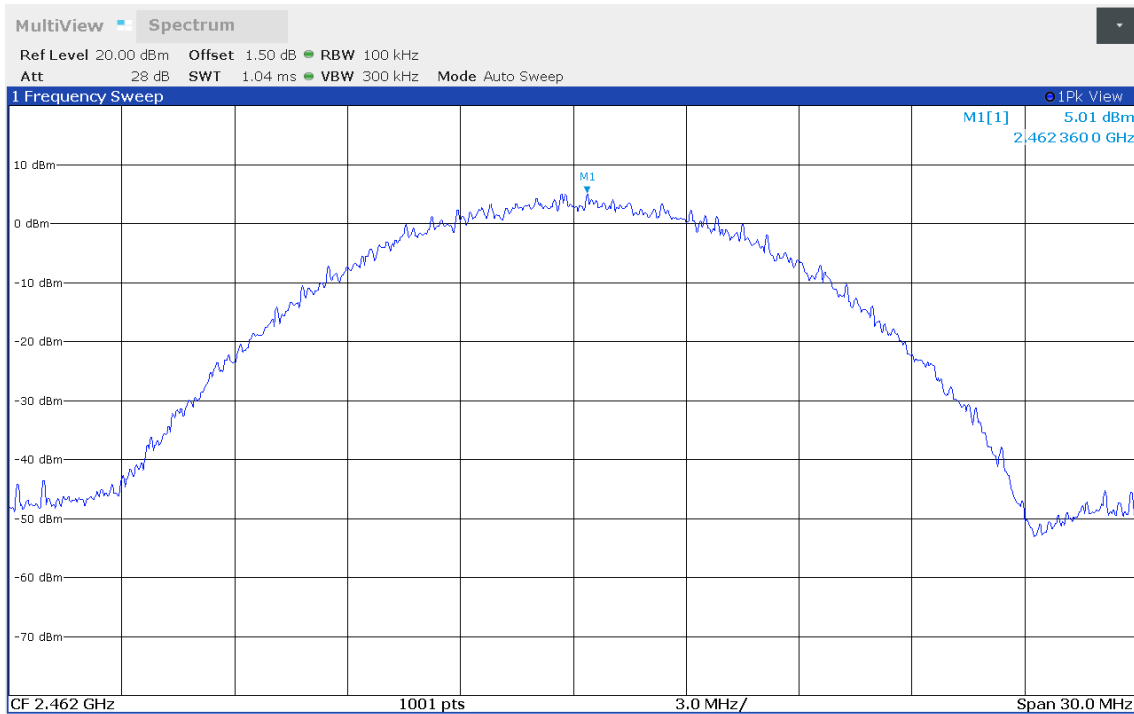
Project Number: G0M-2011-9488  
 Applicant: Leica Geosystems AG  
 Model Description: UAV 3D measurement device  
 Model: BLK2FLY  
 Test Sample ID: 34982  
 Reference Standards: FCC 15.247, RSS-247  
 Reference Method: ANSI C63.10:2013, Section 11.10.2  
 Operational Mode: IEEE 802.11 b, Channel: 6, 2437 MHz  
 Operating Conditions: Tnom/Vnom  
 Operator: Toralf Jahn  
 Test Site: Eurofins Product Service GmbH  
 Test Date: 2021-09-11  
 Antenna port: 2  
 Peak Frequency [MHz]: 2437.360  
 Spectral Density [dBm/RBW]: 5.028  
 Resolution Bandwidth [kHz]: 100 kHz



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### Peak Power Spectral Density

Project Number: G0M-2011-9488  
 Applicant: Leica Geosystems AG  
 Model Description: UAV 3D measurement device  
 Model: BLK2FLY  
 Test Sample ID: 34982  
 Reference Standards: FCC 15.247, RSS-247  
 Reference Method: ANSI C63.10:2013, Section 11.10.2  
 Operational Mode: IEEE 802.11 b, Channel: 11, 2462 MHz  
 Operating Conditions: Tnom/Vnom  
 Operator: Toralf Jahn  
 Test Site: Eurofins Product Service GmbH  
 Test Date: 2021-09-11  
 Antenna port: 2  
 Peak Frequency [MHz]: 2462.360  
 Spectral Density [dBm/RBW]: 5.008  
 Resolution Bandwidth [kHz]: 100 kHz

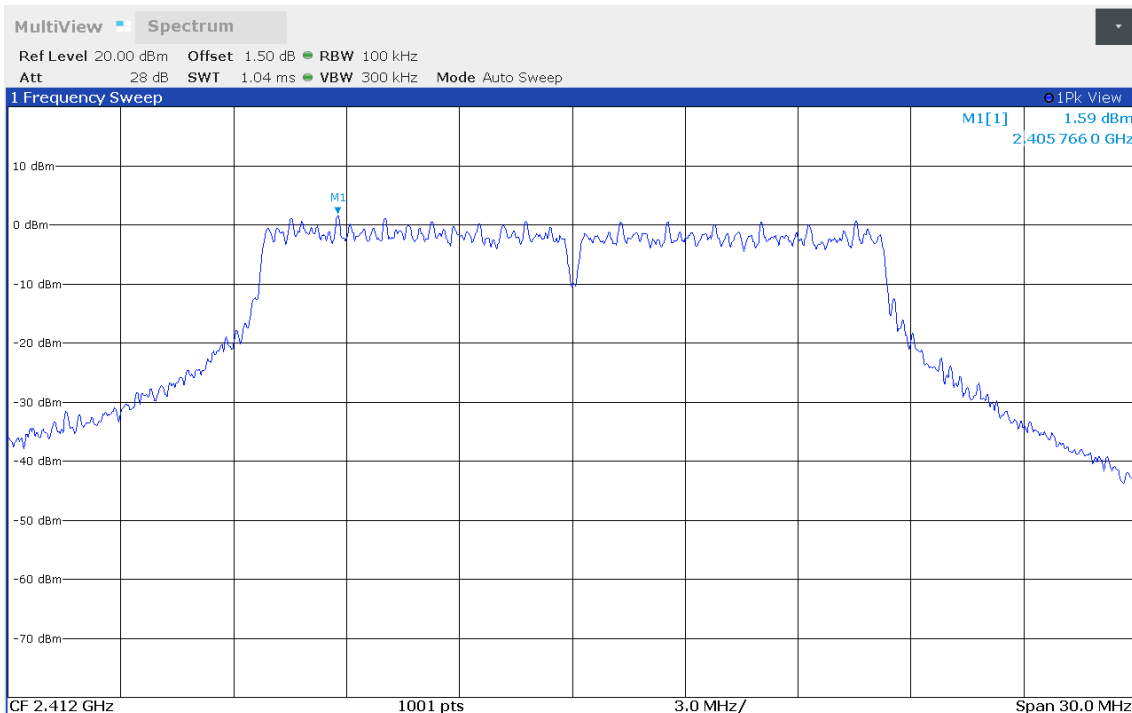


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### Peak Power Spectral Density

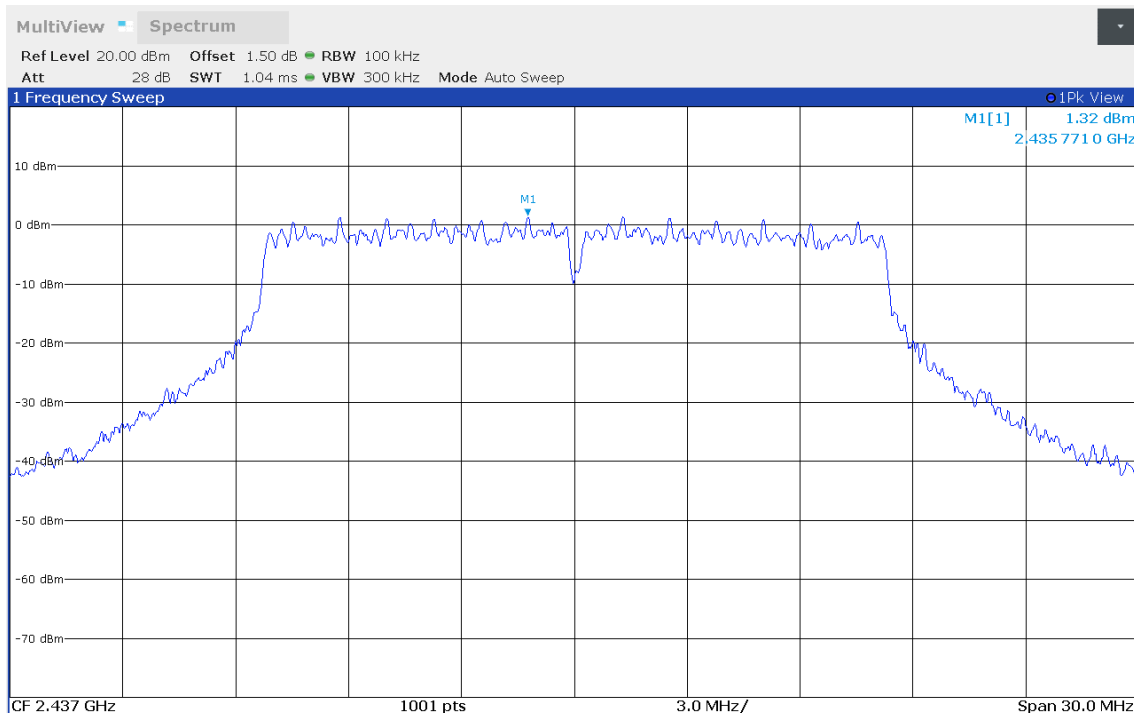
Project Number: G0M-2011-9488  
 Applicant: Leica Geosystems AG  
 Model Description: UAV 3D measurement device  
 Model: BLK2FLY  
 Test Sample ID: 34982  
 Reference Standards: FCC 15.247, RSS-247  
 Reference Method: ANSI C63.10:2013, Section 11.10.2  
 Operational Mode: IEEE 802.11 g, Channel: 1, 2412 MHz  
 Operating Conditions: Tnom/Vnom  
 Operator: Toralf Jahn  
 Test Site: Eurofins Product Service GmbH  
 Test Date: 2021-09-11  
 Antenna port: 1  
 Peak Frequency [MHz]: 2405.766  
 Spectral Density [dBm/RBW]: 1.587  
 Resolution Bandwidth [kHz]: 100 kHz



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### Peak Power Spectral Density

Project Number: G0M-2011-9488  
 Applicant: Leica Geosystems AG  
 Model Description: UAV 3D measurement device  
 Model: BLK2FLY  
 Test Sample ID: 34982  
 Reference Standards: FCC 15.247, RSS-247  
 Reference Method: ANSI C63.10:2013, Section 11.10.2  
 Operational Mode: IEEE 802.11 g, Channel: 6, 2437 MHz  
 Operating Conditions: Tnom/Vnom  
 Operator: Toralf Jahn  
 Test Site: Eurofins Product Service GmbH  
 Test Date: 2021-09-11  
 Antenna port: 1  
 Peak Frequency [MHz]: 2435.771  
 Spectral Density [dBm/RBW]: 1.322  
 Resolution Bandwidth [kHz]: 100 kHz



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