

RF-EXPOSURE REPORT FCC 47 CFR Part 2.1091 ISED RSS-102 Maximum permissible exposure	
Report Reference No	G0M-2011-9488-TFC091MP-V01
Testing Laboratory	Eurofins Product Service GmbH
Address	Storkower Str. 38c 15526 Reichenwalde Germany
Accreditation	 A2LA Accredited Testing Laboratory, Certificate No.: 1983.01 FCC Test Firm Designation Number: DE0008 ISED Testing Laboratory site: 3470A-2
Applicant	Leica Geosystems AG
Address	Heinrich-Wild-Strasse 9435 Heerbrugg SWITZERLAND
Test Specification	According to FCC/ISED rules
Standard	FCC 47 CFR 2.1091 ISED RSS-102
Non-Standard Test Method	None
Equipment under Test (EUT):	
Product Description	UAV 3D measurement device
Model(s)	BLK2FLY
Additional Model(s)	None
Brand Name(s)	Leica Geosystems AG
Hardware Version(s)	Rev. D
Software Version(s)	0.13.0
FCC ID	RFD-BLK2FLY
IC	3177A-BLK2FLY
Test Result	PASSED

Possible test case verdicts:		
required by standard but not tested	N/T	
not required by standard	N/R	
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	2020-12-03	
Report:		
Compiled by	Charline Graf	
Tested by (+ signature) (Responsible for Test)	Charline Graf	
Approved by (+ signature) (Deputy Head of Lab)	Toralf Jahn	
Date of Issue	2022-02-25	
Total number of pages	31	
General Remarks:		
The test results presented in this report relate only to the object tested. 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. This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory.		
Additional Comments:		

VERSION HISTORY

Version History			
Version	Issue Date	Remarks	Revised By
01	2022-02-25	Initial Release	

ABBREVIATIONS AND ACRONYMS

Acronyms	
Acronym	Description
EIRP	Equivalent Isotropic Radiated Power
EUT	Equipment Under Test
MPE	Maximum Permissible Exposure

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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)	3000102
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
Environment	General public

1.1 Reference Documents

Document Type	Document No.	Issued by	Date
Radio Test Report 47 CFR Part 15E	G0M-2011-9488- TFC407WF-V01	Eurofins Product Service GmbH	2022-01-07
Radio Test Report 47 CFR Part 15C RSS-210, Issue 10	G0M-2011-9488- TFC249BL-V01	Eurofins Product Service GmbH	2022-01-20
Radio Test Report 47 CFR Part 15C RSS-247, Issue 2	G0M-2011-9488- TFC247WF-V01	Eurofins Product Service GmbH	2022-01-18
Radio Test Report 47 CFR Chapter 1 Part 22H,24E, 27C RSS-132, Issue 3 RSS-133, Issue 6 RSS-130, Issue 2 RSS-139, Issue 3	TR21-1-0103301T07a	Cetecom	2022-01-18
Technical Data Sheet for LTE antenna	SZ17845	Bittium Corporation	-
Radio Test Report Subpart C §15.255	21096188-22599-1	IBL-Lab GmbH	2022-02-18

1.2 Power density radiation sources

Mode	Operating Frequency [MHz]	Maximum conducted power [dBm]	Maximum radiated power [dBm EIRP]	Maximum duty cycle [%]	Maximum antenna gain [dBi]	Maximum antenna diameter [cm]
IEEE 802.11 (2.4 GHz)	2412	26.69	30.19	91	3.5	N/A
IEEE 802.11 (U-NII-1)	5180	21.2	26.0	92	4.8	N/A
LTE FDD2	1880.0	25.7	29.5	100	3.8	N/A
LTE FDD4	1732.5	25.7	28.0	100	2.3	N/A
LTE FDD5	836.5	25.7	28.7	100	3.0	N/A
LTE FDD7	2535.0	25.7	28.2	100	2.5	N/A
LTE FDD12	707.5	25.7	26.7	100	1.0	N/A
LTE FDD13	782.0	25.7	27.9	100	2.2	N/A
LTE FDD26	831.5	25.7	28.7	100	3.0	N/A
LTE FDD41	2501.0	25.7	28.7	100	3.0	N/A
LTE FDD66	1745.0	25.7	28.0	100	2.3	N/A
60 GHz Radar	62000.0	N/A	13.89	14	N/A	N/A
Bluetooth LE	2440	-1.54	1.96	89	3.5	N/A
Comment:						

1.3 Field strength radiation sources

None

1.4 Concurrent Sources

Concurrent operating conditions
IEEE 802.11 (2.4 GHz) + LTE FDD2 + 60 GHz Radar + Bluetooth LE
IEEE 802.11 (2.4 GHz) + LTE FDD26 + 60 GHz Radar + Bluetooth LE
IEEE 802.11 (2.4 GHz) + LTE FDD41 + 60 GHz Radar + Bluetooth LE
IEEE 802.11 (U-NII-1) + LTE FDD2 + 60 GHz Radar + Bluetooth LE
IEEE 802.11 (U-NII-1) + LTE FDD26 + 60 GHz Radar + Bluetooth LE
IEEE 802.11 (U-NII-1) + LTE FDD41 + 60 GHz Radar + Bluetooth LE
Comment: *worst case declaration for every frequency range of each technology

2 Result Summary

FCC MPE Evaluation - Single radiation sources					
Product Standard Reference	Requirement	Reference Method	Mode	Distance [m]	Verdict
47 CFR 2.1091	Maximum permissible exposure	FCC KDB 447498	IEEE 802.11 (2.4 GHz)	0.20	PASS
47 CFR 2.1091	Maximum permissible exposure	FCC KDB 447498	IEEE 802.11 (U-NII-1)	0.20	PASS
47 CFR 2.1091	Maximum permissible exposure	FCC KDB 447498	LTE FDD2	0.20	PASS
47 CFR 2.1091	Maximum permissible exposure	FCC KDB 447498	LTE FDD4	0.20	PASS
47 CFR 2.1091	Maximum permissible exposure	FCC KDB 447498	LTE FDD5	0.20	PASS
47 CFR 2.1091	Maximum permissible exposure	FCC KDB 447498	LTE FDD7	0.20	PASS
47 CFR 2.1091	Maximum permissible exposure	FCC KDB 447498	LTE FDD12	0.20	PASS
47 CFR 2.1091	Maximum permissible exposure	FCC KDB 447498	LTE FDD13	0.20	PASS
47 CFR 2.1091	Maximum permissible exposure	FCC KDB 447498	LTE FDD26	0.20	PASS
47 CFR 2.1091	Maximum permissible exposure	FCC KDB 447498	LTE FDD41	0.20	PASS
47 CFR 2.1091	Maximum permissible exposure	FCC KDB 447498	LTE FDD66	0.20	PASS
47 CFR 2.1091	Maximum permissible exposure	FCC KDB 447498	60 GHz Radar	0.20	PASS
47 CFR 2.1091	Maximum permissible exposure	FCC KDB 447498	Bluetooth LE	0.20	PASS
Comment:					

ISED MPE Evaluation - Single radiation sources					
Product Standard Reference	Requirement	Reference Method	Mode	Distance [m]	Verdict
ISED RSS-102	Maximum permissible exposure	ISED RSS-102	IEEE 802.11 (2.4 GHz)	0.20	PASS
ISED RSS-102	Maximum permissible exposure	ISED RSS-102	IEEE 802.11 (U-NII-1)	0.20	PASS
ISED RSS-102	Maximum permissible exposure	ISED RSS-102	LTE FDD2	0.20	PASS
ISED RSS-102	Maximum permissible exposure	ISED RSS-102	LTE FDD4	0.20	PASS
ISED RSS-102	Maximum permissible exposure	ISED RSS-102	LTE FDD5	0.20	PASS
ISED RSS-102	Maximum permissible exposure	ISED RSS-102	LTE FDD7	0.20	PASS
ISED RSS-102	Maximum permissible exposure	ISED RSS-102	LTE FDD12	0.20	PASS
ISED RSS-102	Maximum permissible exposure	ISED RSS-102	LTE FDD13	0.20	PASS
ISED RSS-102	Maximum permissible exposure	ISED RSS-102	LTE FDD26	0.20	PASS
ISED RSS-102	Maximum permissible exposure	ISED RSS-102	LTE FDD41	0.20	PASS
ISED RSS-102	Maximum permissible exposure	ISED RSS-102	LTE FDD66	0.20	PASS
ISED RSS-102	Maximum permissible exposure	ISED RSS-102	60 GHz Radar	0.20	PASS
ISED RSS-102	Maximum permissible exposure	ISED RSS-102	Bluetooth LE	0.20	PASS
Comment:					

FCC MPE Evaluation - Multi-transmitter sources					
Product Standard Reference	Requirement	Reference Method	Mode	Distance [m]	Verdict
47 CFR 2.1091	Maximum permissible exposure	FCC KDB 447498	IEEE 802.11 (2.4 GHz) + LTE FDD2 + 60 GHz Radar + Bluetooth LE	0.20	PASS
47 CFR 2.1091	Maximum permissible exposure	FCC KDB 447498	IEEE 802.11 (2.4 GHz) + LTE FDD26 + 60 GHz Radar + Bluetooth LE	0.20	PASS
47 CFR 2.1091	Maximum permissible exposure	FCC KDB 447498	IEEE 802.11 (2.4 GHz) + LTE FDD41 + 60 GHz Radar + Bluetooth LE	0.20	PASS
47 CFR 2.1091	Maximum permissible exposure	FCC KDB 447498	IEEE 802.11 (U-NII-1) + LTE FDD2 + 60 GHz Radar + Bluetooth LE	0.20	PASS
47 CFR 2.1091	Maximum permissible exposure	FCC KDB 447498	IEEE 802.11 (U-NII-1) + LTE FDD26 + 60 GHz Radar + Bluetooth LE	0.20	PASS
47 CFR 2.1091	Maximum permissible exposure	FCC KDB 447498	IEEE 802.11 (U-NII-1) + LTE FDD41 + 60 GHz Radar + Bluetooth LE	0.20	PASS
Comment:					

ISED MPE Evaluation - Multi-transmitter sources					
Product Standard Reference	Requirement	Reference Method	Mode	Distance [m]	Verdict
ISED RSS-102	Maximum permissible exposure	ISED RSS-102	IEEE 802.11 (2.4 GHz) + LTE FDD2 + 60 GHz Radar + Bluetooth LE	0.20	PASS
ISED RSS-102	Maximum permissible exposure	ISED RSS-102	IEEE 802.11 (2.4 GHz) + LTE FDD26 + 60 GHz Radar + Bluetooth LE	0.20	PASS
ISED RSS-102	Maximum permissible exposure	ISED RSS-102	IEEE 802.11 (2.4 GHz) + LTE FDD41 + 60 GHz Radar + Bluetooth LE	0.20	PASS
ISED RSS-102	Maximum permissible exposure	ISED RSS-102	IEEE 802.11 (U-NII-1) + LTE FDD2 + 60 GHz Radar + Bluetooth LE	0.20	PASS
ISED RSS-102	Maximum permissible exposure	ISED RSS-102	IEEE 802.11 (U-NII-1) + LTE FDD26 + 60 GHz Radar + Bluetooth LE	0.20	PASS
ISED RSS-102	Maximum permissible exposure	ISED RSS-102	IEEE 802.11 (U-NII-1) + LTE FDD41 + 60 GHz Radar + Bluetooth LE	0.20	PASS
Comment:					

3 RF-Exposure classification

RF-Exposure Categories	
Fixed	A fixed device is defined as a device physically secured at one fixed location and cannot be easily re-located.
Mobile	A mobile device is defined as a transmitting device designed to be used in other than fixed locations and to generally be used in such a way that a separation distance of at least 20 centimeters is normally maintained between the transmitter's radiating structure(s) and the body of the user or nearby persons.
Portable	A portable device is defined as a transmitting device designed to be used so that the radiating structure(s) of the device is/are within 20 centimeters of the body of the user.

RF-Exposure Categories	
Occupational / Controlled	Limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure. Limits for occupational/controlled exposure also apply in situations when an individual is transient through a location where occupational/controlled limits apply provided he or she is made aware of the potential for exposure.
General population / Uncontrolled	Exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or cannot exercise control over their exposure.

4 RF-Exposure limits

FCC Limits – General Population / Uncontrolled Exposure				
Frequency range [MHz]	Electric field strength [V/M]	Magnetic field strength [A/M]	Power density [W/m ²]	Averaging time [min]
0.3 – 1.34	614	1.63	1000	30
1.34 – 30	824/f	2.19/f	1800/f ²	30
30 – 300	27.5	0.073	2	30
300 – 1500	-	-	f/150	30
1500 – 100000	-	-	10.0	30

FCC Limits – Occupational / Controlled Exposure				
Frequency range [MHz]	Electric field strength [V/M]	Magnetic field strength [A/M]	Power density [W/m ²]	Averaging time [min]
0.3 – 3.0	614	1.63	1000	6
3.0 – 30	1842/f	4.89/f	9000/f ²	6
30 – 300	61.4	0.163	10.0	6
300 – 1500	-	-	f/30	6
1500 – 100000	-	-	50	6

ISED Limits – General Population / Uncontrolled Exposure				
Frequency range [MHz]	Electric field strength [V/M]	Magnetic field strength [A/M]	Power density [W/m ²]	Averaging time [min]
0.003 – 10	83	90	-	Instantaneous
0.1 – 10	-	0.73/f	-	6
1.1 – 10	87/f ^{0.5}	-	-	6
10 – 20	27.46	0.0728	2	6
20 – 48	58.07/f ^{0.5}	0.1540/f ^{0.25}	8.944/f ^{0.5}	6
48 – 300	22.06	0.05852	1.291	6
300 – 6000	3.142·f ^{0.3417}	0.008335·f ^{0.3417}	0.02619·f ^{0.6834}	6
6000 – 15000	61.4	0.163	10	6
15000 – 150000	61.4	0.163	10	616000/f ^{1.2}
150000 – 300000	0.158·f ^{0.5}	4.21·10 ⁻⁴ ·f ^{0.5}	6.67·10 ⁻⁵ ·f	616000/f ^{1.2}

ISED Limits – Occupational / Controlled Exposure				
Frequency range [MHz]	Electric field strength [V/M]	Magnetic field strength [A/M]	Power density [W/m ²]	Averaging time [min]
0.003 – 10	170	180	-	Instantaneous
0.1 – 10	-	1.6/f	-	6
1.1 – 10	193/f ^{0.5}	-	-	6
10 – 20	61.4	0.163	10	6
20 – 48	129.8/f ^{0.5}	0.3444/f ^{0.25}	44.72/f ^{0.5}	6
48 – 300	49.33	0.1309	6.455	6
300 – 6000	15.60·f ^{0.25}	0.04138·f ^{0.25}	0.6455·f ^{0.5}	6
6000 – 15000	137	0.364	50	6
15000 – 150000	137	0.364	50	616000/f ^{1.2}
150000 – 300000	0.354·f ^{0.5}	9.40·10 ⁻⁴ ·f ^{0.5}	3.33·10 ⁻⁴ ·f	616000/f ^{1.2}

5 RF-Exposure Evaluation

Evaluation Relations
$\lambda[m] = \frac{c \left[\frac{m}{s} \right]}{f[Hz]} ; R_{FF}[m] \geq \frac{2 \cdot D[m]^2}{\lambda[m]}$ $S[W/m^2] = \frac{P_{E.I.R.P.}[W]}{4\pi R[m]^2} ; R[m] = \sqrt{\frac{P_{E.I.R.P.}[W]}{4\pi S[W/m^2]}}$ $DCC [dB] = 10 \cdot \log_{10} \left(\frac{DC[\%]}{100} \right)$ $\sum_{i=1}^N \frac{S_i \left[\frac{W}{m^2} \right]}{S_{Li} \left[\frac{W}{m^2} \right]} + \sum_{j=1}^M \left(\frac{E_j \left[\frac{V}{m} \right]}{E_{Lj} \left[\frac{V}{m} \right]} \right)^2 + \sum_{k=1}^O \left(\frac{H_k \left[\frac{A}{m} \right]}{H_{Lk} \left[\frac{A}{m} \right]} \right)^2 < 1$

Evaluation Procedure
<u>Standalone operation evaluation:</u> For each radio and frequency band the worst case transmission mode with the highest peak conducted or radiated power is evaluated at the frequency that results in the most restrictive rf-exposure limit. From the peak power values, antenna gains and duty cycles taken from the reference documents, the source average radiated power values are calculated. From the average radiated power the power densities at antenna far-field distance is calculated. The distance from the radiation source for compliance power density is calculated. If the separation distance is lower than the far-field distance, the far-field distance is given as compliance separation distance because the plane wave power density assessment is only valid in the far-field of the radiation source. For radiation sources for which the average electric and magnetic fields are measured using field probes, the measured field strength values are compared to the reference limits. For those sources no calculations are performed. Compliance with the reference values is determined with the near field measurements. <u>Concurrent operation evaluation:</u> First the evaluation distance is set to an appropriate value. For all radiation sources for which power densities are calculated, the power densities at the evaluation distance are calculated and for all other sources the electric or magnetic field strengths are measured using field probes. Finally the ratios of the power densities and/or field strength values and the corresponding limits are calculated and summed and the sum is compared to the maximum of 1.

6 Single Source Evaluation Results - FCC

IEEE 802.11 (2.4 GHz)	
Transmission Mode	
Transmission Frequency (f) [MHz]	2412
Antenna far-field distance	
Maximum antenna diameter (D) [m]	N/A
Transmission wavelength (λ) [m]	N/A
Antenna far-field distance (R_{FF}) [m]	N/A
Source average power	
Peak radiated power (PR) [dBm EIRP]	30.19
Maximum transmission duty cycle (DC)	0.91
Duty cycle correction (DCC) [dB]	-0.41
Average radiated power (PRAVG) [dBm EIRP]	29.78
Power density	
Compliance power density limit [W/m ²]	10.000
Power density (S) @ Antenna far-field distance [W/m ²]	N/A
Power density (S) @ 0.20 m [W/m ²]	1.891
Power density ratio @ 0.20 m	0.19
Distance for compliance power density (S=SL) [m]	0.087
Compliance	
Verdict	PASS
Comment:	

IEEE 802.11 (U-NII-1)	
Transmission Mode	
Transmission Frequency (f) [MHz]	5180
Antenna far-field distance	
Maximum antenna diameter (D) [m]	N/A
Transmission wavelength (λ) [m]	N/A
Antenna far-field distance (R_{FF}) [m]	N/A
Source average power	
Peak radiated power (PR) [dBm EIRP]	26.0
Maximum transmission duty cycle (DC)	0.92
Duty cycle correction (DCC) [dB]	-0.36
Average radiated power (PRAVG) [dBm EIRP]	25.64
Power density	
Compliance power density limit [W/m ²]	10.000
Power density (S) @ Antenna far-field distance [W/m ²]	N/A
Power density (S) @ 0.20 m [W/m ²]	0.729
Power density ratio @ 0.20 m	0.07
Distance for compliance power density (S=SL) [m]	0.054
Compliance	
Verdict	PASS
Comment:	

LTE FDD2	
Transmission Mode	
Transmission Frequency (f) [MHz]	1880.0
Antenna far-field distance	
Maximum antenna diameter (D) [m]	N/A
Transmission wavelength (λ) [m]	N/A
Antenna far-field distance (R_{FF}) [m]	N/A
Source average power	
Peak radiated power (PR) [dBm EIRP]	29.5
Maximum transmission duty cycle (DC)	1.00
Duty cycle correction (DCC) [dB]	0.00
Average radiated power (PRAVG) [dBm EIRP]	29.50
Power density	
Compliance power density limit [W/m ²]	10.000
Power density (S) @ Antenna far-field distance [W/m ²]	N/A
Power density (S) @ 0.20 m [W/m ²]	1.773
Power density ratio @ 0.20 m	0.18
Distance for compliance power density (S=SL) [m]	0.084
Compliance	
Verdict	PASS
Comment:	

LTE FDD4	
Transmission Mode	
Transmission Frequency (f) [MHz]	1732.5
Antenna far-field distance	
Maximum antenna diameter (D) [m]	N/A
Transmission wavelength (λ) [m]	N/A
Antenna far-field distance (R_{FF}) [m]	N/A
Source average power	
Peak radiated power (PR) [dBm EIRP]	28.0
Maximum transmission duty cycle (DC)	1.00
Duty cycle correction (DCC) [dB]	0.00
Average radiated power (PRAVG) [dBm EIRP]	28.00
Power density	
Compliance power density limit [W/m ²]	10.000
Power density (S) @ Antenna far-field distance [W/m ²]	N/A
Power density (S) @ 0.20 m [W/m ²]	1.255
Power density ratio @ 0.20 m	0.13
Distance for compliance power density (S=SL) [m]	0.071
Compliance	
Verdict	PASS
Comment:	

LTE FDD5	
Transmission Mode	
Transmission Frequency (f) [MHz]	836.5
Antenna far-field distance	
Maximum antenna diameter (D) [m]	N/A
Transmission wavelength (λ) [m]	N/A
Antenna far-field distance (R_{FF}) [m]	N/A
Source average power	
Peak radiated power (PR) [dBm EIRP]	28.7
Maximum transmission duty cycle (DC)	1.00
Duty cycle correction (DCC) [dB]	0.00
Average radiated power (PRAVG) [dBm EIRP]	28.70
Power density	
Compliance power density limit [W/m ²]	5.577
Power density (S) @ Antenna far-field distance [W/m ²]	N/A
Power density (S) @ 0.20 m [W/m ²]	1.475
Power density ratio @ 0.20 m	0.26
Distance for compliance power density (S=SL) [m]	0.103
Compliance	
Verdict	PASS
Comment:	

LTE FDD7	
Transmission Mode	
Transmission Frequency (f) [MHz]	2535.0
Antenna far-field distance	
Maximum antenna diameter (D) [m]	N/A
Transmission wavelength (λ) [m]	N/A
Antenna far-field distance (R_{FF}) [m]	N/A
Source average power	
Peak radiated power (PR) [dBm EIRP]	28.2
Maximum transmission duty cycle (DC)	1.00
Duty cycle correction (DCC) [dB]	0.00
Average radiated power (PRAVG) [dBm EIRP]	28.20
Power density	
Compliance power density limit [W/m ²]	10.000
Power density (S) @ Antenna far-field distance [W/m ²]	N/A
Power density (S) @ 0.20 m [W/m ²]	1.314
Power density ratio @ 0.20 m	0.13
Distance for compliance power density (S=SL) [m]	0.073
Compliance	
Verdict	PASS
Comment:	

LTE FDD12	
Transmission Mode	
Transmission Frequency (f) [MHz]	707.5
Antenna far-field distance	
Maximum antenna diameter (D) [m]	N/A
Transmission wavelength (λ) [m]	N/A
Antenna far-field distance (R_{FF}) [m]	N/A
Source average power	
Peak radiated power (PR) [dBm EIRP]	26.7
Maximum transmission duty cycle (DC)	1.00
Duty cycle correction (DCC) [dB]	0.00
Average radiated power (PRAVG) [dBm EIRP]	26.70
Power density	
Compliance power density limit [W/m ²]	4.717
Power density (S) @ Antenna far-field distance [W/m ²]	N/A
Power density (S) @ 0.20 m [W/m ²]	0.931
Power density ratio @ 0.20 m	0.20
Distance for compliance power density (S=SL) [m]	0.089
Compliance	
Verdict	PASS
Comment:	

LTE FDD13	
Transmission Mode	
Transmission Frequency (f) [MHz]	782.0
Antenna far-field distance	
Maximum antenna diameter (D) [m]	N/A
Transmission wavelength (λ) [m]	N/A
Antenna far-field distance (R_{FF}) [m]	N/A
Source average power	
Peak radiated power (PR) [dBm EIRP]	27.9
Maximum transmission duty cycle (DC)	1.00
Duty cycle correction (DCC) [dB]	0.00
Average radiated power (PRAVG) [dBm EIRP]	27.90
Power density	
Compliance power density limit [W/m ²]	5.213
Power density (S) @ Antenna far-field distance [W/m ²]	N/A
Power density (S) @ 0.20 m [W/m ²]	1.227
Power density ratio @ 0.20 m	0.24
Distance for compliance power density (S=SL) [m]	0.097
Compliance	
Verdict	PASS
Comment:	

LTE FDD26	
Transmission Mode	
Transmission Frequency (f) [MHz]	831.5
Antenna far-field distance	
Maximum antenna diameter (D) [m]	N/A
Transmission wavelength (λ) [m]	N/A
Antenna far-field distance (R_{FF}) [m]	N/A
Source average power	
Peak radiated power (PR) [dBm EIRP]	28.7
Maximum transmission duty cycle (DC)	1.00
Duty cycle correction (DCC) [dB]	0.00
Average radiated power (PRAVG) [dBm EIRP]	28.70
Power density	
Compliance power density limit [W/m ²]	5.543
Power density (S) @ Antenna far-field distance [W/m ²]	N/A
Power density (S) @ 0.20 m [W/m ²]	1.475
Power density ratio @ 0.20 m	0.27
Distance for compliance power density (S=SL) [m]	0.103
Compliance	
Verdict	PASS
Comment:	

LTE FDD41	
Transmission Mode	
Transmission Frequency (f) [MHz]	2501.0
Antenna far-field distance	
Maximum antenna diameter (D) [m]	N/A
Transmission wavelength (λ) [m]	N/A
Antenna far-field distance (R_{FF}) [m]	N/A
Source average power	
Peak radiated power (PR) [dBm EIRP]	28.7
Maximum transmission duty cycle (DC)	1.00
Duty cycle correction (DCC) [dB]	0.00
Average radiated power (PRAVG) [dBm EIRP]	28.70
Power density	
Compliance power density limit [W/m ²]	10.000
Power density (S) @ Antenna far-field distance [W/m ²]	N/A
Power density (S) @ 0.20 m [W/m ²]	1.475
Power density ratio @ 0.20 m	0.15
Distance for compliance power density (S=SL) [m]	0.077
Compliance	
Verdict	PASS
Comment:	

LTE FDD66	
Transmission Mode	
Transmission Frequency (f) [MHz]	1745.0
Antenna far-field distance	
Maximum antenna diameter (D) [m]	N/A
Transmission wavelength (λ) [m]	N/A
Antenna far-field distance (R_{FF}) [m]	N/A
Source average power	
Peak radiated power (PR) [dBm EIRP]	28.0
Maximum transmission duty cycle (DC)	1.00
Duty cycle correction (DCC) [dB]	0.00
Average radiated power (PRAVG) [dBm EIRP]	28.00
Power density	
Compliance power density limit [W/m ²]	10.000
Power density (S) @ Antenna far-field distance [W/m ²]	N/A
Power density (S) @ 0.20 m [W/m ²]	1.255
Power density ratio @ 0.20 m	0.13
Distance for compliance power density (S=SL) [m]	0.071
Compliance	
Verdict	PASS
Comment:	

60 GHz Radar	
Transmission Mode	
Transmission Frequency (f) [MHz]	62000.0
Antenna far-field distance	
Maximum antenna diameter (D) [m]	N/A
Transmission wavelength (λ) [m]	N/A
Antenna far-field distance (R_{FF}) [m]	N/A
Source average power	
Peak radiated power (PR) [dBm EIRP]	13.89
Maximum transmission duty cycle (DC)	0.14
Duty cycle correction (DCC) [dB]	-8.54
Average radiated power (PRAVG) [dBm EIRP]	5.35
Power density	
Compliance power density limit [W/m ²]	10.00
Power density (S) @ Antenna far-field distance [W/m ²]	N/A
Power density (S) @ 0.20 m [W/m ²]	0.007
Power density ratio @ 0.20 m	0.00
Distance for compliance power density (S=SL) [m]	0.005
Compliance	
Verdict	PASS
Comment:	

Bluetooth LE	
Transmission Mode	
Transmission Frequency (f) [MHz]	2440
Antenna far-field distance	
Maximum antenna diameter (D) [m]	N/A
Transmission wavelength (λ) [m]	N/A
Antenna far-field distance (R_{FF}) [m]	N/A
Source average power	
Peak radiated power (PR) [dBm EIRP]	1.96
Maximum transmission duty cycle (DC)	0.89
Duty cycle correction (DCC) [dB]	-0.51
Average radiated power (PRAVG) [dBm EIRP]	1.45
Power density	
Compliance power density limit [W/m ²]	10.000
Power density (S) @ Antenna far-field distance [W/m ²]	N/A
Power density (S) @ 0.20 m [W/m ²]	0.003
Power density ratio @ 0.20 m	0.00
Distance for compliance power density (S=SL) [m]	0.003
Compliance	
Verdict	PASS
Comment:	

7 Single Source Evaluation Results - ISED

IEEE 802.11 (2.4 GHz)	
Transmission Mode	
Transmission Frequency (f) [MHz]	2412
Antenna far-field distance	
Maximum antenna diameter (D) [m]	N/A
Transmission wavelength (λ) [m]	N/A
Antenna far-field distance (R_{FF}) [m]	N/A
Source average power	
Peak radiated power (PR) [dBm EIRP]	30.19
Maximum transmission duty cycle (DC)	0.91
Duty cycle correction (DCC) [dB]	-0.41
Average radiated power (PRAVG) [dBm EIRP]	29.78
Power density	
Compliance power density limit [W/m ²]	5.366
Power density (S) @ Antenna far-field distance [W/m ²]	N/A
Power density (S) @ 0.20 m [W/m ²]	1.891
Power density ratio @ 0.20 m	0.35
Distance for compliance power density (S=SL) [m]	0.119
Compliance	
Verdict	PASS
Comment:	

IEEE 802.11 (U-NII-1)	
Transmission Mode	
Transmission Frequency (f) [MHz]	5180
Antenna far-field distance	
Maximum antenna diameter (D) [m]	N/A
Transmission wavelength (λ) [m]	N/A
Antenna far-field distance (R_{FF}) [m]	N/A
Source average power	
Peak radiated power (PR) [dBm EIRP]	26.0
Maximum transmission duty cycle (DC)	0.92
Duty cycle correction (DCC) [dB]	-0.36
Average radiated power (PRAVG) [dBm EIRP]	25.64
Power density	
Compliance power density limit [W/m ²]	9.047
Power density (S) @ Antenna far-field distance [W/m ²]	N/A
Power density (S) @ 0.20 m [W/m ²]	0.729
Power density ratio @ 0.20 m	0.08
Distance for compliance power density (S=SL) [m]	0.057
Compliance	
Verdict	PASS
Comment:	

LTE FDD2	
Transmission Mode	
Transmission Frequency (f) [MHz]	1880.0
Antenna far-field distance	
Maximum antenna diameter (D) [m]	N/A
Transmission wavelength (λ) [m]	N/A
Antenna far-field distance (R_{FF}) [m]	N/A
Source average power	
Peak radiated power (PR) [dBm EIRP]	29.5
Maximum transmission duty cycle (DC)	1.00
Duty cycle correction (DCC) [dB]	0.00
Average radiated power (PRAVG) [dBm EIRP]	29.50
Power density	
Compliance power density limit [W/m ²]	4.526
Power density (S) @ Antenna far-field distance [W/m ²]	N/A
Power density (S) @ 0.20 m [W/m ²]	1.773
Power density ratio @ 0.20 m	0.39
Distance for compliance power density (S=SL) [m]	0.125
Compliance	
Verdict	PASS
Comment:	

LTE FDD4	
Transmission Mode	
Transmission Frequency (f) [MHz]	1732.5
Antenna far-field distance	
Maximum antenna diameter (D) [m]	N/A
Transmission wavelength (λ) [m]	N/A
Antenna far-field distance (R_{FF}) [m]	N/A
Source average power	
Peak radiated power (PR) [dBm EIRP]	28.0
Maximum transmission duty cycle (DC)	1.00
Duty cycle correction (DCC) [dB]	0.00
Average radiated power (PRAVG) [dBm EIRP]	28.00
Power density	
Compliance power density limit [W/m ²]	4.280
Power density (S) @ Antenna far-field distance [W/m ²]	N/A
Power density (S) @ 0.20 m [W/m ²]	1.255
Power density ratio @ 0.20 m	0.29
Distance for compliance power density (S=SL) [m]	0.108
Compliance	
Verdict	PASS
Comment:	

LTE FDD5	
Transmission Mode	
Transmission Frequency (f) [MHz]	836.5
Antenna far-field distance	
Maximum antenna diameter (D) [m]	N/A
Transmission wavelength (λ) [m]	N/A
Antenna far-field distance (R_{FF}) [m]	N/A
Source average power	
Peak radiated power (PR) [dBm EIRP]	28.7
Maximum transmission duty cycle (DC)	1.00
Duty cycle correction (DCC) [dB]	0.00
Average radiated power (PRAVG) [dBm EIRP]	28.70
Power density	
Compliance power density limit [W/m ²]	2.602
Power density (S) @ Antenna far-field distance [W/m ²]	N/A
Power density (S) @ 0.20 m [W/m ²]	1.475
Power density ratio @ 0.20 m	0.57
Distance for compliance power density (S=SL) [m]	0.151
Compliance	
Verdict	PASS
Comment:	

LTE FDD7	
Transmission Mode	
Transmission Frequency (f) [MHz]	2535.0
Antenna far-field distance	
Maximum antenna diameter (D) [m]	N/A
Transmission wavelength (λ) [m]	N/A
Antenna far-field distance (R_{FF}) [m]	N/A
Source average power	
Peak radiated power (PR) [dBm EIRP]	28.2
Maximum transmission duty cycle (DC)	1.00
Duty cycle correction (DCC) [dB]	0.00
Average radiated power (PRAVG) [dBm EIRP]	28.20
Power density	
Compliance power density limit [W/m ²]	5.552
Power density (S) @ Antenna far-field distance [W/m ²]	N/A
Power density (S) @ 0.20 m [W/m ²]	1.314
Power density ratio @ 0.20 m	0.24
Distance for compliance power density (S=SL) [m]	0.097
Compliance	
Verdict	PASS
Comment:	

LTE FDD12	
Transmission Mode	
Transmission Frequency (f) [MHz]	707.5
Antenna far-field distance	
Maximum antenna diameter (D) [m]	N/A
Transmission wavelength (λ) [m]	N/A
Antenna far-field distance (R_{FF}) [m]	N/A
Source average power	
Peak radiated power (PR) [dBm EIRP]	26.7
Maximum transmission duty cycle (DC)	1.00
Duty cycle correction (DCC) [dB]	0.00
Average radiated power (PRAVG) [dBm EIRP]	26.70
Power density	
Compliance power density limit [W/m ²]	2.321
Power density (S) @ Antenna far-field distance [W/m ²]	N/A
Power density (S) @ 0.20 m [W/m ²]	0.931
Power density ratio @ 0.20 m	0.40
Distance for compliance power density (S=SL) [m]	0.127
Compliance	
Verdict	PASS
Comment:	

LTE FDD13	
Transmission Mode	
Transmission Frequency (f) [MHz]	782.0
Antenna far-field distance	
Maximum antenna diameter (D) [m]	N/A
Transmission wavelength (λ) [m]	N/A
Antenna far-field distance (R_{FF}) [m]	N/A
Source average power	
Peak radiated power (PR) [dBm EIRP]	27.9
Maximum transmission duty cycle (DC)	1.00
Duty cycle correction (DCC) [dB]	0.00
Average radiated power (PRAVG) [dBm EIRP]	27.90
Power density	
Compliance power density limit [W/m ²]	2.485
Power density (S) @ Antenna far-field distance [W/m ²]	N/A
Power density (S) @ 0.20 m [W/m ²]	1.227
Power density ratio @ 0.20 m	0.49
Distance for compliance power density (S=SL) [m]	0.141
Compliance	
Verdict	PASS
Comment:	

LTE FDD26	
Transmission Mode	
Transmission Frequency (f) [MHz]	831.5
Antenna far-field distance	
Maximum antenna diameter (D) [m]	N/A
Transmission wavelength (λ) [m]	N/A
Antenna far-field distance (R_{FF}) [m]	N/A
Source average power	
Peak radiated power (PR) [dBm EIRP]	28.7
Maximum transmission duty cycle (DC)	1.00
Duty cycle correction (DCC) [dB]	0.00
Average radiated power (PRAVG) [dBm EIRP]	28.70
Power density	
Compliance power density limit [W/m ²]	2.592
Power density (S) @ Antenna far-field distance [W/m ²]	N/A
Power density (S) @ 0.20 m [W/m ²]	1.475
Power density ratio @ 0.20 m	0.57
Distance for compliance power density (S=SL) [m]	0.151
Compliance	
Verdict	PASS
Comment:	

LTE FDD41	
Transmission Mode	
Transmission Frequency (f) [MHz]	2501.0
Antenna far-field distance	
Maximum antenna diameter (D) [m]	N/A
Transmission wavelength (λ) [m]	N/A
Antenna far-field distance (R_{FF}) [m]	N/A
Source average power	
Peak radiated power (PR) [dBm EIRP]	28.7
Maximum transmission duty cycle (DC)	1.00
Duty cycle correction (DCC) [dB]	0.00
Average radiated power (PRAVG) [dBm EIRP]	28.70
Power density	
Compliance power density limit [W/m ²]	5.501
Power density (S) @ Antenna far-field distance [W/m ²]	N/A
Power density (S) @ 0.20 m [W/m ²]	1.475
Power density ratio @ 0.20 m	0.27
Distance for compliance power density (S=SL) [m]	0.104
Compliance	
Verdict	PASS
Comment:	

LTE FDD66	
Transmission Mode	
Transmission Frequency (f) [MHz]	1745.0
Antenna far-field distance	
Maximum antenna diameter (D) [m]	N/A
Transmission wavelength (λ) [m]	N/A
Antenna far-field distance (R_{FF}) [m]	N/A
Source average power	
Peak radiated power (PR) [dBm EIRP]	28.0
Maximum transmission duty cycle (DC)	1.00
Duty cycle correction (DCC) [dB]	0.00
Average radiated power (PRAVG) [dBm EIRP]	28.00
Power density	
Compliance power density limit [W/m ²]	4.301
Power density (S) @ Antenna far-field distance [W/m ²]	N/A
Power density (S) @ 0.20 m [W/m ²]	1.255
Power density ratio @ 0.20 m	0.29
Distance for compliance power density (S=SL) [m]	0.108
Compliance	
Verdict	PASS
Comment:	

60 GHz Radar	
Transmission Mode	
Transmission Frequency (f) [MHz]	62000.0
Antenna far-field distance	
Maximum antenna diameter (D) [m]	N/A
Transmission wavelength (λ) [m]	N/A
Antenna far-field distance (R_{FF}) [m]	N/A
Source average power	
Peak radiated power (PR) [dBm EIRP]	13.89
Maximum transmission duty cycle (DC)	0.14
Duty cycle correction (DCC) [dB]	-8.54
Average radiated power (PRAVG) [dBm EIRP]	5.35
Power density	
Compliance power density limit [W/m ²]	10.0
Power density (S) @ Antenna far-field distance [W/m ²]	N/A
Power density (S) @ 0.20 m [W/m ²]	0.007
Power density ratio @ 0.20 m	0.00
Distance for compliance power density (S=SL) [m]	0.005
Compliance	
Verdict	PASS
Comment:	

Bluetooth LE	
Transmission Mode	
Transmission Frequency (f) [MHz]	2440
Antenna far-field distance	
Maximum antenna diameter (D) [m]	N/A
Transmission wavelength (λ) [m]	N/A
Antenna far-field distance (R_{FF}) [m]	N/A
Source average power	
Peak radiated power (PR) [dBm EIRP]	1.96
Maximum transmission duty cycle (DC)	0.89
Duty cycle correction (DCC) [dB]	-0.51
Average radiated power (PRAVG) [dBm EIRP]	1.45
Power density	
Compliance power density limit [W/m ²]	5.409
Power density (S) @ Antenna far-field distance [W/m ²]	N/A
Power density (S) @ 0.20 m [W/m ²]	0.003
Power density ratio @ 0.20 m	0.00
Distance for compliance power density (S=SL) [m]	0.005
Compliance	
Verdict	PASS
Comment:	

8 Concurrent Evaluation Results - FCC

IEEE 802.11 (2.4 GHz) + LTE FDD2 + 60 GHz Radar + Bluetooth LE	
Information	
Number of concurrent modes	4
Evaluation distance [m]	0.20
Maximum MPE Ratios	
IEEE 802.11 (2.4 GHz)	0.19
LTE FDD2	0.18
60 GHz Radar	0.00
Bluetooth LE	0.00
Sum of MPE Ratios	
Sum	0.37
Compliance	
Verdict	PASS

IEEE 802.11 (2.4 GHz) + LTE FDD26 + 60 GHz Radar + Bluetooth LE	
Information	
Number of concurrent modes	4
Evaluation distance [m]	0.20
Maximum MPE Ratios	
IEEE 802.11 (2.4 GHz)	0.19
LTE FDD26	0.27
60 GHz Radar	0.00
Bluetooth LE	0.00
Sum of MPE Ratios	
Sum	0.46
Compliance	
Verdict	PASS

IEEE 802.11 (2.4 GHz) + LTE FDD41 + 60 GHz Radar + Bluetooth LE	
Information	
Number of concurrent modes	4
Evaluation distance [m]	0.20
Maximum MPE Ratios	
IEEE 802.11 (2.4 GHz)	0.19
LTE FDD41	0.15
60 GHz Radar	0.00
Bluetooth LE	0.00
Sum of MPE Ratios	
Sum	0.34
Compliance	
Verdict	PASS

IEEE 802.11 (U-NII-1) + LTE FDD2 + 60 GHz Radar + Bluetooth LE	
Information	
Number of concurrent modes	4
Evaluation distance [m]	0.20
Maximum MPE Ratios	
IEEE 802.11 (U-NII-1)	0.07
LTE FDD2	0.18
60 GHz Radar	0.00
Bluetooth LE	0.00
Sum of MPE Ratios	
Sum	0.25
Compliance	
Verdict	PASS

IEEE 802.11 (U-NII-1) + LTE FDD26 + 60 GHz Radar + Bluetooth LE	
Information	
Number of concurrent modes	4
Evaluation distance [m]	0.20
Maximum MPE Ratios	
IEEE 802.11 (U-NII-1)	0.07
LTE FDD26	0.27
60 GHz Radar	0.00
Bluetooth LE	0.00
Sum of MPE Ratios	
Sum	0.34
Compliance	
Verdict	PASS

IEEE 802.11 (U-NII-1) + LTE FDD41 + 60 GHz Radar + Bluetooth LE	
Information	
Number of concurrent modes	4
Evaluation distance [m]	0.20
Maximum MPE Ratios	
IEEE 802.11 (U-NII-1)	0.07
LTE FDD41	0.15
60 GHz Radar	0.00
Bluetooth LE	0.00
Sum of MPE Ratios	
Sum	0.22
Compliance	
Verdict	PASS

9 Concurrent Evaluation Results - ISED

IEEE 802.11 (2.4 GHz) + LTE FDD2 + 60 GHz Radar + Bluetooth LE	
Information	
Number of concurrent modes	4
Evaluation distance [m]	0.20
Maximum MPE Ratios	
IEEE 802.11 (2.4 GHz)	0.35
LTE FDD2	0.39
60 GHz Radar	0.00
Bluetooth LE	0.00
Sum of MPE Ratios	
Sum	0.74
Compliance	
Verdict	PASS

IEEE 802.11 (2.4 GHz) + LTE FDD26 + 60 GHz Radar + Bluetooth LE	
Information	
Number of concurrent modes	4
Evaluation distance [m]	0.20
Maximum MPE Ratios	
IEEE 802.11 (2.4 GHz)	0.35
LTE FDD26	0.57
60 GHz Radar	0.00
Bluetooth LE	0.00
Sum of MPE Ratios	
Sum	0.92
Compliance	
Verdict	PASS

IEEE 802.11 (2.4 GHz) + LTE FDD41 + 60 GHz Radar + Bluetooth LE	
Information	
Number of concurrent modes	4
Evaluation distance [m]	0.20
Maximum MPE Ratios	
IEEE 802.11 (2.4 GHz)	0.35
LTE FDD41	0.27
60 GHz Radar	0.00
Bluetooth LE	0.00
Sum of MPE Ratios	
Sum	0.62
Compliance	
Verdict	PASS

IEEE 802.11 (U-NII-1) + LTE FDD2 + 60 GHz Radar + Bluetooth LE	
Information	
Number of concurrent modes	4
Evaluation distance [m]	0.20
Maximum MPE Ratios	
IEEE 802.11 (U-NII-1)	0.08
LTE FDD2	0.39
60 GHz Radar	0.00
Bluetooth LE	0.00
Sum of MPE Ratios	
Sum	0.47
Compliance	
Verdict	PASS

IEEE 802.11 (U-NII-1) + LTE FDD26 + 60 GHz Radar + Bluetooth LE	
Information	
Number of concurrent modes	4
Evaluation distance [m]	0.20
Maximum MPE Ratios	
IEEE 802.11 (U-NII-1)	0.08
LTE FDD26	0.57
60 GHz Radar	0.00
Bluetooth LE	0.00
Sum of MPE Ratios	
Sum	0.65
Compliance	
Verdict	PASS

IEEE 802.11 (U-NII-1) + LTE FDD41 + 60 GHz Radar + Bluetooth LE	
Information	
Number of concurrent modes	4
Evaluation distance [m]	0.20
Maximum MPE Ratios	
IEEE 802.11 (U-NII-1)	0.08
LTE FDD41	0.27
60 GHz Radar	0.00
Bluetooth LE	0.00
Sum of MPE Ratios	
Sum	0.35
Compliance	
Verdict	PASS

=== END OF TEST REPORT ===

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