




RF-EXPOSURE REPORT FCC 47 CFR Part 2.1091 ISED RSS-102 Maximum permissible exposure	
Report Reference No	G0M-1901-8021-TFC091MP-V02
Testing Laboratory	Eurofins Product Service GmbH
Address	Storkower Str. 38c 15526 Reichenwalde Germany
Accreditation	 <p> DAkkS - Registration number : D-PL-12092-01-03 (ISED) ISED Testing Laboratory site: 3470A-2 DAkkS - Registration number : D-PL-12092-01-04 (FCC) FCC Filed Test Laboratory, Reg.-No.: 96970 </p>
Applicant	IAV automotive Engineering Inc.
Address	15620 technology Drive 48168 Northville United States
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	Telemetry Equipment
Model(s)	TDBOX2
Additional Model(s)	None
Brand Name(s)	None
Hardware Version(s)	IAV-G-00057-01-AA-V02-R01_CI01 and IAV-G-00057-01-AA-V02-R02_CI03
Software Version(s)	Frontend 0109 / Telemetrie 0211
FCC-ID	2AS2J-G00057-01
IC	24891-G0005701
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	15 - 35 °C	
Test Lab Humidity	30 – 50 %	
Date of receipt of test item	2019-02-14	
Report:		
Compiled by	Abdullah Al Jamal	
Tested by (+ signature) (Responsible for Test)	Abdullah Al Jamal	
Approved by (+ signature) (Head of Lab)	Christian Weber	
Date of Issue	2019-10-15	
Total number of pages	27	
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:		
None.		

VERSION HISTORY

Version History			
Version	Issue Date	Remarks	Revised By
01	2019-09-03	Initial Release	
02	2019-10-15	The reference documents were updated.	A. Al Jamal

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	Telemetry Equipment
Model	TDBOX2
Additional Model(s)	None
Brand Name(s)	None
Serial Number(s)	1700400005
Hardware Version(s)	IAV-G-00057-01-AA-V02-R01_CI01 and IAV-G-00057-01-AA-V02-R02_CI03
Software Version(s)	Frontend 0109 / Telemetrie 0211
PMN	TDBOX2
HVIN	G00057-01
FVIN	0209
HMN	-/-
FCC-ID	2AS2J-G00057-01
IC	24891-G0005701
Equipment type	End Product
Environment	General public

1.1 Reference Documents

Document Type	Document No.	Issued by	Date
Test Report (Radio) FCC 47 e-CFR Part 22H ISED RSS-133, Issue 6, Amendment 1 (January 2018)	G0M-1901-8021- TFC224GS-V01	Eurofins Product Service GmbH	2019-08-13
Test Report (Radio) FCC 47 e-CFR Part 15C ISED RSS-247, Issue 2 (February 2017)	G0M-1901-8021- TFC247WF-V02	Eurofins Product Service GmbH	2019-10-15
Test Report (Radio) ISED RSS-247, Issue 2 (February 2017)	G0M-1901-8021- TIC247WF-V02	Eurofins Product Service GmbH	2019-10-15
Test Report (Radio) FCC 47 e-CFR Part 15E ISED RSS-247, Issue 2 (February 2017)	G0M-1901-8021- TFC407WF-V01	Eurofins Product Service GmbH	2019-08-05
Test Report (Radio) FCC 47 e-CFR §15.201 FCC 47 e-CFR §15.207 FCC 47 e-CFR §15.209 FCC 47 e-CFR §15.247	MDE_LESSW_1302_FCCa	7 layers AG	2014-03-07
Test Report (Radio) FCC 47 e-CFR §15.201 FCC 47 e-CFR §15.207 FCC 47 e-CFR §15.209 FCC 47 e-CFR §15.403 FCC 47 e-CFR §15.407	MDE_LESSW_1302_FCCb	7 layers AG	2014-03-07

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]
GSM 850	824.2	28.4	31.4	50	2.7	N/A
	836.2	27.8	30.5	50	2.7	N/A
	848.8	27.2	29.9	50	2.7	N/A
GSM 1900	1850.2	13.9	16.2	50	2.3	N/A
	1880.0	15.6	17.9	50	2.3	N/A
	1909.8	15.0	17.3	50	2.3	N/A
UMTS FDDII	1852.6	15.0	17.3	100	2.3	N/A
	1880.0	15.7	18.0	100	2.3	N/A
	1907.4	15.0	17.3	100	2.3	N/A
UMTS FDDV	826.6	26.4	29.1	100	2.7	N/A
	835.0	24.5	27.2	100	2.7	N/A
	846.6	24.1	26.8	100	2.7	N/A
IEEE 802.11 (2.4 GHz)	2422	23.6	25.8	100	2.2	N/A
	2437	23.2	25.4	100	2.2	N/A
	2462	23.6	25.8	100	2.2	N/A
IEEE 802.11 (U-NII-1)	5180	13.8	18.02	100	4.22	N/A
	5200	14.2	18.42	100	4.22	N/A
	5240	14.0	18.00	100	4.22	N/A
IEEE 802.11 (U-NII-2A)	5260	15.0	19.22	100	4.22	N/A
	5280	14.5	18.72	100	4.22	N/A
	5320	13.9	18.12	100	4.22	N/A

Comment: None.

1.3 Field strength radiation sources

None.

1.4 Concurrent Sources

Concurrent operating conditions
GSM 850 + IEEE 802.11 (2.4 GHz)
GSM 850 + IEEE 802.11 (U-NII-1)
GSM 850 + IEEE 802.11 (U-NII-2A)
GSM 1900 + IEEE 802.11 (2.4 GHz)
GSM 1900 + IEEE 802.11 (U-NII-1)
GSM 1900 + IEEE 802.11 (U-NII-2A)
UMTS FDDII + IEEE 802.11 (2.4 GHz)
UMTS FDDII + IEEE 802.11 (U-NII-1)
UMTS FDDII + IEEE 802.11 (U-NII-2A)
UMTS FDDV + IEEE 802.11 (2.4 GHz)
UMTS FDDV + IEEE 802.11 (U-NII-1)
UMTS FDDV + IEEE 802.11 (U-NII-2A)

Comment: None.

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	GSM 850	0.20	PASS
47 CFR 2.1091	Maximum permissible exposure	FCC KDB 447498	GSM 1900	0.20	PASS
47 CFR 2.1091	Maximum permissible exposure	FCC KDB 447498	UMTS FDDII	0.20	PASS
47 CFR 2.1091	Maximum permissible exposure	FCC KDB 447498	UMTS FDDV	0.20	PASS
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	IEEE 802.11 (U-NII-2A)	0.20	PASS
Comment: None.					

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	GSM 850	0.20	PASS
ISED RSS-102	Maximum permissible exposure	ISED RSS-102	GSM 1900	0.20	PASS
ISED RSS-102	Maximum permissible exposure	ISED RSS-102	UMTS FDDII	0.20	PASS
ISED RSS-102	Maximum permissible exposure	ISED RSS-102	UMTS FDDV	0.20	PASS
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	IEEE 802.11 (U-NII-2A)	0.20	PASS
Comment: None.					

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	GSM 850 + IEEE 802.11 (2.4 GHz)	0.20	PASS
47 CFR 2.1091	Maximum permissible exposure	FCC KDB 447498	GSM 850 + IEEE 802.11 (U-NII-1)	0.20	PASS
47 CFR 2.1091	Maximum permissible exposure	FCC KDB 447498	GSM 850 + IEEE 802.11 (U-NII-2A)	0.20	PASS
47 CFR 2.1091	Maximum permissible exposure	FCC KDB 447498	GSM 1900 + IEEE 802.11 (2.4 GHz)	0.20	PASS
47 CFR 2.1091	Maximum permissible exposure	FCC KDB 447498	GSM 1900 + IEEE 802.11 (U-NII-1)	0.20	PASS
47 CFR 2.1091	Maximum permissible exposure	FCC KDB 447498	GSM 1900 + IEEE 802.11 (U-NII-2A)	0.20	PASS
47 CFR 2.1091	Maximum permissible exposure	FCC KDB 447498	UMTS FDDII + IEEE 802.11 (2.4 GHz)	0.20	PASS
47 CFR 2.1091	Maximum permissible exposure	FCC KDB 447498	UMTS FDDII + IEEE 802.11 (U-NII-1)	0.20	PASS
47 CFR 2.1091	Maximum permissible exposure	FCC KDB 447498	UMTS FDDII + IEEE 802.11 (U-NII-2A)	0.20	PASS
47 CFR 2.1091	Maximum permissible exposure	FCC KDB 447498	UMTS FDDV + IEEE 802.11 (2.4 GHz)	0.20	PASS
47 CFR 2.1091	Maximum permissible exposure	FCC KDB 447498	UMTS FDDV + IEEE 802.11 (U-NII-1)	0.20	PASS
47 CFR 2.1091	Maximum permissible exposure	FCC KDB 447498	UMTS FDDV + IEEE 802.11 (U-NII-2A)	0.20	PASS
Comment: None.					

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	GSM 850 + IEEE 802.11 (2.4 GHz)	0.20	PASS
ISED RSS-102	Maximum permissible exposure	ISED RSS-102	GSM 850 + IEEE 802.11 (U-NII-1)	0.20	PASS
ISED RSS-102	Maximum permissible exposure	ISED RSS-102	GSM 850 + IEEE 802.11 (U-NII-2A)	0.20	PASS
ISED RSS-102	Maximum permissible exposure	ISED RSS-102	GSM 1900 + IEEE 802.11 (2.4 GHz)	0.20	PASS
ISED RSS-102	Maximum permissible exposure	ISED RSS-102	GSM 1900 + IEEE 802.11 (U-NII-1)	0.20	PASS
ISED RSS-102	Maximum permissible exposure	ISED RSS-102	GSM 1900 + IEEE 802.11 (U-NII-2A)	0.20	PASS
ISED RSS-102	Maximum permissible exposure	ISED RSS-102	UMTS FDDII + IEEE 802.11 (2.4 GHz)	0.20	PASS
ISED RSS-102	Maximum permissible exposure	ISED RSS-102	UMTS FDDII + IEEE 802.11 (U-NII-1)	0.20	PASS
ISED RSS-102	Maximum permissible exposure	ISED RSS-102	UMTS FDDII + IEEE 802.11 (U-NII-2A)	0.20	PASS
ISED RSS-102	Maximum permissible exposure	ISED RSS-102	UMTS FDDV + IEEE 802.11 (2.4 GHz)	0.20	PASS
ISED RSS-102	Maximum permissible exposure	ISED RSS-102	UMTS FDDV + IEEE 802.11 (U-NII-1)	0.20	PASS
ISED RSS-102	Maximum permissible exposure	ISED RSS-102	UMTS FDDV + IEEE 802.11 (U-NII-2A)	0.20	PASS
Comment: None.					

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

Evaluation Procedure
<p><u>Standalone operation evaluation:</u></p> <p>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.</p> <p>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.</p> <p><u>Concurrent operation evaluation:</u></p> <p>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.</p>

6 Single Source Evaluation Results - FCC

GSM 850			
Transmission Mode			
Transmission Frequency (f) [MHz]	824.2	836.2	848.8
Antenna far-field distance			
Maximum antenna diameter (D) [m]	N/A	N/A	N/A
Transmission wavelength (λ) [m]	N/A	N/A	N/A
Antenna far-field distance (R_{FF}) [m]	N/A	N/A	N/A
Source average power			
Peak radiated power (PR) [dBm EIRP]	31.4	30.5	29.9
Maximum transmission duty cycle (DC)	0.50	0.50	0.50
Duty cycle correction (DCC) [dB]	-3.01	-3.01	-3.01
Average radiated power (PRAVG) [dBm EIRP]	28.39	27.49	26.89
Power density			
Compliance power density limit [W/m^2]	5.495	5.575	5.659
Power density (S) @ Antenna far-field distance [W/m^2]	N/A	N/A	N/A
Power density (S) @ 0.20 m [W/m^2]	1.373	1.116	0.972
Power density ratio @ 0.20 m	0.25	0.20	0.17
Distance for compliance power density (S=SL) [m]	0.100	0.089	0.083
Compliance			
Verdict	PASS	PASS	PASS
Comment: None.			

GSM 1900			
Transmission Mode			
Transmission Frequency (f) [MHz]	1850.2	1880.0	1909.8
Antenna far-field distance			
Maximum antenna diameter (D) [m]	N/A	N/A	N/A
Transmission wavelength (λ) [m]	N/A	N/A	N/A
Antenna far-field distance (R_{FF}) [m]	N/A	N/A	N/A
Source average power			
Peak radiated power (PR) [dBm EIRP]	16.2	17.9	17.3
Maximum transmission duty cycle (DC)	0.50	0.50	0.50
Duty cycle correction (DCC) [dB]	-3.01	-3.01	-3.01
Average radiated power (PRAVG) [dBm EIRP]	13.19	14.89	14.29
Power density			
Compliance power density limit [W/m^2]	10.000	10.000	10.000
Power density (S) @ Antenna far-field distance [W/m^2]	N/A	N/A	N/A
Power density (S) @ 0.20 m [W/m^2]	0.041	0.061	0.053
Power density ratio @ 0.20 m	0.00	0.01	0.01
Distance for compliance power density (S=SL) [m]	0.013	0.016	0.015
Compliance			
Verdict	PASS	PASS	PASS
Comment: None.			

UMTS FDDII			
Transmission Mode			
Transmission Frequency (f) [MHz]	1852.6	1880.0	1907.4
Antenna far-field distance			
Maximum antenna diameter (D) [m]	N/A	N/A	N/A
Transmission wavelength (λ) [m]	N/A	N/A	N/A
Antenna far-field distance (R_{FF}) [m]	N/A	N/A	N/A
Source average power			
Peak radiated power (PR) [dBm EIRP]	17.3	18.0	17.3
Maximum transmission duty cycle (DC)	1.00	1.00	1.00
Duty cycle correction (DCC) [dB]	0.00	0.00	0.00
Average radiated power (PRAVG) [dBm EIRP]	17.30	18.00	17.30
Power density			
Compliance power density limit [W/m^2]	10.000	10.000	10.000
Power density (S) @ Antenna far-field distance [W/m^2]	N/A	N/A	N/A
Power density (S) @ 0.20 m [W/m^2]	0.107	0.126	0.107
Power density ratio @ 0.20 m	0.01	0.01	0.01
Distance for compliance power density (S=SL) [m]	0.021	0.022	0.021
Compliance			
Verdict	PASS	PASS	PASS
Comment: None.			

UMTS FDDV			
Transmission Mode			
Transmission Frequency (f) [MHz]	826.6	835.0	846.6
Antenna far-field distance			
Maximum antenna diameter (D) [m]	N/A	N/A	N/A
Transmission wavelength (λ) [m]	N/A	N/A	N/A
Antenna far-field distance (R_{FF}) [m]	N/A	N/A	N/A
Source average power			
Peak radiated power (PR) [dBm EIRP]	29.1	27.2	26.8
Maximum transmission duty cycle (DC)	1.00	1.00	1.00
Duty cycle correction (DCC) [dB]	0.00	0.00	0.00
Average radiated power (PRAVG) [dBm EIRP]	29.10	27.20	26.80
Power density			
Compliance power density limit [W/m^2]	5.511	5.567	5.644
Power density (S) @ Antenna far-field distance [W/m^2]	N/A	N/A	N/A
Power density (S) @ 0.20 m [W/m^2]	1.617	1.044	0.952
Power density ratio @ 0.20 m	0.29	0.19	0.17
Distance for compliance power density (S=SL) [m]	0.108	0.087	0.082
Compliance			
Verdict	PASS	PASS	PASS
Comment: None.			

IEEE 802.11 (2.4 GHz)			
Transmission Mode			
Transmission Frequency (f) [MHz]	2422	2437	2462
Antenna far-field distance			
Maximum antenna diameter (D) [m]	N/A	N/A	N/A
Transmission wavelength (λ) [m]	N/A	N/A	N/A
Antenna far-field distance (R_{FF}) [m]	N/A	N/A	N/A
Source average power			
Peak radiated power (PR) [dBm EIRP]	25.8	25.4	25.8
Maximum transmission duty cycle (DC)	1.00	1.00	1.00
Duty cycle correction (DCC) [dB]	0.00	0.00	0.00
Average radiated power (PRAVG) [dBm EIRP]	25.80	25.40	25.80
Power density			
Compliance power density limit [W/m^2]	10.000	10.000	10.000
Power density (S) @ Antenna far-field distance [W/m^2]	N/A	N/A	N/A
Power density (S) @ 0.20 m [W/m^2]	0.756	0.690	0.756
Power density ratio @ 0.20 m	0.08	0.07	0.08
Distance for compliance power density (S=SL) [m]	0.055	0.053	0.055
Compliance			
Verdict	PASS	PASS	PASS
Comment: None.			

IEEE 802.11 (U-NII-1)			
Transmission Mode			
Transmission Frequency (f) [MHz]	5180	5200	5240
Antenna far-field distance			
Maximum antenna diameter (D) [m]	N/A	N/A	N/A
Transmission wavelength (λ) [m]	N/A	N/A	N/A
Antenna far-field distance (R_{FF}) [m]	N/A	N/A	N/A
Source average power			
Peak radiated power (PR) [dBm EIRP]	18.02	18.42	18.00
Maximum transmission duty cycle (DC)	1.00	1.00	1.00
Duty cycle correction (DCC) [dB]	0.00	0.00	0.00
Average radiated power (PRAVG) [dBm EIRP]	18.02	18.42	18.00
Power density			
Compliance power density limit [W/m^2]	10.000	10.000	10.000
Power density (S) @ Antenna far-field distance [W/m^2]	N/A	N/A	N/A
Power density (S) @ 0.20 m [W/m^2]	0.126	0.138	0.126
Power density ratio @ 0.20 m	0.01	0.01	0.01
Distance for compliance power density (S=SL) [m]	0.022	0.024	0.022
Compliance			
Verdict	PASS	PASS	PASS
Comment: None.			

IEEE 802.11 (U-NII-2A)			
Transmission Mode			
Transmission Frequency (f) [MHz]	5260	5280	5320
Antenna far-field distance			
Maximum antenna diameter (D) [m]	N/A	N/A	N/A
Transmission wavelength (λ) [m]	N/A	N/A	N/A
Antenna far-field distance (R_{FF}) [m]	N/A	N/A	N/A
Source average power			
Peak radiated power (PR) [dBm EIRP]	19.22	18.72	18.12
Maximum transmission duty cycle (DC)	1.00	1.00	1.00
Duty cycle correction (DCC) [dB]	0.00	0.00	0.00
Average radiated power (PRAVG) [dBm EIRP]	19.22	18.72	18.12
Power density			
Compliance power density limit [W/m^2]	10.000	10.000	10.000
Power density (S) @ Antenna far-field distance [W/m^2]	N/A	N/A	N/A
Power density (S) @ 0.20 m [W/m^2]	0.166	0.148	0.129
Power density ratio @ 0.20 m	0.02	0.01	0.01
Distance for compliance power density (S=SL) [m]	0.026	0.024	0.023
Compliance			
Verdict	PASS	PASS	PASS
Comment: None.			

7 Single Source Evaluation Results - ISED

GSM 850			
Transmission Mode			
Transmission Frequency (f) [MHz]	824.2	836.2	848.8
Antenna far-field distance			
Maximum antenna diameter (D) [m]	N/A	N/A	N/A
Transmission wavelength (λ) [m]	N/A	N/A	N/A
Antenna far-field distance (R_{FF}) [m]	N/A	N/A	N/A
Source average power			
Peak radiated power (PR) [dBm EIRP]	31.4	30.5	29.9
Maximum transmission duty cycle (DC)	0.50	0.50	0.50
Duty cycle correction (DCC) [dB]	-3.01	-3.01	-3.01
Average radiated power (PRAVG) [dBm EIRP]	28.39	27.49	26.89
Power density			
Compliance power density limit [W/m^2]	2.576	2.602	2.628
Power density (S) @ Antenna far-field distance [W/m^2]	N/A	N/A	N/A
Power density (S) @ 0.20 m [W/m^2]	1.373	1.116	0.972
Power density ratio @ 0.20 m	0.53	0.43	0.37
Distance for compliance power density (S=SL) [m]	0.146	0.131	0.122
Compliance			
Verdict	PASS	PASS	PASS
Comment: None.			

GSM 1900			
Transmission Mode			
Transmission Frequency (f) [MHz]	1850.2	1880.0	1909.8
Antenna far-field distance			
Maximum antenna diameter (D) [m]	N/A	N/A	N/A
Transmission wavelength (λ) [m]	N/A	N/A	N/A
Antenna far-field distance (R_{FF}) [m]	N/A	N/A	N/A
Source average power			
Peak radiated power (PR) [dBm EIRP]	16.2	17.9	17.3
Maximum transmission duty cycle (DC)	0.50	0.50	0.50
Duty cycle correction (DCC) [dB]	-3.01	-3.01	-3.01
Average radiated power (PRAVG) [dBm EIRP]	13.19	14.89	14.29
Power density			
Compliance power density limit [W/m^2]	4.477	4.526	4.575
Power density (S) @ Antenna far-field distance [W/m^2]	N/A	N/A	N/A
Power density (S) @ 0.20 m [W/m^2]	0.041	0.061	0.053
Power density ratio @ 0.20 m	0.01	0.01	0.01
Distance for compliance power density (S=SL) [m]	0.019	0.023	0.022
Compliance			
Verdict	PASS	PASS	PASS
Comment: None.			

UMTS FDDII			
Transmission Mode			
Transmission Frequency (f) [MHz]	1852.6	1880.0	1907.4
Antenna far-field distance			
Maximum antenna diameter (D) [m]	N/A	N/A	N/A
Transmission wavelength (λ) [m]	N/A	N/A	N/A
Antenna far-field distance (R_{FF}) [m]	N/A	N/A	N/A
Source average power			
Peak radiated power (PR) [dBm EIRP]	17.3	18.0	17.3
Maximum transmission duty cycle (DC)	1.00	1.00	1.00
Duty cycle correction (DCC) [dB]	0.00	0.00	0.00
Average radiated power (PRAVG) [dBm EIRP]	17.30	18.00	17.30
Power density			
Compliance power density limit [W/m^2]	4.481	4.526	4.571
Power density (S) @ Antenna far-field distance [W/m^2]	N/A	N/A	N/A
Power density (S) @ 0.20 m [W/m^2]	0.107	0.126	0.107
Power density ratio @ 0.20 m	0.02	0.03	0.02
Distance for compliance power density (S=SL) [m]	0.031	0.033	0.031
Compliance			
Verdict	PASS	PASS	PASS
Comment: None.			

UMTS FDDV			
Transmission Mode			
Transmission Frequency (f) [MHz]	826.6	835.0	846.6
Antenna far-field distance			
Maximum antenna diameter (D) [m]	N/A	N/A	N/A
Transmission wavelength (λ) [m]	N/A	N/A	N/A
Antenna far-field distance (R_{FF}) [m]	N/A	N/A	N/A
Source average power			
Peak radiated power (PR) [dBm EIRP]	29.1	27.2	26.8
Maximum transmission duty cycle (DC)	1.00	1.00	1.00
Duty cycle correction (DCC) [dB]	0.00	0.00	0.00
Average radiated power (PRAVG) [dBm EIRP]	29.10	27.20	26.80
Power density			
Compliance power density limit [W/m^2]	2.581	2.599	2.624
Power density (S) @ Antenna far-field distance [W/m^2]	N/A	N/A	N/A
Power density (S) @ 0.20 m [W/m^2]	1.617	1.044	0.952
Power density ratio @ 0.20 m	0.63	0.40	0.36
Distance for compliance power density (S=SL) [m]	0.158	0.127	0.120
Compliance			
Verdict	PASS	PASS	PASS
Comment: None.			

IEEE 802.11 (2.4 GHz)			
Transmission Mode			
Transmission Frequency (f) [MHz]	2422	2437	2462
Antenna far-field distance			
Maximum antenna diameter (D) [m]	N/A	N/A	N/A
Transmission wavelength (λ) [m]	N/A	N/A	N/A
Antenna far-field distance (R_{FF}) [m]	N/A	N/A	N/A
Source average power			
Peak radiated power (PR) [dBm EIRP]	25.8	25.4	25.8
Maximum transmission duty cycle (DC)	1.00	1.00	1.00
Duty cycle correction (DCC) [dB]	0.00	0.00	0.00
Average radiated power (PRAVG) [dBm EIRP]	25.80	25.40	25.80
Power density			
Compliance power density limit [W/m^2]	5.381	5.404	5.442
Power density (S) @ Antenna far-field distance [W/m^2]	N/A	N/A	N/A
Power density (S) @ 0.20 m [W/m^2]	0.756	0.690	0.756
Power density ratio @ 0.20 m	0.14	0.13	0.14
Distance for compliance power density (S=SL) [m]	0.075	0.071	0.075
Compliance			
Verdict	PASS	PASS	PASS
Comment: None.			

IEEE 802.11 (U-NII-1)			
Transmission Mode			
Transmission Frequency (f) [MHz]	5180	5200	5240
Antenna far-field distance			
Maximum antenna diameter (D) [m]	N/A	N/A	N/A
Transmission wavelength (λ) [m]	N/A	N/A	N/A
Antenna far-field distance (R_{FF}) [m]	N/A	N/A	N/A
Source average power			
Peak radiated power (PR) [dBm EIRP]	18.02	18.42	18.00
Maximum transmission duty cycle (DC)	1.00	1.00	1.00
Duty cycle correction (DCC) [dB]	0.00	0.00	0.00
Average radiated power (PRAVG) [dBm EIRP]	18.02	18.42	18.00
Power density			
Compliance power density limit [W/m^2]	9.047	9.071	9.119
Power density (S) @ Antenna far-field distance [W/m^2]	N/A	N/A	N/A
Power density (S) @ 0.20 m [W/m^2]	0.126	0.138	0.126
Power density ratio @ 0.20 m	0.01	0.02	0.01
Distance for compliance power density (S=SL) [m]	0.024	0.025	0.023
Compliance			
Verdict	PASS	PASS	PASS
Comment: None.			

IEEE 802.11 (U-NII-2A)			
Transmission Mode			
Transmission Frequency (f) [MHz]	5260	5280	5320
Antenna far-field distance			
Maximum antenna diameter (D) [m]	N/A	N/A	N/A
Transmission wavelength (λ) [m]	N/A	N/A	N/A
Antenna far-field distance (R_{FF}) [m]	N/A	N/A	N/A
Source average power			
Peak radiated power (PR) [dBm EIRP]	19.22	18.72	18.12
Maximum transmission duty cycle (DC)	1.00	1.00	1.00
Duty cycle correction (DCC) [dB]	0.00	0.00	0.00
Average radiated power (PRAVG) [dBm EIRP]	19.22	18.72	18.12
Power density			
Compliance power density limit [W/m^2]	9.142	9.166	9.213
Power density (S) @ Antenna far-field distance [W/m^2]	N/A	N/A	N/A
Power density (S) @ 0.20 m [W/m^2]	0.166	0.148	0.129
Power density ratio @ 0.20 m	0.02	0.02	0.01
Distance for compliance power density (S=SL) [m]	0.027	0.025	0.024
Compliance			
Verdict	PASS	PASS	PASS
Comment: None.			

8 Concurrent Evaluation Results - FCC

GSM 850 + IEEE 802.11 (2.4 GHz)	
Information	
Number of concurrent modes	2
Evaluation distance [m]	0.20
Maximum MPE Ratios	
GSM 850	0.25
IEEE 802.11 (2.4 GHz)	0.08
Sum of MPE Ratios	
Sum	0.33
Compliance	
Verdict	PASS

GSM 850 + IEEE 802.11 (U-NII-1)	
Information	
Number of concurrent modes	2
Evaluation distance [m]	0.20
Maximum MPE Ratios	
GSM 850	0.25
IEEE 802.11 (U-NII-1)	0.01
Sum of MPE Ratios	
Sum	0.26
Compliance	
Verdict	PASS

GSM 850 + IEEE 802.11 (U-NII-2A)	
Information	
Number of concurrent modes	2
Evaluation distance [m]	0.20
Maximum MPE Ratios	
GSM 850	0.25
IEEE 802.11 (U-NII-2A)	0.02
Sum of MPE Ratios	
Sum	0.27
Compliance	
Verdict	PASS

GSM 1900 + IEEE 802.11 (2.4 GHz)	
Information	
Number of concurrent modes	2
Evaluation distance [m]	0.20
Maximum MPE Ratios	
GSM 1900	0.01
IEEE 802.11 (2.4 GHz)	0.08
Sum of MPE Ratios	
Sum	0.09
Compliance	
Verdict	PASS

GSM 1900 + IEEE 802.11 (U-NII-1)	
Information	
Number of concurrent modes	2
Evaluation distance [m]	0.20
Maximum MPE Ratios	
GSM 1900	0.01
IEEE 802.11 (U-NII-1)	0.01
Sum of MPE Ratios	
Sum	0.02
Compliance	
Verdict	PASS

GSM 1900 + IEEE 802.11 (U-NII-2A)	
Information	
Number of concurrent modes	2
Evaluation distance [m]	0.20
Maximum MPE Ratios	
GSM 1900	0.01
IEEE 802.11 (U-NII-2A)	0.02
Sum of MPE Ratios	
Sum	0.03
Compliance	
Verdict	PASS

UMTS FDDII + IEEE 802.11 (2.4 GHz)	
Information	
Number of concurrent modes	2
Evaluation distance [m]	0.20
Maximum MPE Ratios	
UMTS FDDII	0.01
IEEE 802.11 (2.4 GHz)	0.08
Sum of MPE Ratios	
Sum	0.09
Compliance	
Verdict	PASS

UMTS FDDII + IEEE 802.11 (U-NII-1)	
Information	
Number of concurrent modes	2
Evaluation distance [m]	0.20
Maximum MPE Ratios	
UMTS FDDII	0.01
IEEE 802.11 (U-NII-1)	0.01
Sum of MPE Ratios	
Sum	0.02
Compliance	
Verdict	PASS

UMTS FDDII + IEEE 802.11 (U-NII-2A)	
Information	
Number of concurrent modes	2
Evaluation distance [m]	0.20
Maximum MPE Ratios	
UMTS FDDII	0.01
IEEE 802.11 (U-NII-2A)	0.02
Sum of MPE Ratios	
Sum	0.03
Compliance	
Verdict	PASS

UMTS FDDV + IEEE 802.11 (2.4 GHz)	
Information	
Number of concurrent modes	2
Evaluation distance [m]	0.20
Maximum MPE Ratios	
UMTS FDDV	0.29
IEEE 802.11 (2.4 GHz)	0.08
Sum of MPE Ratios	
Sum	0.37
Compliance	
Verdict	PASS

UMTS FDDV + IEEE 802.11 (U-NII-1)	
Information	
Number of concurrent modes	2
Evaluation distance [m]	0.20
Maximum MPE Ratios	
UMTS FDDV	0.29
IEEE 802.11 (U-NII-1)	0.01
Sum of MPE Ratios	
Sum	0.30
Compliance	
Verdict	PASS

UMTS FDDV + IEEE 802.11 (U-NII-2A)	
Information	
Number of concurrent modes	2
Evaluation distance [m]	0.20
Maximum MPE Ratios	
UMTS FDDV	0.29
IEEE 802.11 (U-NII-2A)	0.02
Sum of MPE Ratios	
Sum	0.31
Compliance	
Verdict	PASS

9 Concurrent Evaluation Results - ISED

GSM 850 + IEEE 802.11 (2.4 GHz)	
Information	
Number of concurrent modes	2
Evaluation distance [m]	0.20
Maximum MPE Ratios	
GSM 850	0.53
IEEE 802.11 (2.4 GHz)	0.14
Sum of MPE Ratios	
Sum	0.67
Compliance	
Verdict	PASS

GSM 850 + IEEE 802.11 (U-NII-1)	
Information	
Number of concurrent modes	2
Evaluation distance [m]	0.20
Maximum MPE Ratios	
GSM 850	0.53
IEEE 802.11 (U-NII-1)	0.02
Sum of MPE Ratios	
Sum	0.55
Compliance	
Verdict	PASS

GSM 850 + IEEE 802.11 (U-NII-2A)	
Information	
Number of concurrent modes	2
Evaluation distance [m]	0.20
Maximum MPE Ratios	
GSM 850	0.53
IEEE 802.11 (U-NII-2A)	0.02
Sum of MPE Ratios	
Sum	0.55
Compliance	
Verdict	PASS

GSM 1900 + IEEE 802.11 (2.4 GHz)	
Information	
Number of concurrent modes	2
Evaluation distance [m]	0.20
Maximum MPE Ratios	
GSM 1900	0.01
IEEE 802.11 (2.4 GHz)	0.14
Sum of MPE Ratios	
Sum	0.15
Compliance	
Verdict	PASS

GSM 1900 + IEEE 802.11 (U-NII-1)	
Information	
Number of concurrent modes	2
Evaluation distance [m]	0.20
Maximum MPE Ratios	
GSM 1900	0.01
IEEE 802.11 (U-NII-1)	0.02
Sum of MPE Ratios	
Sum	0.03
Compliance	
Verdict	PASS

GSM 1900 + IEEE 802.11 (U-NII-2A)	
Information	
Number of concurrent modes	2
Evaluation distance [m]	0.20
Maximum MPE Ratios	
GSM 1900	0.01
IEEE 802.11 (U-NII-2A)	0.02
Sum of MPE Ratios	
Sum	0.03
Compliance	
Verdict	PASS

UMTS FDDII + IEEE 802.11 (2.4 GHz)	
Information	
Number of concurrent modes	2
Evaluation distance [m]	0.20
Maximum MPE Ratios	
UMTS FDDII	0.03
IEEE 802.11 (2.4 GHz)	0.14
Sum of MPE Ratios	
Sum	0.17
Compliance	
Verdict	PASS

UMTS FDDII + IEEE 802.11 (U-NII-1)	
Information	
Number of concurrent modes	2
Evaluation distance [m]	0.20
Maximum MPE Ratios	
UMTS FDDII	0.03
IEEE 802.11 (U-NII-1)	0.02
Sum of MPE Ratios	
Sum	0.05
Compliance	
Verdict	PASS

UMTS FDDII + IEEE 802.11 (U-NII-2A)	
Information	
Number of concurrent modes	2
Evaluation distance [m]	0.20
Maximum MPE Ratios	
UMTS FDDII	0.03
IEEE 802.11 (U-NII-2A)	0.02
Sum of MPE Ratios	
Sum	0.05
Compliance	
Verdict	PASS

UMTS FDDV + IEEE 802.11 (2.4 GHz)	
Information	
Number of concurrent modes	2
Evaluation distance [m]	0.20
Maximum MPE Ratios	
UMTS FDDV	0.63
IEEE 802.11 (2.4 GHz)	0.14
Sum of MPE Ratios	
Sum	0.77
Compliance	
Verdict	PASS

UMTS FDDV + IEEE 802.11 (U-NII-1)	
Information	
Number of concurrent modes	2
Evaluation distance [m]	0.20
Maximum MPE Ratios	
UMTS FDDV	0.63
IEEE 802.11 (U-NII-1)	0.02
Sum of MPE Ratios	
Sum	0.65
Compliance	
Verdict	PASS

UMTS FDDV + IEEE 802.11 (U-NII-2A)	
Information	
Number of concurrent modes	2
Evaluation distance [m]	0.20
Maximum MPE Ratios	
UMTS FDDV	0.63
IEEE 802.11 (U-NII-2A)	0.02
Sum of MPE Ratios	
Sum	0.65
Compliance	
Verdict	PASS