SAR exemption letter according 447498 D01 General RF Exposure Guidance v06

Customer	Product	Model	HW Status	SW status	FCC-ID
Witte-Velbert GmbH & Co. KG Höferstr. 3-15, 42551 Velbert Germany Mr. Christian Goldschmidt	BTLE enabled secure vehicle access box	flinkey BLE	D3.3	cert-vX	BLE = Contains FCC ID: SQGBL652 NFC = FCC ID: V2TFB33

Declared minimum distance to human body according to customer 20 cm according customer's information in "Operational description flinkey BLE 20230111". The customer thus declares that the device is not body-worn.

NFC:

According 447498 D01 General RF Exposure Guidance v06 – 4.3. General SAR test exclusion guidance 4.3.1 c) can be exempted as follows using a test separation distances of < 200 mm:

Appendix C

***SAR Test Exclusion Thresholds* for < 100 MHz and < 200 mm**

Approximate SAR test exclusion power thresholds at selected frequencies and test separation distances are illustrated in the following table. The equation and threshold in 4.3.1 must be applied to determine SAR test exclusion.

MHz	< 50	50	60	70	80	90	100	110	120	130	140	150	160	170	180	190	mm
100	237	474	481	487	494	501	507	514	521	527	534	541	547	554	561	567	
50	308	617	625	634	643	651	660	669	677	686	695	703	712	721	729	738	
10	474	948	961	975	988	1001	1015	1028	1041	1055	1068	1081	1095	1108	1121	1135	
1	711	1422	1442	1462	1482	1502	1522	1542	1562	1582	1602	1622	1642	1662	1682	1702	mW
0.1	948	1896	1923	1949	1976	2003	2029	2056	2083	2109	2136	2163	2189	2216	2243	2269	
0.05	1019	2039	2067	2096	2125	2153	2182	2211	2239	2268	2297	2325	2354	2383	2411	2440	
0.01	1185	2370	2403	2437	2470	2503	2537	2570	2603	2637	2670	2703	2737	2770	2803	2837	

Calculation based on information provided by customer:

Frequency	test separation distance	Exclusion Threshold	Cond. PWR incl. Tolerance	SAR Exemption fulfilled
MHz	mm	mW	mW	
13.56	190	1060	310	yes

Version	Applied changes	Date of release
--	Inital release	2023-Feb-28

Bluetooth LE:

According 447498 D01 General RF Exposure Guidance v06 – 4.3. General SAR test exclusion guidance 4.3.1 b) can be exempted as follows using a test separation distances of > 50 mm:

Appendix B

***SAR Test Exclusion Thresholds* for 100 MHz – 6 GHz and > 50 mm**

Approximate SAR test exclusion power thresholds at selected frequencies and test separation distances are illustrated in the following table. The equation and threshold in 4.3.1 must be applied to determine SAR test exclusion.

MHz	50	60	70	80	90	100	110	120	130	140	150	160	170	180	190	mm
100	474	481	487	494	501	507	514	521	527	534	541	547	554	561	567	
150	387	397	407	417	427	437	447	457	467	477	487	497	507	517	527	
300	274	294	314	334	354	374	394	414	434	454	474	494	514	534	554	
450	224	254	284	314	344	374	404	434	464	494	524	554	584	614	644	
835	164	220	275	331	387	442	498	554	609	665	721	776	832	888	943	
900	158	218	278	338	398	458	518	578	638	698	758	818	878	938	998	
1500	122	222	322	422	522	622	722	822	922	1022	1122	1222	1322	1422	1522	mW
1900	109	209	309	409	509	609	709	809	909	1009	1109	1209	1309	1409	1509	
2450	96	196	296	396	496	596	696	796	896	996	1096	1196	1296	1396	1496	
3600	79	179	279	379	479	579	679	779	879	979	1079	1179	1279	1379	1479	
5200	66	166	266	366	466	566	666	766	866	966	1066	1166	1266	1366	1466	
5400	65	165	265	365	465	565	665	765	865	965	1065	1165	1265	1365	1465	
5800	62	162	262	362	462	562	662	762	862	962	1062	1162	1262	1362	1462	

Calculation based on information provided by customer:

Frequency	test separation distance	Exclusion Threshold	Cond. PWR incl. Tolerance	SAR Exemption fulfilled
MHz	mm	mW	mW	
2402	190	1497	3	yes
2440	190	1496	3	yes
2480	190	1495	3	yes

Version	Applied changes	Date of release
--	Inital release	2023-Feb-28

Simultaneous Transmission:

$$\sum_{i=1}^{a}\frac{P_i}{P_{th,i}}+\sum_{j=1}^{b}\frac{ERP_j}{ERP_{th,j}}+\sum_{k=1}^{c}\frac{Evaluated_k}{Exposure\ Limit_k}\leq 1$$

Transmitter	maximum conducted power	Threshold ERP or Exemption limit	Ratio of MPE-Value/Limit
	mW	mW	
Bluetooth LE	3	1495	0.002007
NFC	310	1060	0.292453
total			0.294460

Conclusion: SAR-Based Exemption fulfilled

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--	Inital release	2023-Feb-28