
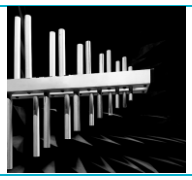
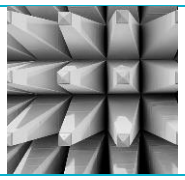

SAR Test exemption documentation
according to CFR 47 §1.1307

Report identification number: 1-2437/21-01-11 Exemption / MPE (FCC)

contains the module with the following certification numbers	
FCC ID	2ALP8IA01

This test report is electronically signed and valid without handwritten signature. For verification of the electronic signatures, the public keys can be requested at the testing laboratory.

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EUT technologies:

SAR based exempted technologies:

Technologies:	Max. power [dBm]		Max. declared EIRP [dBm]	**Max. declared ERP [dBm]**	#
	conducted	EIRP[2)]			
BT LE 2450 MHz	8.45 [1)] (=7.0mW)	11.6	12.0 (=15.85mW)	**9.95** (=9.89mW)	A
WLAN 2450 MHz	22.4 [1)] (=174.0mW)	25.55	26.0	**23.95** (=248.3mW)	--
E GPRS 850 MHz	35.0 * 26.0 **	36.2 * 27.2 **	28.0	**25.95** (=393.55mW)	B
E GPRS 1900 MHz	32.0 * 23.0 **	35.0 * 26.0 **	27.0	**24.95** (=312.6mW)	B
LTE FDD 2 Cat M1/ 1900 MHz	22.0 (=158.5mW)	25.0	26.0	**23.95** (=248.3mW)	B
LTE FDD 4 Cat M1/Cat NB1 1750 MHz	22.0 (=158.5mW)	23.2	24.0	**21.95** (=156.67mW)	B
LTE FDD 5 Cat M1 850 MHz	22.0 (=158.5mW)	23.2	24.0	**21.95** (=156.67mW)	B
LTE FDD 12 Cat M1 700 MHz	22.0 (=158.5mW)	24.0	25.0	**22.95** (=197.24mW)	B
LTE FDD 13 Cat M1 700 MHz	22.0 (=158.5mW)	24.0	25.0	**22.95** (=197.24mW)	B
LTE FDD 25 Cat M1 1900 MHz	22.0 (=158.5mW)	25.0	26.0	**23.95** (=248.3mW)	B
LTE FDD 26 Cat M1 850 MHz	22.0 (=158.5mW)	23.2	24.0	**21.95** (=156.67mW)	B
LTE FDD 66 Cat M1 1750 MHz	22.0 (=158.5mW)	23.2	24.0	**21.95** (=156.67mW)	B
LTE FDD 85 Cat M1 700 MHz	22.0 (=158.5mW)	24.0	25.0	**22.95** (=197.24mW)	B

[1)] Conducted value taken from FCC Module Grant XMR201910BG95M3
[2)] Calculated with antenna gains from manufacturer:
700 MHz (2.0dB) 1750 MHz (1.2dB) 2450MHz (3.15dB)
850 MHz (1.2dB) 1900 MHz (3.0dB)

* - 1 slot slotted avg. power
** - 1 slot time based avg. power

Details and origins of the measurements shown in the table above:

#	Results from:	Additional information
A	1-2437/21-01-07 CTC Advanced GmbH	Max meas. EIRP page 18
B	Module data sheet (Quectel BG95-M3)	Max. declared conducted values

Collocation overview:

Active scenario: / Technology	1	2	3	4
BT LE / WLAN	x		x	
E GPRS / LTE CAT M1	x	x		

Declared minimum safety distance: 20cm
According the manual a safety distance of 20cm shall be applied between the user (and/or bystanders) to the EUT antenna whilst active transmitting.

SAR-Based Exemption following 47 CFR 1.1307 amendment:

The SAR-based exemption formula of § 1.1307(b)(3)(i)(B), repeated here as Formula (B.2), applies for single fixed, mobile, and portable RF sources with available maximum time-averaged power or effective radiated power (ERP), whichever is greater, of less than or equal to the threshold P_{th} (mW). This method shall only be used at separation distances from 0.5 cm to 40 cm and at frequencies from 0.3 GHz to 6 GHz (inclusive). P_{th} is given by Formula (B.2).

$$P_{th}(mW) = \begin{cases} ERP_{20cm}\left(\frac{d}{20cm}\right)^{x} & d \le 20cm \\ ERP_{20cm} & 20cm \le d \le 40cm \end{cases} \quad (B.2)$$

where

$$x = -\log_{10}\left(\frac{60}{ERP_{20cm}\sqrt{f}}\right)$$

and f is in GHz, d is the separation distance (cm), and ERP_{20cm} is per Formula (B.1).

$$P_{th}(mW) = ERP_{20cm}(mW) = \begin{cases} ERP_{20cm}\left(\frac{d}{20cm}\right)^{x} & d \le 20cm \\ ERP_{20cm} & 20cm \le d \le 40cm \end{cases} \quad (B.1)$$

Technology	Transmitter frequency (MHz)	Max. decl. ERP (mW)	Treshold ERP (mW)	Treshold ERP (dBm)	Minimal Safety (mm)	Verdict
LTE 12/13/85	700	197.24	3060.00	34.8	20	EXCEMPTED
E GPRS / LTE 5/25	850	393.6	3060.00	34.8	20	EXCEMPTED
LTE 4/66	1750	156.67	3060.00	34.8	20	EXCEMPTED
E GPRS / LTE 2/25	1900	312.60	3060.00	34.8	20	EXCEMPTED
BT LE / WLAN	2450	248.30	3060.00	34.8	20	EXCEMPTED

Collocation:

Technology , [MHz]	E GPRS, 850	WLAN, 2450
Exemption based on	SAR , 20mm distance	
Limit ERP [mW]:	3060	3060
Result ERP [mW]:	393.55	248.3
Limit-Exhaustion [%]	12.9	8.1
Collocated percentage [%]	21.0	
Verdict:	pass	

This prediction demonstrates the following:

The power density levels for FCC that are larger than the minimum safety-distances stated above, are below the maximum levels allowed by regulations.