



Test report No:
NIE: 58866REM.001

Test report

FCC Rules and Regulations CFR 47, Part 15, Subpart B (10-1-16 Edition) & ICES-003 Issue 6 (Updated 2017-04)

Identification of item tested	Bluetooth BLE module
Trademark	Telit
Model and /or type reference	BlueMod+S42M (BE890F2-SI)
Other identification of the product	FCC ID: RI7-S42M IC: 5131A-S42M HW Version: V 2.0 SW Version: Rom Code in Realtek RTL8762AG
Features	Bluetooth LE
Manufacturer	TELIT COMMUNICATIONS S.P.A. Via Stazione di Prosecco 5/b, 34010. Sgonico – Trieste. Italy.
Test method requested, standard	FCC CFR 47, Part 15, Subpart B (10-1-16 Edition) & ICES-003 Issue 6 (Updated 2017-04)
Summary	IN COMPLIANCE
Approved by (name / position & signature)	Rafael López EMC LAB Manager
Date of issue	2018-10-18
Report template No	FDT08_21

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Competences and guarantees

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Uncertainty

Uncertainty (factor $k=2$) was calculated according to the DEKRA Testing and Certification internal document PODT000.

The total uncertainty of the measurement system for the measured radio disturbance characteristics of EUT from 30 MHz to 1000 MHz is $I = \pm 4,9$ dB for quasi-peak measurements, $I = \pm 4,6$ dB for peak measurements ($k = 2$)

The total uncertainty of the measurement system for the measured radio disturbance characteristics of EUT from 1000 MHz to 26 GHz is $I = \pm 2,6$ dB for peaks and average measurements ($k = 2$)

Data provided by the client

The sample consists of a Bluetooth LE module with optional 3-axis sensor and temperature/humidity sensor.

DEKRA declines any responsibility with respect to the information provided by the client and that may affect the validity of results.

Usage of samples

Samples under test have been selected by: The client.

Sample S/01 is composed of the following elements:

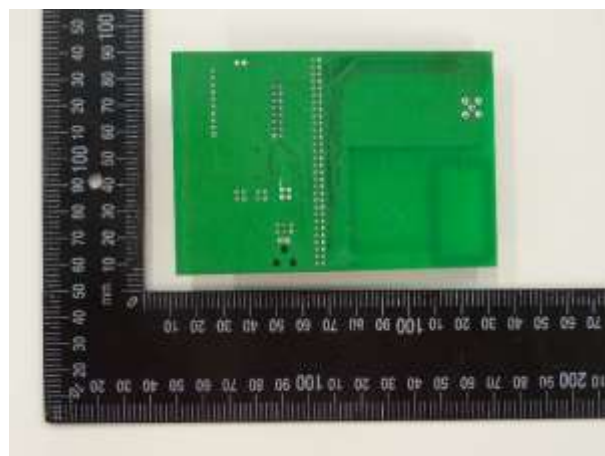
Control N°	Description	Model	Serial N°	Date of reception
53029B/005	Bluetooth BLE module	BlueMod+S42M (BE890F2-SI)	008025D1D2D6	2017-07-26

Test sample description

Ports..... :	Port name and description	Cable					
		Specified length [m]	Attached during test	Shielded			
			☐	☐			
			☐	☐			
			☐	☐			
			☐	☐			
			☐	☐			
			☐	☐			
Supplementary information to the ports..... :							
Rated power supply	Voltage and Frequency		Reference poles				
			L1	L2	L3	N	PE
	☐	AC:	☐	☐	☐	☐	☐
	☐	AC:	☐	☐	☐	☐	☐
	☒	DC: Internal battery. (1 x CR2032)					
☐	DC:						
Rated Power		0dBm					
Clock frequencies		40MHz internal crystal					
Other parameters.....		Not provided data					
Software version		Rom Code in Realtek RTL8762AG					

Hardware version.....:	V 2.0		
Dimensions in cm (W x H x D).....:	17,0 x 10,0 x 2,6 mm		
Mounting position.....:	☐	Table top equipment	
	☐	Wall/Ceiling mounted equipment	
	☐	Floor standing equipment	
	☐	Hand-held equipment	
	☒	Other: Soldered on a final device	
Modules/parts	Module/parts of test item	Type	Manufacturer
	N/A		
Accessories (not part of the test item)	Description	Type	Manufacturer
	USB to SERIAL CABLE	c232hd-ddhsp-0	FTDI
	5V DC external power supply		
	Test JIG for DUT		
Documents as provided by the applicant.....:	Description	File name	Issue date
	Hardware User Guide		
	Data sheet		
	BlueMod+S42M_LAB_TESTING_GUIDE		

Copy of marking plate:



Identification of the client

TELIT COMMUNICATIONS S.P.A.
Via Stazione di Prosecco 5/b,
34010. Sgonico – Trieste. Italy.

Testing period and place

Test Location	DEKRA Testing and Certification S.A.U.
Date (start)	2018-09-28
Date (finish)	2018-10-02

Document history

Report number	Date	Description
58866REM.001	2018-10-18	First release

Environmental conditions

In the control chamber, the following limits were not exceeded during the test:

Temperature	Min. = 15 °C Max. = 35 °C
Relative humidity	Min. = 30 % Max. = 75 %
Air pressure	Min. = 860 mbar Max. = 1060 mbar

In the semianechoic chamber, the following limits were not exceeded during the test.

Temperature	Min. = 15 °C Max. = 35 °C
Relative humidity	Min. = 30 % Max. = 75 %
Air pressure	Min. = 860 mbar Max. = 1060 mbar

In the chamber for conducted measurements, the following limits were not exceeded during the test:

Temperature	Min. = 15 °C Max. = 35 °C
Relative humidity	Min. = 30 % Max. = 60 %
Air pressure	Min. = 860 mbar Max. = 1060 mbar

Remarks and comments

The test have been performed by the technical personnel: Daniel López & David Rubio.

Testing verdicts

Not applicable :	N/A
Pass :	P
Fail :	F
Not measured :	N/M

Summary

Emission Test		
Requirement – Test case	Verdict	Remark
Radiated emission. Electromagnetic field measure (30 KHz – 1000 MHz)	P	---
Radiated emission. Electromagnetic field measure (1 GHz – 18 GHz)	P	---
Radiated emission. Electromagnetic field measure (18 GHz – 26 GHz)	P	---
Continuous conducted emission (150 KHz – 30 MHz)	N/A	See 1
<u>Supplementary information and remarks:</u> 1) EUT powered by batteries		

Appendix A: Test results

Appendix A Content

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DESCRIPTION OF THE OPERATION MODES

The operation modes described in this paragraph constitute a functionality of the sample under test for itself. The operation modes used by the samples to which the present report refers, are shown in the following table:

OPERATION MODE	DESCRIPTION
OM#01	EUT ON. Bluetooth in RX mode. Power supply: Internal battery (1 x CR2032)

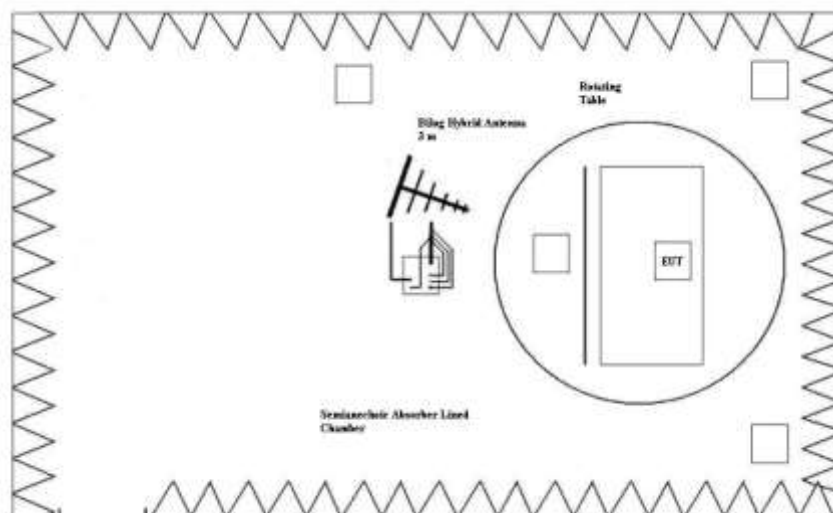
RADIATED EMISSION. ELECTROMAGNETIC FIELD MEASURE

LIMITS:	Product standard:	FCC CFR 47, Part 15, Subpart B (10-1-16 Edition), Secs. 15.109 & ICES-003 Issue 6 (Updated 04-2017)
	Test standard:	FCC CFR 47, Part 15, Subpart B (10-1-16 Edition), Secs. 15.109 & ICES-003 Issue 6 (Updated 04-2017)

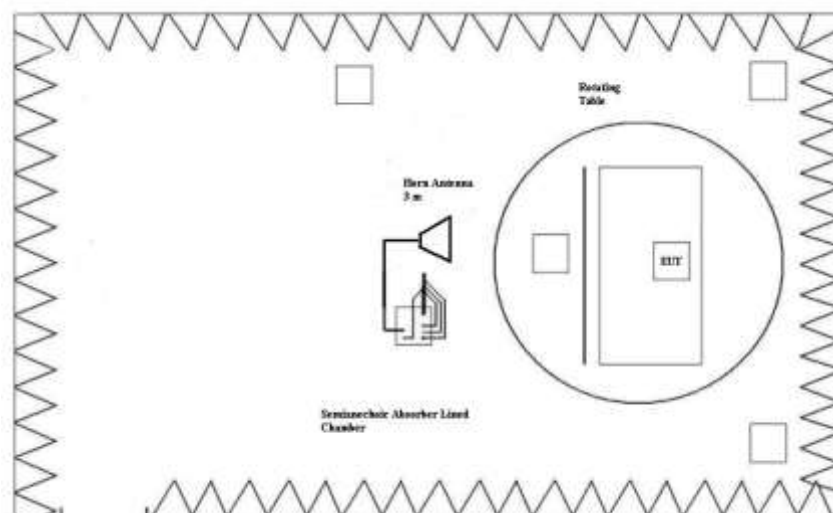
Limits of interference Class B

The applied limit for radiated emissions, 3 m distance, according with the requirements of FCC Rules and Regulations 47 CFR Part 15, Subpart B (10-1-16 Edition), Secs. 15.109 & ICES-003 Issue 6 (Updated 04-2017) in the frequency range 30 MHz to 18 GHz for class B equipments.

Frequency range (MHz)	QP Limit for 3 m		PK Limit for 3 m
	($\mu\text{V/m}$)	($\text{dB}\mu\text{V/m}$)	($\text{dB}\mu\text{V/m}$)
30 to 88	100	40	---
88 to 216	150	43.5	---
216 to 960	200	46	---
Above 960	500	54	74



Setup for measurements < 1GHz.



Setup for measurements > 1GHz.

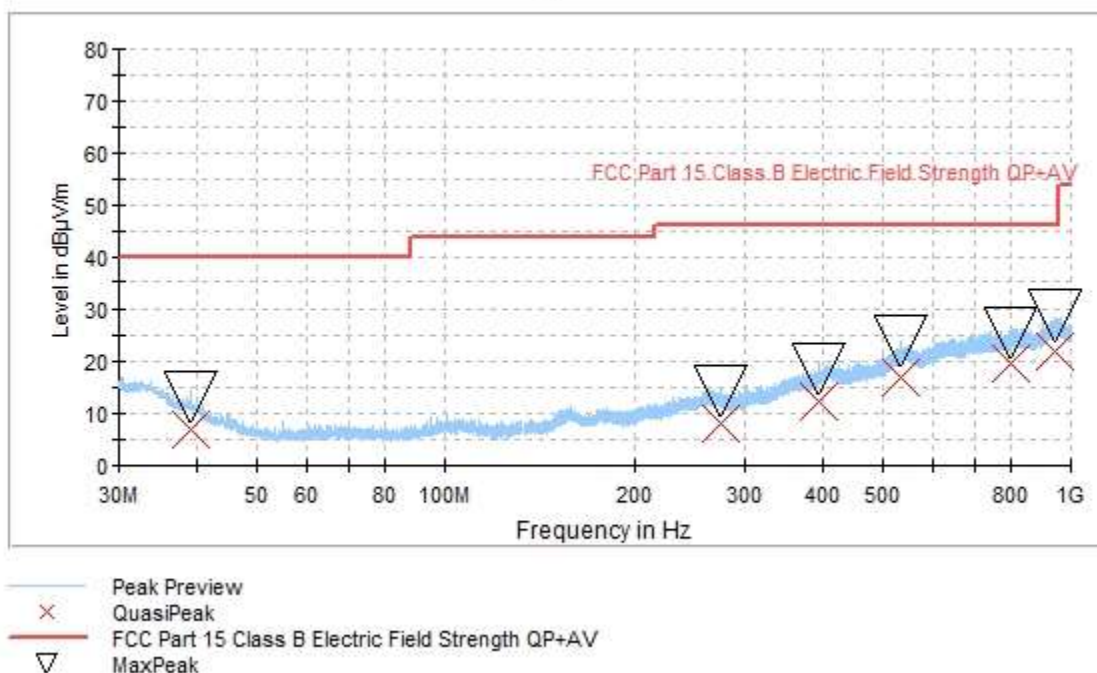
TESTED SAMPLE:	S/01
TESTED OPERATION MODES:	OM#01
TEST RESULTS:	CRmmnnRRPP: CR, Radiated Condition; mm: Sample number; nn: Operation mode; RR: Range; PP: Polarization.

CRmmnnRRPP	Description	Result
CR0101LR	Range: 30 MHz - 1000 MHz.	P
CR0101HR1 PH	Range: 1 GHz - 18 GHz. Horizontal Polarization.	P
CR0101HR1 PV	Range: 1 GHz - 18 GHz. Vertical Polarization.	P
CR0101HR2 PH	Range: 18 GHz - 26 GHz. Horizontal Polarization.	P
CR0101HR2 PV	Range: 18 GHz - 26 GHz. Vertical Polarization.	P

Radiated Emission. CR0101LR

Project: 58866REM.001
Company: TELIT COMMUNICATIONS S.P.A.
Sample: S/01
Operation mode: OM#01
Description: EUT ON. Bluetooth in RX mode. Power supply: Internal battery

Full Spectrum



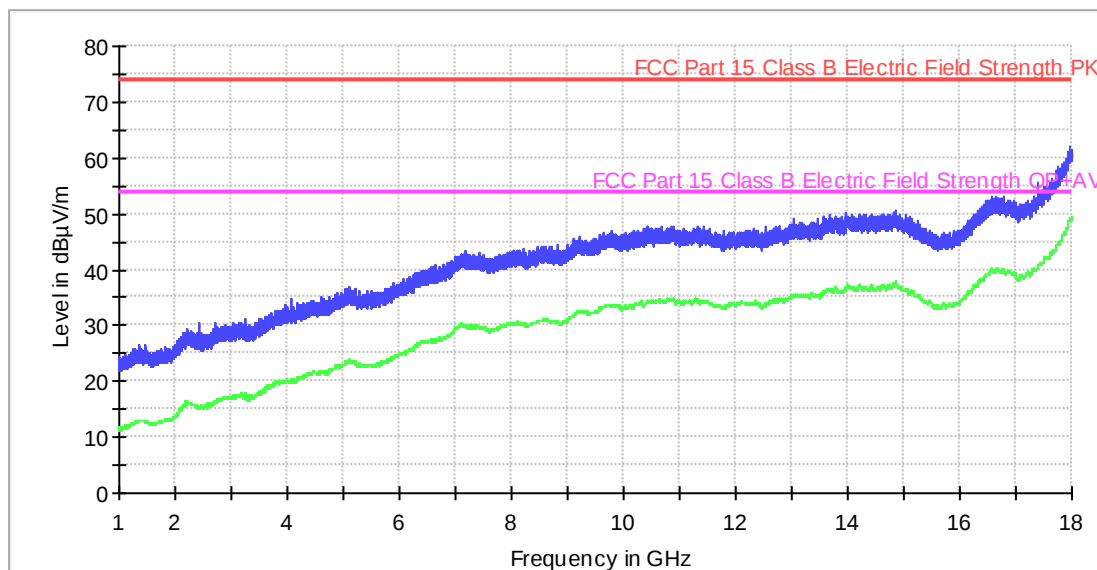
Maximizations

Frequency (MHz)	QuasiPeak (dBµV/m)	MaxPeak (dBµV/m)	Height (cm)	Pol	Azimuth (deg)
39.027500	7.04	13.33	190.0	H	-28.0
275.765000	7.97	14.19	323.0	H	132.0
394.200000	12.53	18.43	305.0	V	137.0
535.585000	16.92	24.10	167.0	H	77.0
801.590000	19.57	25.34	368.0	V	82.0
943.135000	21.92	28.55	383.0	V	-43.0

Radiated Emission. CR0101HR1_PH

Project: 58866REM.001
Company: TELIT COMMUNICATIONS S.P.A.
Sample: S/01
Operation mode: OM#01
Description: EUT ON. Bluetooth in RX mode. Power supply: Internal battery
Horizontal polarization.

ER EMI FCC 15 Class B (1-18GHz)



— Average Scan
— Peak Scan
— FCC Part 15 Class B Electric Field Strength PK
— FCC Part 15 Class B Electric Field Strength QP+AV

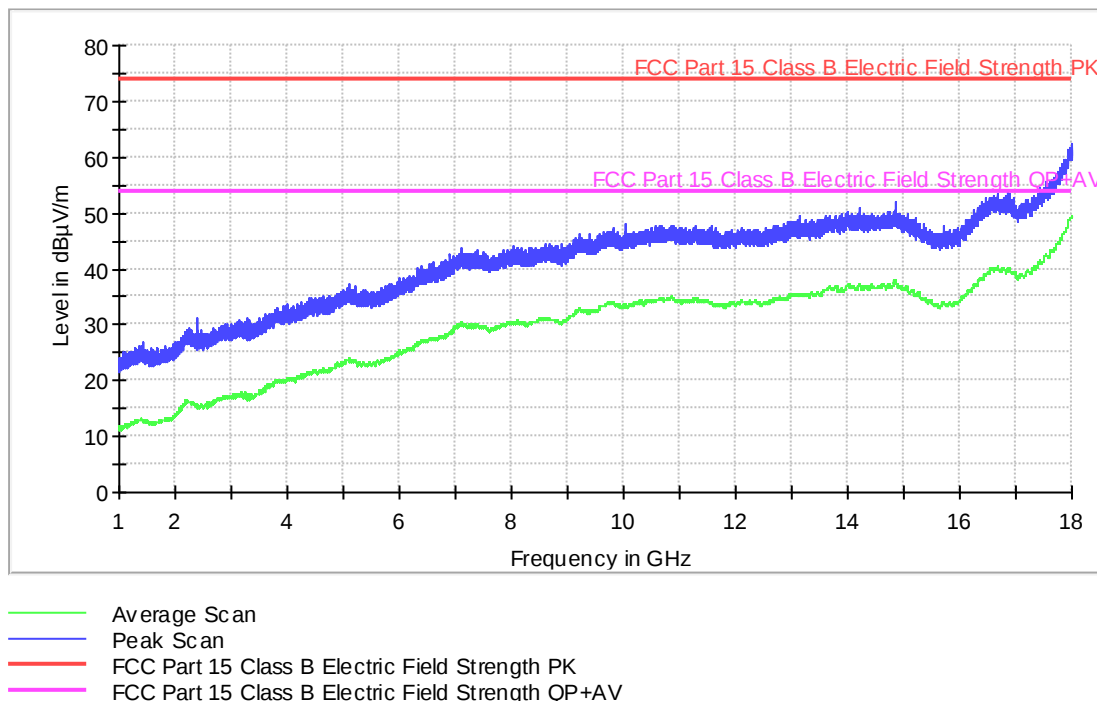
Subrange Maxima

Frequency (MHz)	PK+ CLRWR (dBµV/m)	AVG CLRWR (dBµV/m)
2440.000000	30.5	15.5
4054.000000	34.7	20.2
6064.000000	38.3	25.2
7192.400000	43.4	29.8
9209.200000	45.9	32.5
10680.800000	47.9	34.4
11427.200000	47.7	34.3
13961.200000	50.1	36.3
14853.600000	50.6	37.6
17968.400000	62.0	48.9

Radiated Emission. CR0101HR1_PV

Project: 58866REM.001
Company: TELIT COMMUNICATIONS S.P.A.
Sample: S/01
Operation mode: OM#01
Description: EUT ON. Bluetooth in RX mode. Power supply: Internal battery.
Vertical polarization.

ER EMI FCC 15 Class B (1-18GHz)



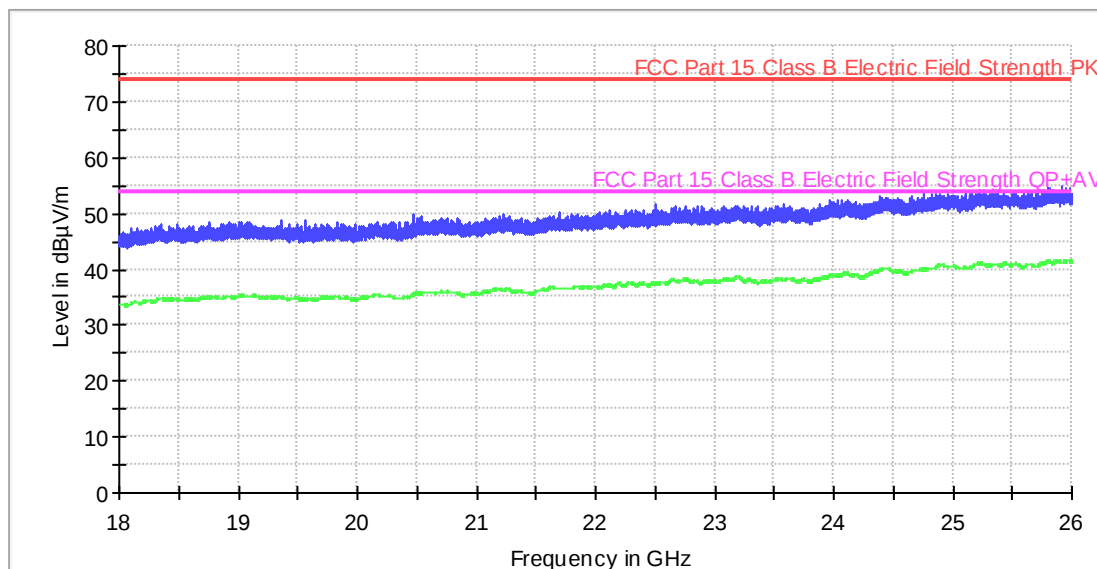
Subrange Maxima

Frequency (MHz)	PK+ CLRWR (dBµV/m)	AVG CLRWR (dBµV/m)
2406.400000	31.2	15.3
4360.400000	34.2	21.5
6084.400000	38.3	25.2
7114.800000	43.6	30.3
9392.400000	46.4	32.3
10038.800000	48.2	33.4
12866.400000	48.1	34.4
14202.400000	50.9	37.1
14858.400000	52.1	37.7
17992.800000	62.3	49.3

Radiated Emission. CR0101HR2_PH

Project: 58866REM.001
Company: TELIT COMMUNICATIONS S.P.A.
Sample: S/01
Operation mode: OM#01
Description: EUT ON. Bluetooth in RX mode. Power supply: Internal battery.
Horizontal polarization.

ER EMI FCC 15 Class B (18-26GHz)



— Average Scan
— Peak Scan
— FCC Part 15 Class B Electric Field Strength PK
— FCC Part 15 Class B Electric Field Strength QP+AV

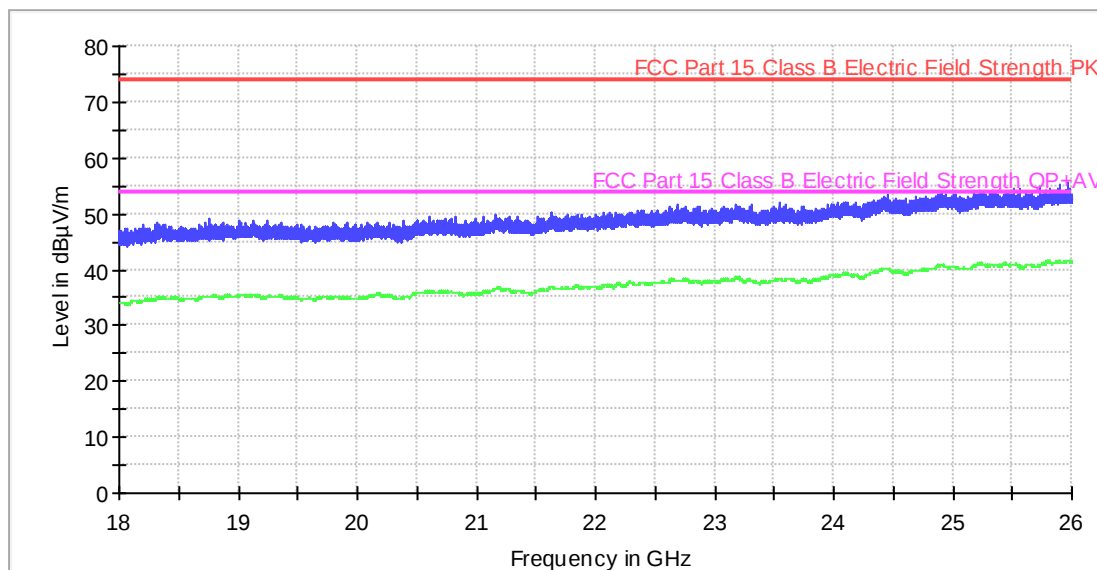
Subrange Maxima

Frequency (MHz)	PK+ CLRWR (dBµV/m)	AVG CLRWR (dBµV/m)
18758.400000	48.3	34.9
19356.400000	48.8	35.2
19833.600000	48.6	35.1
20464.800000	49.8	35.5
21690.000000	50.0	36.6
22508.000000	51.7	37.5
23573.600000	51.7	38.2
24387.200000	52.9	39.8
24751.200000	54.0	40.1
25918.000000	54.9	41.3

Radiated Emission. CR0101HR2_PV

Project: 58866REM.001
Company: TELIT COMMUNICATIONS S.P.A.
Sample: S/01
Operation mode: OM#01
Description: EUT ON. Bluetooth in RX mode. Power supply: Internal battery.
Vertical polarization.

ER EMI FCC 15 Class B (18-26GHz)



— Average Scan
— Peak Scan
— FCC Part 15 Class B Electric Field Strength PK
— FCC Part 15 Class B Electric Field Strength QP+AV

Subrange Maxima

Frequency (MHz)	PK+ CLRWR (dBµV/m)	AVG CLRWR (dBµV/m)
18758.000000	49.1	35.2
19236.400000	48.7	35.2
20391.200000	48.8	35.1
21163.200000	49.7	36.6
21624.000000	50.4	36.9
22682.800000	51.7	38.0
23543.200000	52.1	38.4
24334.000000	52.5	39.4
24907.200000	53.7	40.9
25962.800000	55.6	41.6