

Report No.: SEWA2204000011RG03

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TEST REPORT

Application No.: SEWA2204000011RG

Applicant: Quectel Wireless Solutions Co., Ltd.

Address of Applicant:

Building 5, Shanghai Business Park Phase III (Area B), No.1016 Tianlin Road,

Minhord District Changhai China 200323

Minhang District, Shanghai, China 200233

Manufacturer: Quectel Wireless Solutions Co., Ltd.

Address of Manufacturer: Building 5, Shanghai Business Park Phase III (Area B), No.1016 Tianlin Road,

Minhang District, Shanghai, China 200233

EUT Description: Multi-mode Smart LTE Module

Model No.: SC690A-NA

Trade Mark: Quectel

FCC ID: XMR2022SC690ANA

Standards: FCC 47 CFR Part 2, Subpart J

FCC 47 CFR Part 15, Subpart C

Date of Receipt: 2022/08/05

Date of Test: 2022/08/15 to 2022/09/01

Date of Issue: 2022/09/06

Test Result : PASS *

* In the configuration tested, the EUT detailed in this report complied with the standards specified above.

Authorized Signature:

Panta Sun Wireless Laboratory Manager



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Version 1

Revision Record					
Version Chapter Date Modifier Remark					
01		2022/09/06		Original	

Prepared By	(Tizzy Song) / Test Engineer	
Checked By	(Well Wei) / Reviewer	



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2 Test Summary

Test Item	FCC Rule No.	Test Method	Test Result	Result
Antenna Requirement	15.203/15.247(b)		Clause 4.1	PASS
AC Power Line Conducted Emission	15.207	ANSI C63.10 2013 Section 6.2	Clause 4.2	PASS
Conducted Output Power	15.247 (b)(3)	ANSI C63.10 2013 Section11.9.2.3	Clause 4.4	PASS
DTS (6 dB) Bandwidth & 99% Occupied Bandwidth	15.247 (a)(2)	ANSI C63.10 2013 Section 11.8 Option 2 / 6.9.3	Clause 4.5	PASS
Power Spectral Density	15.247 (e)	ANSI C63.10 2013 Section 11.10.2	Clause 4.6	PASS
Band-edge for RF Conducted Emissions	15.247(d)	ANSI C63.10 2013 Section 11.11	Clause 4.7	PASS
RF Conducted Spurious Emissions	15.247(d)	ANSI C63.10 2013 Section 11.11	Clause 4.8	PASS
Radiated Spurious Emissions 15.205/15.209		ANSI C63.10 2013 Section 11.12	Clause 4.9	PASS
Restricted bands around fundamental frequency (Radiated Emission)	15.205/15.209	ANSI C63.10 2013 Section 11.12	Clause 4.10	PASS



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3 General Information

3.1 Details of Client

Applicant:	Quectel Wireless Solutions Co., Ltd.
Address of Applicant:	Building 5, Shanghai Business Park Phase III (Area B), No.1016 Tianlin Road, Minhang District, Shanghai, China 200233
Manufacturer:	Quectel Wireless Solutions Co., Ltd.
Address of Manufacturer:	Building 5, Shanghai Business Park Phase III (Area B), No.1016 Tianlin Road, Minhang District, Shanghai, China 200233

3.2 Test Location

Company:	SGS-CSTC Standards Technical Services (Suzhou) Co., Ltd.		
Address: South of No. 6 Plant, No. 1, Runsheng Road, Suzhou Industrial Parea, China (Jiangsu) Pilot Free Trade Zone			
Post code:	215000		
Test engineer:	Lves Cheng, Tizzy Song		

3.3 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

• A2LA (Certificate No. 6336.01)

SGS-CSTC STANDARDS TECHNICAL SERVICES (SUZHOU) CO., LTD. is accredited by the American Association for Laboratory Accreditation(A2LA). Certificate No. 6336.01.

• Innovation, Science and Economic Development Canada

SGS-CSTC STANDARDS TECHNICAL SERVICES (SUZHOU) CO., LTD. has been recognized by ISED as an accredited testing laboratory.

CAB identifier: CN0120.

IC#: 27594.

• FCC –Designation Number: CN1312

SGS-CSTC STANDARDS TECHNICAL SERVICES (SUZHOU) CO., LTD. has been recognized as an

accredited testing laboratory. Designation Number: CN1312.

Test Firm Registration Number: 717327



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3.4 General Description of EUT

EUT Description:	Multi-mode Smart LTE Module			
Model No.:	SC690A-NA			
Trade Mark:	Quectel	Quectel		
Hardware Version:	R1.0			
Software Version:	SC690ANAPAR02A02			
	RF Conducted	867269050014144		
IMEI:	RSE & AC power line	867269050012684 867269050012692		
Operation Frequency:	2400MHz~2483.5MHz fc = 2402 MHz + N * 2 MHz, where: -fc = "Operating Frequency" in MHz, -N = "Channel Number" with the range from 0 to 39.			
Bluetooth version:	Bluetooth V5.1	Bluetooth V5.1		
Modulation Type:	GFSK	GFSK		
Number of Channel:	40	40		
Rates Type*:	⊠Provided by client			
Rates Type .	1M PHY 2M PHY			
Antenna Type:	External Antenna			
	0.47dBi			
Antenna Gain:	Note: The antenna gain are derived from the gain information report provided by the manufacturer.			
RF Cable:	1dB			

Note: *Since the above data and/or information is provided by the client relevant results or conclusions of this report are only made for these data and/or information, SGS is not responsible for the authenticity, integrity and results of the data and information and/or the validity of the conclusion.

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	Operation Frequency of each channel						
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
0	2402MHz	10	2422MHz	20	2442MHz	30	2462MHz
1	2404MHz	11	2424MHz	21	2444MHz	31	2464MHz
2	2406MHz	12	2426MHz	22	2446MHz	32	2466MHz
3	2408MHz	13	2428MHz	23	2448MHz	33	2468MHz
4	2410MHz	14	2430MHz	24	2450MHz	34	2470MHz
5	2412MHz	15	2432MHz	25	2452MHz	35	2472MHz
6	2414MHz	16	2434MHz	26	2454MHz	36	2474MHz
7	2416MHz	17	2436MHz	27	2456MHz	37	2476MHz
8	2418MHz	18	2438MHz	28	2458MHz	38	2478MHz
9	2420MHz	19	2440MHz	29	2460MHz	39	2480MHz

Remark:

In section 15.31(m), regards to the operating frequency range over 10 MHz, the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channel see below:

Channel	Frequency	
The Lowest channel(CH0)	2402MHz	
The Middle channel(CH19)	2440MHz	
The Highest channel(CH39)	2480MHz	



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3.5 Test Environment

Environment Parameter	101.0 kPa Selected Values During Tests		
Relative Humidity	44-46 % RH Ambient		
Value	Temperature(℃) Voltage(V)		
NTNV	22~23	3.8	

Remark:

NV: Normal Voltage NT: Normal Temperature

3.6 Description of Support Units

Description	Manufacturer	Model No.			
Mother board	Quectel	SMART-EVB-G5			
Adaptor	Something High Innovation (B.V.I.) Co., Ltd	P12F050200			
Remark: all above the information of table are provided by client.					



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4 Test results and Measurement Data

4.1 Antenna Requirement

Standard requirement: 47 CFR Part 15C Section 15.203 /247(b)

15.203 requirement:

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

15.247(b) (4) requirement:

The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

The antenna is External Antenna on the main PCB and no consideration of replacement. The best case gain of the antenna is 0.47dBi. *

*Note:The antenna gain are derived from the gain information report provided by the manufacturer.

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4.2 AC Power Line Conducted Emissions

Test Requirement:	47 CFR Part 15C Section 15.207			
Test Method:	ANSI C63.10: 2013 Section 6.2			
Test Frequency Range:	150kHz to 30MHz			
Receiver Setup:	RBW = 9kHz, VBW = 30kHz			
Limit:	Fragues av range (MIII-)	Limit (d	BuV)	
	Frequency range(MHz)	Quasi-peak	Average	
	0.15-0.5	66 to 56*	56 to 46*	
	0.5-5	56	46	
	5-30	60	50	
	* Decreases with the log	arithm of the frequency.		
Test Procedure:	The mains terminal discrete room.	sturbance voltage test was co	onducted in a shielded	
	 room. 2) The EUT was connected to AC power source through a LISN 1 (Line Impedance Stabilization Network) which provides a 50Ω/50μH + 5Ω linear impedance. The power cables of all other units of the EUT were connected to a second LISN 2, which was bonded to the ground reference plane in the same way as the LISN 1 for the unit being measured. A multiple socket outlet strip was used to connect multiple power cables to a single LISN provided the rating of the LISN was not exceeded. 3) The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane. 4) The test was performed with a vertical ground reference plane. The rear of the EUT shall be 0.4 m from the vertical ground reference plane. The vertical ground reference plane was bonded to the horizontal ground reference plane. The LISN 1 was placed 0.8 m from the boundary of the unit under test and bonded to a ground reference plane for LISNs mounted on top of the ground reference plane. This distance was between the closest points of the LISN 1 and the EUT. All other units of the EUT and associated equipment was at least 0.8 m from the LISN 2. 5) In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10: 2013 on conducted measurement. 		a 50Ω/50µH + 5Ω linear the EUT were to the ground reference eing measured. A ultiple power cables to a pot exceeded. The table 0.8m above the tangement, the EUT was rence plane. The rear of ference plane. The horizontal ground means the boundary of the plane for LISNs is distance was between other units of the EUT in the LISN 2.	



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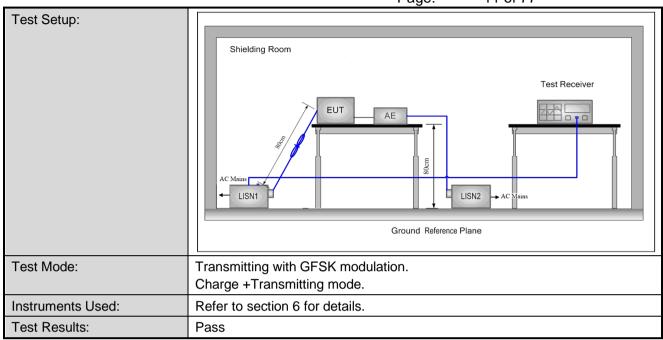
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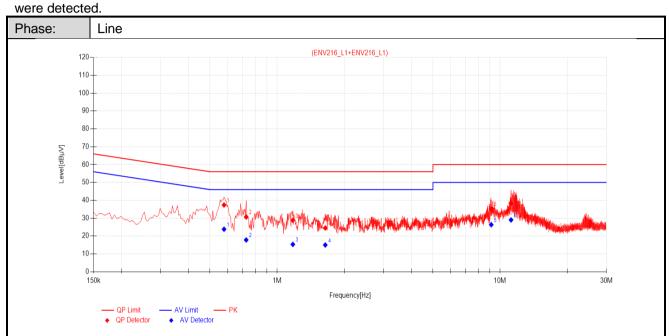
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Measurement Data

An initial pre-scan was performed on the live and neutral lines with peak detector.

Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission



Final	Data List										
NO.	Frequency [MHz]	Factor [dB]	QP Reading [dBμV]	QP Value [dBµV]	QP Limit [dBµV]	QP Margin [dB]	ΑV Reading [dBμV]	AV Value [dBµV]	AV Limit [dBµV]	AV Margin [dB]	Verdict
1	0.5775	10.52	26.87	37.39	56.00	18.61	13.29	23.81	46.00	22.19	PASS
2	0.7260	10.56	20.09	30.65	56.00	25.35	7.25	17.81	46.00	28.19	PASS
3	1.1760	10.74	18.03	28.77	56.00	27.23	4.59	15.33	46.00	30.67	PASS
4	1.6440	10.75	13.76	24.51	56.00	31.49	4.24	14.99	46.00	31.01	PASS
5	9.1320	10.65	24.63	35.28	60.00	24.72	15.70	26.35	50.00	23.65	PASS
6	11.2065	10.61	27.79	38.40	60.00	21.60	18.41	29.02	50.00	20.98	PASS

- 1. The following Quasi-Peak and Average measurements were performed on the EUT:
- 2. Value =Reading[dB μ V] + Factor(Lisn factor[dB] + cable loss[dB]). 3. Margin = Limit[dB μ V] Value[dB μ V]



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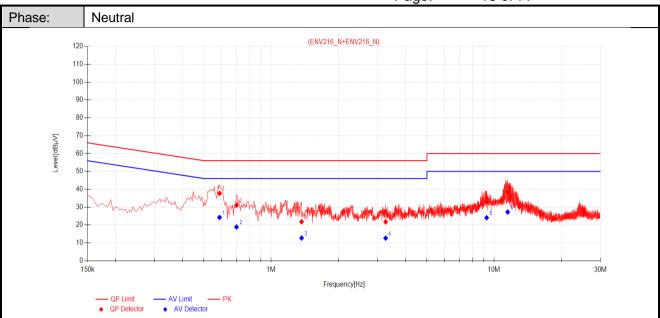
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Final	Data List										
NO.	Frequency [MHz]	Factor [dB]	QP Reading [dBμV]	QP Value [dBµV]	QP Limit [dBµV]	QP Margin [dB]	ΑV Reading [dBμV]	AV Value [dBµV]	AV Limit [dBµV]	AV Margin [dB]	Verdict
1	0.5865	10.70	27.04	37.74	56.00	18.26	13.56	24.26	46.00	21.74	PASS
2	0.6990	10.81	20.28	31.09	56.00	24.91	8.07	18.88	46.00	27.12	PASS
3	1.3695	10.77	11.04	21.81	56.00	34.19	1.96	12.73	46.00	33.27	PASS
4	3.2640	10.63	11.13	21.76	56.00	34.24	2.02	12.65	46.00	33.35	PASS
5	9.2670	10.64	22.35	32.99	60.00	27.01	13.42	24.06	50.00	25.94	PASS
6	11.5170	10.65	27.74	38.39	60.00	21.61	16.61	27.26	50.00	22.74	PASS

Remark:

- 1. The following Quasi-Peak and Average measurements were performed on the EUT:
- 2. Value = Reading[dB μ V] + Factor(Lisn factor[dB] + cable loss[dB]).
- 3. Margin = Limit[$dB\mu V$] Value[$dB\mu V$]



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4.3 Duty Cycle

The detailed test data see: Appendix



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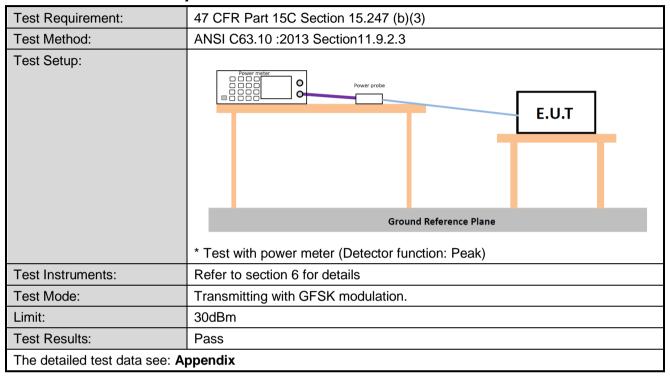
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4.4 Conducted Output Power





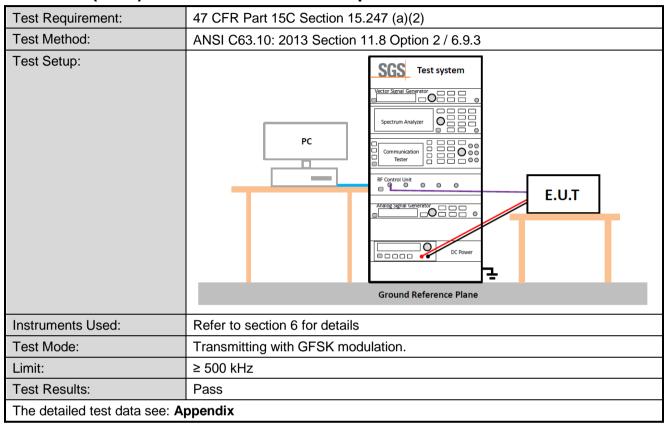
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4.5 DTS (6 dB) Bandwidth & 99% Occupied Bandwidth





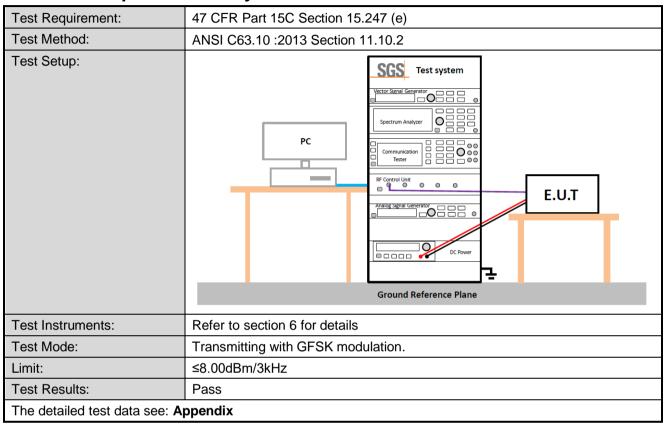
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4.6 Power Spectral Density





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4.7 Band-edge for RF Conducted Emissions

Test Requirement:	47 CFR Part 15C Section 15.247 (d)					
Test Method:	ANSI C63.10: 2013 Section 11.11					
Test Setup:	PC Spectrum Analyzer O O O O O O O O O					
Instruments Used:	Refer to section 6 for details					
Test Mode:	Transmitting with GFSK modulation.					
Limit:	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement.					
Test Results:	Pass					
The detailed test data see: A	ppendix					



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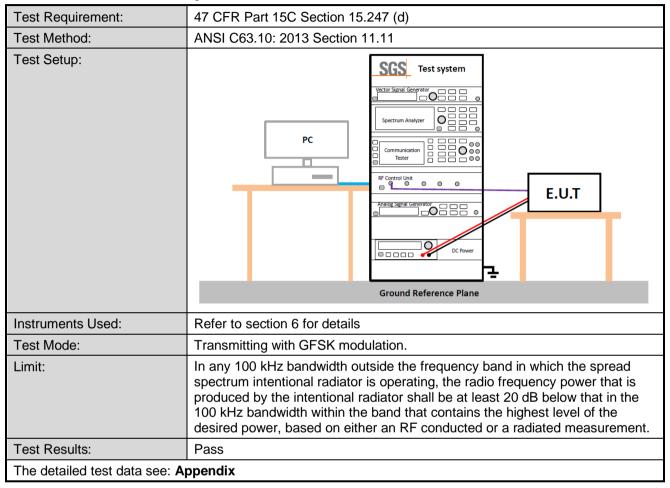
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4.8 RF Conducted Spurious Emissions





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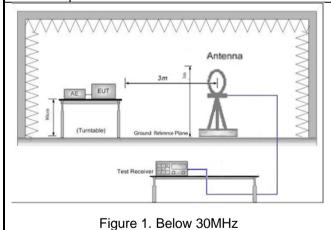
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4.9 Radiated Spurious Emissions

Test Requirement:	47 CFR Part 15C Section 15.209 and 15.205						
Test Method:	ANSI C63.10 :2013 Section 11.12						
Test Site:	Measurement Distance:	3m (Semi-Anecho	ic Chamber)				
Test Frequency:	9kHz ~ 25GHz						
Limit:	Frequency	Field strength (microvolt/meter)	Limit (dBuV/m)	Remark	Measurement distance (m)		
	0.009MHz-0.490MHz	2400/F(kHz)	-	-	300		
	0.490MHz-1.705MHz	24000/F(kHz)	-	-	30		
	1.705MHz-30MHz	30	-	-	30		
	30MHz-88MHz	100	40.0	Quasi-peak	3		
	88MHz-216MHz	150	43.5	Quasi-peak	3		
	216MHz-960MHz	200	46.0	Quasi-peak	3		
	960MHz-1GHz	500	54.0	Quasi-peak	3		
	Above 1GHz	500	54.0	Average	3		
	Remark: 15.35(b),Unless otherwise specified, the limit on peak radio frequency emissions is 20dB above the maximum permitted average emission limit applicable to the equipment under test. This peak limit applies to the total peak emission level radiated by the device.						

Test Setup:



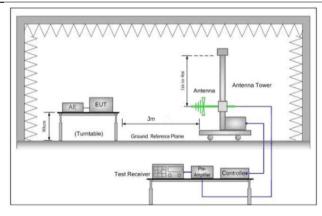


Figure 2. 30MHz to 1GHz



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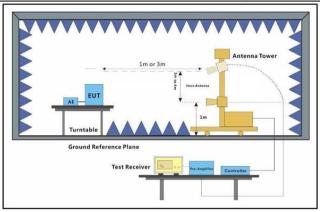


Figure 3. Above 1 GHz

Test Procedure:

- a. For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 or 10 meter semi-anechoic camber. The table was rotated 360 degrees to determine the position of the highest radiation.
- For above 1GHz, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter semi-anechoic camber. The table was rotated 360 degrees to determine the position of the highest radiation (Distance from antenna to EUT is 1m for measurements >18GHz).
- c. The EUT was set 3 or 10 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- d. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- e. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters(for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- f. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- g. Test the EUT in the lowest channel, the middle channel ,the Highest channel.
- h. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, And found the X axis positioning which it is worse case.
- i. Repeat above procedures until all frequencies measured was complete.
- j. The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line was not reported
- k. The disturbance above 18GHz was very low, and the harmonics were the highest point could be found when testing, so only the harmonics had been displayed.
- At a measurement distance of 1 meter the limit line was increased by 20*LOG(3/1) = 9.54 dB.

Test Configuration:

Measurements Below 1000MHz

- RBW = 120 kHz
- VBW = 300 kHz
- Detector = Peak
- Trace mode = max hold



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	Fage. 22 0177
	Peak Measurements Above 1000 MHz
	• RBW = 1 MHz
	• VBW ≥ 3 MHz
	Detector = Peak
	Sweep time = auto
	Trace mode = max hold
	Average Measurements Above 1000MHz
	• RBW = 1 MHz
	• VBW ≥ [3 *RBW]
	• Detector = RMS (power averaging), if span / (# of points in sweep) ≤ (RBW / 2). Satisfying this condition may require increasing the number of points in the sweep or reducing the span. If this condition cannot be satisfied, then the detector mode shall be set to peak.
	Sweep time = auto
	Perform a trace average of at least 100 traces.
Exploratory Test	Transmitting with GFSK modulation.
Mode:	Charge + Transmitting mode.
Final Test Mode:	Transmitting with GFSK modulation.
	Pretest the EUT at Charge + Transmitting mode,
	For below 1GHz part, through pre-scan, the worst case is the lowest channel. Only the worst case is recorded in the report.
Instruments Used:	Refer to section 6 for details
Test Results:	Pass
The detailed test data	see: Appendix



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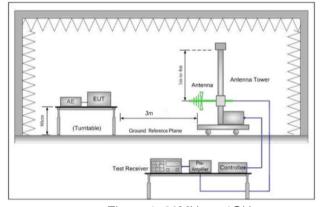
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4.10 Restricted bands around fundamental frequency

Test Requirement:	47 CFR Part 15C Section 15.209 and 15.205						
Test Method:	ANSI C63.10: 2013 Section	11.12					
Test Site:	Measurement Distance: 3m	(Semi-Anechoic Cham	ber)				
Limit:	Frequency	Limit (dBuV/m)	Remark				
	30MHz-88MHz	40.0	Quasi-peak				
	88MHz-216MHz	43.5	Quasi-peak				
	216MHz-960MHz	46.0	Quasi-peak				
	960MHz-1GHz	54.0	Quasi-peak				
	Above 4015	54.0	Average Value				
	Above 1GHz	74.0	Peak Value				

Test Setup:



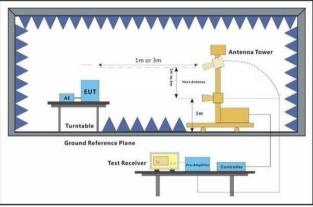


Figure 1. 30MHz to 1GHz

Figure 2. Above 1 GHz

Test Procedure:

- a. For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 or 10 meter semi-anechoic camber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. For above 1GHz, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter semi-anechoic camber. The table was rotated 360 degrees to determine the position of the highest radiation.
- c. The EUT was set 3 or 10 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- d. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- e. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- f. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- g. Place a marker at the end of the restricted band closest to the transmit frequency to show compliance. Also measure any emissions in the restricted



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	 bands. Save the spectrum analyzer plot. Repeat for each power and modulation for lowest and highest channel h. Test the EUT in the lowest channel, the Highest channel i. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, And found the X axis positioning which it is worse case. j. Repeat above procedures until all frequencies measured was complete.
T10(
Test Configuration:	Measurements Below 1000MHz
	• RBW = 120 kHz
	• VBW = 300 kHz
	Detector = Peak
	Trace mode = max hold
	Peak Measurements Above 1000 MHz
	• RBW = 1 MHz
	• VBW ≥ 3 MHz
	Detector = Peak
	Sweep time = auto
	Trace mode = max hold
	Average Measurements Above 1000MHz
	• RBW = 1 MHz
	• VBW ≥ [3 *RBW]
	• Detector = RMS (power averaging), if span / (# of points in sweep) ≤ (RBW / 2). Satisfying this condition may require increasing the number of points in the sweep or reducing the span. If this condition cannot be satisfied, then the detector mode shall be set to peak.
	Sweep time = auto
	Perform a trace average of at least 100 traces.
Exploratory Test Mode:	Transmitting with GFSK modulation.
	Charge + Transmitting mode.
Final Test Mode:	Transmitting with GFSK modulation.
	Pretest the EUT at Charge + Transmitting mode.
	Only the worst case is recorded in the report.
Instruments Used:	Refer to section 6 for details
Test Results:	Pass
The detailed test data see	e: Appendix



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5 Measurement Uncertainty (95% confidence levels, k=2)

No.	Item	Measurement Uncertainty		
1	Total RF power, conducted	±0.54dB		
2	RF power density, conducted	±1.03dB		
3	Spurious emissions, conducted	±0.54dB		
4	Radio Frequency	±1.0 %		
5	Duty Cycle	±0.37%		
6	Occupied Bandwidth	±1.0 %		
7	Conduction Emission	± 2.90dB (150kHz to 30MHz)		
		± 3.13dB (9k -30MHz)		
8	Radiated Emission	± 4.80dB (30M -1GHz)		
0	Radiated Effission	± 4.80dB (1GHz to 18GHz)		
		± 4.80dB (Above 18GHz)		

Remark:

The U_{lab} (lab Uncertainty) is less than $U_{cispr/ETSI}$ (CISPR/ETSI Uncertainty), so the test results

- compliance is deemed to occur if no measured disturbance level exceeds the disturbance limit;

- non-compliance is deemed to occur if any measured disturbance level exceeds the disturbance limit.



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6 Equipment List

		RF Test Equipmen	t		
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
Shielding Room	Brilliant-emc	N/A	SUWI-04-01-06	2021/05/08	2024/05/07
Temperature and humidity meter	MingGao	TH101B	SUWI-01-01-07	2022/02/16	2023/02/15
Signal Analyzer	ROHDE&SCHWARZ	FSV3030	SUWI-01-02-02	2022/05/17	2023/05/16
Measurement Software	Tonscend	JS1120-3 Test System V3.1.55	SUWI-02-09-09	NCR	NCR
Signal Analyzer	ROHDE&SCHWARZ	FSW43	SUWI-01-02-04	2022/05/28	2023/05/27
DC Power Supply	HYELEC	HY3005B	SUWI-01-18-01	2022/02/15	2023/02/14
Power meter	Anritsu	ML2495A	SUWI-01-31-01	2021/12/04	2022/12/03
Pulse power sensor	Anritsu	MA2411B	SUWI-01-32-01	2021/12/04	2022/12/03
Temperature Chamber	ESPEC	SU-242	SUWI-01-13-01	2022/02/15	2023/02/14
Wideband Radio Communication Tester	ROHDE&SCHWARZ	CMW500	SUWI-01-16-05	2022/02/14	2023/02/13
MXG Vector signal genitor	KEYSIGHT	N5182B	SUWI-01-38-01	2022/02/14	2023/02/13

CE Test System								
Equipment Manufacturer		Model No. Inventory No.		Cal Date	Cal Due Date			
Shielding Room	Brilliant-emc	N/A	SUWI-04-03-01	2021/05/08	2024/05/07			
Artificial network	ROHDE&SCHWARZ	ENV216	SUWI-01-19-01	2022/02/16	2023/02/15			
Artificial network	ROHDE&SCHWARZ	ENV216	SUWI-01-19-02	2022/02/16	2023/02/15			
Measurement Software	Tonscend	JS32-CE V4.0.0.2	SUWI-02-09-05	NCR	NCR			
Test receiver	ROHDE&SCHWARZ	ESR7	SUWI-01-10-01	2022/02/16	2023/02/15			
Temperature and humidity meter	MingGao	TH101B	SUWI-01-01-06	2022/02/16	2023/02/15			



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	RSE Test System								
		KSE Test S	/stem						
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date (yyyy/mm/dd)	Cal Due Date (yyyy/mm/dd)				
Semi-Anechoic Chamber	Brilliant-emc	N/A	SUWI-04-02-01	2021/05/08	2024/05/07				
Temperature and humidity meter	MingGao	TH101B	SUWI-01-01-05	2022/02/16	2023/02/15				
Signal Analyzer	ROHDE&SCHWARZ	FSW43	SUWI-01-02-04	2022/05/28	2023/05/27				
Signal Analyzer	KEYSIGHT	N9020A	SUWI-01-02-05	2021/12/04	2022/12/03				
Test receiver	ROHDE&SCHWARZ	ESR7	SUWI-01-10-01	2022/02/19	2023/02/18				
Receiving antenna	SCHWRZBECK MESS- ELEKTRONIK	VULB 9163	SUWI-01-11-01	2021/05/16	2023/05/15				
Receiving antenna	SCHWRZBECK MESS- ELEKTRONIK	BBHA 9120D	SUWI-01-11-02	2021/05/16	2023/05/15				
Receiving antenna	SCHWRZBECK MESS- ELEKTRONIK	BBHA 9170	SUWI-01-11-03	2021/05/14	2023/05/13				
Amplifier	Tonscend	TAP9K3G40	SUWI-01-14-01	2022/02/14	2023/02/13				
Amplifier	Tonscend	TAP01018050	SUWI-01-14-02	2022/02/14	2023/02/13				
Amplifier	Tonscend	TAP18040048	SUWI-01-14-03	2022/02/19	2023/02/18				
Active Loop Antenna	SCHWRZBECK MESS- ELEKTRONIK	FMZB 1519B	SUWI-01-21-01	2021/06/10	2023/06/09				
Measurement Software	Tonscend	JS32-RSE V4.0.0.0	SUWI-02-09-06	NCR	NCR				



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7 **Photographs - Setup Photos**

Refer to Appendix A.2 WLAN Setup Photos.



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Appendix



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DTS Bandwidth Test Result

TestMode	Antenna	Frequency[MHz]	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
		2402	0.68	2401.65	2402.34	≥0.5	PASS
BLE_1M	Ant1	2440	0.69	2439.65	2440.34	≥0.5	PASS
		2480	0.68	2479.66	2480.34	≥0.5	PASS
BLE_2M		2402	1.16	2401.42	2402.58	≥0.5	PASS
	Ant1	2440	1.17	2439.42	2440.58	≥0.5	PASS
		2480	1.16	2479.42	2480.58	≥0.5	PASS



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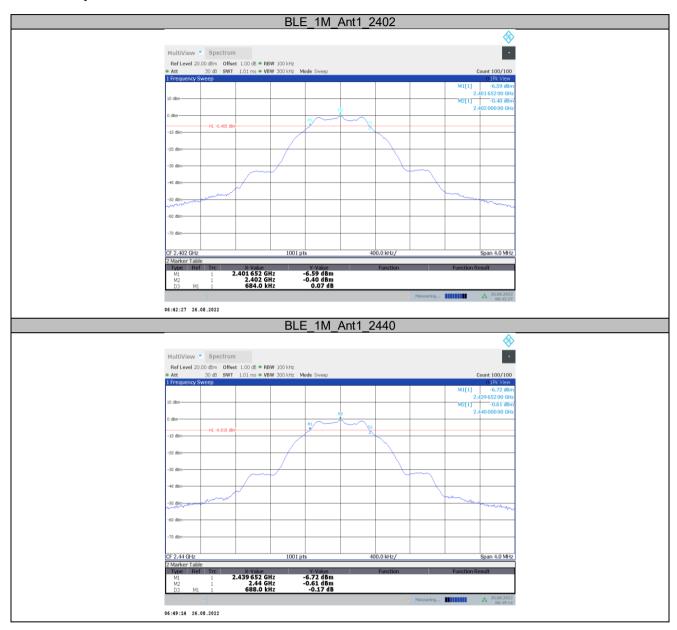


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Test Graphs





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Occupied Channel Bandwidth Test Result

TestMode	Antenna	Frequency[MHz]	OCB [MHz]	FL[MHz]	FH[MHz]	Verdict
BLE_1M	Ant1	2402	1.029	2401.489	2402.519	
		2440	1.028	2439.490	2440.518	
		2480	1.03	2479.489	2480.520	Reporting
BLE_2M	Ant1	2402	2.044	2400.992	2403.036	only
		2440	2.041	2438.992	2441.033	
		2480	2.045	2478.989	2481.034	



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Test Graphs





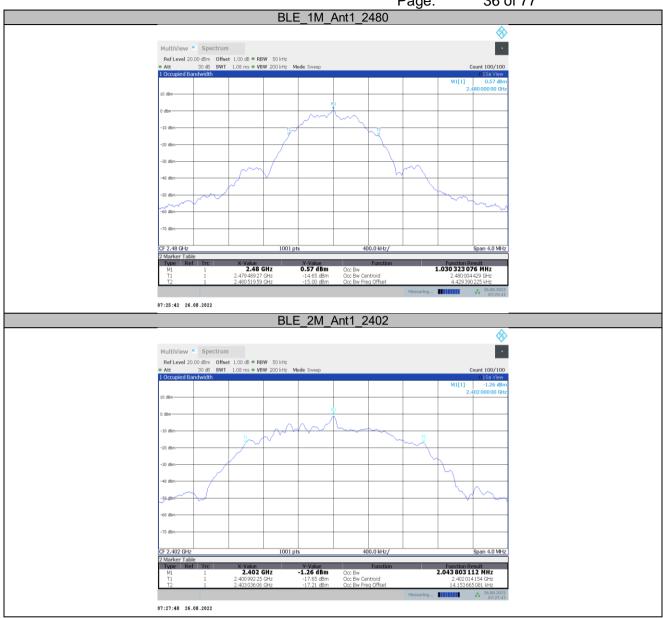
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Maximum conducted output power Test Result Peak

TestMode	Antenna	Frequency[MHz]	Conducted Peak Powert[dBm]	Conducted Limit[dBm]	Verdict
		2402	0.23	≤30	PASS
BLE_1M	Ant1	2440	0.43	≤30	PASS
		2480	1.88	≤30	PASS
		2402	0.44	≤30	PASS
BLE_2M	Ant1	2440	0.58	≤30	PASS
		2480	2.01	≤30	PASS



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Maximum power spectral density Test Result

TestMode	Antenna	Frequency[MHz]	Result[dBm/3kHz]	Limit[dBm/3kHz]	Verdict
		2402	-15.12	≤8.00	PASS
BLE_1M	Ant1	2440	-15.29	≤8.00	PASS
_		2480	-13.44	≤8.00	PASS
		2402	-18.56	≤8.00	PASS
BLE_2M	Ant1	2440	-18.81	≤8.00	PASS
		2480	-17.18	≤8.00	PASS



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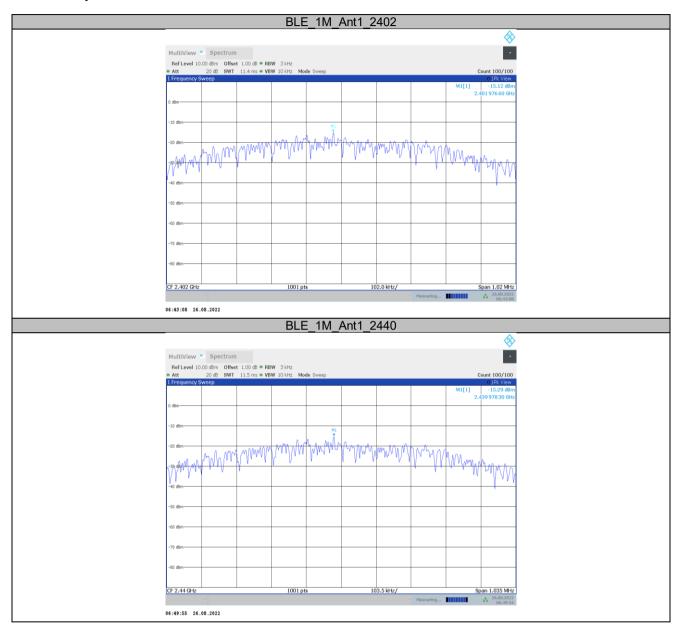
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Test Graphs





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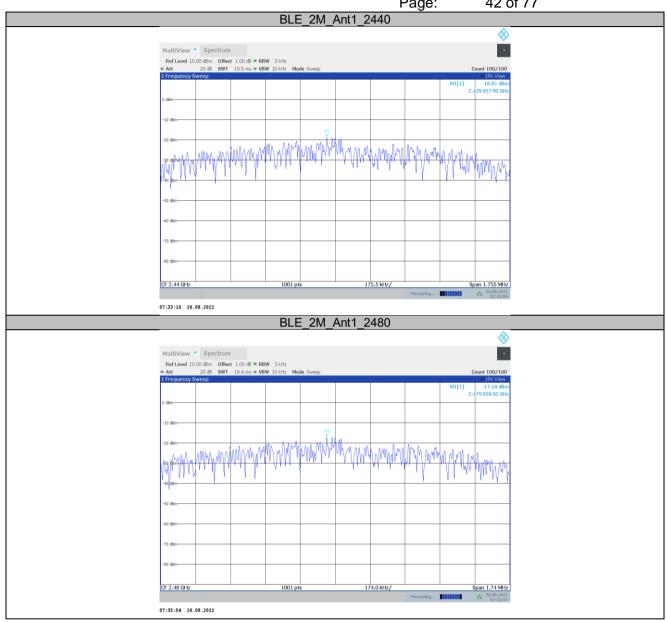
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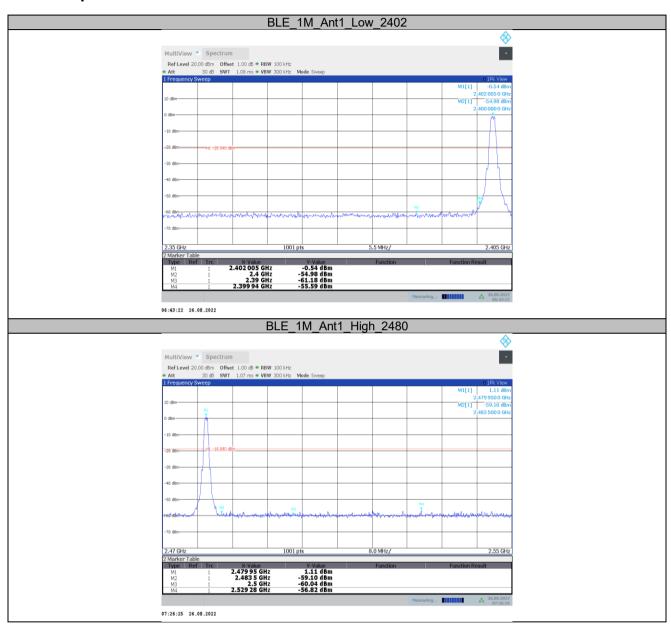


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Band edge measurements Test Graphs





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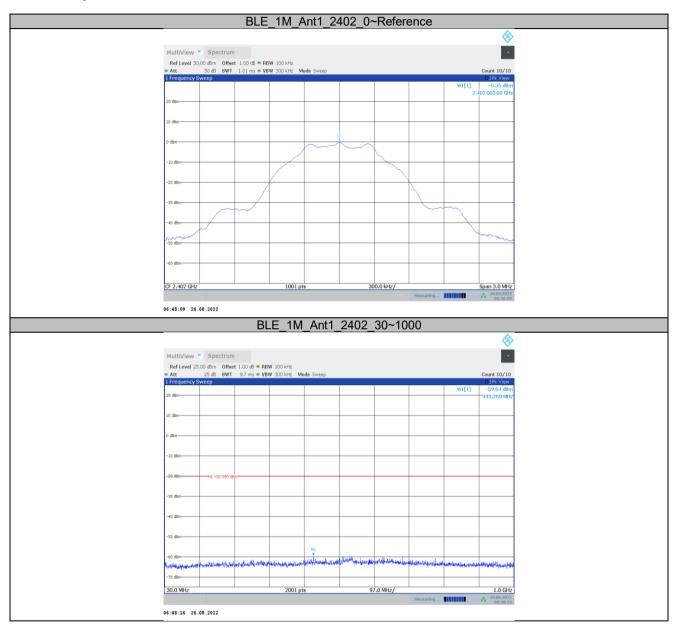


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Conducted Spurious Emission Test Graphs





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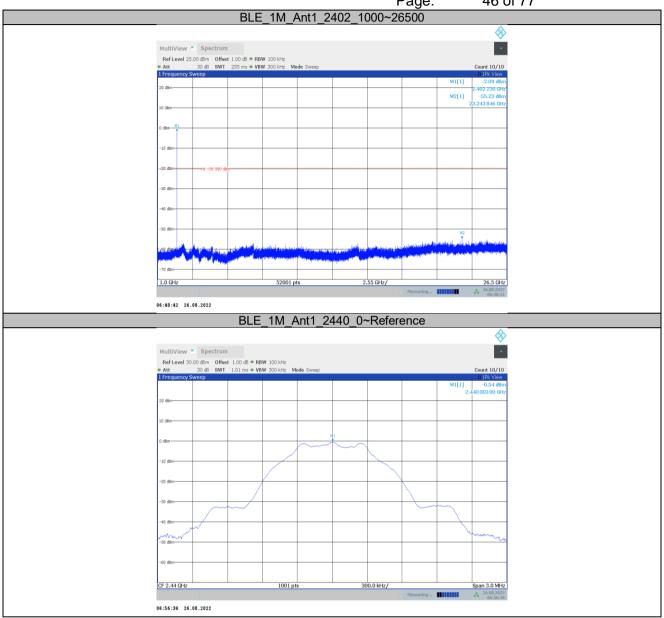
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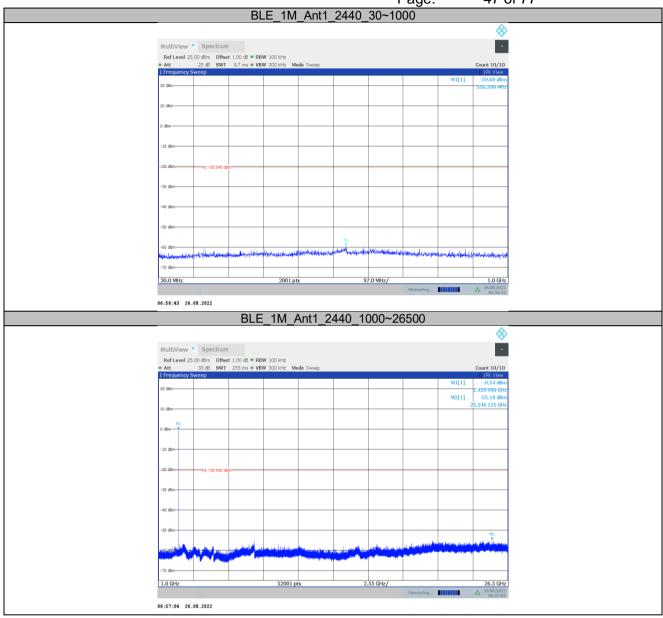
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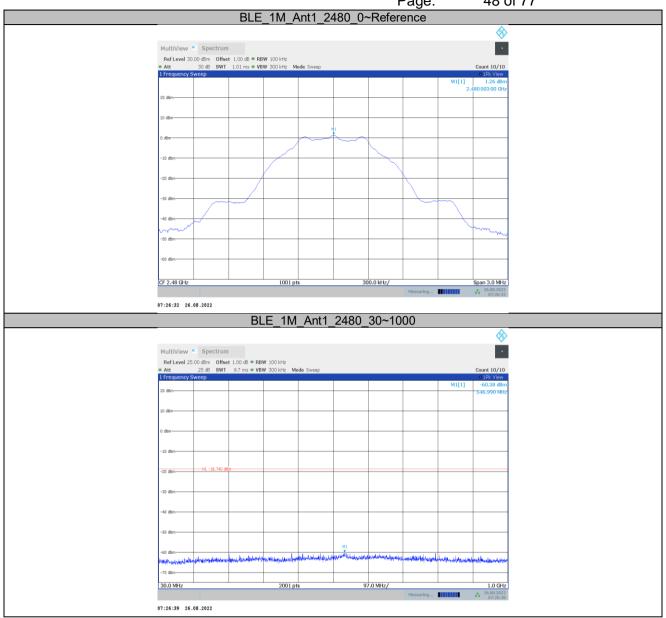
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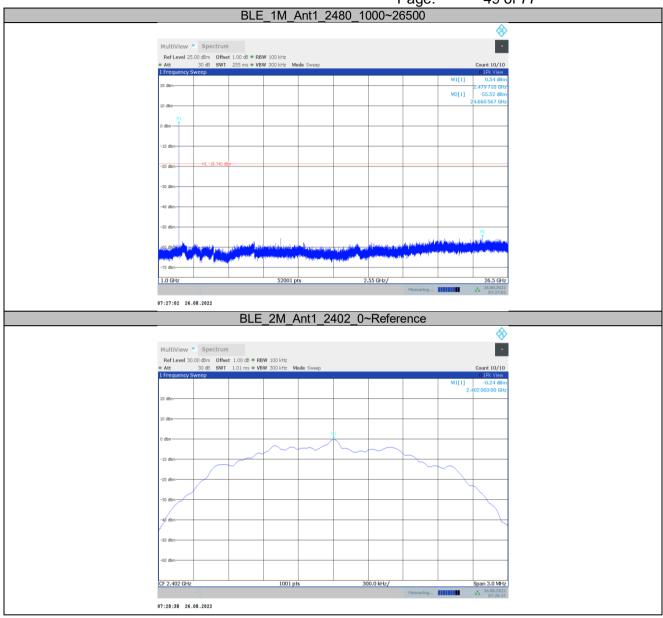
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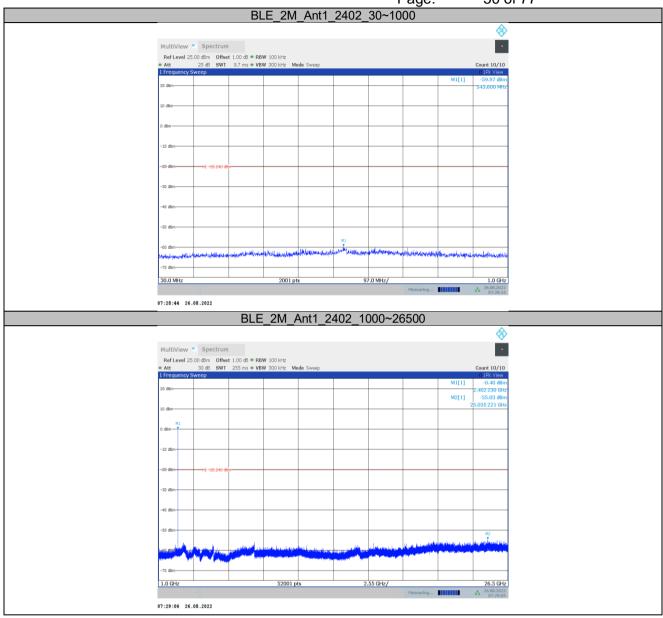
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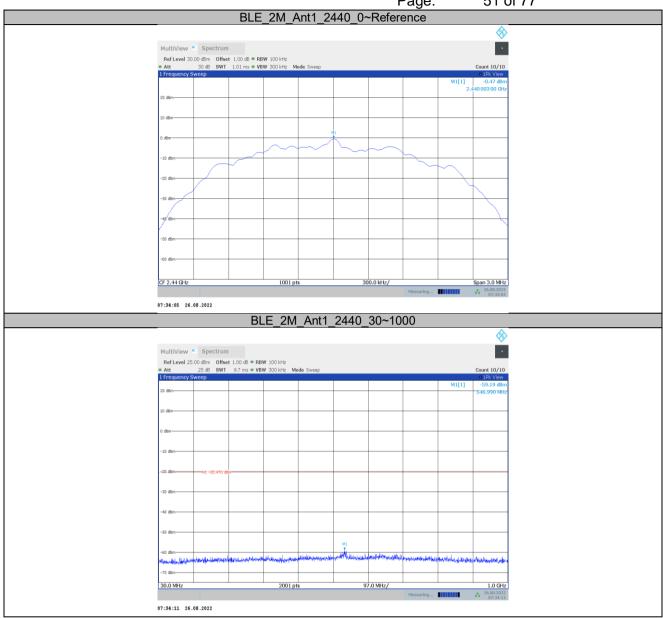
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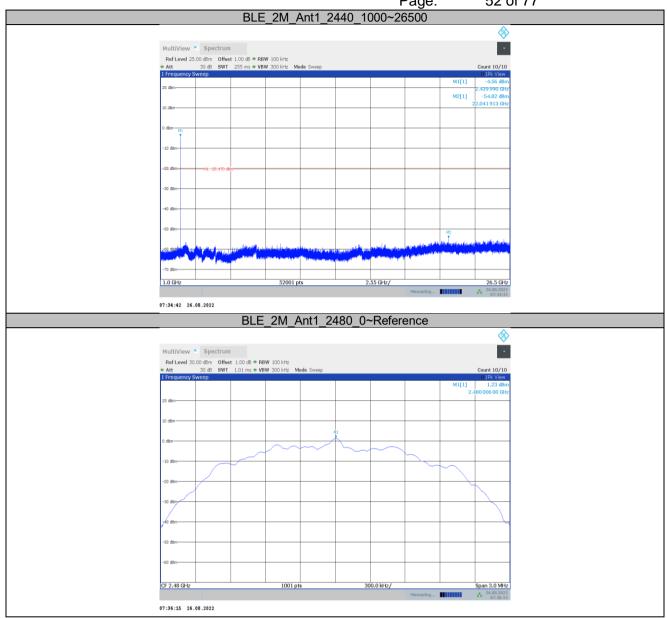
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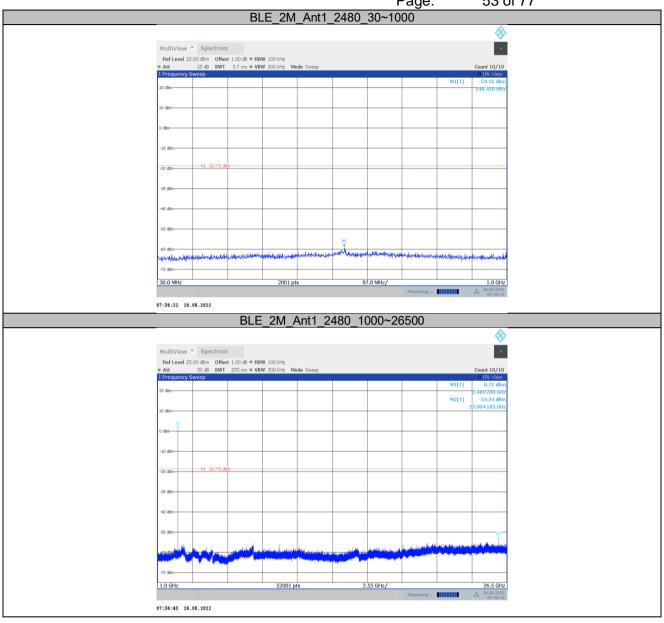
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Duty Cycle Test Result

TestMode	Antenna	Frequency[MHz]	ON Time [ms]	Period [ms]	Duty Cycle [%]	Duty Cycle Factor[dB]
BLE_1M	Ant1	2402	0.39	0.63	61.90	2.08
BLE 2M	Ant1	2402	0.20	0.62	32.26	4.91



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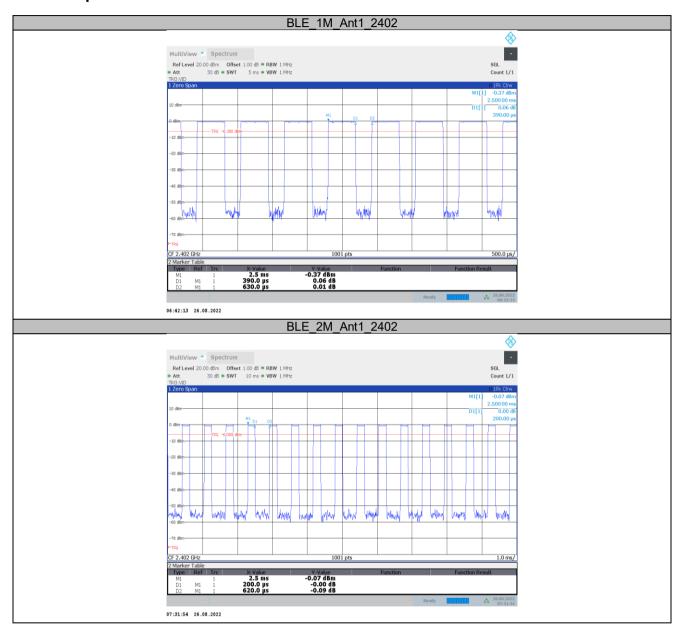


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Test Graphs





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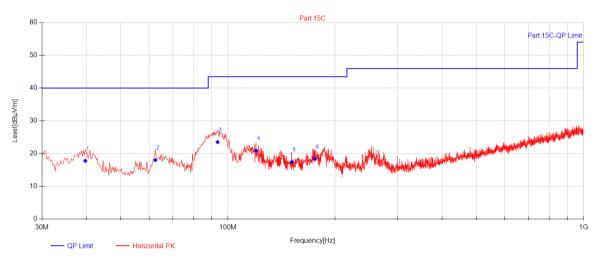


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Radiated Spurious Emissions Radiated emission below 1GHz

Worst case Mode: BLE 2M_Channel 00



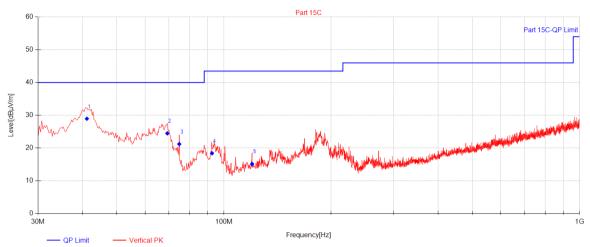
Final I	Final Data List													
NO.	Frequency [MHz]	Reading [dBµV]	Factor [dB]	AF [dB/m]	QP Value [dBµV/m]	QP Limit [dBµV/m]	QP Margin [dB]	Height [cm]	Angle [°]	Polarity				
1	39.7	40.02	-36.28	14.03	17.77	40.00	22.23	126	159	Horizontal				
2	62.495	42.16	-36.43	12.27	18.00	40.00	22.00	142	147	Horizontal				
3	93.535	50.03	-36.19	9.69	23.53	43.50	19.97	135	318	Horizontal				
4	119.9675	44.81	-36.15	12.24	20.90	43.50	22.60	122	306	Horizontal				
5	151.25	38.79	-35.24	13.86	17.41	43.50	26.09	165	328	Horizontal				
6	175.7425	39.02	-35.19	14.57	18.39	43.50	25.11	188	328	Horizontal				





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Final	Data List									
NO.	Frequency [MHz]	Reading [dBµV]	Factor [dB]	AF [dB/m]	QP Value [dBµV/m]	QP Limit [dBµV/m]	QP Margin [dB]	Height [cm]	Angle [°]	Polarity
1	41.155	51.23	-36.25	13.97	28.95	40.00	11.05	216	307	Vertical
2	69.285	50.02	-36.51	10.96	24.47	40.00	15.53	233	98	Vertical
3	74.8625	47.22	-36.09	10.08	21.21	40.00	18.79	261	179	Vertical
4	92.565	45.03	-36.26	9.62	18.39	43.50	25.11	166	179	Vertical
5	119.9675	39.02	-36.15	12.24	15.11	43.50	28.39	251	338	Vertical
6	181.32	44.12	-35.26	14.36	23.22	43.50	20.28	142	46	Vertical

Remark:

1) The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier gain. The basic equation with a sample calculation is as follows:

Value = Reading(dB μ V) + AF(dB/m) + Factor(dB):

AF = Antenna Factor(dB/m)

Factor = Cable Factor(dB) - Preamplifier gain(dB)

Margin = Limit($dB\mu V/m$) – Value($dB\mu V/m$)

2) All channels have been tested, but only the worst case data displayed in this report.



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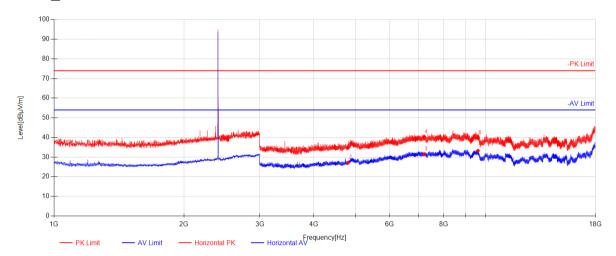


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Transmitter emission Above 1GHz

BLE 1M_Channel 00



Data	Data List												
NO.	Frequency [MHz]	Reading [dBµV]	AF [dB/m]	Factor [dB]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity			
1	4804.0000	48.01	32.33	-45.54	34.80	74.00	39.20	165	144	Horizontal			
2	4804.0000	40.38	32.33	-45.54	27.17	54.00	26.83	233	254	Horizontal			
3	7206.0000	38.28	36.60	-43.44	31.44	54.00	22.56	214	61	Horizontal			
4	7206.0000	47.07	36.60	-43.44	40.23	74.00	33.77	142	335	Horizontal			
5	9608.0000	34.45	38.43	-39.65	33.23	54.00	20.77	196	170	Horizontal			
6	9608.0000	40.98	38.43	-39.65	39.76	74.00	34.24	188	199	Horizontal			

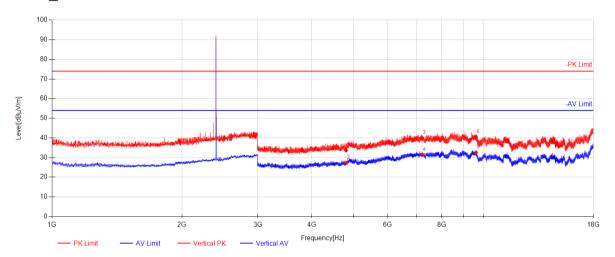




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BLE 1M_Channel 00



Data	Data List												
NO.	Frequency [MHz]	Reading [dBµV]	AF [dB/m]	Factor [dB]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity			
1	4804.0000	46.88	32.33	-45.54	33.67	74.00	40.33	216	115	Vertical			
2	4804.0000	40.55	32.33	-45.54	27.34	54.00	26.66	145	85	Vertical			
3	7206.0000	46.79	36.60	-43.44	39.95	74.00	34.05	172	1	Vertical			
4	7206.0000	38.13	36.60	-43.44	31.29	54.00	22.71	231	0	Vertical			
5	9608.0000	33.81	38.43	-39.65	32.59	54.00	21.41	201	334	Vertical			
6	9608.0000	41.67	38.43	-39.65	40.45	74.00	33.55	133	56	Vertical			

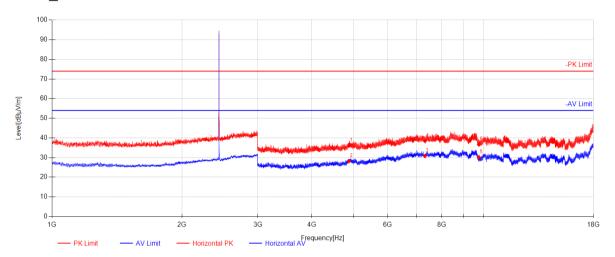




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BLE 1M_Channel 19



Data	Data List												
NO.	Frequency [MHz]	Reading [dBµV]	AF [dB/m]	Factor [dB]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity			
1	4880.0000	49.11	32.54	-45.53	36.12	74.00	37.88	216	144	Horizontal			
2	4880.0000	41.16	32.54	-45.53	28.17	54.00	25.83	133	0	Horizontal			
3	7320.0000	38.00	36.53	-43.68	30.85	54.00	23.15	192	307	Horizontal			
4	7320.0000	45.62	36.53	-43.68	38.47	74.00	35.53	255	20	Horizontal			
5	9760.0000	31.30	38.26	-39.46	30.10	54.00	23.90	148	0	Horizontal			
6	9760.0000	37.83	38.26	-39.46	36.63	74.00	37.37	126	32	Horizontal			

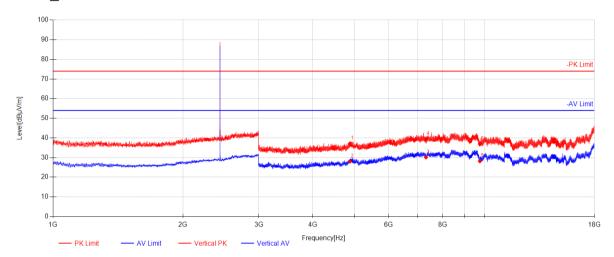




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BLE 1M_Channel 19



Data	Data List												
NO.	Frequency [MHz]	Reading [dBµV]	AF [dB/m]	Factor [dB]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity			
1	4880.0000	50.16	32.54	-45.53	37.17	74.00	36.83	216	196	Vertical			
2	4880.0000	41.00	32.54	-45.53	28.01	54.00	25.99	123	196	Vertical			
3	7320.0000	37.29	36.53	-43.68	30.14	54.00	23.86	173	142	Vertical			
4	7320.0000	46.61	36.53	-43.68	39.46	74.00	34.54	145	141	Vertical			
5	9760.0000	29.33	38.26	-39.46	28.13	54.00	25.87	251	141	Vertical			
6	9760.0000	38.10	38.26	-39.46	36.90	74.00	37.10	199	197	Vertical			

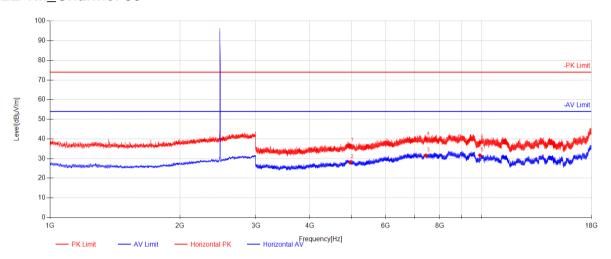




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BLE 1M_Channel 39



Data	Data List												
NO.	Frequency [MHz]	Reading [dBµV]	AF [dB/m]	Factor [dB]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity			
1	4960.0000	49.50	32.77	-45.60	36.67	74.00	37.33	218	0	Horizontal			
2	4960.0000	40.93	32.77	-45.60	28.10	54.00	25.90	110	43	Horizontal			
3	7440.0000	38.40	36.47	-43.30	31.57	54.00	22.43	140	291	Horizontal			
4	7440.0000	46.75	36.47	-43.30	39.92	74.00	34.08	149	127	Horizontal			
5	9920.0000	32.58	38.38	-39.31	31.65	54.00	22.35	126	59	Horizontal			
6	9920.0000	39.17	38.38	-39.31	38.24	74.00	35.76	175	332	Horizontal			

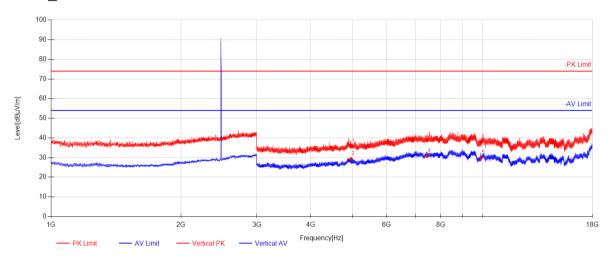




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BLE 1M_Channel 39



Data	Data List												
NO.	Frequency [MHz]	Reading [dBµV]	AF [dB/m]	Factor [dB]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity			
1	4960.0000	48.45	32.77	-45.60	35.62	74.00	38.38	198	0	Vertical			
2	4960.0000	42.08	32.77	-45.60	29.25	54.00	24.75	133	250	Vertical			
3	7440.0000	45.66	36.47	-43.30	38.83	74.00	35.17	175	168	Vertical			
4	7440.0000	37.63	36.47	-43.30	30.80	54.00	23.20	285	334	Vertical			
5	9920.0000	30.88	38.38	-39.31	29.95	54.00	24.05	166	224	Vertical			
6	9920.0000	38.90	38.38	-39.31	37.97	74.00	36.03	142	58	Vertical			

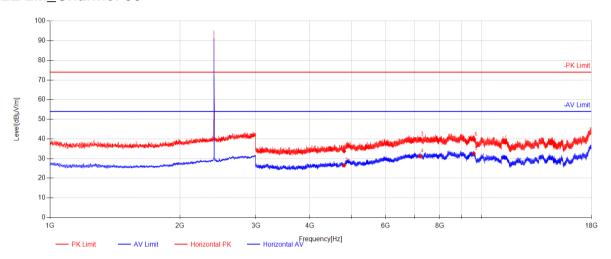




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BLE 2M_Channel 00



Data	Data List												
NO.	Frequency [MHz]	Reading [dBµV]	AF [dB/m]	Factor [dB]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity			
1	4804.0000	46.95	32.33	-45.54	33.74	74.00	40.26	216	169	Horizontal			
2	4804.0000	39.69	32.33	-45.54	26.48	54.00	27.52	145	332	Horizontal			
3	7206.0000	46.64	36.60	-43.44	39.80	74.00	34.20	126	60	Horizontal			
4	7206.0000	38.04	36.60	-43.44	31.20	54.00	22.80	291	306	Horizontal			
5	9608.0000	33.78	38.43	-39.65	32.56	54.00	21.44	175	34	Horizontal			
6	9608.0000	40.81	38.43	-39.65	39.59	74.00	34.41	231	10	Horizontal			

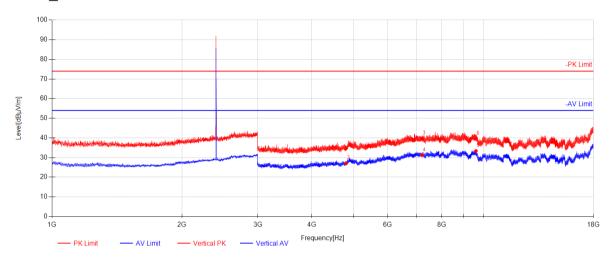




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BLE 2M_Channel 00



Data	Data List													
NO.	Frequency [MHz]	Reading [dBµV]	AF [dB/m]	Factor [dB]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity				
1	4804.0000	47.86	32.33	-45.54	34.65	74.00	39.35	254	221	Vertical				
2	4804.0000	40.29	32.33	-45.54	27.08	54.00	26.92	126	222	Vertical				
3	7206.0000	46.51	36.60	-43.44	39.67	74.00	34.33	296	356	Vertical				
4	7206.0000	38.07	36.60	-43.44	31.23	54.00	22.77	222	194	Vertical				
5	9608.0000	34.58	38.43	-39.65	33.36	54.00	20.64	231	30	Vertical				
6	9608.0000	40.75	38.43	-39.65	39.53	74.00	34.47	170	84	Vertical				

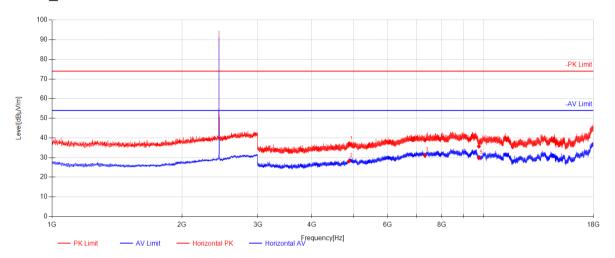




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BLE 2M_Channel 19



Data	Data List													
NO.	Frequency [MHz]	Reading [dBµV]	AF [dB/m]	Factor [dB]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity				
1	4880.0000	49.98	32.54	-45.53	36.99	74.00	37.01	186	1	Horizontal				
2	4880.0000	41.15	32.54	-45.53	28.16	54.00	25.84	133	112	Horizontal				
3	7320.0000	38.23	36.53	-43.68	31.08	54.00	22.92	142	222	Horizontal				
4	7320.0000	46.04	36.53	-43.68	38.89	74.00	35.11	145	356	Horizontal				
5	9760.0000	31.08	38.26	-39.46	29.88	54.00	24.12	291	1	Horizontal				
6	9760.0000	36.89	38.26	-39.46	35.69	74.00	38.31	266	168	Horizontal				

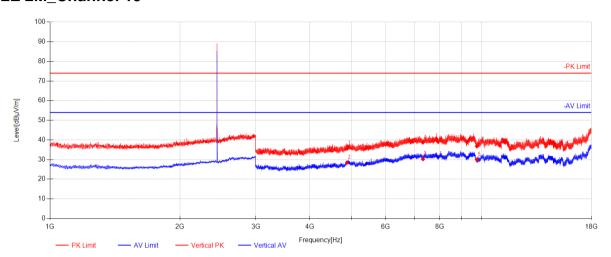




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BLE 2M_Channel 19



Data	Data List													
NO.	Frequency [MHz]	Reading [dBµV]	AF [dB/m]	Factor [dB]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity				
1	4880.0000	48.55	32.54	-45.53	35.56	74.00	38.44	218	114	Vertical				
2	4880.0000	41.45	32.54	-45.53	28.46	54.00	25.54	153	32	Vertical				
3	7320.0000	37.38	36.53	-43.68	30.23	54.00	23.77	133	32	Vertical				
4	7320.0000	45.91	36.53	-43.68	38.76	74.00	35.24	155	60	Vertical				
5	9760.0000	31.16	38.26	-39.46	29.96	54.00	24.04	291	199	Vertical				
6	9760.0000	37.99	38.26	-39.46	36.79	74.00	37.21	146	306	Vertical				

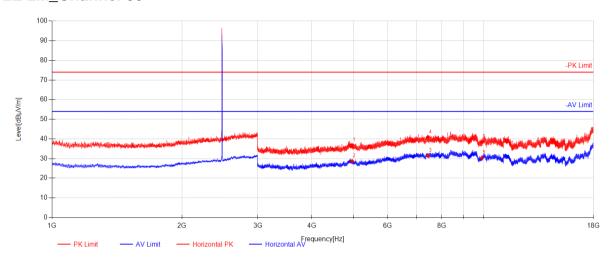




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BLE 2M_Channel 39



Data	Data List													
NO.	Frequency [MHz]	Reading [dBµV]	AF [dB/m]	Factor [dB]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity				
1	4960.0000	49.66	32.77	-45.60	36.83	74.00	37.17	185	126	Horizontal				
2	4960.0000	41.54	32.77	-45.60	28.71	54.00	25.29	133	307	Horizontal				
3	7440.0000	38.21	36.47	-43.30	31.38	54.00	22.62	211	86	Horizontal				
4	7440.0000	47.72	36.47	-43.30	40.89	74.00	33.11	142	0	Horizontal				
5	9920.0000	31.28	38.38	-39.31	30.35	54.00	23.65	191	281	Horizontal				
6	9920.0000	39.37	38.38	-39.31	38.44	74.00	35.56	166	11	Horizontal				

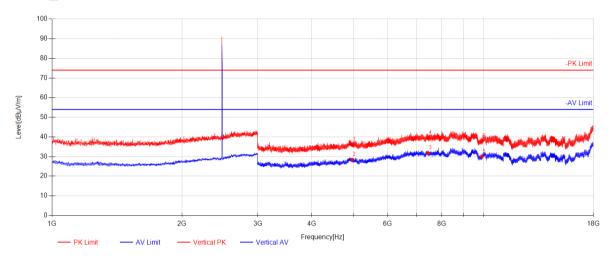




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BLE 2M_Channel 39



Data	List									
NO.	Frequency [MHz]	Reading [dBµV]	AF [dB/m]	Factor [dB]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	4960.0000	48.87	32.77	-45.60	36.04	74.00	37.96	111	357	Vertical
2	4960.0000	41.22	32.77	-45.60	28.39	54.00	25.61	185	0	Vertical
3	7440.0000	38.65	36.47	-43.30	31.82	54.00	22.18	147	125	Vertical
4	7440.0000	46.29	36.47	-43.30	39.46	74.00	34.54	169	250	Vertical
5	9920.0000	30.84	38.38	-39.31	29.91	54.00	24.09	159	60	Vertical
6	9920.0000	38.71	38.38	-39.31	37.78	74.00	36.22	158	276	Vertical

Remark:

1) The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier gain. The basic equation with a sample calculation is as follows:

Level = Reading(dB μ V) + AF(dB/m) + Factor(dB):

AF = Antenna Factor(dB/m)

Factor = Cable Factor(dB) - Preamplifier gain(dB)

Margin = Limit($dB\mu V/m$) – Level($dB\mu V/m$)

2) All channels have been tested, but only the worst case data displayed in this report.



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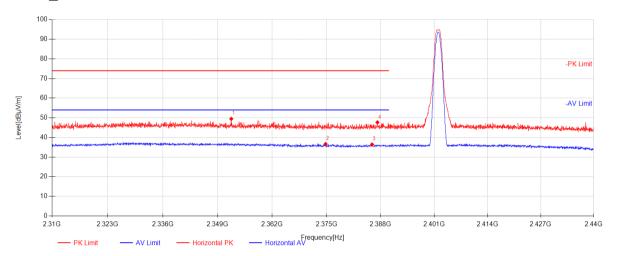


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Restricted bands around fundamental frequency

BLE 1M_Channel 00



Data	List									
NO.	Frequency [MHz]	Reading [dBµV]	AF [dB/m]	Factor [dB]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2352.25	45.62	27.42	-23.57	49.46	74.00	24.54	188	300	Horizontal
2	2374.7833	32.80	27.43	-23.57	36.65	54.00	17.35	188	300	Horizontal
3	2385.9633	32.58	27.43	-23.57	36.44	54.00	17.56	188	300	Horizontal
4	2387.2633	43.82	27.43	-23.57	47.68	74.00	26.32	188	300	Horizontal

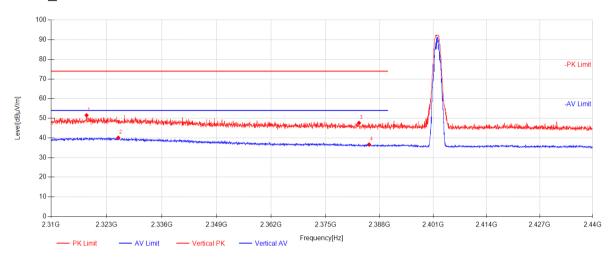




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BLE 1M_Channel 00



Data	Data List												
NO.	Frequency [MHz]	Reading [dBµV]	AF [dB/m]	Factor [dB]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity			
1	2318.32	47.71	27.40	-23.58	51.53	74.00	22.47	196	254	Vertical			
2	2325.7733	36.27	27.40	-23.58	40.10	54.00	13.90	196	254	Vertical			
3	2383.06	43.78	27.43	-23.57	47.64	74.00	26.36	196	254	Vertical			
4	2385.4867	32.82	27.43	-23.57	36.68	54.00	17.32	196	254	Vertical			

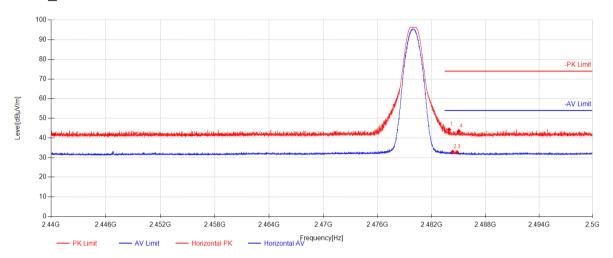




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BLE 1M_Channel 39



Data	Data List												
NO.	Frequency [MHz]	Reading [dBµV]	AF [dB/m]	Factor [dB]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity			
1	2483.9575	40.07	27.72	-23.54	44.24	74.00	29.76	199	14	Horizontal			
2	2484.3625	28.72	27.72	-23.54	32.89	54.00	21.11	199	14	Horizontal			
3	2484.8425	28.51	27.72	-23.54	32.69	54.00	21.31	199	14	Horizontal			
4	2485.0525	39.23	27.72	-23.54	43.41	74.00	30.59	199	14	Horizontal			

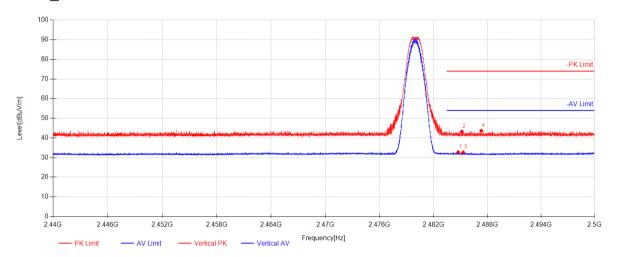




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BLE 1M_Channel 39



Data	Data List												
NO.	Frequency [MHz]	Reading [dBµV]	AF [dB/m]	Factor [dB]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity			
1	2484.76	28.55	27.72	-23.54	32.73	54.00	21.27	199	134	Vertical			
2	2485.1575	39.07	27.72	-23.54	43.25	74.00	30.75	199	134	Vertical			
3	2485.315	28.44	27.72	-23.54	32.62	54.00	21.38	199	134	Vertical			
4	2487.325	39.45	27.73	-23.54	43.63	74.00	30.37	199	134	Vertical			

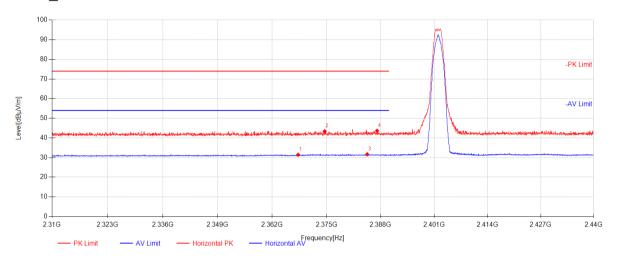




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BLE 2M_Channel 00



Data	Data List												
NO.	Frequency [MHz]	Reading [dBµV]	AF [dB/m]	Factor [dB]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity			
1	2368.1967	27.59	27.42	-23.57	31.44	54.00	22.56	125	330	Horizontal			
2	2374.5667	39.56	27.43	-23.57	43.41	74.00	30.59	125	330	Horizontal			
3	2384.7933	27.81	27.43	-23.57	31.67	54.00	22.33	125	330	Horizontal			
4	2387.1767	39.78	27.43	-23.57	43.64	74.00	30.36	125	330	Horizontal			

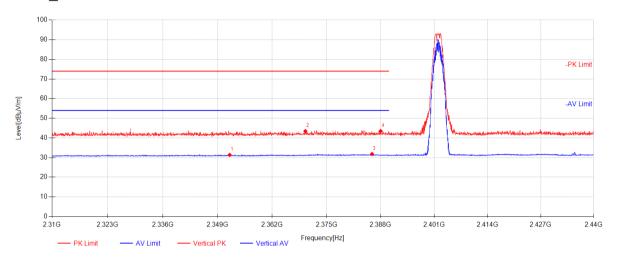




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Data	Data List												
NO.	Frequency [MHz]	Reading [dBµV]	AF [dB/m]	Factor [dB]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity			
1	2351.86	27.52	27.42	-23.57	31.36	54.00	22.64	128	78	Vertical			
2	2369.93	39.62	27.42	-23.57	43.47	74.00	30.53	128	78	Vertical			
3	2385.9633	27.96	27.43	-23.57	31.82	54.00	22.18	128	78	Vertical			
4	2388.0433	39.64	27.43	-23.57	43.50	74.00	30.50	128	78	Vertical			

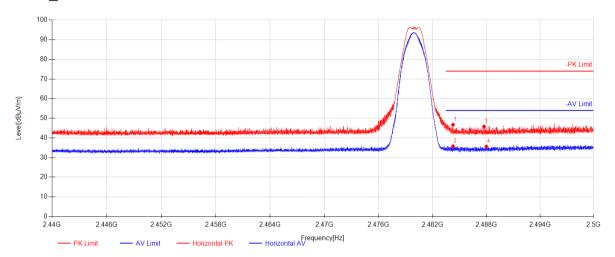




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BLE 2M_Channel 39



Data	Data List												
NO.	Frequency [MHz]	Reading [dBµV]	AF [dB/m]	Factor [dB]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity			
1	2484.2875	42.54	27.72	-23.54	46.71	74.00	27.29	222	97	Horizontal			
2	2484.2875	31.58	27.72	-23.54	35.75	54.00	18.25	222	97	Horizontal			
3	2487.745	41.62	27.73	-23.54	45.81	74.00	28.19	222	97	Horizontal			
4	2488.015	31.44	27.73	-23.54	35.63	54.00	18.37	222	97	Horizontal			

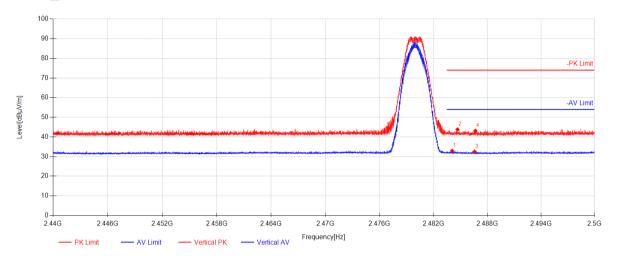




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Data List										
NO.	Frequency [MHz]	Reading [dBµV]	AF [dB/m]	Factor [dB]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2484.085	28.77	27.72	-23.54	32.94	54.00	21.06	178	354	Vertical
2	2484.6775	39.63	27.72	-23.54	43.80	74.00	30.20	178	354	Vertical
3	2486.575	28.36	27.73	-23.54	32.54	54.00	21.46	178	354	Vertical
4	2486.6725	38.94	27.73	-23.54	43.12	74.00	30.88	178	354	Vertical

Remark:

1) The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier gain. The basic equation with a sample calculation is as follows:

Level = Reading(dB μ V) + AF(dB/m) + Factor(dB):

AF = Antenna Factor(dB/m)

Factor = Cable Factor(dB) - Preamplifier gain(dB)

Margin = Limit($dB\mu V/m$) – Level($dB\mu V/m$)

---End of Report---

