



FCC Part 15C TEST REPORT

FCC ID:2BVW8-S20ULTRA

Prepared for : 1MORE Technology (Shenzhen) Co., Ltd.
Address : Building 1, Shenzhen Industrial Software Park, No. 107 Banlan Avenue, Xiangjiaotang Community, Bantian Subdistrict, Longgang District, Shenzhen, China
Trade Name : 1MORE
E.U.T : Wireless Earphones
Model Number : S20Ultra

Prepared by : Keyway Testing Technology(Guangdong) Co., Ltd.
Address : Room 2102, Building 6, Dongyi Intelligent Equipment New Energy Vehicle Park, No.30 of Tangxia District, Dongshen Road, Tangxia Town, Dongguan, 523710, People's Republic of China

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Report No. : 2026071695878057-00
Date of Test: : May 21 ~ Jul. 16, 2026
Date of Report : Jul. 16, 2026

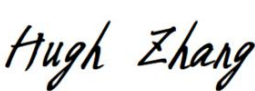
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Keyway Testing Technology (Guangdong) Co., Ltd.

Applicant:	1MORE Technology (Shenzhen) Co., Ltd.	
Address:	Building 1, Shenzhen Industrial Software Park, No. 107 Banlan Avenue, Xiangjiaotang Community, Bantian Subdistrict, Longgang District, Shenzhen, China	
Manufacturer:	1MORE Technology (Shenzhen) Co., Ltd.	
Address:	Building 1, Shenzhen Industrial Software Park, No. 107 Banlan Avenue, Xiangjiaotang Community, Bantian Subdistrict, Longgang District, Shenzhen, China	
E.U.T:	Wireless Earphones	
Model Number:	S20Ultra	
Trade Name:	1MORE	
Date of Receipt:	May 20, 2026	
Date of Test:	May 21 ~ Jul. 16, 2026	
Test Specification :	FCC CFR47 Part 15 Section 15.247 ANSI C63.10-2020+Cor. 1-2023+C63.10a-2024 + Errata to C63.10a-2024	
Test Result:	The equipment under test was found to be compliance with the requirements of the standards applied. Issue Date: Jul. 16, 2026	
Tested by:	Reviewed by:	Authorized by:
		
Hugh Zhang / Engineer	Billy Zeng / Supervisor	Cherry Chen / Manager
<i>Abbreviations: OK/P=passed fail/F=failed N/A=not applicable E.U.T=equipment under test</i>		
<i>This device described above has been tested by Keyway, and the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report. This report shall not be reproduced except in full, without the written approval of Keyway, this document may be altered or revised by Keyway, personal only, and shall be noted in the revision of the document.</i>		

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Revision Record				
Version	Chapter	Date	Modifier	Remark
00		2026.7.16		Original

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2 Test Summary

Test Items	Test Requirement	Result
Conduct Emission	15.207	PASS
Radiated Spurious Emissions	15.205(a) 15.209 15.247(d)	PASS
Conducted Spurious Emission	15.247(d)	PASS
Band edge	15.247(d) 15.205(a)	PASS
6dB Bandwidth & 99% OCB	15.247(a)(2)	PASS
Maximum Peak Output Power & E.I.R.P	15.247(b)(3)	PASS
Power Spectral Density	15.247(e)	PASS
Antenna Requirement	FCC part 15.203/15.247 (c)	PASS

Remark:

1. "N/A" denotes test is not applicable in this Test Report.

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2.1 Test Site

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

Certificated by CMA
Registration No.: 202319016955
Date of registration: July 23, 2024

Certificated by CNAS
Registration No.: CNAS L5783
Date of registration: March 07, 2025

Certificated by A2LA
Certificate Number:7404.01
Valid To: March 31.2027

FCC Designation No.: CN1412
Has been recognized to perform compliance testing on equipment subject to the Commission's Declaration of Conformity (DoC) and Certification rules.

ISED (Company No.: 33959)
The test lab Conformity Assessment
Body Identifier (CABID) is CN0186

Certificated by VCCI
Member No.3498
R-20091:966 Chamber 2 Below 1 G
G-20227:966 Chamber 2 above 1 G
C-20064:Conducted Emissions at Mains ports
T-20120:Conducted Emissions at Wired network port
Date of Valid until: Sept. 19, 2027

Certificated by Nemko
Registration No.: ELA 814
Date of registration: September 25, 2024

Certificated by UL
Registration No.: 100567237
Date of registration: September 25, 2024

Name of Firm : Keyway Testing Technology(Guangdong) Co., Ltd.

Site Location : Room 2102, Building 6, Dongyi Intelligent Equipment New Energy Vehicle Park, No.30 of Tangxia District, Dongshen Road, Tangxia Town, Dongguan, 523710, People's Republic of China

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3 General Information

3.1 General Description of E.U.T.

Product Name	:	Wireless Earphones
Model Name	:	S20Ultra
Sample ID	:	33000270429
Sample(s) Status:	:	Engineer sample
Operating frequency	:	2402-2480MHz
Numbers of Channel	:	40 channels
Antenna Type	:	FPC Antenna
Antenna Gain	:	L: -2.35dBi Max. R: -2.93dBi Max.
Type of Modulation	:	GFSK
Power supply	:	DC 3.7V by Li-Battery And Recharged By DC 5V, 0.2A through Type-C Port
Battery Information	:	Charging case: Model: 702030-400mah DC 3.7V; 400mAh; 1.48Wh Earphones: Model: 501012-40mah DC 3.7V; 40mAh; 0.148Wh
Hardware Version	:	N/A
Software Version	:	N/A
Remark: the Antenna gain is provided by customer from Antenna spec. and the laboratory will not be responsible for the accumulated calculation results which covers the information provided by the applicant.		

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3.2 Channel List

The EUT has been tested under its typical operating condition. Pre-defined engineering program for regulatory testing used to control the EUT for staying in continuous transmitting. Only the worst case data were reported.

The EUT has been associated with peripherals pursuant to ANSI C63.10-2020+Cor. 1-2023+C63.10a-2024 + Errata to C63.10a-2024 and configuration operated in a manner tended to maximize its emission characteristics in a typical application. Frequency range investigated: radiation (9 KHz to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower).

The details of test channels and bandwidth were for RF conductive measurement.

Channel List:

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
00	2402	14	2430	28	2458
01	2404	15	2432	29	2460
02	2406	16	2434	30	2462
03	2408	17	2436	31	2464
04	2410	18	2438	32	2466
05	2412	19	2440	33	2468
06	2414	20	2442	34	2470
07	2416	21	2444	35	2472
08	2418	22	2446	36	2474
09	2420	23	2448	37	2476
10	2422	24	2450	38	2478
11	2424	25	2452	39	2480
12	2426	26	2454		
13	2428	27	2456		

Note:

1. Test of channel was included the lowest, middle and highest frequency in highest data rate and to perform the test, then record on this report.

hannel	Frequency(MHz)
0	2402
19	2440
39	2480

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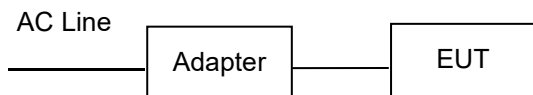
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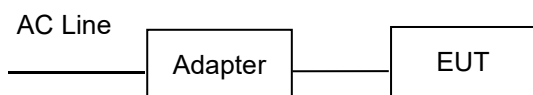
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3.3 Test Setup Configuration

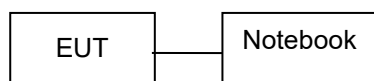
Conducted Emission



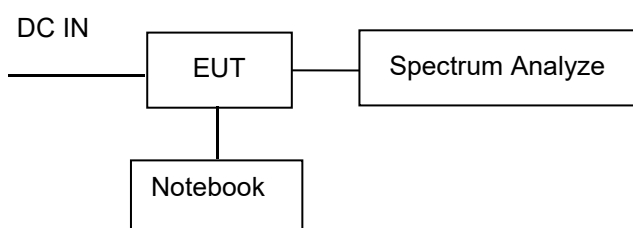
Radiated Emission (Below 1G)



Radiated Emission (Above 1G)



Conducted Spurious



3.4 Test Mode

Transmitting mode	Keep the EUT in continuously transmitting mode.
Remark: During the test, the test voltage was tuned from 85% to 115% of the nominal rated supply voltage, and found that the worst case was under the nominal rated supply condition. For battery operated equipment, the equipment tests shall be performed using a new battery. So the report just shows that condition's data.	

Test Software	bt_tool_v1.1.4
Power level setup	10dBm

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4 Equipment During Test

4.1 Equipments List

Equipment	Manufacturer	Model No.	Serial No.	Valid until	This use
Conduction test system					
Shielded Room	YI HENG	9*4*3	YH-KW-943	Mar 11,29	√
Test Software	FARAD	EZ-EMC Ver.FARAD-3A1+	KWET-089	/	√
EMI Test Receiver	R&S	ESCI	101156	Apr 12, 27	√
Artificial Mains Network	R&S	ENV216	101315	Apr 12, 27	√
Artificial Mains Network	SCHWARZBECK	NNLK 8130	00457	Apr 12, 27	
RF Cable	FUJIKURA	3D-2W	/	Apr 12, 27	√
ISN-CAT5	Schwarzbeck	CAT5 8158	#282	Apr 23, 27	
ISN-CAT6	Schwarzbeck	CAT6 8158	#241	Apr 13, 27	
Pulse limiter	Schwarzbeck	ESH3-Z2	102742	Apr 12, 27	
Radiated emission (30MHz-1GHz) test system					
3m Semi-anechoic Chamber	YI HENG	9*6*6	YH-KW-966-02	Mar 06, 29	√
Test Software	FARAD	EZ-EMC Ver.FARAD-3A1+	KWET-087	/	√
EMI Test Receiver	R&S	ESCI	101178	Apr 13, 27	√
TRILOG Broadband Antenna	Schwarzbeck	VULB 9168	1991	Apr 18, 27	√
RF Cable	EMC Instruments	EMCCFD400-NM-NM-2000	240307	Apr 13, 27	√
RF Cable	EMC Instruments	EMCCFD400-NM-NM-9000	240309	Apr 13, 27	√
Radiated emission (Above 1GHz) test system					
3m anechoic Chamber	YI HENG	9*6*6	YH-KW-966-02	Mar 06, 29	√
Test Software	FARAD	EZ-EMC	KWET-087	/	√

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		Ver.FARAD-3A1+			
EMI Test Receiver	R&S	ESCI	101178	Apr 13, 27	√
Horn Antenna	DAZE	ZN30701	11003	Apr 18, 27	√
Spectrum Analyzer	Agilent	N9020A	MY56070279	Apr 12, 27	√
LNA	WCS Technology	DLNA-1000-18000	231020	Apr 14, 27	√
RF Cable(1G-18GHz)	EMC Instruments	EMC105-SM-SM-1000	240301	Apr 13, 27	√
RF Cable(1G-18GHz)	EMC Instruments	EMC105-SM-SM-2000	240302	Apr 13, 27	√
RF Cable(1G-18GHz)	EMC Instruments	EMC105-SM-SM-9000	240303	Apr 13, 27	√
LNA	WCS Technology	DLNA-18000-40000	231031	Apr 22, 27	
For conducted emission test (RF)					
MXG Signal Analyzer	Agilent	N9020A	MY56070279	Apr 13, 27	√
RF SWITCH BOX	CSKJ	SMU-1003	KWET-047	Apr 13, 27	√
Attenuator	R&S	ESH3-Z2	102696	Apr 13, 27	
Power meter	YOKOKAWA	WY210	27D528405	Apr 13, 27	√
RF sma cable	Keysight	ULC-1m-SMSM+	1623	Apr 14, 27	√
RF sma cable	Keysight	ULC-1m-SMSM+	1623	Apr 14, 27	√
RF sma cable	Keysight	ULC-1.5FT-SMSM+	1623	Apr 14, 27	
RF sma cable	Keysight	ULC-1.5FT-SMSM+	1623	Apr 14, 27	
Coupler	Keysight	ZHDC-10-63-S+	SF331801603	Apr 14, 27	
Test Software	CSKJ	CS-305X	KWET-149	/	√

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4.2 Measurement Uncertainty

The reported uncertainty of measurement $y \pm U$, where expanded uncertainty U is based on a standard uncertainty multiplied by a coverage factor of $k=2$, providing a level of confidence of approximately 95 %.

Parameter	Uncertainty
RF output power, conducted	$\pm 1.0\text{dB}$
Power Spectral Density, conducted	$\pm 2.2\text{dB}$
Radio Frequency	$\pm 1 \times 10^{-6}$
Bandwidth	$\pm 1.5 \times 10^{-6}$
Duty Cycle	$\pm 2\%$
Spurious emissions, conducted	$\pm 0.21\text{dB}$
Temperature	$\pm 1^\circ\text{C}$
Humidity	$\pm 5\%$
DC and low frequency voltages	$\pm 3\%$
Conducted Emissions (150kHz~30MHz)	$\pm 3.64\text{dB}$
Radiated Emission(9KHz~30MHz)	$\pm 4.51\text{dB}$
Radiated Emission(30MHz~1GHz)	$\pm 5.03\text{dB}$
Radiated Emission(1GHz~25GHz)	$\pm 4.74\text{dB}$
Radiated Emission(25GHz~40GHz)	$\pm 3.38\text{dB}$

4.3 Description of Support Units

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Item	Equipment	Mfr/Brand	Model/Type No.	Series No.	Note
E-1	Wireless Earphones	N/A	S20Ultra	N/A	EUT
E-2	Notebook	lenovo	B40-80	MP07F6JD	AE

Note:

- (1) The support equipment was authorized by Declaration of Confirmation.
- (2) For detachable type I/O cable should be specified the length in cm in 『Length』 column.

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5 Conducted Emission

Test Requirement	: FCC CFR 47 Part 15 Section 15.207
Test Method	: ANSI C63.10-2020+Cor. 1-2023+C63.10a-2024 + Errata to C63.10a-2024
Test Result	: PASS
Frequency Range	: 150kHz to 30MHz
Class/Severity	: Class B

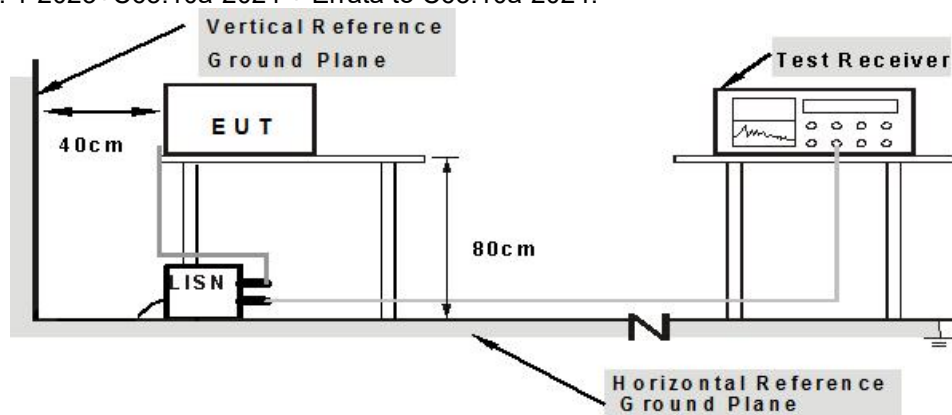
5.1 E.U.T. Operation

Operating Environment :

Temperature:	: 23.5°C
Humidity:	: 54 % RH
Atmospheric Pressure:	: 101.12 kPa
Test Voltage	: AC 120V/60Hz

5.2 EUT Setup

The conducted emission tests were performed using the setup accordance with the ANSI C63.10-2020+Cor. 1-2023+C63.10a-2024 + Errata to C63.10a-2024.



Note: 1.Support units were connected to second LISN.
2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 cm from other units and other metal planes

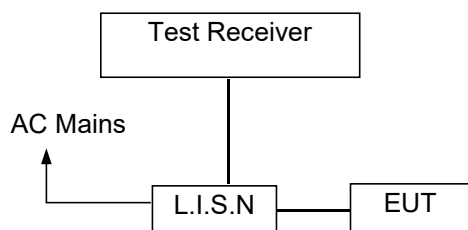
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5.3 Test SET-UP (Block Diagram of Configuration)



5.4 Measurement Procedure

1. The EUT was placed on a table, which is 0.8m above ground plane.
2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
3. Repeat above procedures until all frequency measured was complete.

5.5 Conducted Emission Limit

Conducted Emission

Frequency(MHz)	Quasi-peak	Average
0.15-0.5	66-56	56-46
0.5-5.0	56	46
5.0-30.0	60	50

Note:

1. The lower limit shall apply at the transition frequencies
2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

5.6 Measurement Description

The maximised peak emissions from the EUT was scanned and measured for both the Live and Neutral Lines. Quasi-peak & average measurements were performed if peak emissions were within 6dB of the average limit line.

5.7 Conducted Emission Test Result

Pass

Conducted emission at both 120V & 240V is assessed, and emission at 120V represents the worst case. All the modulation modes were tested the data of the worst mode (GFSK LE) are recorded in the following pages and the others modulation methods do not exceed the limits.

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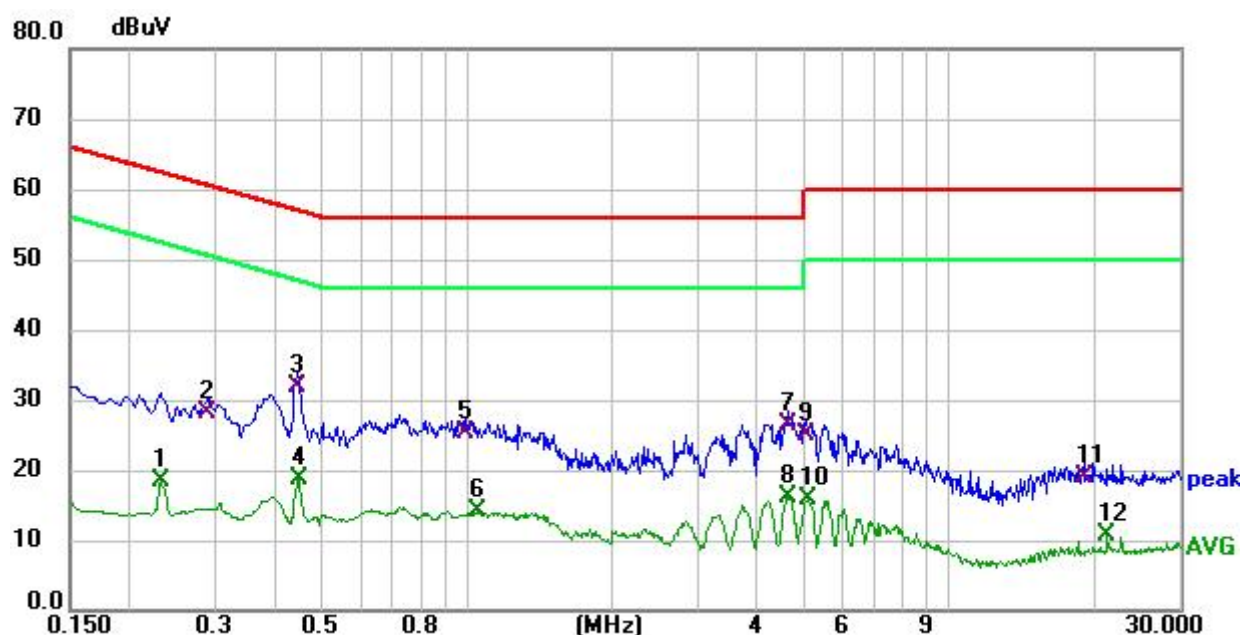
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Channel:	LE High	Phase :	L
Model:	S20Ultra		



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F	Remark
1	0.231	6.36	12.01	18.37	52.41	-34.04	AVG	P	
2	0.289	16.21	12.02	28.23	60.55	-32.32	QP	P	
3 *	0.443	19.70	12.24	31.94	57.01	-25.07	QP	P	
4	0.447	6.55	12.24	18.79	46.93	-28.14	AVG	P	
5	0.996	13.25	11.94	25.19	56.00	-30.81	QP	P	
6	1.054	2.10	11.93	14.03	46.00	-31.97	AVG	P	
7	4.627	14.70	11.66	26.36	56.00	-29.64	QP	P	
8	4.627	4.48	11.66	16.14	46.00	-29.86	AVG	P	
9	5.075	13.40	11.66	25.06	60.00	-34.94	QP	P	
10	5.125	4.11	11.66	15.77	50.00	-34.23	AVG	P	
11	19.025	6.07	13.02	19.09	60.00	-40.91	QP	P	
12	21.300	-2.57	13.27	10.70	50.00	-39.30	AVG	P	

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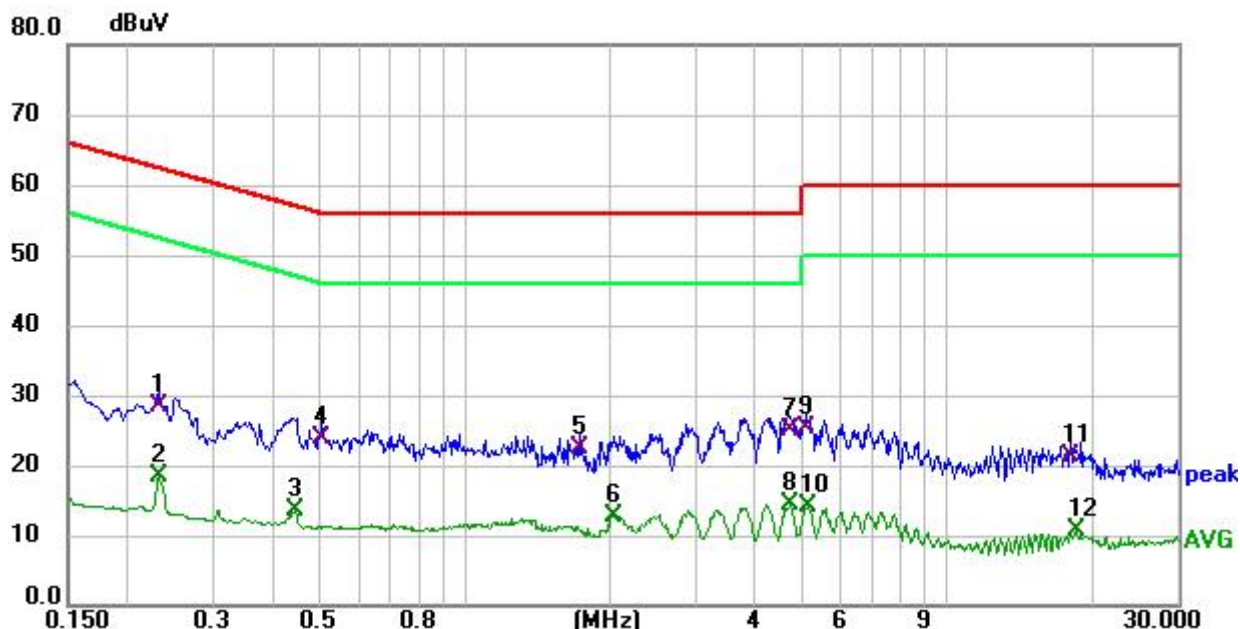
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Channel:	LE High	Phase :	N
Model:	S20Ultra		



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F	Remark
1	0.231	16.26	12.04	28.30	62.41	-34.11	QP	P	
2	0.231	6.39	12.04	18.43	52.41	-33.98	AVG	P	
3	0.443	1.19	12.25	13.44	47.01	-33.57	AVG	P	
4	0.505	11.68	12.25	23.93	56.00	-32.07	QP	P	
5	1.738	10.64	11.80	22.44	56.00	-33.56	QP	P	
6	2.035	1.07	11.75	12.82	46.00	-33.18	AVG	P	
7 *	4.699	13.25	11.77	25.02	56.00	-30.98	QP	P	
8	4.735	2.66	11.77	14.43	46.00	-31.57	AVG	P	
9	5.100	13.39	11.79	25.18	60.00	-34.82	QP	P	
10	5.150	2.23	11.79	14.02	50.00	-35.98	AVG	P	
11	18.025	8.03	13.17	21.20	60.00	-38.80	QP	P	
12	18.500	-2.53	13.23	10.70	50.00	-39.30	AVG	P	

Notes:

1. An initial pre-scan was performed on the line and neutral lines with peak detector.
2. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
3. Measurement Level = Reading level + Correct Factor

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6 Radiated Spurious Emissions

Test Requirement : FCC CFR47 Part 15 Section 15.209 & 15.247
Test Method : ANSI C63.10-2020+Cor. 1-2023+C63.10a-2024 + Errata to C63.10a-2024
Test Result : PASS
Measurement Distance : 3m
Limit : See the follow table

Frequency (MHz)	Field Strength		Field Strength Limit at 3m Measurement Dist	
	uV/m	Distance (m)	uV/m	dBuV/m
0.009 ~ 0.490	$2400/F(\text{kHz})$	300	$10000 * 2400/F(\text{kHz})$	$20\log^{(2400/F(\text{kHz}))} + 80$
0.490 ~ 1.705	$24000/F(\text{kHz})$	30	$100 * 24000/F(\text{kHz})$	$20\log^{(24000/F(\text{kHz}))} + 40$
1.705 ~ 30	30	30	$100 * 30$	$20\log^{(30)} + 40$
30 ~ 88	100	3	100	$20\log^{(100)}$
88 ~ 216	150	3	150	$20\log^{(150)}$
216 ~ 960	200	3	200	$20\log^{(200)}$
Above 960	500	3	500	$20\log^{(500)}$

6.1 EUT Operation

Operating Environment :

Temperature : 26 °C
Humidity : 54% RH
Atmospheric Pressure : 101.3kPa
Test Voltage : AC 120V60Hz

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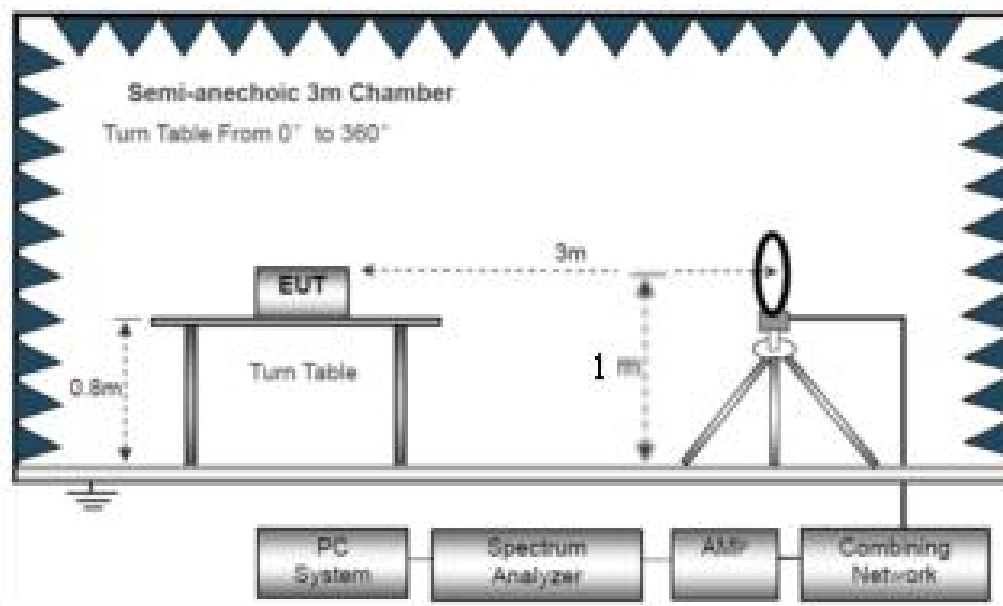
E-mail: kwtest@keywaytest.com

https: www.keywaytest.com

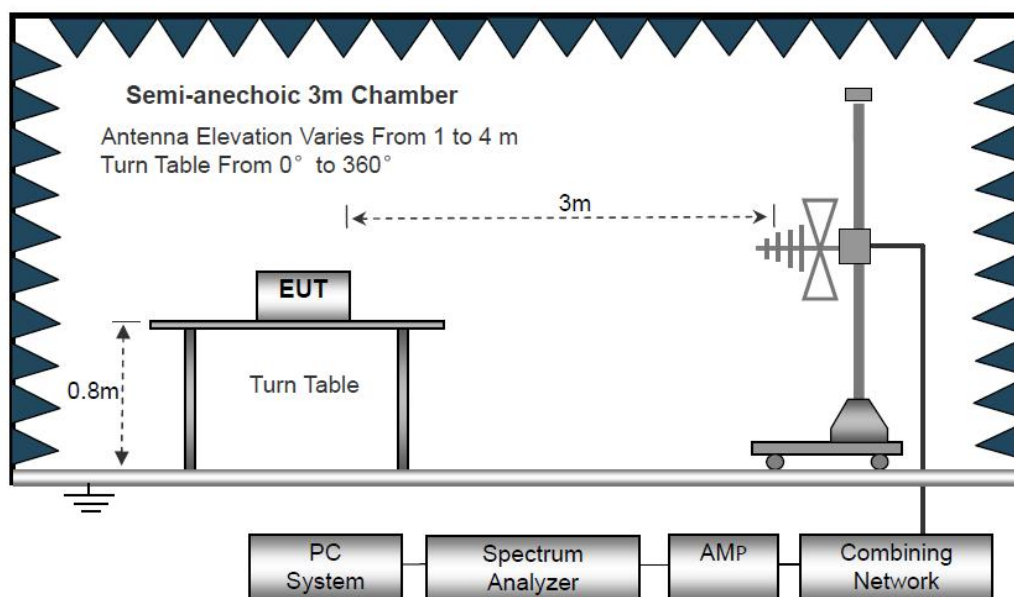
6.2 Test Setup

The radiated emission tests were performed in the 3m Semi- Anechoic Chamber test site

The test setup for emission measurement below 30MHz



The test setup for emission measurement from 30 MHz to 1 GHz.



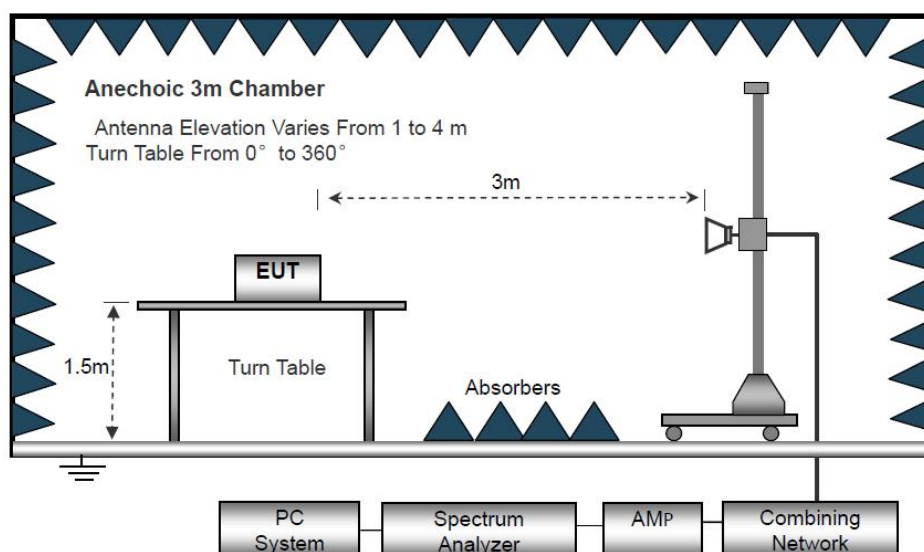
Laboratory Address: Room 2102, Building 6, Dongyi Intelligent Equipment New Energy Vehicle Park, No.30 of Tangxia District, Dongshen Road, Tangxia Town, Dongguan, 523710, People's Republic of China

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The test setup for emission measurement above 1 GHz



6.3 Spectrum Analyzer Setup

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	10th carrier harmonic
RB / VB (emission in restricted band)	1 MHz / 1 MHz for Peak, 1 MHz / 10Hz for Average

Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RB 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RB 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RB 120kHz for QP

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6.4 Test Procedure

1. The testing follows the guidelines in Spurious Radiated Emissions of ANSI C63.10-2020+Cor. 1-2023+C63.10a-2024 + Errata to C63.10a-2024.
2. Below 1000MHz, The EUT was placed on a turn table which is 0.8m above ground plane. And above 1000MHz, The EUT was placed on a styrofoam table which is 1.5m above ground plane.
3. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
4. For each suspected emission, the EUT was arranged to its worst case and then tune the Antenna tower (From 1m to 4m) and turntable (from 0 degree to 360 degree) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level to comply with the guidelines.
5. Set to the maximum power setting and enable the EUT transmit continuously.
6. Final measurement (Above 1GHz): The frequency range will be divided into different sub ranges depending of the frequency range of the used horn antenna. The EMI Receiver set to peak and average mode and a resolution bandwidth of 1MHz. The measurement will be performed in horizontal and vertical polarization of the measuring antenna and while rotating the EUT in its vertical axis in the range of 0 degree to 360 degree in order to have the antenna inside the cone of radiation.
7. Test Procedure of measurement (For Above 1GHz):
 - 1) Monitor the frequency range at horizontal polarization and move the antenna over all sides of the EUT(if necessary move the EUT to another orthogonal axis).
 - 2) Change the antenna polarization and repeat 1) with vertical polarization.
 - 3) Make a hardcopy of the spectrum.
 - 4) Measure the frequency of the detected emissions with a lower span and resolution bandwidth to increase the accuracy and note the frequency value.
 - 5) Change the analyser mode to Clear/ Write and found the cone of emission.
 - 6) Rotate and move the EUT, so that the measuring distance can be enlarged to 3m and the antenna will be still inside the cone of emission.
 - 7) Measure the level of the detected frequency with the correct resolution bandwidth, with the antenna polarization and azimuth and the peak and average detector, which causes the maximum emission.
 - 8) Repeat steps 1) to 7) for the next antenna spot if the EUT is larger than the antenna beamwidth.
8. The radiation measurements are tested under 3-axes(X,Y,Z) position(X denotes lying on the table, Y denotes side stand and Z denotes vertical stand), After pre-test, It was found that the worse radiation emission was get at the X position. So the data shown was the X position only.

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6.5 Summary of Test Results

Test Frequency: 9KHz-30MHz

Freq. (MHz)	Ant.Pol. H/V	Emission Level (dBuV/m)	Limit 3m (dBuV/m)	Over (dB)
--	--	--	--	>20

Note:

The amplitude of spurious emission that is attenuated by more than 20dB below the permissible limit has no need to be reported.

Distance extrapolation factor = $40\log(\text{Specific distance} / \text{test distance})$ (dB);

Limit line = Specific limits (dBuV) + distance extrapolation factor.

Test Frequency: 30MHz ~ 1GHz

Pass.

Please refer to the following test plots for the worst test mode (GFSK (LE CH39: 2480MHz)).

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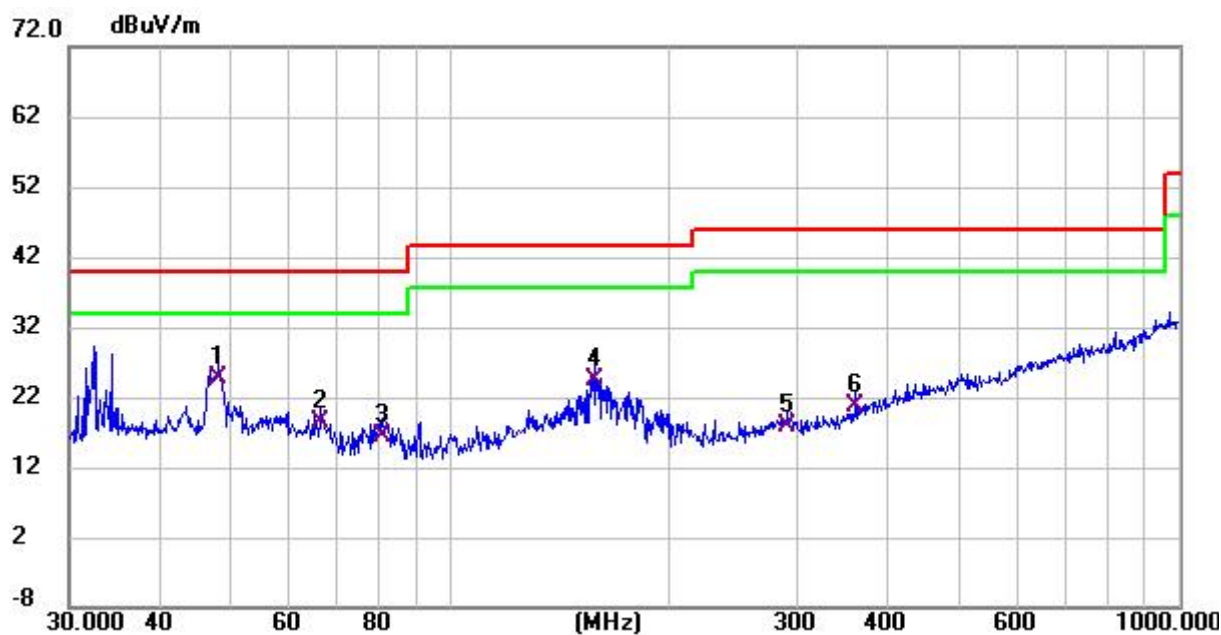
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<https://www.keywaytest.com>



Model:	S20Ultra
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Test plot for Horizontal



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1 *	48.163	10.50	14.21	24.71	40.00	-15.29	QP	100	312	P	
2	66.499	6.30	12.23	18.53	40.00	-21.47	QP	100	245	P	
3	80.927	6.47	10.10	16.57	40.00	-23.43	QP	100	264	P	
4	157.559	9.29	15.24	24.53	43.50	-18.97	QP	100	3	P	
5	291.036	3.61	14.18	17.79	46.00	-28.21	QP	100	63	P	
6	360.448	4.59	16.17	20.76	46.00	-25.24	QP	100	225	P	

Remark:Emission Level=Reading+Factor

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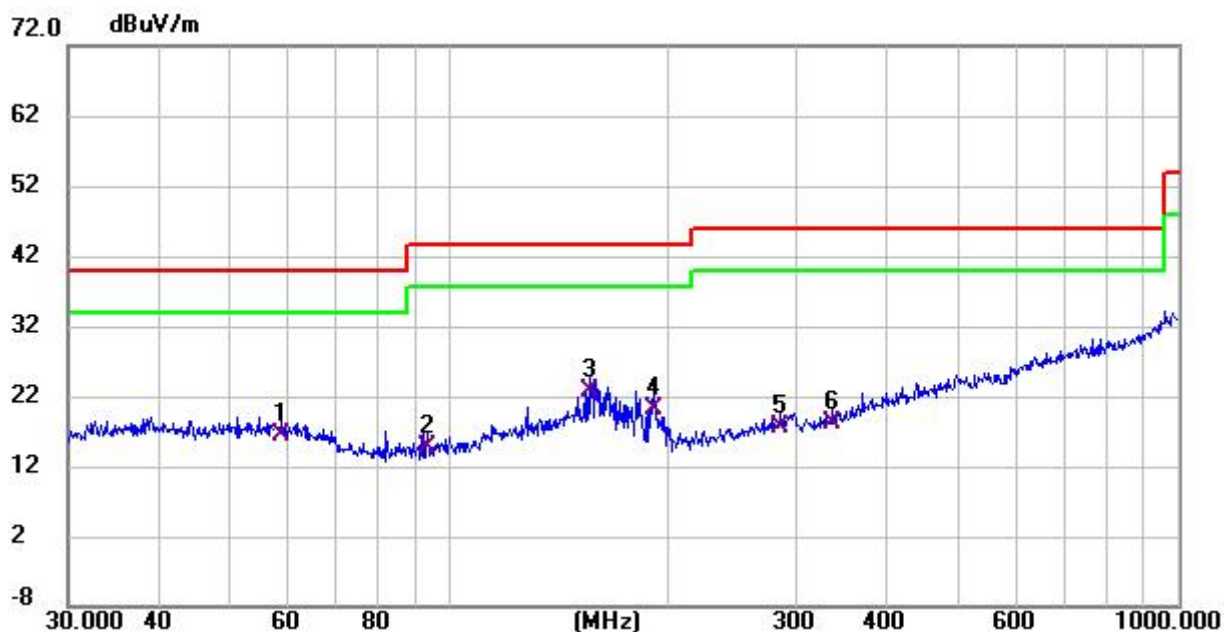
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E-mail: kwtest@keywaytest.com

https: www.keywaytest.com

Model:	S20Ultra
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Test plot for Vertical



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	58.819	2.76	13.53	16.29	40.00	-23.71	QP	200	342	P	
2	93.440	4.19	10.54	14.73	43.50	-28.77	QP	200	4	P	
3 *	155.910	7.46	15.25	22.71	43.50	-20.79	QP	200	85	P	
4	191.074	8.43	11.63	20.06	43.50	-23.44	QP	200	104	P	
5	284.977	3.51	14.05	17.56	46.00	-28.44	QP	200	0	P	
6	334.859	2.93	15.25	18.18	46.00	-27.82	QP	200	114	P	

Remark:Emission Level=Reading+Factor

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Test Frequency 1GHz-25GHz

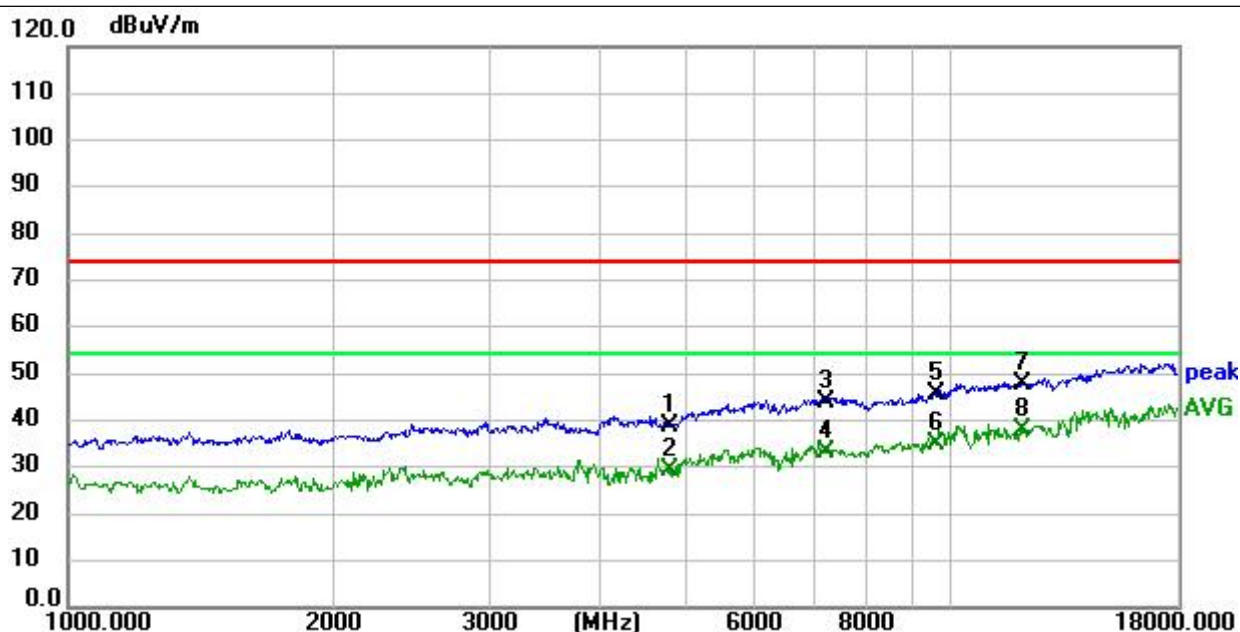
Bluetooth (GFSK, $\pi/4$ DQPSK, 8DPSK)mode have been tested, and the worst result(GFSK) was report as below

M/N : S20Ultra

Operation Mode : TX GFSK Low Channel

Test Voltage : AC 120V/60Hz

Test Specification : Horizontal



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	4804.000	43.95	-4.95	39.00	74.00	-35.00	peak
2	4804.000	34.38	-4.95	29.43	54.00	-24.57	AVG
3	7206.000	43.58	0.24	43.82	74.00	-30.18	peak
4	7206.000	32.94	0.24	33.18	54.00	-20.82	AVG
5	9608.000	43.67	2.10	45.77	74.00	-28.23	peak
6	9608.000	32.86	2.10	34.96	54.00	-19.04	AVG
7	12010.000	43.76	3.87	47.63	74.00	-26.37	peak
8 *	12010.000	34.25	3.87	38.12	54.00	-15.88	AVG

Remark:

Emission Level=Reading+Factor

Factor=Cable Loss+ANT Factor-Preamplifier Factor

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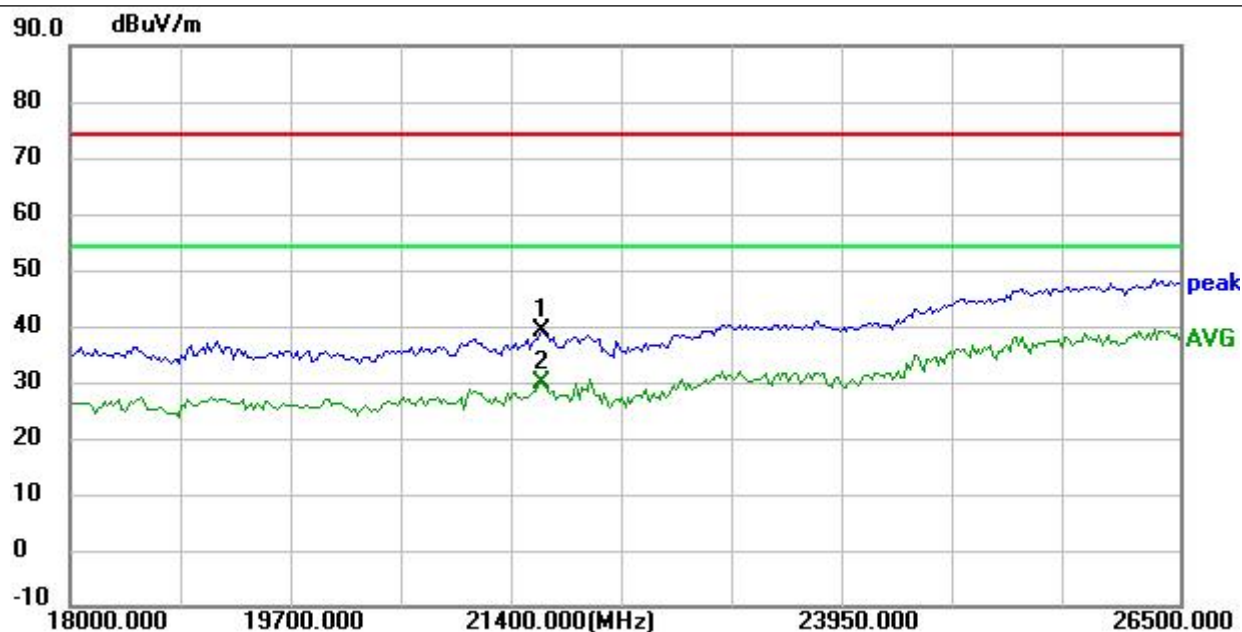
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M/N : S20Ultra
Operation Mode : TX GFSK Low Channel
Test Voltage : AC 120V/60Hz
Test Specification : Horizontal



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	21611.399	33.51	5.52	39.03	74.00	-34.97	peak
2 *	21611.399	24.24	5.52	29.76	54.00	-24.24	AVG

Remark:

Emission Level=Reading+Factor

Factor=Cable Loss+ANT Factor-Preamplifier Factor

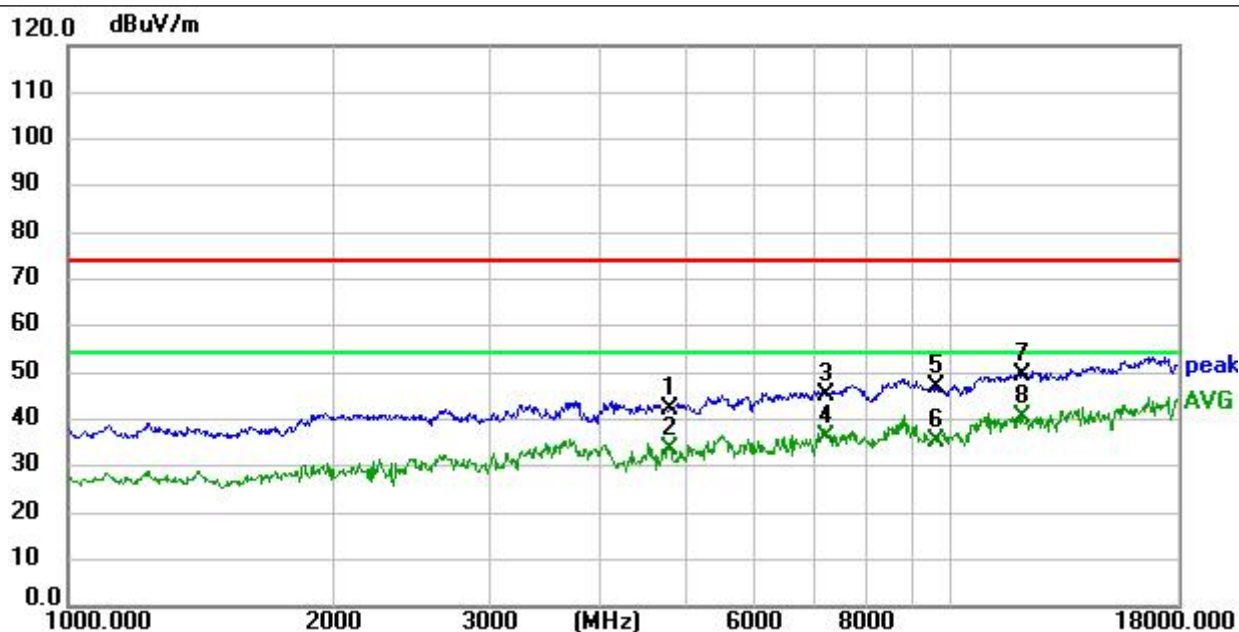
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M/N : S20Ultra
Operation Mode : TX GFSK Low Channel
Test Voltage : AC 120V/60Hz
Test Specification : Vertical



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	4804.000	47.32	-4.95	42.37	74.00	-31.63	peak
2	4804.000	38.40	-4.95	33.45	54.00	-20.55	AVG
3	7206.000	45.13	0.24	45.37	74.00	-28.63	peak
4	7206.000	36.09	0.24	36.33	54.00	-17.67	AVG
5	9608.000	44.92	2.10	47.02	74.00	-26.98	peak
6	9608.000	33.45	2.10	35.55	54.00	-18.45	AVG
7	12010.000	45.56	3.87	49.43	74.00	-24.57	peak
8 *	12010.000	36.68	3.87	40.55	54.00	-13.45	AVG

Remark:

Emission Level=Reading+Factor

Factor=Cable Loss+ANT Factor-Preamplifier Factor

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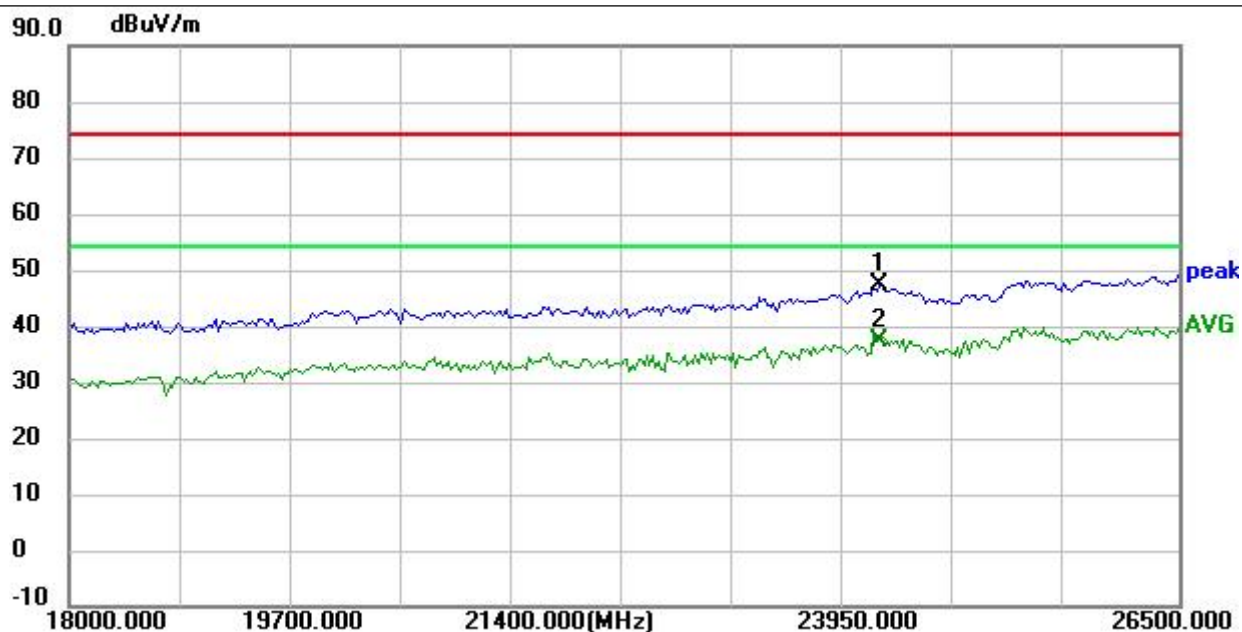
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M/N : S20Ultra
Operation Mode : TX GFSK Low Channel
Test Voltage : AC 120V/60Hz
Test Specification : Vertical



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	24209.844	38.50	8.86	47.36	74.00	-26.64	peak
2 *	24209.844	28.64	8.86	37.50	54.00	-16.50	AVG

Remark:

Emission Level=Reading+Factor

Factor=Cable Loss+ANT Factor-Preamp Factor

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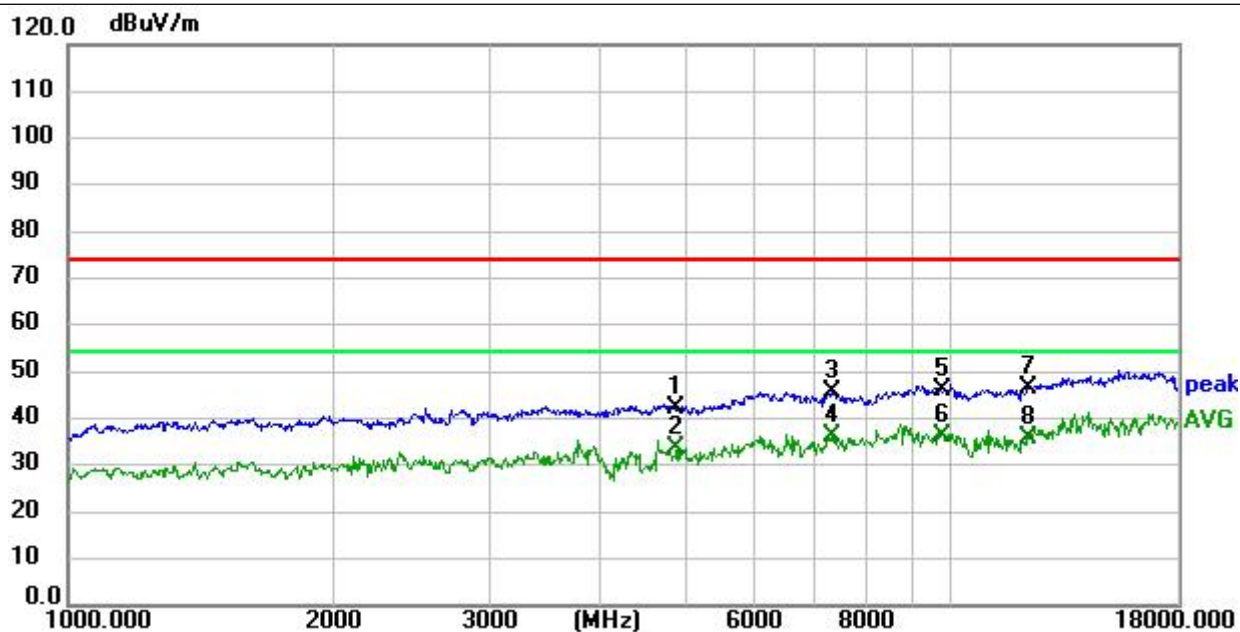
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M/N : S20Ultra
Operation Mode : TX GFSK Middle Channel
Test Voltage : AC 120V/60Hz
Test Specification : Horizontal



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	4880.000	47.01	-4.69	42.32	74.00	-31.68	peak
2	4880.000	38.12	-4.69	33.43	54.00	-20.57	AVG
3	7320.000	45.13	0.50	45.63	74.00	-28.37	peak
4	7320.000	35.59	0.50	36.09	54.00	-17.91	AVG
5	9760.000	44.35	1.73	46.08	74.00	-27.92	peak
6 *	9760.000	34.69	1.73	36.42	54.00	-17.58	AVG
7	12200.000	42.04	4.65	46.69	74.00	-27.31	peak
8	12200.000	30.95	4.65	35.60	54.00	-18.40	AVG

Remark:

Emission Level=Reading+Factor

Factor=Cable Loss+ANT Factor-Preamp Factor

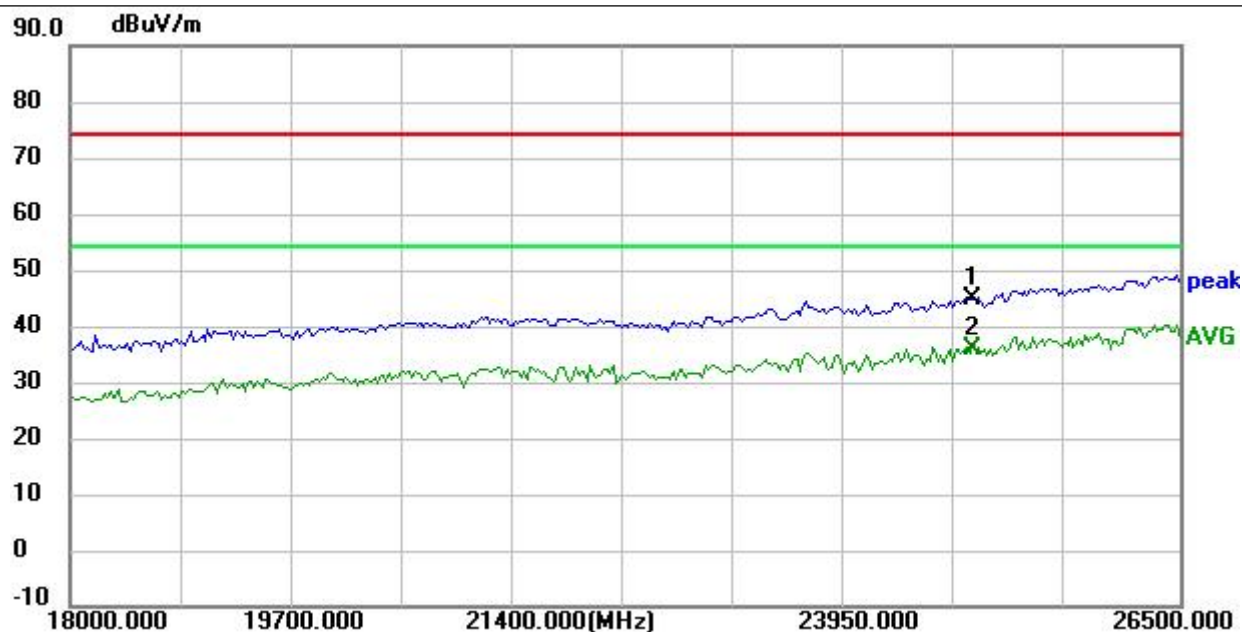
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M/N : S20Ultra
 Operation Mode : TX GFSK Middle Channel
 Test Voltage : AC 120V/60Hz
 Test Specification : Horizontal



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	24936.000	34.73	9.97	44.70	74.00	-29.30	peak
2 *	24936.000	25.83	9.97	35.80	54.00	-18.20	AVG

Remark:

Emission Level=Reading+Factor

Factor=Cable Loss+ANT Factor-Preamplifier Factor

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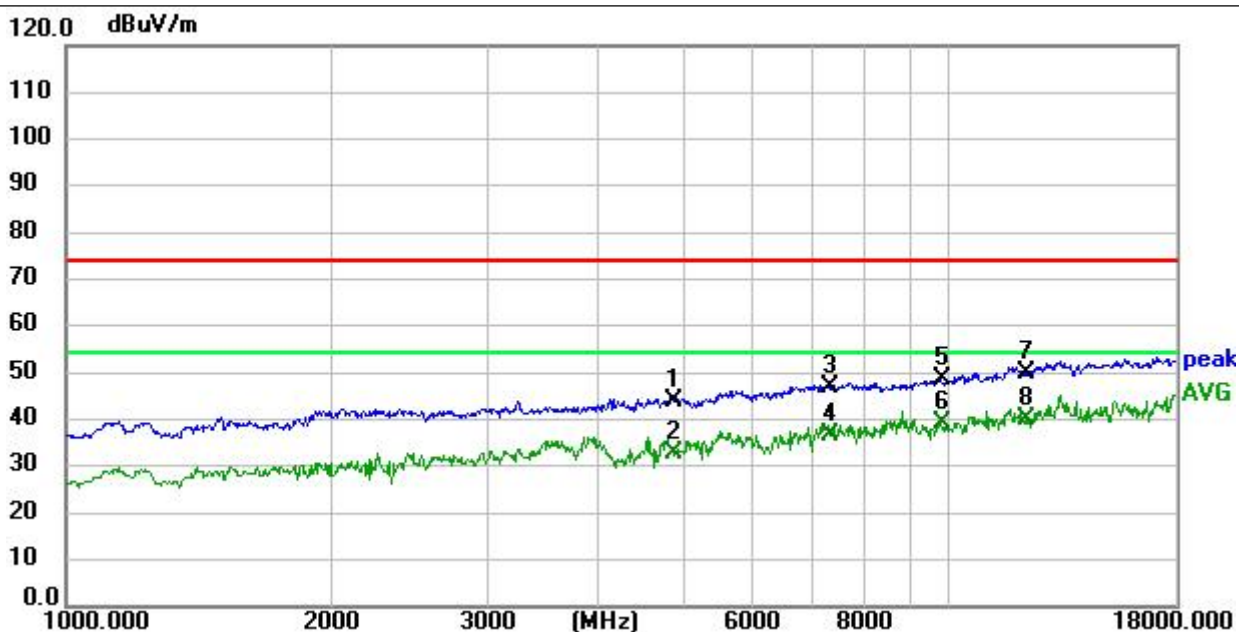
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M/N : S20Ultra
Operation Mode : TX GFSK Middle Channel
Test Voltage : AC 120V/60Hz
Test Specification : Vertical



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	4880.000	48.82	-4.69	44.13	74.00	-29.87	peak
2	4880.000	37.54	-4.69	32.85	54.00	-21.15	AVG
3	7320.000	46.44	0.50	46.94	74.00	-27.06	peak
4	7320.000	36.07	0.50	36.57	54.00	-17.43	AVG
5	9760.000	46.72	1.73	48.45	74.00	-25.55	peak
6	9760.000	37.46	1.73	39.19	54.00	-14.81	AVG
7	12200.000	45.22	4.65	49.87	74.00	-24.13	peak
8 *	12200.000	35.31	4.65	39.96	54.00	-14.04	AVG

Remark:

Emission Level=Reading+Factor

Factor=Cable Loss+ANT Factor-Preamplifier Factor

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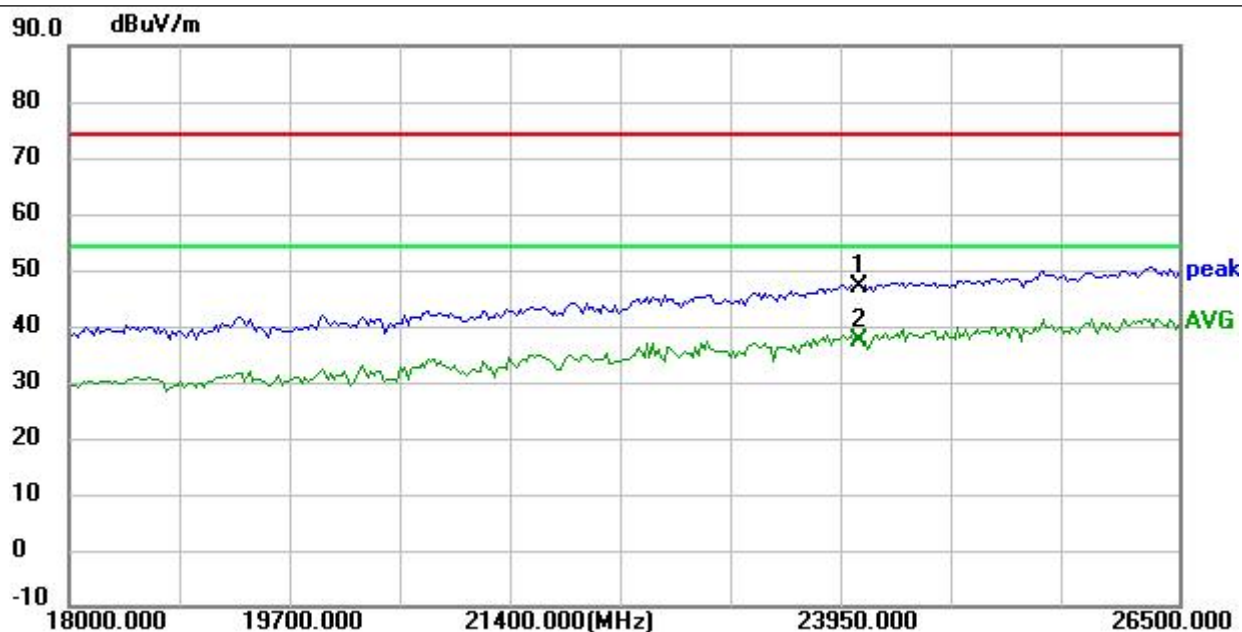
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M/N : S20Ultra
Operation Mode : TX GFSK Middle Channel
Test Voltage : AC 120V/60Hz
Test Specification : Vertical



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	24077.000	38.28	8.61	46.89	74.00	-27.11	peak
2 *	24077.000	28.68	8.61	37.29	54.00	-16.71	AVG

Remark:

Emission Level=Reading+Factor

Factor=Cable Loss+ANT Factor-Preamp Factor

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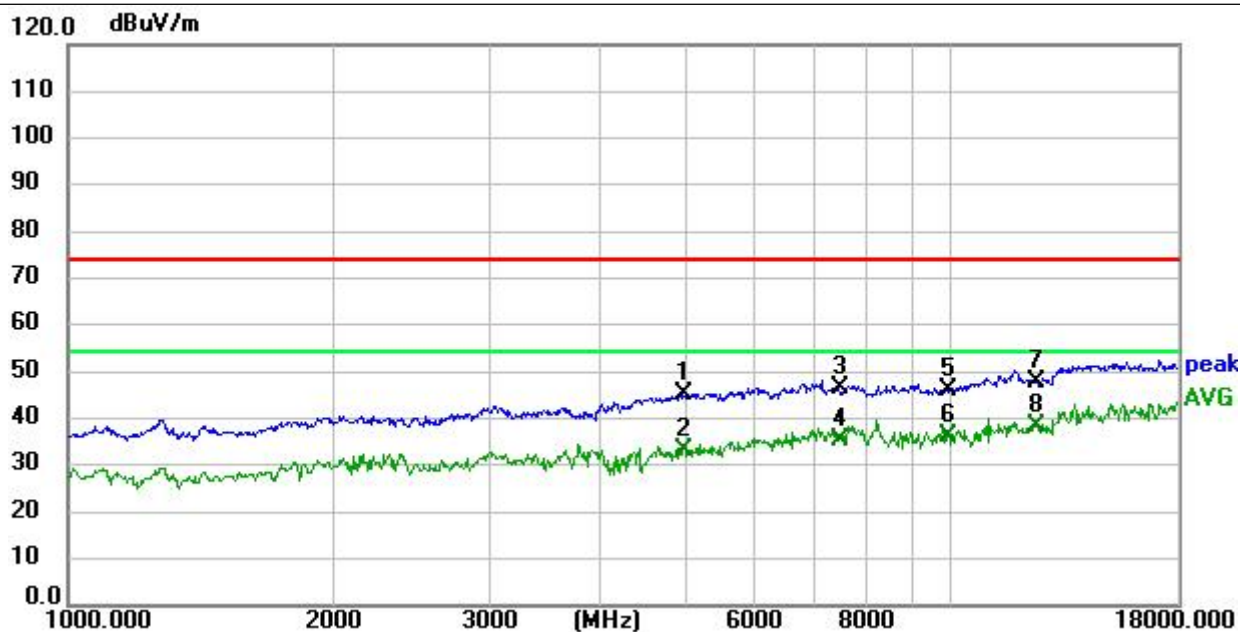
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Operation Mode : TX GFSK High Channel
Test Voltage : AC 120V/60Hz
Test Specification : Horizontal



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)
1	4960.000	50.22	-5.15	45.07	74.00	-28.93	peak	
2	4960.000	38.22	-5.15	33.07	54.00	-20.93	AVG	
3	7440.000	45.65	0.88	46.53	74.00	-27.47	peak	
4	7440.000	34.32	0.88	35.20	54.00	-18.80	AVG	
5	9920.000	43.95	1.95	45.90	74.00	-28.10	peak	
6	9920.000	34.25	1.95	36.20	54.00	-17.80	AVG	
7	12400.000	43.42	4.47	47.89	74.00	-26.11	peak	
8 *	12400.000	33.99	4.47	38.46	54.00	-15.54	AVG	

Remark:

Emission Level=Reading+Factor

Factor=Cable Loss+ANT Factor-Preamplifier Factor

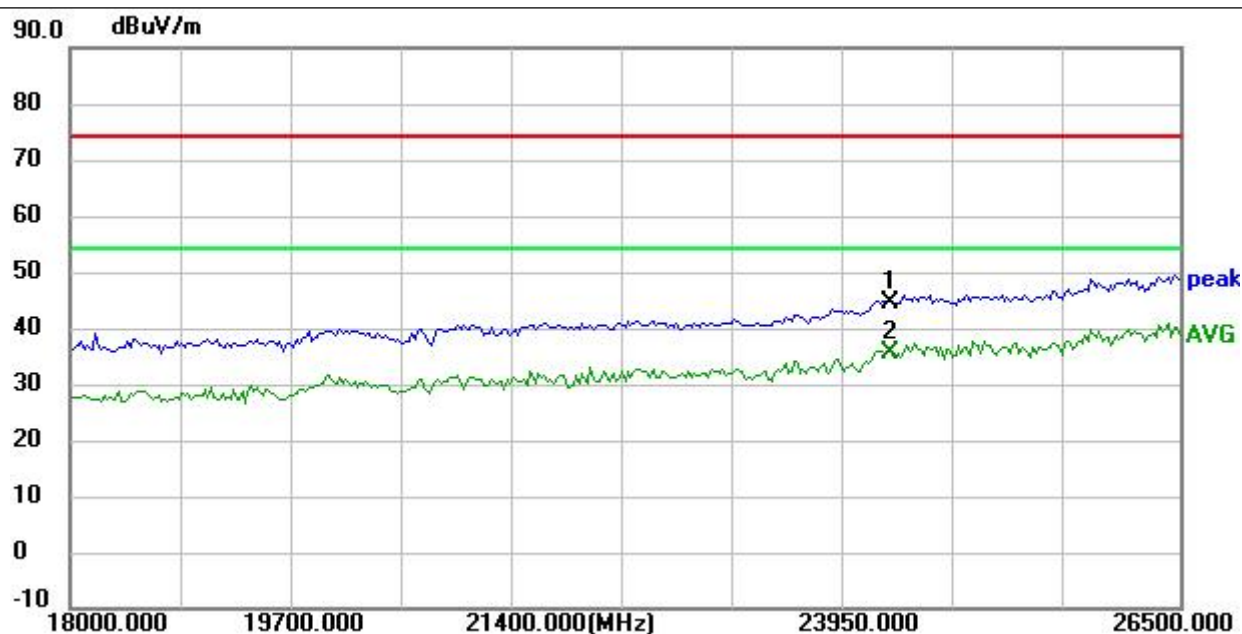
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M/N : S20Ultra
 Operation Mode : TX GFSK High Channel
 Test Voltage : AC 120V/60Hz
 Test Specification : Horizontal



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	24297.000	35.39	9.05	44.44	74.00	-29.56	peak
2 *	24297.000	26.33	9.05	35.38	54.00	-18.62	AVG

Remark:

Emission Level=Reading+Factor

Factor=Cable Loss+ANT Factor-Preamplifier Factor

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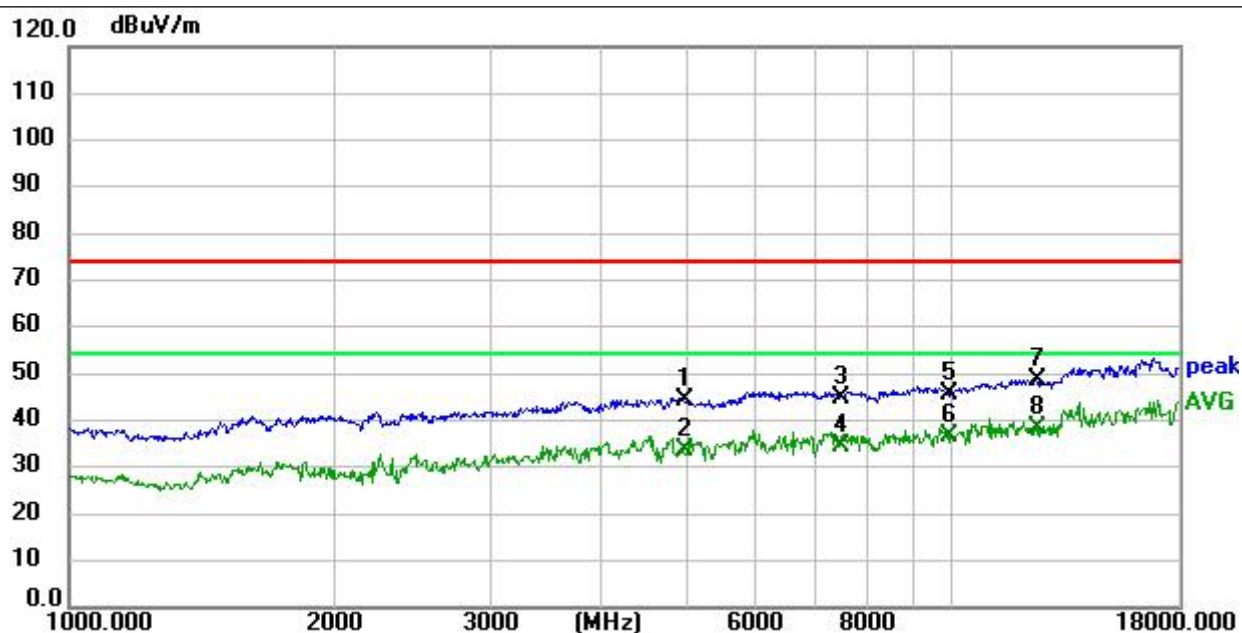
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M/N : S20Ultra
Operation Mode : TX GFSK High Channel
Test Voltage : AC 120V/60Hz
Test Specification : Vertical



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	4960.000	49.34	-5.15	44.19	74.00	-29.81	peak
2	4960.000	38.76	-5.15	33.61	54.00	-20.39	AVG
3	7440.000	44.10	0.88	44.98	74.00	-29.02	peak
4	7440.000	33.46	0.88	34.34	54.00	-19.66	AVG
5	9920.000	43.90	1.95	45.85	74.00	-28.15	peak
6	9920.000	34.62	1.95	36.57	54.00	-17.43	AVG
7	12400.000	44.01	4.47	48.48	74.00	-25.52	peak
8 *	12400.000	34.06	4.47	38.53	54.00	-15.47	AVG

Remark:

Emission Level=Reading+Factor

Factor=Cable Loss+ANT Factor-Preamplifier Factor

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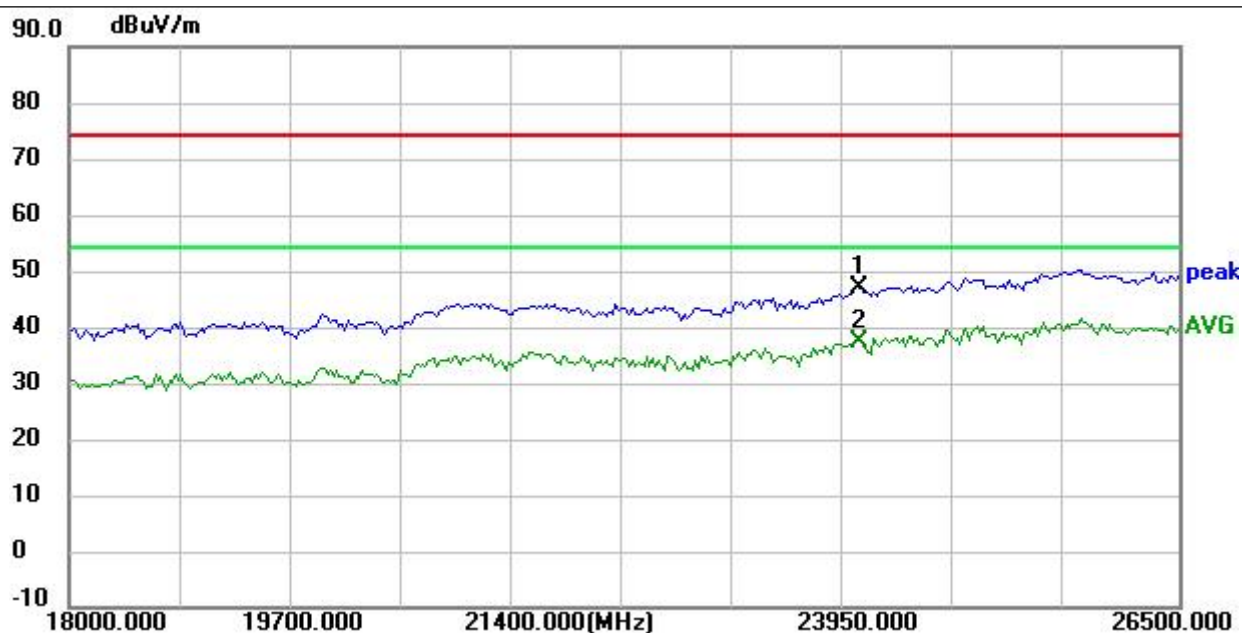
Tel: 0769-87182258

E-mail: kwtest@keywaytest.com

https: www.keywaytest.com



M/N : S20Ultra
Operation Mode : TX GFSK High Channel
Test Voltage : AC 120V/60Hz
Test Specification : Vertical



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	24077.000	38.28	8.61	46.89	74.00	-27.11	peak
2 *	24077.000	28.68	8.61	37.29	54.00	-16.71	AVG

Remark:

Emission Level=Reading+Factor

Factor=Cable Loss+ANT Factor-Preamp Factor

Note:

1. Emission Level = Meter Reading + Antenna Factor + Cable Loss – Pre-amplifier,
Margin= Emission Level - Limit
2. If peak below the average limit, the average emission was no test.
3. The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

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Radiated Band Emission Measurement:

Bluetooth (GFSK, $\pi/4$ DQPSK, 8DPSK) mode have been tested, and the worst result (GFSK) was reported as below

M/N : S20Ultra
 Operation Mode : TX GFSK Low Channel
 Test Voltage : AC 120V/60Hz
 Test Specification : Horizontal



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	2390.000	58.53	-12.67	45.86	54.00	-8.14	AVG
2 *	2400.000	65.83	-12.69	53.14	54.00	-0.86	AVG

Remark:

1. Emission Level = Meter Reading + Antenna Factor + Cable Loss – Pre-amplifier, Margin = Emission Level - Limit

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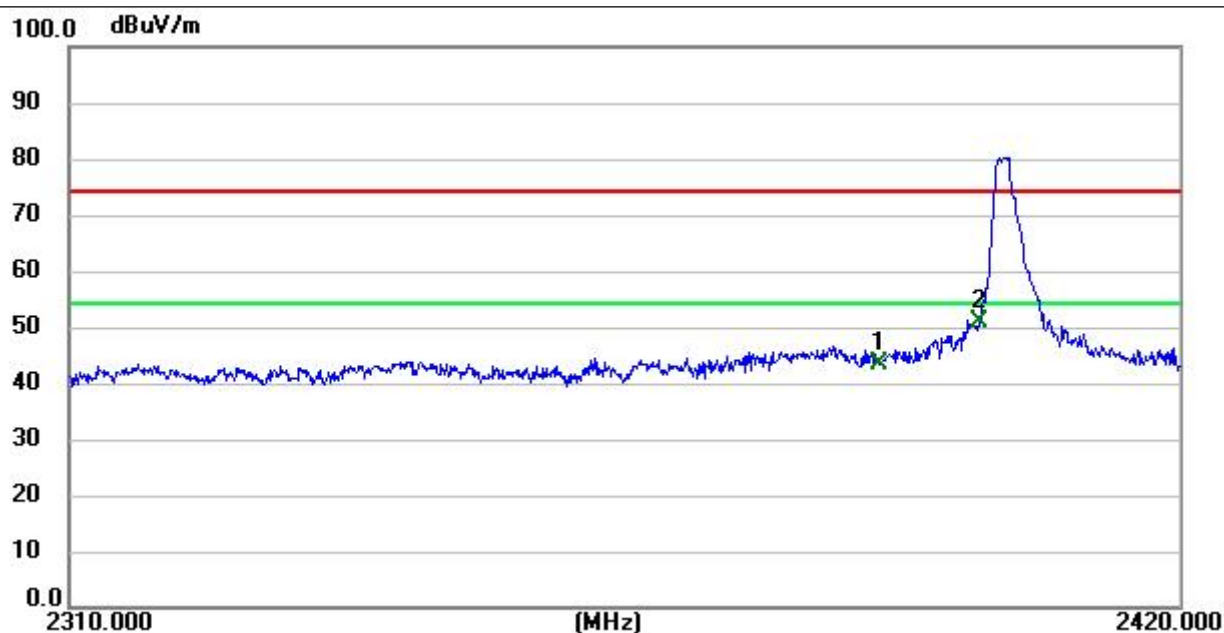
Tel: 0769-87182258

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https: www.keywaytest.com



M/N : S20Ultra
Operation Mode : TX GFSK Low Channel
Test Voltage : AC 120V/60Hz
Test Specification : Vertical



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	2390.000	55.98	-12.67	43.31	54.00	-10.69	AVG
2 *	2400.000	63.61	-12.69	50.92	54.00	-3.08	AVG

Remark:

1. Emission Level = Meter Reading + Antenna Factor + Cable Loss – Pre-amplifier, Margin= Emission Level - Limit

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M/N : S20Ultra
Operation Mode : TX GFSK High Channel
Test Voltage : AC 120V/60Hz
Test Specification : Horizontal



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1 *	2483.500	59.20	-12.81	46.39	54.00	-7.61	AVG
2	2500.000	54.80	-12.63	42.17	54.00	-11.83	AVG

Remark:

1. Emission Level = Meter Reading + Antenna Factor + Cable Loss – Pre-amplifier, Margin= Emission Level - Limit

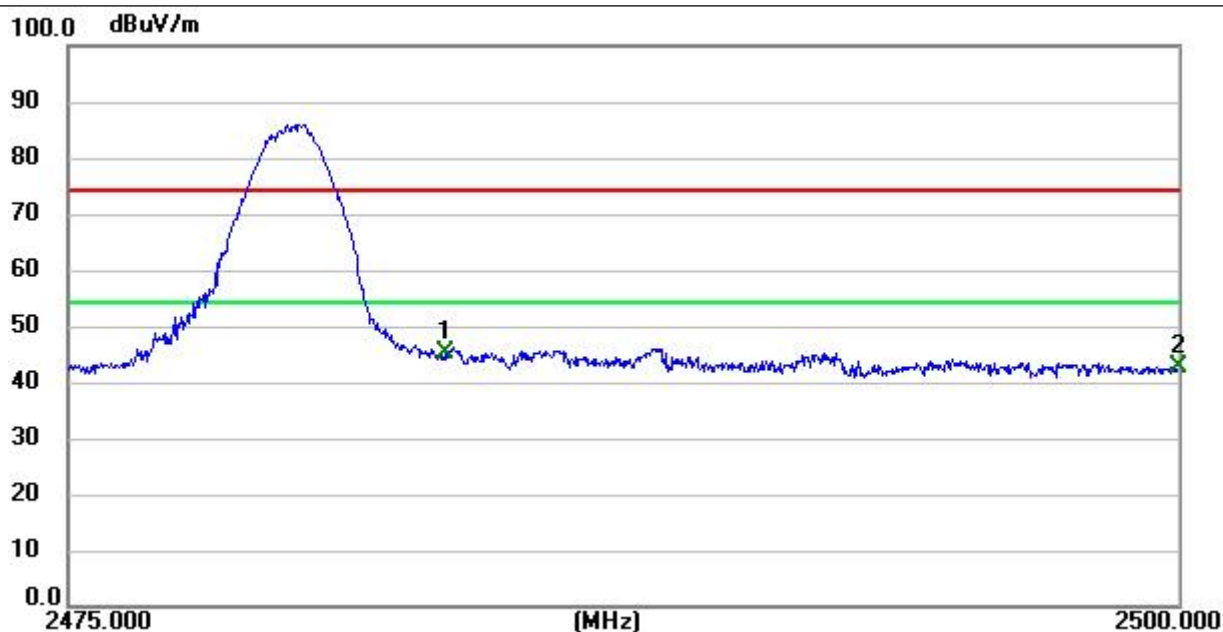
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M/N : S20Ultra
 Operation Mode : TX GFSK High Channel
 Test Voltage : AC 120V/60Hz
 Test Specification : Vertical



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1 *	2483.500	57.84	-12.81	45.03	54.00	-8.97	AVG
2	2500.000	55.18	-12.63	42.55	54.00	-11.45	AVG

Remark:

1. Emission Level = Meter Reading + Antenna Factor + Cable Loss – Pre-amplifier, Margin= Emission Level - Limit

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7 Conduct Band Edge And Spurious Emissions Measurement

Test Requirement	: Section 15.247(d) In addition, radiated emissions which fall in the restricted bands. as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).
Test Method	: ANSI C63.10-2020+Cor. 1-2023+C63.10a-2024 + Errata to C63.10a-2024
Test Limit	: Regulation 15.247 (d),In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated 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, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

7.1 Test Procedure

1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum;
2. Set the spectrum analyzer: RBW = 100kHz, VBW = 300kHz, Sweep = auto
Detector function = peak, Trace = max hold

7.2 Test Result

Please see the appendix IV _BLE_FCC_Test Data



8 6dB Bandwidth Measurement & 99% OCB Test

Test Requirement	: FCC CFR47 Part 15 Section 15.247 (a)(2)[5.2(a)]
Test Method	: ANSI C63.10-2020+Cor. 1-2023+C63.10a-2024 + Errata to C63.10a-2024 Systems using digital modulation techniques may operate in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.
Test Limit	: For the 99% emission bandwidth, the trace data points are recovered and directly summed in linear power level terms. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5% of the total is reached, and that frequency recorded. The process is repeated for the highest frequency data points (starting at the highest frequency, at the right side of the span, and going down in frequency). This frequency is then recorded. The difference between the two recorded frequencies is the occupied bandwidth (or the 99% emission bandwidth).

8.1 Test Procedure

1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum;
2. Set the spectrum analyzer: RBW = 100kHz, VBW = 300kHz(For 6dB bandwidth)
3. Set the spectrum analyzer: RBW = 20kHz, VBW = 62kHz(For LE 99% bandwidth)
4. Set the spectrum analyzer: RBW = 30kHz, VBW = 91kHz(For LE 99% bandwidth)

8.2 Test Result

Please see the appendix IV _BLE_FCC_Test Data



9 Maximum Peak Output Power

Test Requirement	: FCC CFR47 Part 15 Section 15.247 (b)(3) 5.4(b)
Test Method	: ANSI C63.10-2020+Cor. 1-2023+C63.10a-2024 + Errata to C63.10a-2024
Test Limit	: Regulation 15.247 (b)(3), For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 Watt. As an alternative to a peak power measurement, compliance with the one Watt limit can be based on a measurement of the maximum conducted output power. The e.i.r.p. shall not exceed 4 W

9.1 Test Procedure

1. The RF output of EUT was connected to the spectrum analyzer by RF cable. The path loss was compensated to the results for each measurement.
2. Set to the maximum power setting and enable the EUT transmit continuously.
3. Measure the conducted output power and record the results in the test report.

9.2 Test Result

Please see the appendix IV _BLE_FCC_Test Data



10 Power Spectral density

Test Requirement	: FCC CFR47 Part 15 Section 15.247 (e) [6.3.1(b)]
Test Method	: ANSI C63.10-2020+Cor. 1-2023+C63.10a-2024 + Errata to C63.10a-2024
Test Limit	: Regulation 15.247(f) The power spectral density conducted from the intentional radiator to the antenna due to the digital modulation operation of the hybrid system, with the frequency hopping operation turned off, shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

10.1 Test Procedure

1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum.
2. Set the spectrum analyzer: RBW = 3kHz. VBW = 9.1kHz , Span = 1.5 times the DTS channel bandwidth(6 dB bandwidth). Sweep = auto; Detector Function = Peak. Trace = Max hold.
3. Allow the trace to stabilize. Use the marker-delta function to determine the separation between the peaks of the adjacent channels. The limit is specified in one of the subparagraphs of this Section Submit this plot.

10.2 Test Result

Please see the appendix IV _BLE_FCC_Test Data



11 Antenna Application

11.1 Antenna Requirement

For intentional device, according to FCC 47 CFR Section 15.203, 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. And according to FCC 47 CFR Section 15.247 (b), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

For expediting the testing, measurements may be performed using only the antenna with highest gain of each combination of transmitter and antenna type, with the transmitter output power set at the maximum level. However, the transmitter shall comply with the applicable requirements under all operational conditions and when in combination with any type of antenna from the list provided in the test report (and in the notice to be included in the user manual, provided below).

When measurements at the antenna port are used to determine the RF output power, the effective gain of the device's antenna shall be stated, based on a measurement or on data from the antenna's manufacturer.

The test report shall state the RF power, output power setting and spurious emission measurements with each antenna type that is used with the transmitter being tested.

11.2 Result

The antenna is FPC Antenna which permanently attached, and the best case gain of the antenna is 4.31dBi. It complies with the standard requirement.



12 APPENDIX I -- TEST SETUP PHOTOGRAPH

Please see the attachment for details.



13 APPENDIX II -- EUT PHOTOGRAPH

Please see the attachment for details.

*****THE END REPORT*****