



TEST REPORT

FCC ID:2A2FP-SK1200

IC :35966-SK1200

Report Number..... : ZKT-260716L0997E-1

Date of Test..... Jul. 17, 2026 - Jul. 23, 2026

Date of issue..... : Jul. 23, 2026

Total number of pages..... 50

Test Result..... : PASS

Testing Laboratory..... : Shenzhen ZKT Technology Co., Ltd.

Address : 1/F, No. 101, Building B, No. 6, Tangwei Community Industrial Avenue, Fuhai Street, Bao'an District, Shenzhen, China

Applicant's name : Shenzhen Phiradar Technology Co., Ltd

Address : 911 Jiangshi Building, No.4 Xintian Avenue, Xintian Community, Fuhai Street, Baoan District, Shenzhen , China

Manufacturer's name : Shenzhen Phiradar Technology Co., Ltd

Address : 911 Jiangshi Building, No.4 Xintian Avenue, Xintian Community, Fuhai Street, Baoan District, Shenzhen , China

Test specification:

Standard..... : FCC CFR Title 47 Part 15 Subpart C Section 15.247
RSS-247 Issue 4 July 24, 2025
RSS-Gen Issue 5, April 2018+Amendment 1, March 2019+Amendment 2, February 2021
ANSIC63.10-2020+Cor 1-2023 + C63.10a-2024+ Errata to C63.10a-2024

Test procedure..... : /

Non-standard test method : N/A

Test Report Form No..... : TRF-EL-110_V0

Test Report Form(s) Originator..... : ZKT Testing

Master TRF : Dated: 2020-01-06

This device described above has been tested by ZKT, 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.

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Product name..... : Fish finder

Trademark : vexilar

Model/Type reference..... : SK1200,SIDEKICK

Ratings..... : Charge Voltage:DC 5V
DC 3.7V from battery



Testing procedure and testing location:

Testing Laboratory.....: Shenzhen ZKT Technology Co., Ltd.

Address.....: 1/F, No. 101, Building B, No. 6, Tangwei Community
Industrial Avenue, Fuhai Street, Bao'an District,
Shenzhen, China

Tested by (name + signature).....: Jim Liu

Reviewer (name + signature).....: Jackson Fang

Approved (name + signature).....: Lake Xie





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1. VERSION

Report No.	Version	Description	Approved
ZKT-260716L0997xE-1	Rev.01	Initial issue of report	Jul. 23, 2026



2. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:

FCC CFR Title 47 Part 15 Subpart C Section 15.247 RSS-247 Issue 4 July 24, 2025 RSS-Gen Issue 5, April 2018+Amendment 1, March 2019+Amendment 2, February 2021			
Standard Section	Test Item	Result	Remark
FCC part 15.203/15.247 (c) RSS-Gen 6.8	Antenna requirement	PASS	
FCC part 15.207 RSS-Gen 8.8	AC Power Line Conducted Emission	PASS	
FCC part 15.247 (b)(3) RSS-247 6.3.2	Conducted Average Output Power	PASS	
FCC part 15.247 (a)(2) RSS-247.6.3.1	6dB Occupied Bandwidth	PASS	
FCC part 15.247 (e) RSS-247.6.3.1	Power Spectral Density	PASS	
FCC part 15.247(d) RSS-Gen Section 8.10	Band Edge	PASS	
FCC part 15.205/15.209 RSS-Gen Section 8.9	Spurious Emission	PASS	



2.1 TEST FACILITY

Shenzhen ZKT Technology Co., Ltd.
Add. : 1/F, No. 101, Building B, No. 6, Tangwei Community Industrial Avenue, Fuhai Street, Bao'an District, Shenzhen, China

FCC Test Firm Registration Number: 927491
Designation Number: CN1431
IC Registered No.: 27033
CAB identifier: CN0110

2.2 MEASUREMENT UNCERTAINTY

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

No.	Item	Uncertainty
1	3m chamber Radiated spurious emission(9KHz-30MHz)	U=4.5dB
2	3m chamber Radiated spurious emission(30MHz-1GHz)	U=4.8dB
3	3m chamber Radiated spurious emission(1GHz-6GHz)	U=4.9dB
4	3m chamber Radiated spurious emission(6GHz-40GHz)	U=5.0dB
5	Conducted disturbance	U=3.2dB
6	RF Band Edge	U=1.68dB
7	RF power conducted	U=1.86dB
8	RF conducted Spurious Emission	U=2.2dB
9	RF Occupied Bandwidth	U=1.8MHz
10	RF Power Spectral Density	U=1.75dB
11	humidity uncertainty	U=5.3%
12	Temperature uncertainty	U=0.59°C



3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

Product Name:	Fish finder
Model No.:	SK1200,SIDEKICK
Test model:	SK1200
Model difference:	PCB boards, circuits, structures and internal configurations are the same. The difference is that model SK1200 is sold online, while SIDEKICK is sold offline.
Hardware Version:	H1.0
Software Version:	S1.0
Sample(s) Status:	Engineer sample
Sample Number:	ZKT-260716L0997-1
Frequency Range:	2402MHz-2480MHz
Channel numbers:	40 channels
Channel separation:	2MHz
Modulation technology:	GFSK
Data Rate	1Mbps
Antenna Type:	Cable line antenna
Antenna Gain:	1.4 dBi
Power Supply:	Charge Voltage: DC 5V DC 3.7V from battery
HVIN:	SK1200
PMN:	SK1200, SIDEKICK



Operation Frequency each of channel							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
1	2402 MHz	11	2422 MHz	21	2442 MHz	31	2462 MHz
2	2404 MHz	12	2424 MHz	22	2444 MHz	32	2464 MHz
3	2406 MHz	13	2426 MHz	23	2446 MHz	33	2466 MHz
4	2408 MHz	14	2428 MHz	24	2448 MHz	34	2468 MHz
5	2410 MHz	15	2430 MHz	25	2450 MHz	35	2470 MHz
6	2412 MHz	16	2432 MHz	26	2452 MHz	36	2472 MHz
7	2414 MHz	17	2434 MHz	27	2454 MHz	37	2474 MHz
8	2416 MHz	18	2436 MHz	28	2456 MHz	38	2476 MHz
9	2418 MHz	19	2438 MHz	29	2458 MHz	39	2478 MHz
10	2420 MHz	20	2440 MHz	30	2460 MHz	40	2480 MHz

Note:

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	2402MHz
The middle channel	2440MHz
The Highest channel	2480MHz

3.2 DESCRIPTION OF TEST MODES

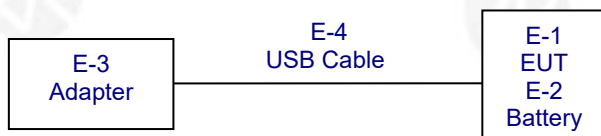
Transmitting mode	Keep the EUT in continuously transmitting mode
Charging mode	Keep the EUT in Charging mode.
Remark: During the test, the test voltage was tuned from 85% to 115% of the nominal rated supply voltage, and found that the worst case was under the nominal rated supply condition. So the report just shows that condition's data.	

Test Software	EspRFTTestTool_v5.2_Manual
Power level setup	Default

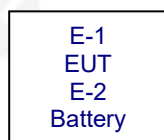


3.3 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED

Conducted Emission



Radiated Emission



Conducted Spurious



3.4 DESCRIPTION OF SUPPORT UNITS(CONDUCTED MODE)

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	Fish finder	vexilar	SK1200	N/A	EUT
E-2	Battery	vexilar	704548	N/A	EUT
E-3	Adapter	HUAWEI	ZC-050-A	N/A	AE
E-4	USB Cable	HUAWEI	ZC-050-A	N/A	AE
-	Test Cable	Shenzhen Tegat Technology Co., Ltd.	RF-01	N/A	AE
-	SMA RF Cable	Shenzhen Tegat Technology Co., Ltd.	RF001	N/A	AE
	Serial port board	Shenzhen Tegat Technology Co., Ltd.	TTL340	N/A	AE



Item	Shielded Type	Ferrite Core	Length	Note
C1	NO	NO	0.3M	RF Line

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.



3.5 EQUIPMENTS LIST FOR ALL TEST ITEMS

Radiation Emissions & Radiation Spurious Emissions Test

Item	Equipment	Manufacturer	Type No.	Serial No.	Firmware Version	Last calibration	Calibrated until
1	Spectrum Analyzer (9kHz-26.5GHz)	KEYSIGHT	N9020A	MY55370835	A.17.05	Sep. 20, 2025	Sep. 19, 2026
2	Spectrum Analyzer (10kHz-39.9GHz)	R&S	FSV40-N	100363	1.71 SP2	Sep. 20, 2025	Sep. 19, 2026
3	EMI Test Receiver (9kHz-7GHz)	R&S	ESC17	100969	4.32	Oct. 24, 2025	Oct. 23, 2026
4	Bilog Antenna (30MHz-1500MHz)	Schwarzbeck	VULB9168	00877	N/A	Sep. 20, 2025	Sep. 19, 2026
5	Horn Antenna (1GHz-18GHz)	Agilent	AH-118	071145	N/A	Sep. 20, 2025	Sep. 19, 2026
6	Horn Antenna (15GHz-40GHz)	A.H.System	SAS-574	588	N/A	Sep. 30, 2025	Sep. 29, 2026
7	Loop Antenna	TESEQ	HLA6121	58357	N/A	Sep. 20, 2025	Sep. 19, 2026
8	Amplifier (30-1000MHz)	EM Electronics	EM330 Amplifier	60747	N/A	Sep. 19, 2025	Sep. 18, 2026
9	Amplifier (1GHz-26.5GHz)	HuiPu	8449B	3008A00315	N/A	Sep. 19, 2025	Sep. 18, 2026
10	Amplifier (500MHz-40GHz)	QuanJuDa	DLE-161	097	N/A	Oct. 24, 2025	Oct. 23, 2026
11	Test Cable	Shenzhen TEGAT Technology Co., Ltd.	R-01	N/A	ZKT-086	May. 25, 2025	May. 24, 2026
12	Test Cable	Shenzhen TEGAT Technology Co., Ltd.	R-02	N/A	ZKT-087	May. 25, 2025	May. 24, 2026
13	Test Cable	Shenzhen TEGAT Technology Co., Ltd.	R-03	N/A	ZKT-088	May. 25, 2025	May. 24, 2026
14	D.C. Power Supply	LongWei	TPR-6405D	N/A	N/A	\	\
15	EMC Software	Frad	EZ-EMC	Ver.EMC-CO N 3A1.1	N/A	\	\
16	Turntable	MF	MF-7802BS	N/A	N/A	\	\
17	Antenna tower	MF	MF-7802BS	N/A	N/A	\	\
18	Band-Filter	Link	JL-BPF-S MAKK	ZKT-0121	N/A	Sep. 19, 2025	Sep. 18, 2026



Conduction Emissions Test

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Firmware Version	Last calibration	Calibrated until
1	LISN	R&S	ENV216	101471	N/A	Sep. 23, 2025	Sep. 22, 2026
2	LISN	CYBERTEK	EM5040A	E1850400149	N/A	Sep. 19, 2025	Sep. 18, 2026
3	Test Cable	Shenzhen Tegat Technology Co., Ltd.	C-01	N/A	N/A	May. 25, 2026	May. 24, 2027
4	Test Cable	Shenzhen Tegat Technology Co., Ltd.	C-02	N/A	N/A	May. 25, 2026	May. 24, 2027
5	Test Cable	Shenzhen Tegat Technology Co., Ltd.	C-03	N/A	N/A	May. 25, 2026	May. 24, 2027
6	EMI Test Receiver	R&S	ESCI3	101393	4.42 SP3	Oct. 24, 2025	Oct. 23, 2026
7	Triple-Loop Antenna	N/A	RF300	9194	N/A	Sep. 19, 2025	Sep. 18, 2026
8	Absorbing Clamp	DZ	ZN23201	15034	N/A	Sep. 23, 2025	Sep. 22, 2026
9	EMC Software	Frad	EZ-EMC	Ver.EMC-CON 3A1.1	N/A	\	\



RF Conducted Test

Item	Equipment	Manufacturer	Type No.	Serial No.	Firmware Version	Last calibration	Calibrated until
1	Spectrum Analyzer (9kHz-26.5GHz)	KEYSIGHT	N9020A	MY55370835	A.17.05	Sep. 20, 2025	Sep. 19, 2026
2	Spectrum Analyzer (10kHz-39.9GHz)	R&S	FSV40-N	100363	1.71 SP2	Sep. 20, 2025	Sep. 19, 2026
3	Test Cable	Shenzhen Togat Technology Co., Ltd.	RF-01	N/A	N/A	May. 25, 2026	May. 24, 2027
4	Test Cable	Shenzhen Togat Technology Co., Ltd.	RF-02	N/A	N/A	May. 25, 2026	May. 24, 2027
5	Test Cable	Shenzhen Togat Technology Co., Ltd.	RF-03	N/A	N/A	May. 25, 2026	May. 24, 2027
6	ESG Signal Generator	Agilent	E4421B	N/A	B.03.84	Sep. 19, 2025	Sep. 18, 2026
7	Signal Generator	Agilent	N5182A	N/A	A.01.87	Sep. 20, 2025	Sep. 19, 2026
8	Magnetic Field Probe Tester	Narda	ELT-400	0-0344/M-1752	N/A	Sep. 25, 2025	Sep. 24, 2026
9	SHIELD BOX	TESCOM	TC-5970C	5970C015553	N/A	Dec. 18, 2024	Dec. 17, 2025
10	Wideband Radio Communication Test	R&S	CMW500	106504	V 3.7.22	Sep. 28, 2025	Sep. 27, 2026
11	MWRF Power Meter Test system	MW	MW100-RF CB	N/A	N/A	Sep. 19, 2025	Sep. 18, 2026
12	D.C. Power Supply	LongWei	TPR-6405 D	N/A	N/A	Sep. 19, 2025	Sep. 18, 2026
13	RF Software	MW	MTS8310	V2.0.0.0	N/A	\	\
14	RF Software	TST	255	V2.0.1	N/A	\	\

Radio frequency transmission test: The software used in this test was provided by BTS.



4. EMC EMISSION TEST

4.1 CONDUCTED EMISSION MEASUREMENT

Test Requirement:	FCC PART15.207 RSS-Gen [8.8]
Test Method:	ANSIC63.10-2020+Cor 1-2023 + C63.10a-2024+ Errata to C63.10a-2024
Test Frequency Range:	150KHz to 30MHz
Receiver setup:	RBW=9KHz, VBW=30KHz, Sweep time=auto

4.1.1 POWER LINE CONDUCTED EMISSION Limits

FREQUENCY (MHz)	Limit (dBuV)		Standard
	Quasi-peak	Average	
0.15 -0.5	66 - 56 *	56 - 46 *	FCC
0.50 -5.0	56.00	46.00	FCC
5.0 -30.0	60.00	50.00	FCC

RSS-Gen 8.8

Table 4 – AC power-line conducted emissions limits		
Frequency (MHz)	Conducted limit (dBμV)	
	Quasi-peak	Average
0.15 - 0.5	66 to 56 ^{Note 1}	56 to 46 ^{Note 1}
0.5 - 5	56	46
5 - 30	60	50

Note 1: The level decreases linearly with the logarithm of the frequency.

4.1.2 TEST PROCEDURE

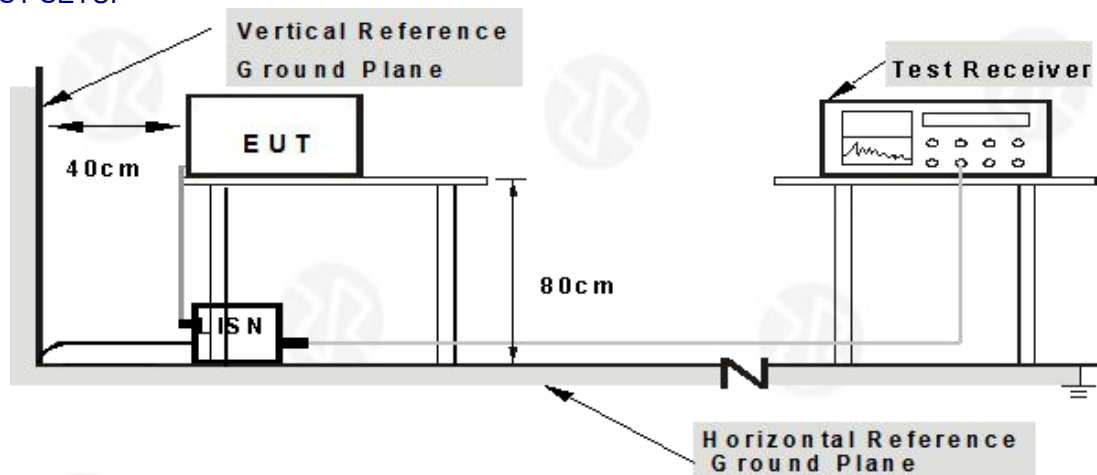
- The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
- Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
- I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
- LISN at least 80 cm from nearest part of EUT chassis.
- For the actual test configuration, please refer to the related Item –EUT Test Photos.

4.1.3 DEVIATION FROM TEST STANDARD

No deviation



4.1.4 TEST SETUP



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

4.1.5 EUT OPERATING CONDITIONS

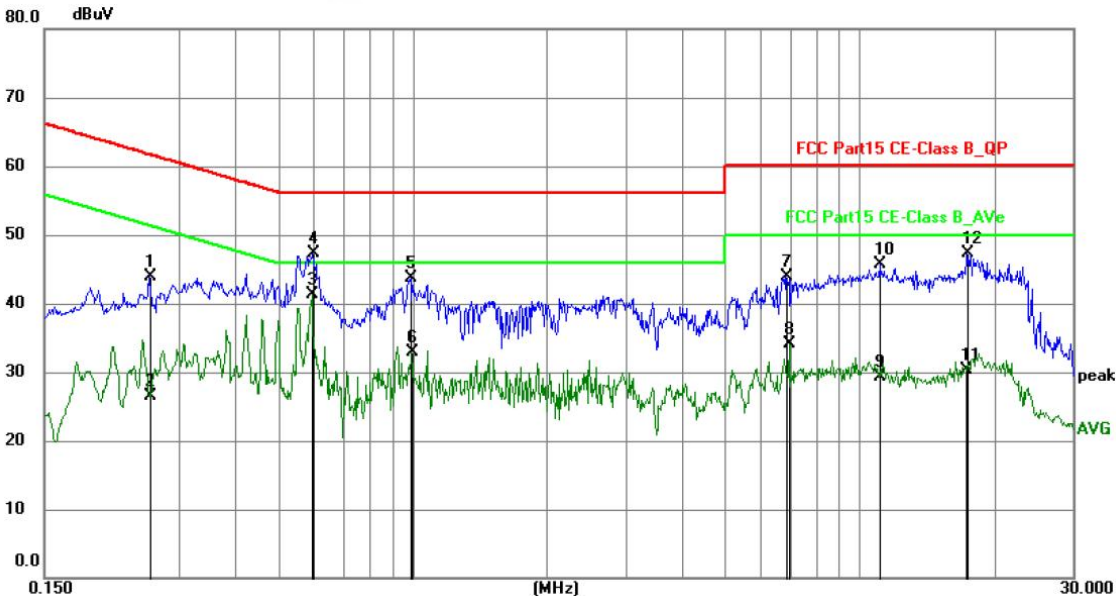
The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.



4.1.6 TEST RESULT

Temperature:	26℃	Relative Humidity:	54%
Pressure:	101 kPa	Polarization:	L
Test Voltage:	AC 120V/60Hz	Test Mode:	GFSK 2M-2402

Note:Pre-scan all modes and recorded the worst case results in this report which is GFSK 2M-2402MHz.

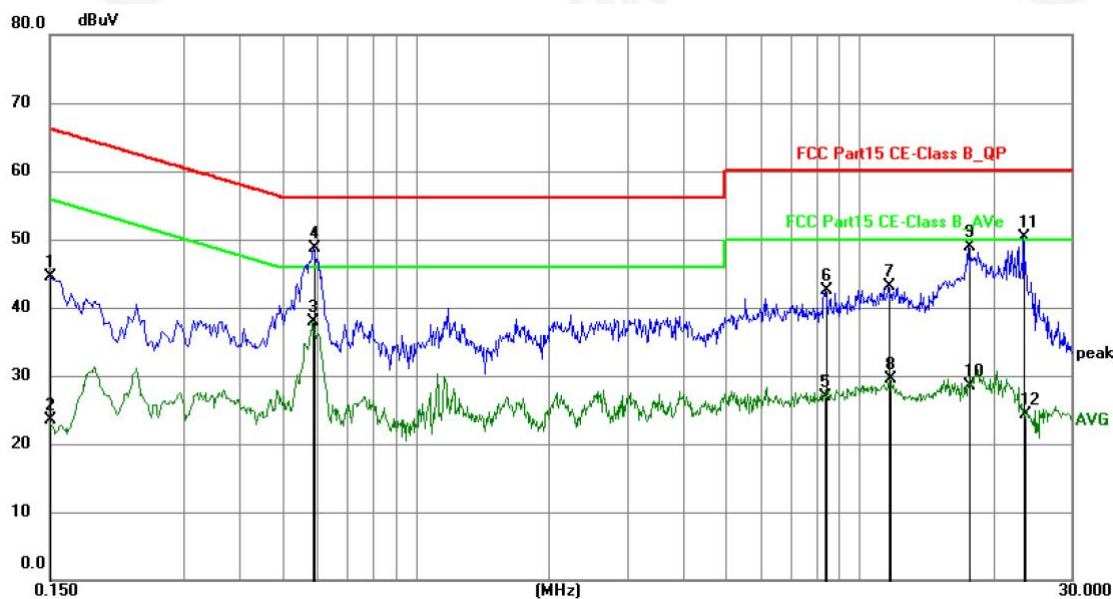


No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.2580	22.88	21.01	43.89	61.50	-17.61	QP	P
2	0.2584	5.52	21.01	26.53	51.48	-24.95	AVG	P
3	0.5954	20.43	20.83	41.26	46.00	-4.74	AVG	P
4	0.6000	26.53	20.83	47.36	56.00	-8.64	QP	P
5	0.9909	22.68	20.95	43.63	56.00	-12.37	QP	P
6	0.9959	12.02	20.96	32.98	46.00	-13.02	AVG	P
7	6.8414	22.48	21.40	43.88	60.00	-16.12	QP	P
8	6.9855	12.60	21.43	34.03	50.00	-15.97	AVG	P
9	11.0219	7.10	22.21	29.31	50.00	-20.69	AVG	P
10	11.1074	23.47	22.22	45.69	60.00	-14.31	QP	P
11	17.3535	6.95	23.27	30.22	50.00	-19.78	AVG	P
12	17.4615	23.92	23.29	47.21	60.00	-12.79	QP	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.Final Level = Reading level + Correct Factor.
 - 4.Correct Factor = Lism factor+ Cable loss factor + limiter factor.
 - 5.Margin = Measurement Level-Limit.



Temperature:	26℃	Relative Humidity:	54%
Pressure:	101 kPa	Polarization:	N
Test Voltage:	AC 120V/60Hz	Test Mode:	GFSK 2M-2402



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.1500	23.70	20.84	44.54	66.00	-21.46	QP	P
2	0.1500	2.65	20.84	23.49	56.00	-32.51	AVG	P
3	0.5864	17.03	20.87	37.90	46.00	-8.10	AVG	P
4	0.5907	27.80	20.87	48.67	56.00	-7.33	QP	P
5	8.3625	5.09	21.78	26.87	50.00	-23.13	AVG	P
6	8.4030	20.76	21.79	42.55	60.00	-17.45	QP	P
7	11.6700	20.79	22.34	43.13	60.00	-16.87	QP	P
8	11.7240	7.21	22.35	29.56	50.00	-20.44	AVG	P
9	17.5694	25.45	23.36	48.81	60.00	-11.19	QP	P
10	17.7540	5.21	23.39	28.60	50.00	-21.40	AVG	P
11	23.4780	25.96	24.31	50.27	60.00	-9.73	QP	P
12	23.5320	-0.06	24.33	24.27	50.00	-25.73	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.Final Level = Reading level + Correct Factor.
- 4.Correct Factor = Liss factor+ Cable loss factor + limiter factor.
- 5.Margin = Measurement Level-Limit.



4.2 RADIATED EMISSION MEASUREMENT

Test Requirement:	FCC PART15.209 RSS-Gen [8.9]				
Test Method:	ANSIC63.10-2020+Cor 1-2023 + C63.10a-2024+ Errata to C63.10a-2024				
Test Frequency Range:	9kHz to 25GHz				
Test site:	Measurement Distance: 3m				
Receiver setup:	Frequency	Detector	RBW	VBW	Value
	9KHz-150KHz	Quasi-peak	200Hz	600Hz	Quasi-peak
	150KHz-30MHz	Quasi-peak	9KHz	30KHz	Quasi-peak
	30MHz-1GHz	Quasi-peak	100KHz	300KHz	Quasi-peak
	Above 1GHz	Peak	1MHz	3MHz	Peak
		Peak	1MHz	10Hz	Average

4.2.1 Radiated Emission Limits FCC

Frequencies (MHz)	Field Strength (micorvolts/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(KHz)	300
0.490~1.705	24000/F(KHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

LIMITS OF RADIATED EMISSION MEASUREMENT

FREQUENCY (MHz)	Limit (dBuV/m) (at 3M)	
	PEAK	AVERAGE
Above 1000	74	54

Notes:

- (1) The limit for radiated test was performed according to FCC PART 15C.
- (2) The tighter limit applies at the band edges.
- (3) Emission level (dBuV/m)=20log Emission level (uV/m).



RSS-Gen

Table 5 – General field strength limits at frequencies above 30 MHz

Frequency (MHz)	Field strength ($\mu\text{V/m}$ at 3 m)
30 – 88	100
88 – 216	150
216 – 960	200
Above 960	500

Table 6 – General field strength limits at frequencies below 30 MHz

Frequency	Magnetic field strength (H-Field) ($\mu\text{A/m}$)	Measurement distance (m)
9 – 490 kHz ^{Note 1}	$6.37/F$ (F in kHz)	300
490 – 1705 kHz	$63.7/F$ (F in kHz)	30
1.705 – 30 MHz	0.08	30

Note 1: The emission limits for the ranges 9-90 kHz and 110-490 kHz are based on measurements employing a linear average detector.

4.2.2 TEST PROCEDURE

Below 1GHz test procedure as below:

- The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of variable-height antenna tower.
- 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.
- 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 1meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

Above 1GHz test procedure as below:

- Different between above is the test site, change from Semi- Anechoic Chamber to fully Anechoic Chamber and change form table 0.8 meter to 1.5 meter(Above 18GHz the distance is 1 meter and table is 1.5 meter).
- Test the EUT in the lowest channel ,the middle channel ,the Highest channel

Note:

Both horizontal and vertical antenna polarities were tested and performed pretest to three orthogonal axis. The worst case emissions were reported

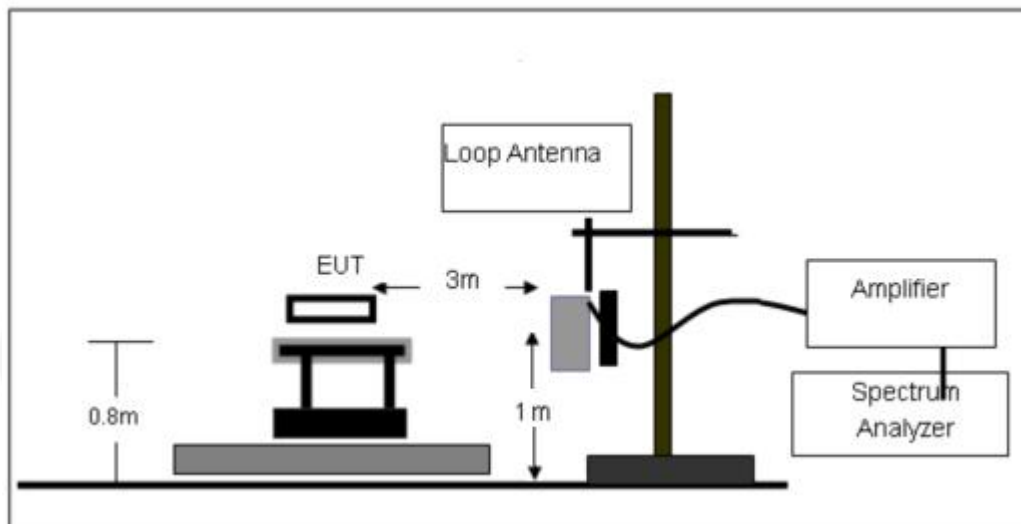
4.2.3 DEVIATION FROM TEST STANDARD



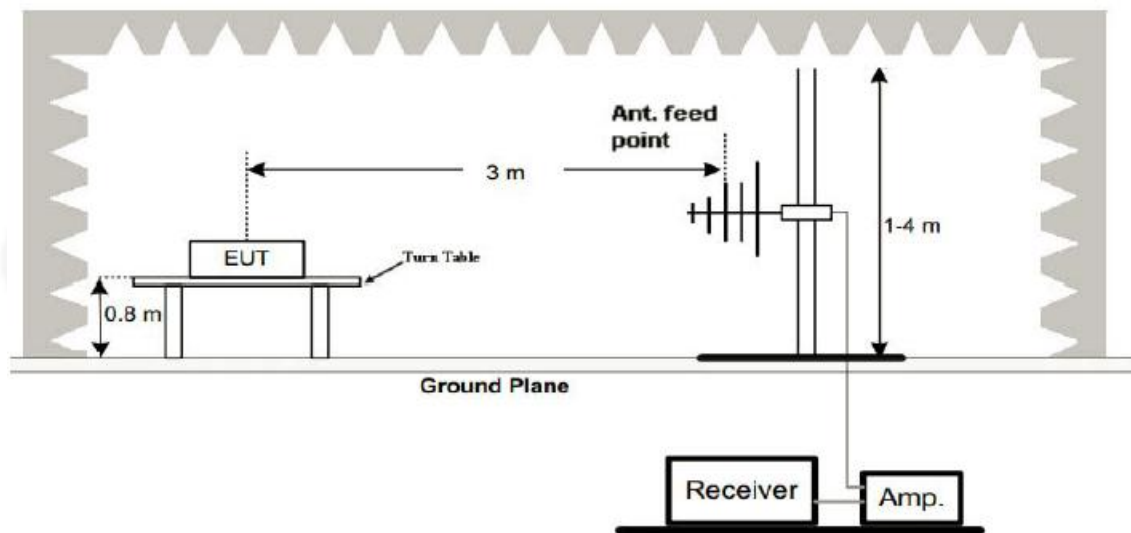
No deviation

4.2.4 TEST SETUP

(A) Radiated Emission Test-Up Frequency Below 30MHz

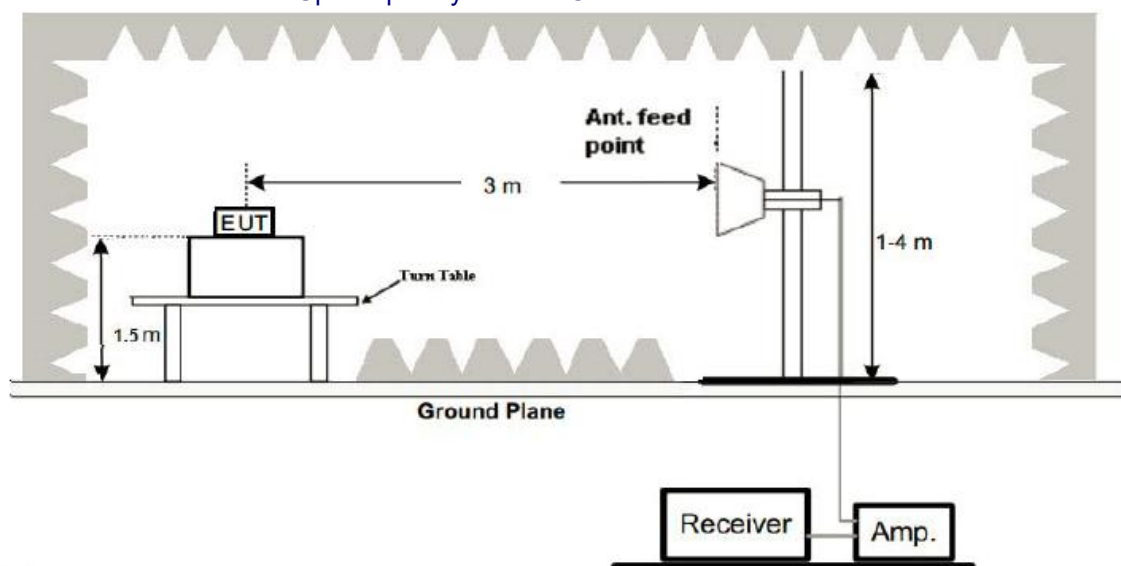


(B) Radiated Emission Test-Up Frequency 30MHz~1GHz





(C) Radiated Emission Test-Up Frequency Above 1GHz



4.2.5 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of 3.3 Unless otherwise a special operating condition is specified in the follows during the testing.

4.2.6 TEST RESULTS

Between 9KHz - 30MHz

We pretest AC 120V and AC 230V, the worst voltage was AC 120V and the data recording in the report.

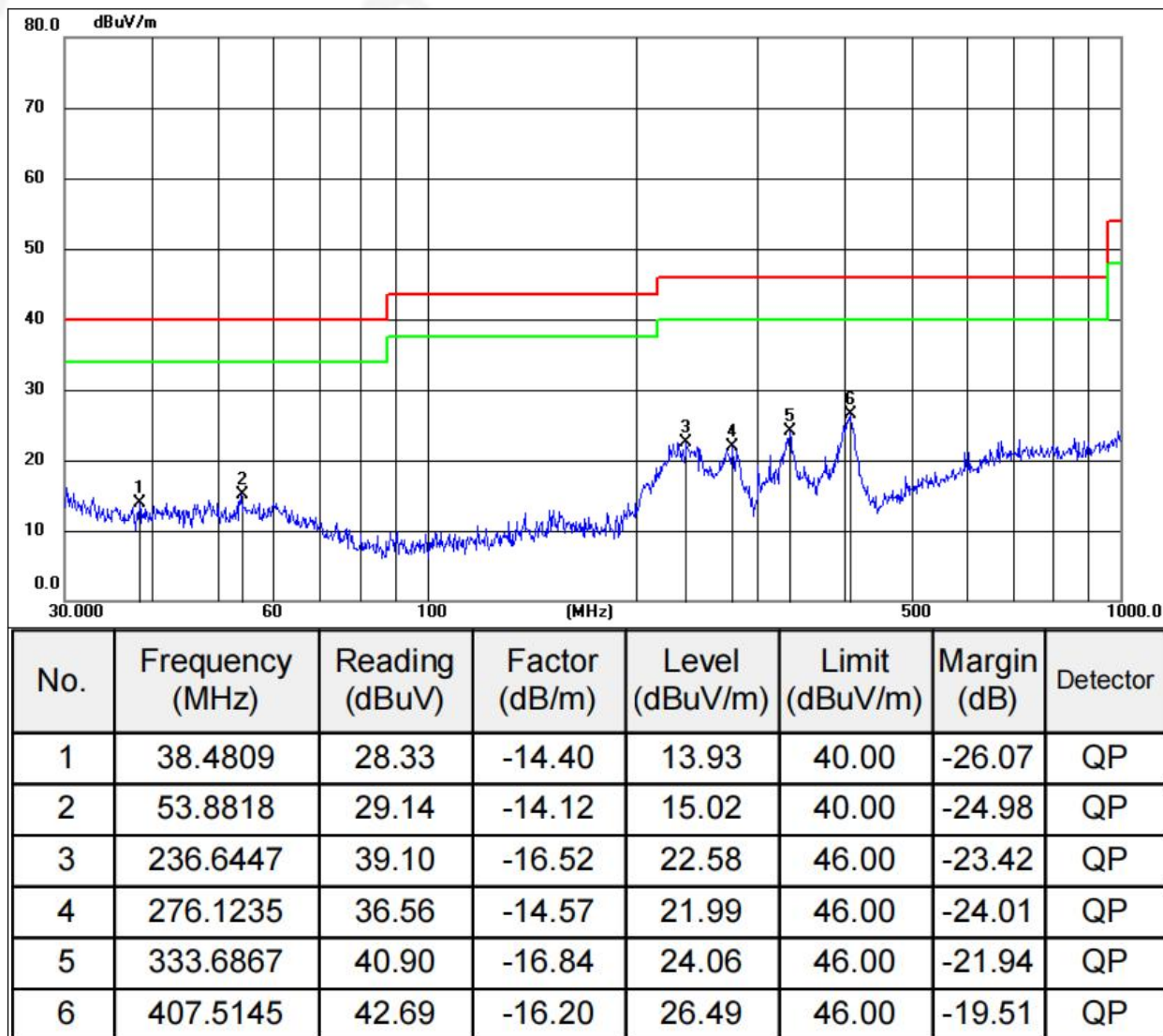
The emission from 9 kHz to 30MHz was pre-tested and found the result was 20dB lower than the limit, and according to 15.31(o) & RSS-Gen 6.13, the test result no need to reported.



Between 30MHz – 1GHz

Temperature:	26°C	Relative Humidity:	54%
Pressure:	101 kPa	Polarization:	Horizontal
Test Voltage:	DC 3.7V from battery	Test Mode :	GFSK 2M- 2402MHz

Note:Pre-scan all modes and recorded the worst case results in this report which is GFSK mode rate 2MHz-2402MHz

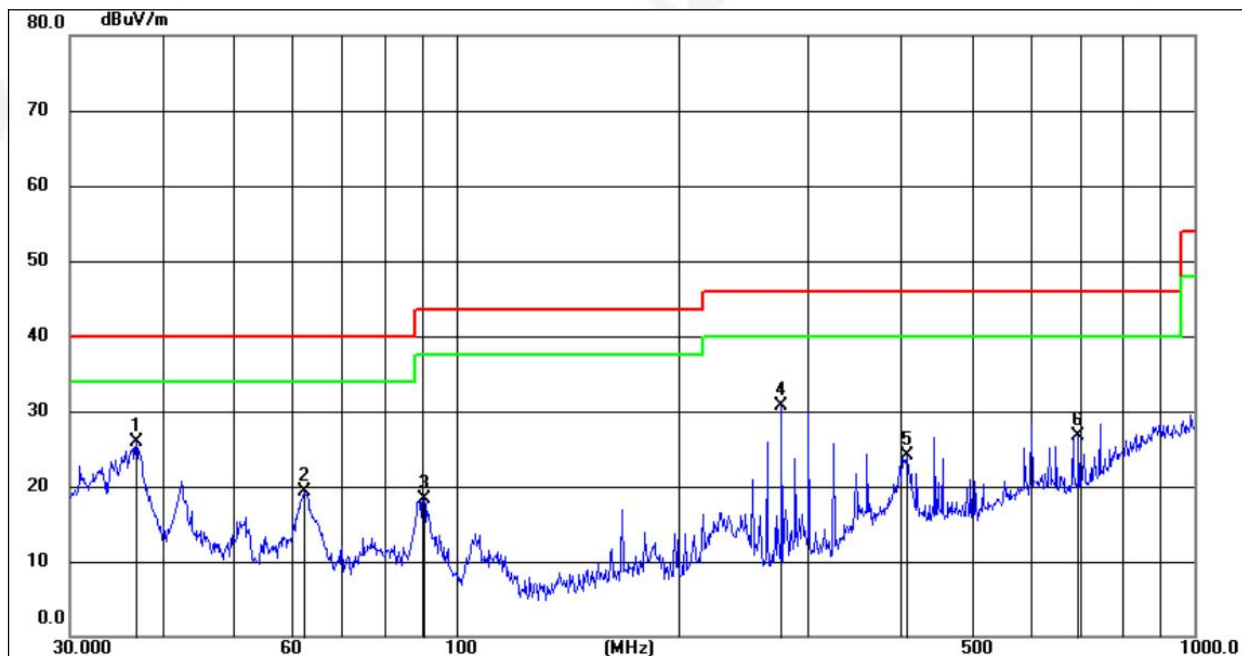


Remarks:

- 1.An initial pre-scan was performed on the peak detector.
- 2.Quasi - Peak measurement were performed at the frequencies with maximized peak emission.
- 3.The emission levels of other frequencies are very lower than the limit and not show in test report.
- 4.Final Level = Reading level + Correct Factor.
- 5.Correct Factor = Antenna factor+ Cable loss factor - Amplifier factor.
- 6.Margin = Measurement Level-Limit.



Temperature:	26℃	Relative Humidity:	54%
Pressure:	101kPa	Polarization:	Vertical
Test Voltage:	DC 3.7V from battery	Test Mode :	GFSK 2M- 2402MHz



No.	Frequency (MHz)	Reading (dBUV)	Factor (dB/m)	Level (dBUV/m)	Limit (dBUV/m)	Margin (dB)	Detector
1	36.8953	43.15	-17.32	25.83	40.00	-14.17	QP
2	62.2128	37.89	-18.54	19.35	40.00	-20.65	QP
3	90.5374	39.85	-21.48	18.37	43.50	-25.13	QP
4	276.1235	49.69	-19.08	30.61	46.00	-15.39	QP
5	407.5144	38.82	-14.77	24.05	46.00	-21.95	QP
6	696.8567	34.32	-7.65	26.67	46.00	-19.33	QP

Remarks:

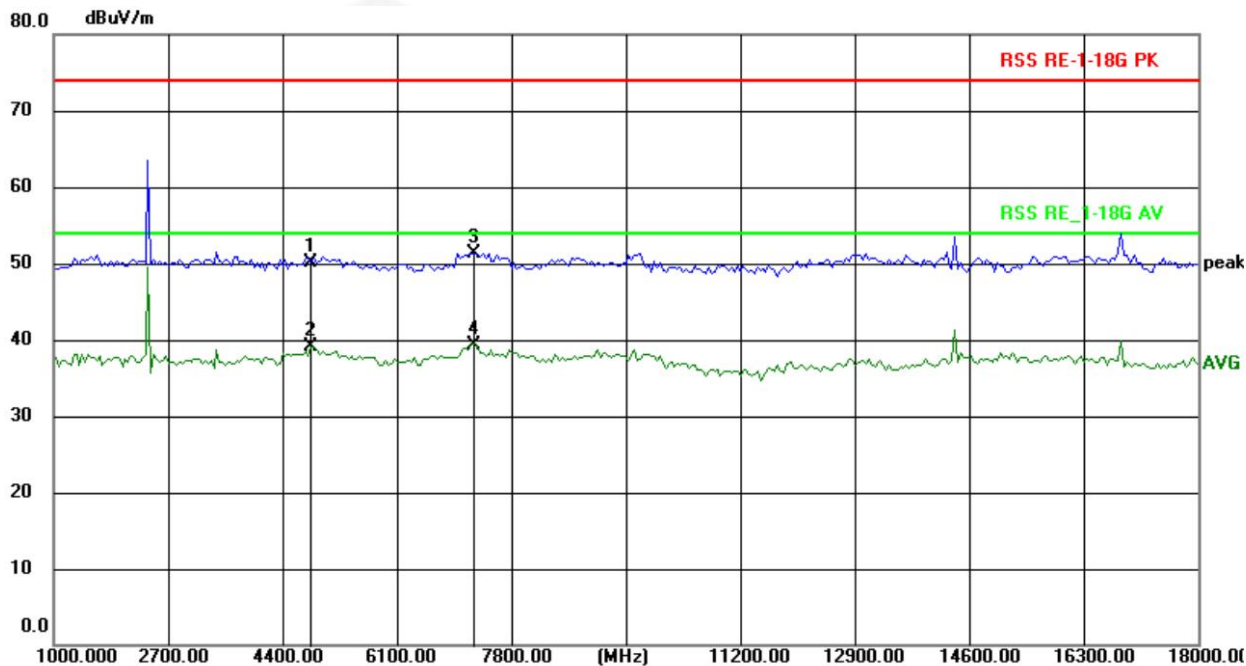
- 1.An initial pre-scan was performed on the peak detector.
- 2.Quasi - Peak measurement were performed at the frequencies with maximized peak emission.
- 3.The emission levels of other frequencies are very lower than the limit and not show in test report.
- 4.Final Level = Reading level + Correct Factor.
- 5.Correct Factor = Antenna factor+ Cable loss factor - Amplifier factor.
- 6.Margin = Measurement Level-Limit.



TEST RESULTS 1GHz~25GHz

Temperature:	26℃	Relative Humidity:	54%
Pressure:	101 kPa	Polarization:	Horizontal
Test Voltage:	DC 3.7V from battery	Test Mode :	GFSK 2M-2402MHz

Note:Pre-scan all modes and recorded the worst case results in this report which is GFSK mode rate 2MHz



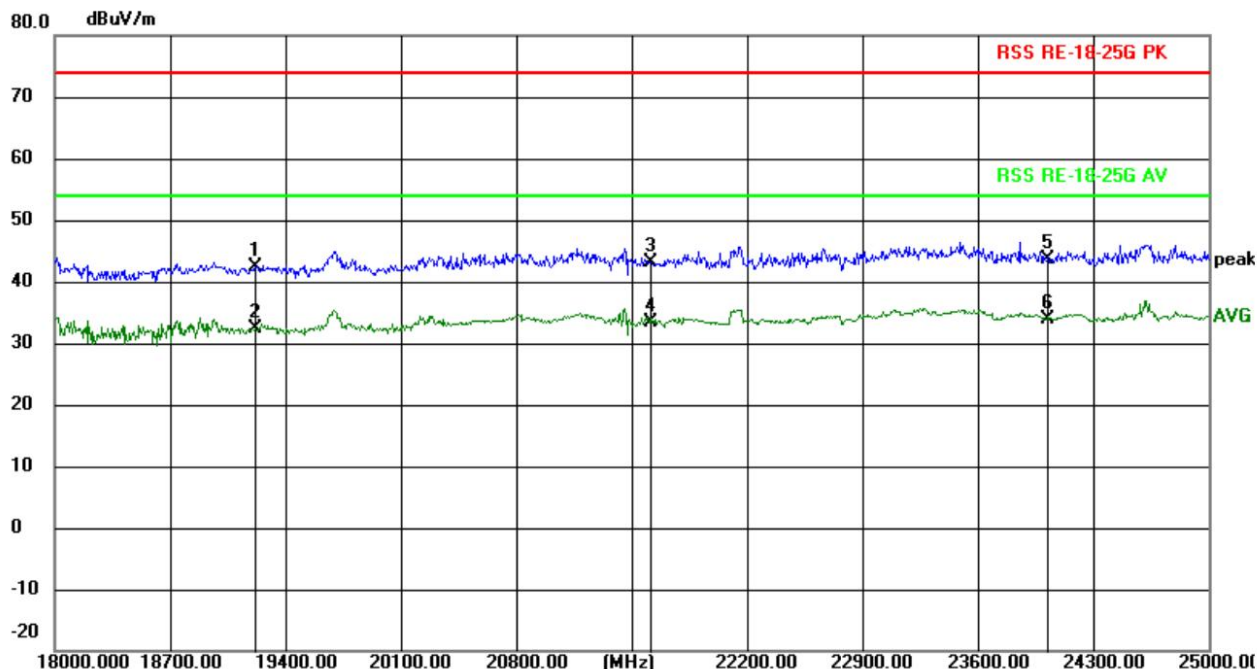
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	4804.000	49.22	0.85	50.07	74.00	-23.93	peak
2	4804.000	38.31	0.85	39.16	54.00	-14.84	AVG
3	7206.000	48.95	2.43	51.38	74.00	-22.62	peak
4	7206.000	36.87	2.43	39.30	54.00	-14.70	AVG

Remark:

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.



Temperature:	26℃	Relative Humidity:	54%
Pressure:	101 kPa	Polarization:	Horizontal
Test Voltage:	DC 3.7V from battery	Test Mode :	GFSK 2M-2402MHz



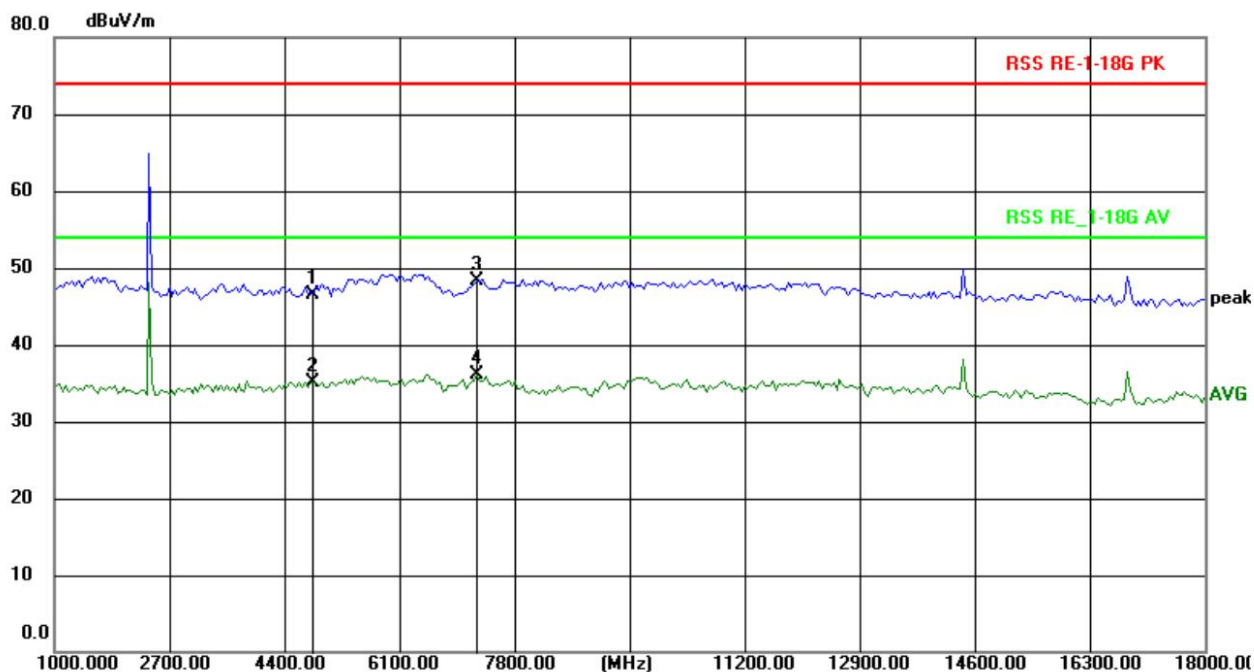
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	19216.000	69.21	-26.90	42.31	74.00	-31.69	peak
2	19218.000	59.25	-26.90	32.35	54.00	-21.65	AVG
3	21618.000	70.12	-26.96	43.16	74.00	-30.84	peak
4	21619.000	60.30	-26.96	33.34	54.00	-20.66	AVG
5	24020.000	70.68	-27.06	43.62	74.00	-30.38	peak
6	24020.000	61.04	-27.06	33.98	54.00	-20.02	AVG

Remark:

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.



Temperature:	26°C	Relative Humidity:	54%
Pressure:	101 kPa	Polarization:	Vertical
Test Voltage:	DC 3.7V from battery	Test Mode :	GFSK 2M-2402MHz



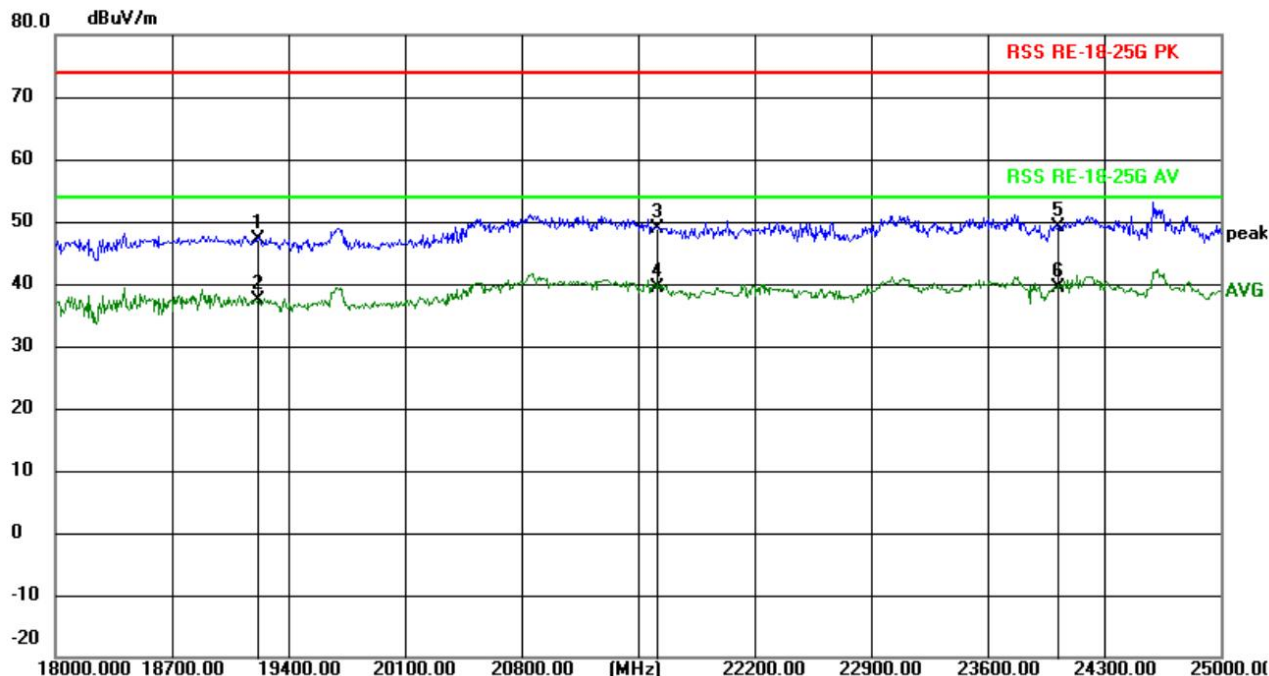
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	4804.000	45.72	0.85	46.57	74.00	-27.43	peak
2	4804.000	34.31	0.85	35.16	54.00	-18.84	AVG
3	7206.000	45.94	2.43	48.37	74.00	-25.63	peak
4	7206.000	33.63	2.43	36.06	54.00	-17.94	AVG

Remark:

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.



Temperature:	26℃	Relative Humidity:	54%
Pressure:	101 kPa	Polarization:	Vertical
Test Voltage:	DC 3.7V from battery	Test Mode :	GFSK 2M-2402MHz



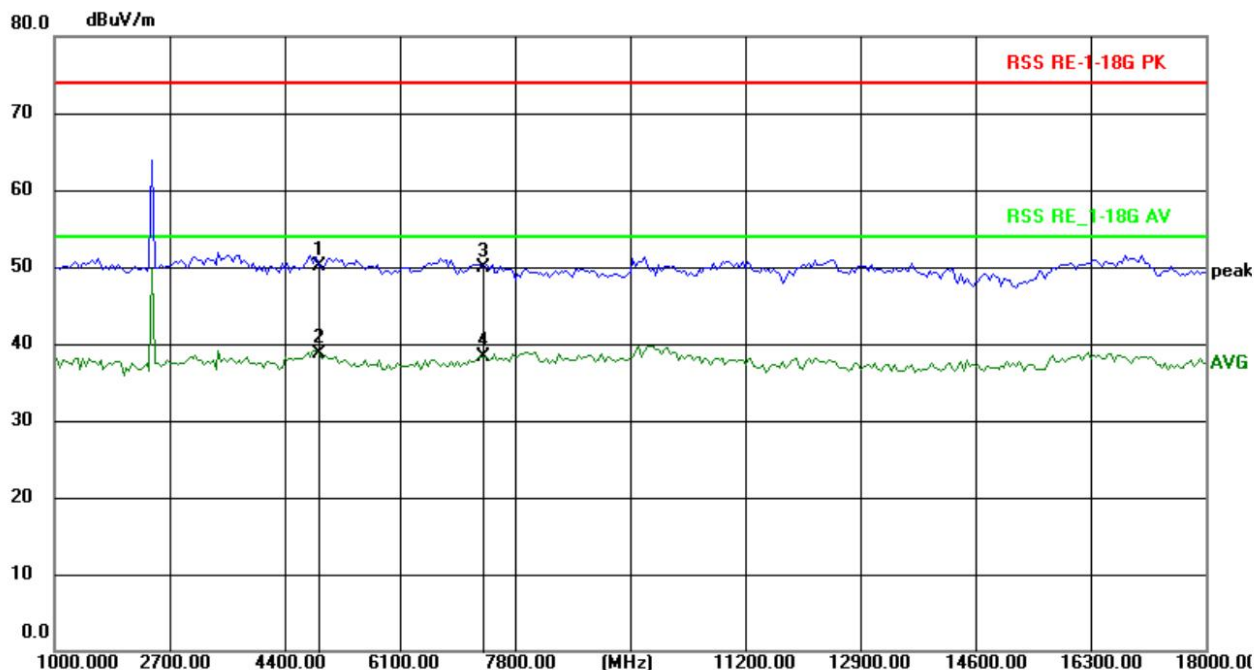
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	19216.000	74.11	-26.90	47.21	74.00	-26.79	peak
2	19218.000	64.25	-26.90	37.35	54.00	-16.65	AVG
3	21618.000	75.72	-26.96	48.76	74.00	-25.24	peak
4	21619.000	66.30	-26.96	39.34	54.00	-14.66	AVG
5	24020.000	76.17	-27.06	49.11	74.00	-24.89	peak
6	24020.000	66.54	-27.06	39.48	54.00	-14.52	AVG

Remark:

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.



Temperature:	26°C	Relative Humidity:	54%
Pressure:	101 kPa	Polarization:	Horizontal
Test Voltage:	DC 3.7V from battery	Test Mode :	GFSK 2M-2440MHz



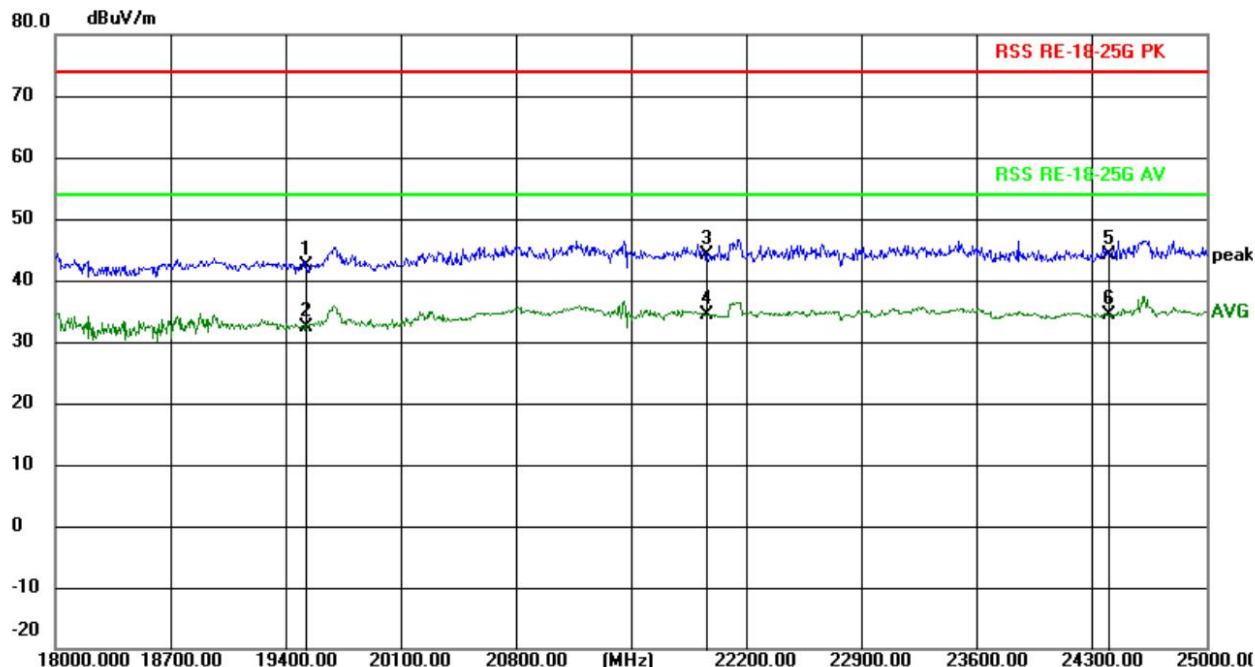
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	4880.000	49.20	0.91	50.11	74.00	-23.89	peak
2	4880.000	37.85	0.91	38.76	54.00	-15.24	AVG
3	7320.000	47.50	2.49	49.99	74.00	-24.01	peak
4	7320.000	35.79	2.49	38.28	54.00	-15.72	AVG

Remark:

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.



Temperature:	26℃	Relative Humidity:	54%
Pressure:	101 kPa	Polarization:	Horizontal
Test Voltage:	DC 3.7V from battery	Test Mode :	GFSK 2M-2440MHz



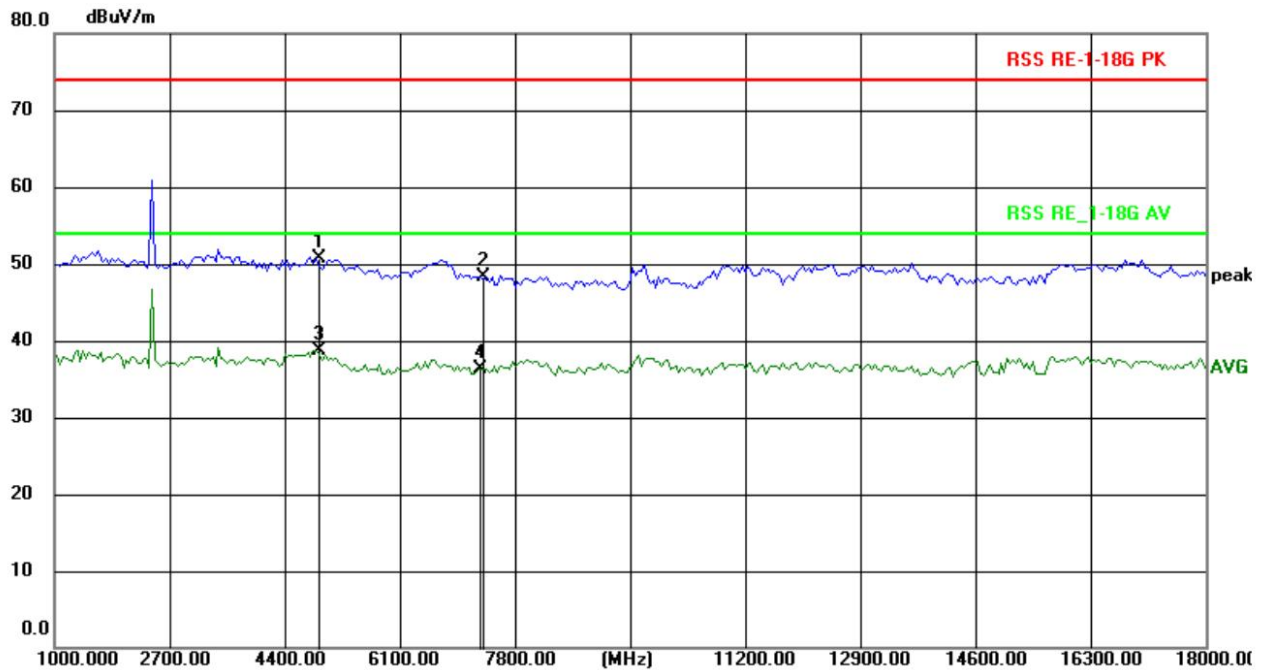
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	19526.000	69.19	-26.90	42.29	74.00	-31.71	peak
2	19526.000	59.19	-26.90	32.29	54.00	-21.71	AVG
3	21960.000	71.14	-26.98	44.16	74.00	-29.84	peak
4	21960.000	61.41	-26.98	34.43	54.00	-19.57	AVG
5	24400.000	71.12	-27.08	44.04	74.00	-29.96	peak
6	24400.000	61.42	-27.08	34.34	54.00	-19.66	AVG

Remark:

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.



Temperature:	26℃	Relative Humidity:	54%
Pressure:	101 kPa	Polarization:	Vertical
Test Voltage:	DC 3.7V from battery	Test Mode :	GFSK 2M-2440MHz



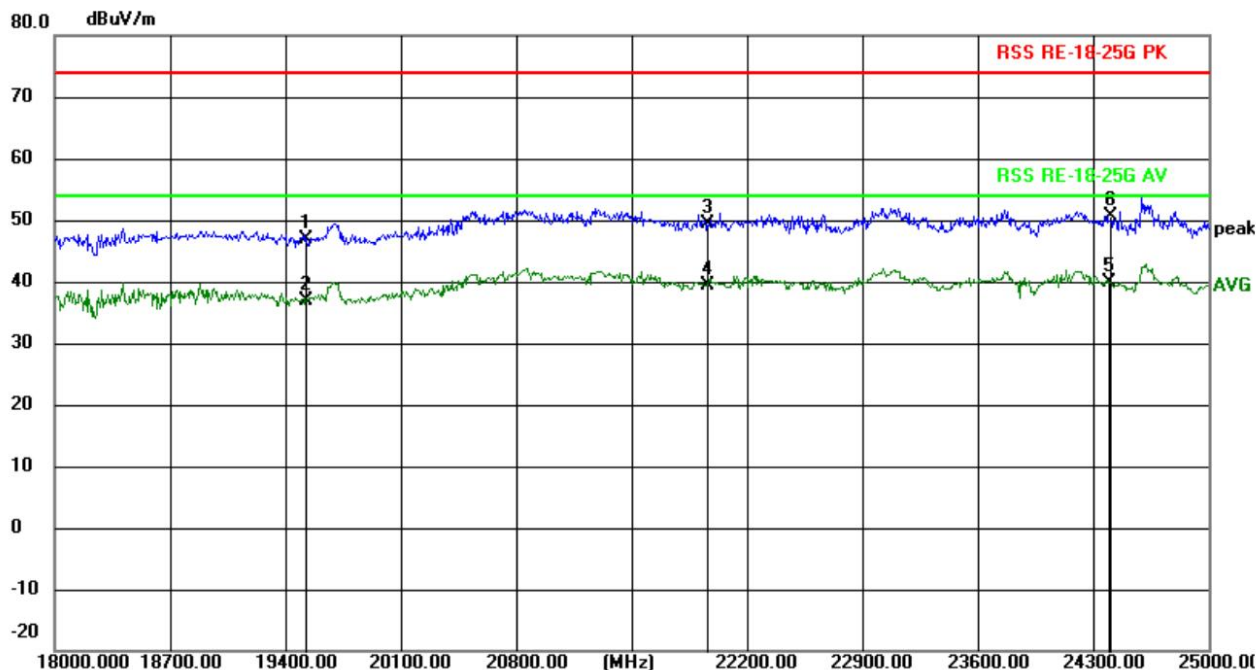
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	4880.000	49.87	0.91	50.78	74.00	-23.22	peak
2	7320.000	45.72	2.49	48.21	74.00	-25.79	peak
3	4880.000	37.76	0.91	38.67	54.00	-15.33	AVG
4	7290.000	33.91	2.48	36.39	54.00	-17.61	AVG

Remark:

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.



Temperature:	26℃	Relative Humidity:	54%
Pressure:	101 kPa	Polarization:	Vertical
Test Voltage:	DC 3.7V from battery	Test Mode :	GFSK 2M-2440MHz



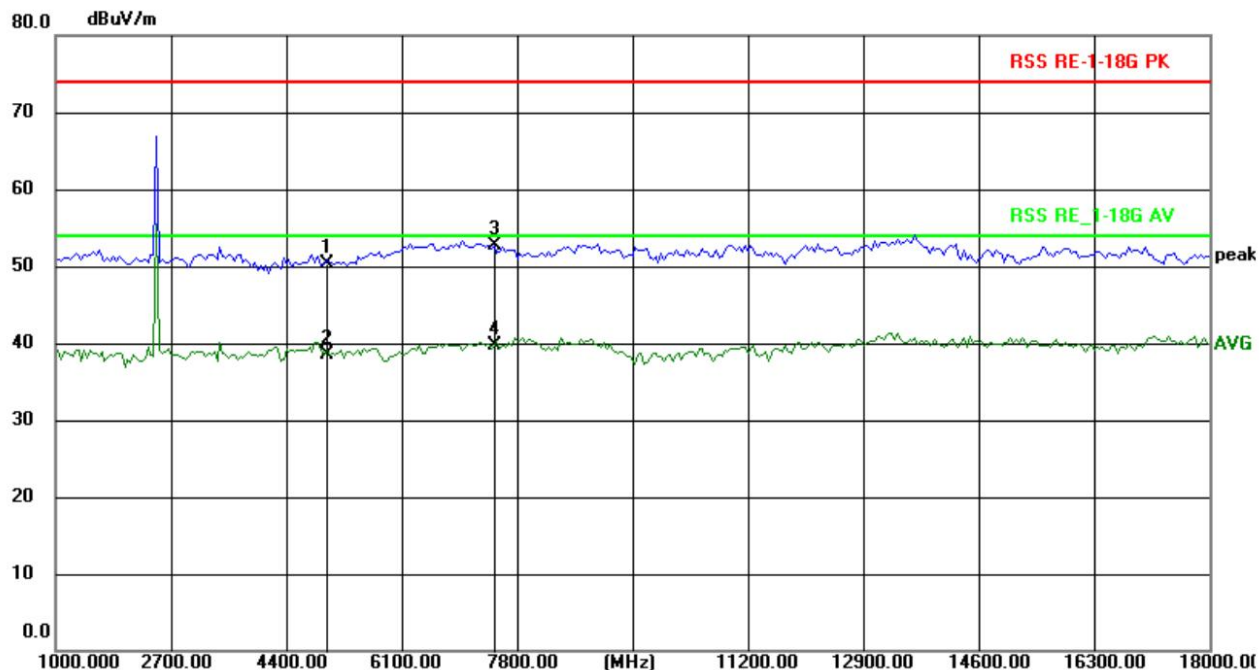
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	19520.000	73.69	-26.90	46.79	74.00	-27.21	peak
2	19526.000	63.69	-26.90	36.79	54.00	-17.21	AVG
3	21960.000	76.34	-26.98	49.36	74.00	-24.64	peak
4	21962.000	66.41	-26.98	39.43	54.00	-14.57	AVG
5	24398.000	66.92	-27.08	39.84	54.00	-14.16	AVG
6	24400.000	77.81	-27.08	50.73	74.00	-23.27	peak

Remark:

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.



Temperature:	26℃	Relative Humidity:	54%
Pressure:	101 kPa	Polarization:	Horizontal
Test Voltage:	DC 3.7V from battery	Test Mode :	GFSK 2M-2480MHz



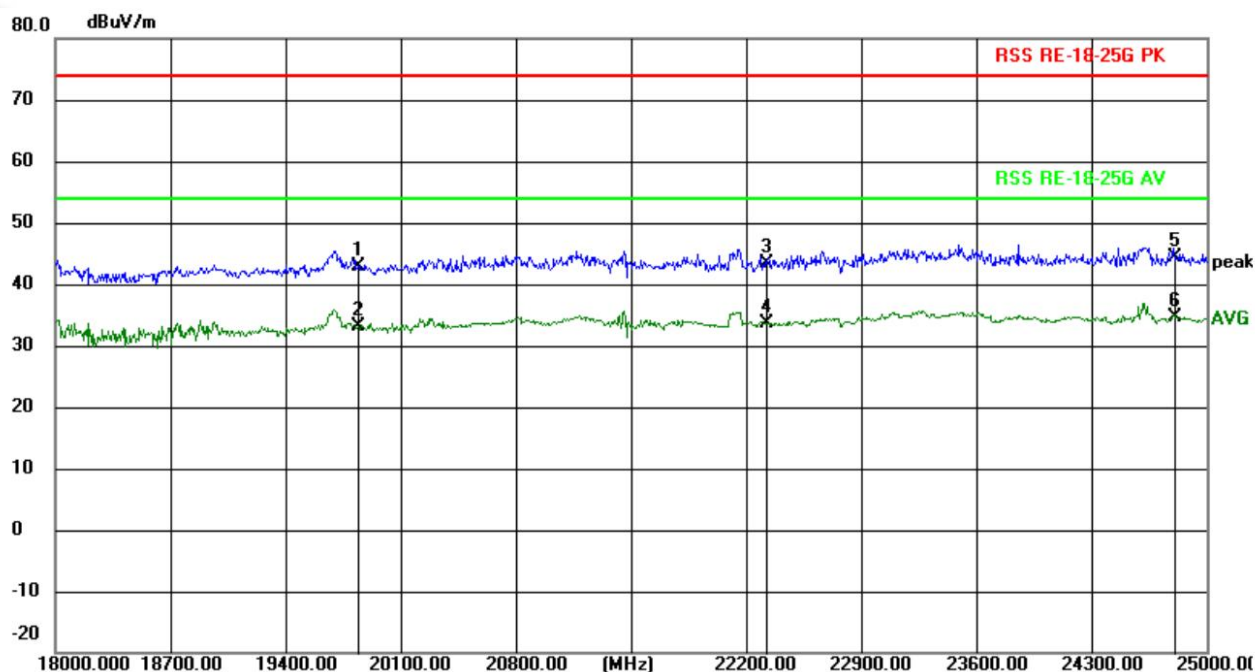
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	4960.000	49.35	0.97	50.32	74.00	-23.68	peak
2	4960.000	37.60	0.97	38.57	54.00	-15.43	AVG
3	7440.000	50.23	2.56	52.79	74.00	-21.21	peak
4	7440.000	37.12	2.56	39.68	54.00	-14.32	AVG

Remark:

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.



Temperature:	26℃	Relative Humidity:	54%
Pressure:	101 kPa	Polarization:	Horizontal
Test Voltage:	DC 3.7V from battery	Test Mode :	GFSK 2M-2480MHz



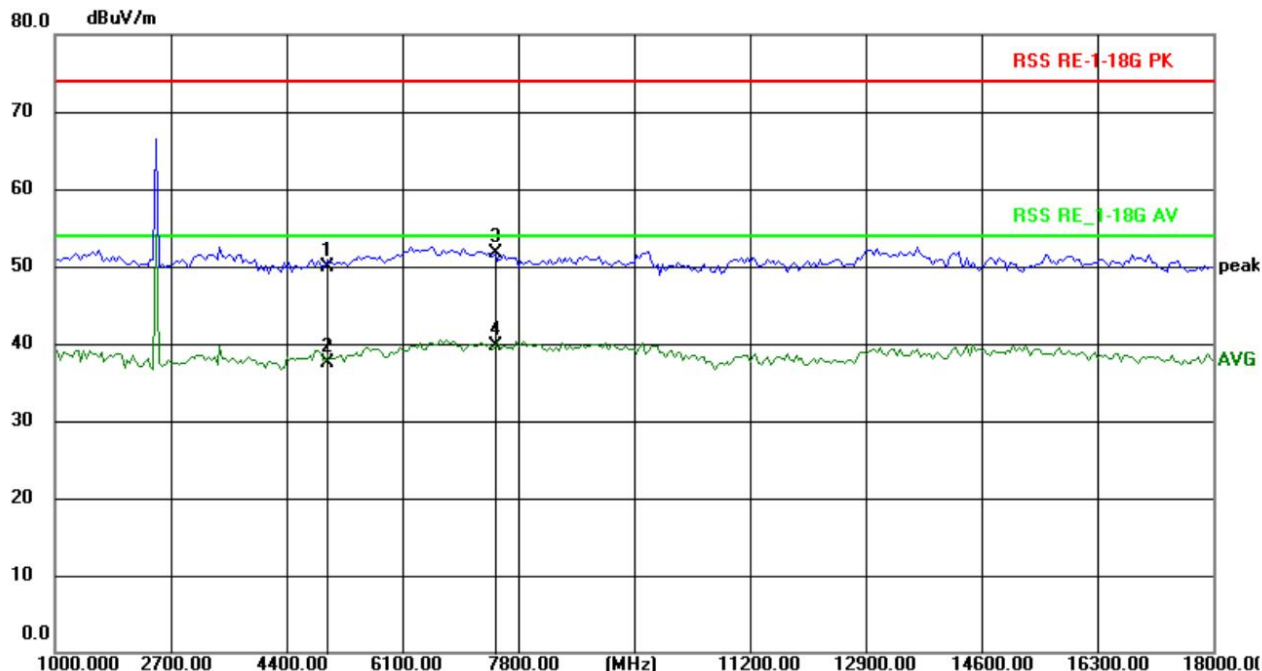
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	19840.000	69.66	-26.90	42.76	74.00	-31.24	peak
2	19841.000	60.06	-26.90	33.16	54.00	-20.84	AVG
3	22320.000	70.40	-26.99	43.41	74.00	-30.59	peak
4	22326.000	60.54	-26.99	33.55	54.00	-20.45	AVG
5	24800.000	71.48	-27.09	44.39	74.00	-29.61	peak
6	24804.000	61.74	-27.09	34.65	54.00	-19.35	AVG

Remark:

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.



Temperature:	26℃	Relative Humidity:	54%
Pressure:	101 kPa	Polarization:	Vertical
Test Voltage:	DC 3.7V from battery	Test Mode :	GFSK 2M-2480MHz



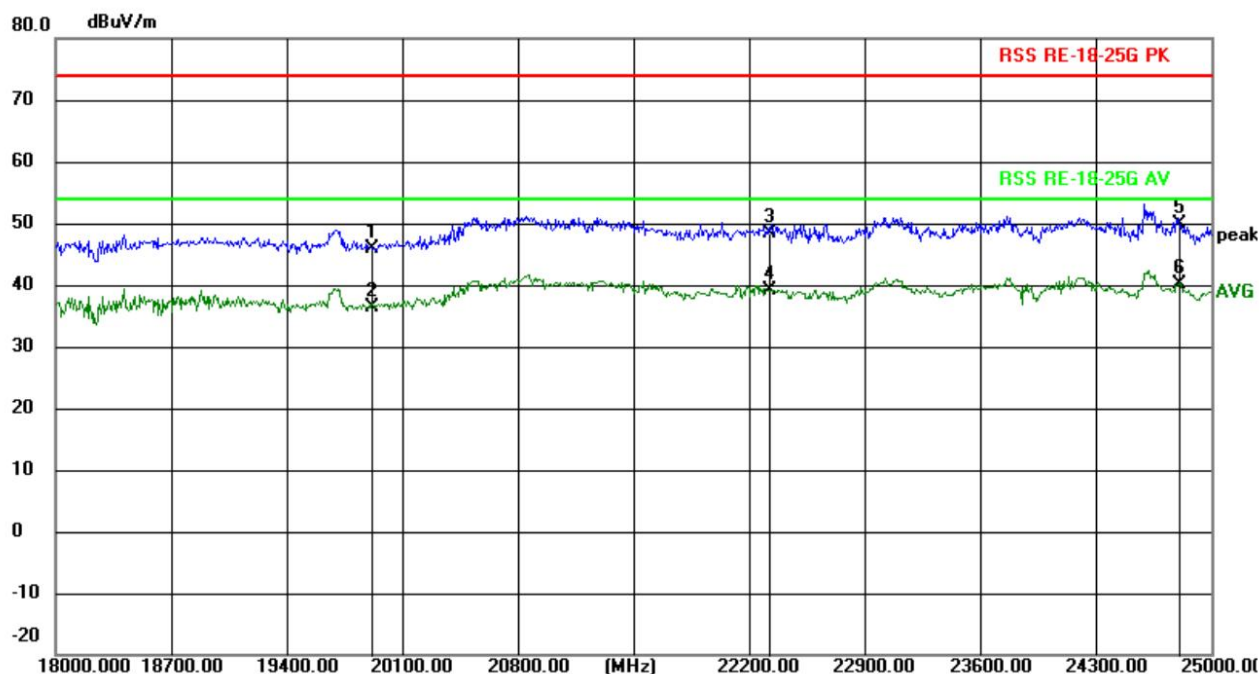
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	4960.000	48.85	0.97	49.82	74.00	-24.18	peak
2	4960.000	36.60	0.97	37.57	54.00	-16.43	AVG
3	7440.000	49.23	2.56	51.79	74.00	-22.21	peak
4	7440.000	37.12	2.56	39.68	54.00	-14.32	AVG

Remark:

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.



Temperature:	26°C	Relative Humidity:	54%
Pressure:	101 kPa	Polarization:	Vertical
Test Voltage:	DC 3.7V from battery	Test Mode :	GFSK 2M-2480MHz



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	19918.000	72.74	-26.90	45.84	74.00	-28.16	peak
2	19918.000	63.38	-26.90	36.48	54.00	-17.52	AVG
3	22320.000	75.32	-26.99	48.33	74.00	-25.67	peak
4	22320.000	66.04	-26.99	39.05	54.00	-14.95	AVG
5	24800.000	76.98	-27.09	49.89	74.00	-24.11	peak
6	24800.000	67.24	-27.09	40.15	54.00	-13.85	AVG

Remark:

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.



5. RADIATED BAND EMISSION MEASUREMENT

5.1 TEST REQUIREMENT

Test Requirement:	FCC Part15 C Section 15.209 and 15.205 RSS-Gen.8.9&RSS-Gen.8.10				
Test Method:	ANSI C63.10-2020+Cor 1-2023 + C63.10a-2024+ Errata to C63.10a-2024				
Test Frequency Range:	All of the restrict bands were tested, only the worst band's (2390MHz to 2500MHz) data was showed.				
Test site:	Measurement Distance: 3m				
Receiver setup:	Frequency	Detector	RBW	VBW	Value
	Above 1GHz	Peak	1MHz	3MHz	Peak
		Average	1MHz	3MHz	Average

LIMITS OF RADIATED EMISSION MEASUREMENT (Above 1000MHz)

FREQUENCY (MHz)	Class B (dBuV/m) (at 3M)	
	PEAK	AVERAGE
Above 1000	74	54

Notes:

- (1) The limit for radiated test was performed according to FCC PART 15C.
- (2) The tighter limit applies at the band edges.
- (3) Emission level (dBuV/m)=20log Emission level (uV/m).

5.2 TEST PROCEDURE

Above 1GHz test procedure as below:

- a. 1. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. 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.
- d. 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 rota table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dBmargin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.
- g. Test the EUT in the lowest channel, the Highest channel

Note:

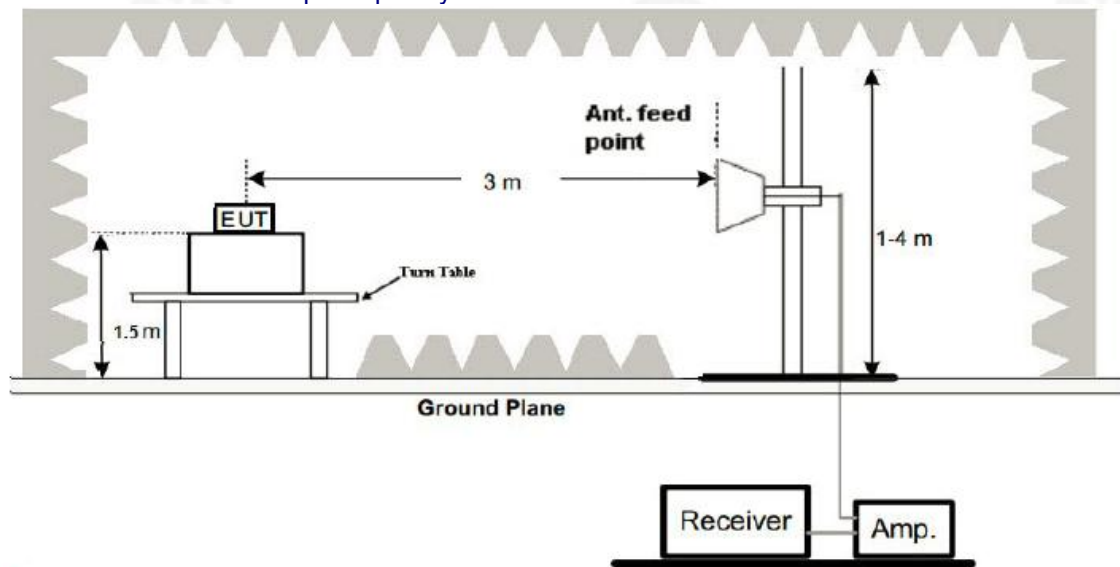
Both horizontal and vertical antenna polarities were tested and performed pretest to three orthogonal axis. The worst case emissions were reported

5.3 DEVIATION FROM TEST STANDARD NO DEVIATION



5.4 TEST SETUP

Radiated Emission Test-Up Frequency Above 1GHz



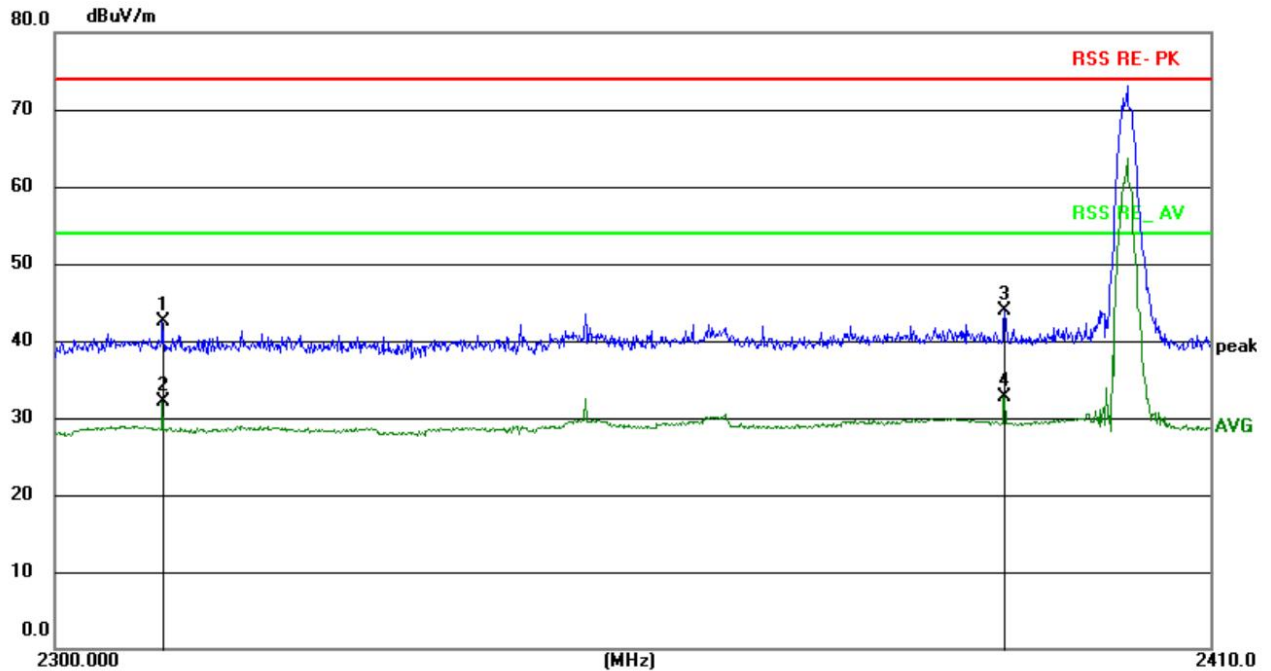
5.5 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of 3.3 Unless otherwise a special operating condition is specified in the follows during the testing.



5.6 TEST RESULT

Temperature:	26℃	Relative Humidity:	54%
Pressure:	101 kPa	Polarization:	Horizontal
Test Voltage:	DC 3.7V from battery	Test Mode :	2402MHz



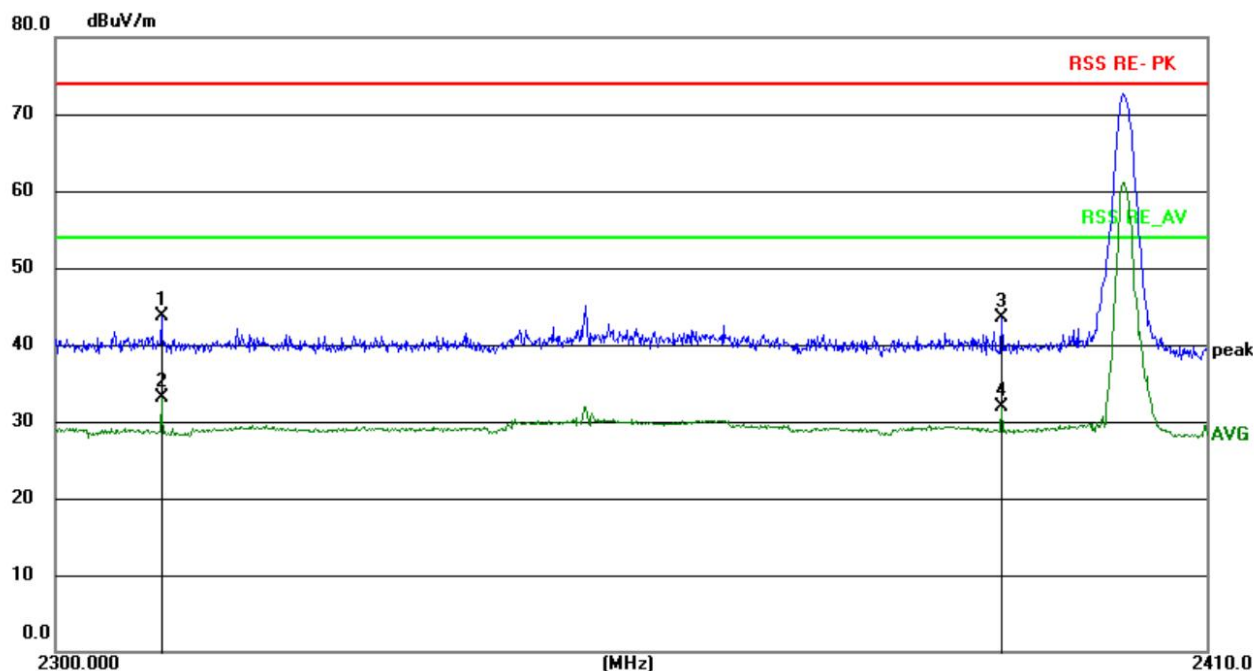
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	2310.015	49.60	-7.13	42.47	74.00	-31.53	peak
2	2310.015	39.19	-7.13	32.06	54.00	-21.94	AVG
3	2390.042	51.00	-7.11	43.89	74.00	-30.11	peak
4	2390.042	39.75	-7.11	32.64	54.00	-21.36	AVG

Remark:

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.



Temperature:	26℃	Relative Humidity:	54%
Pressure:	101 kPa	Polarization:	Vertical
Test Voltage:	DC 3.7V from battery	Test Mode :	2402MHz



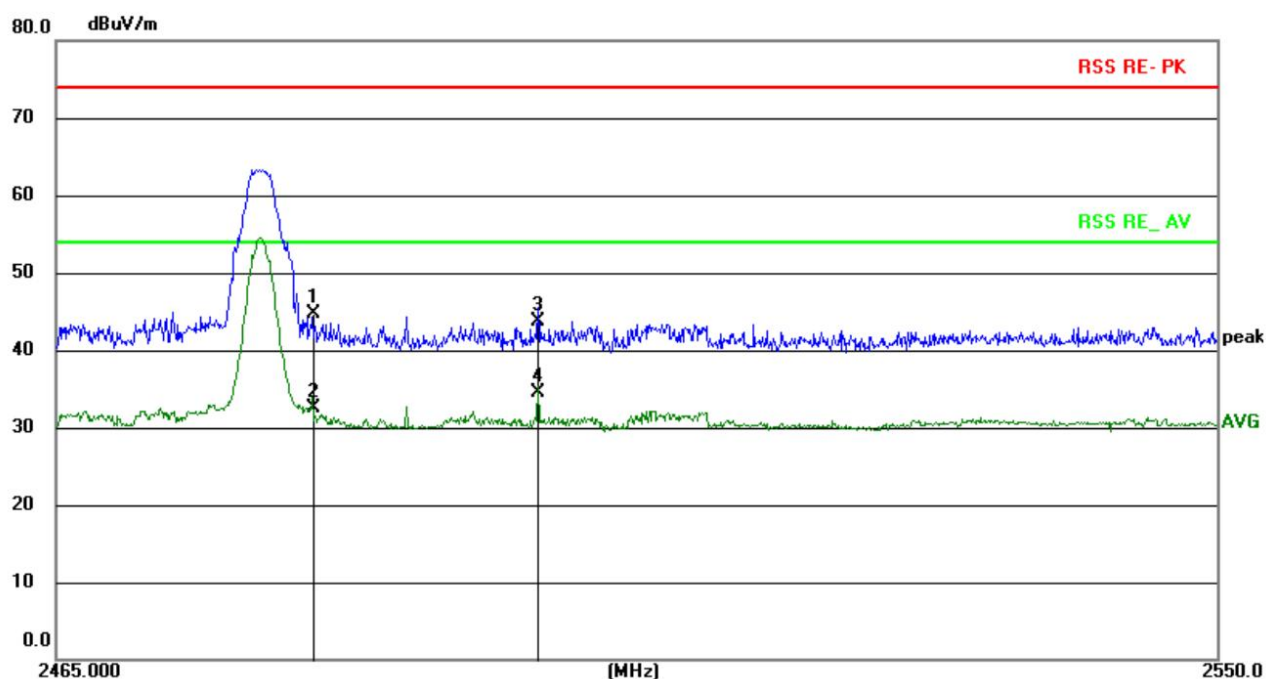
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	2309.907	50.86	-7.13	43.73	74.00	-30.27	peak
2	2309.907	40.21	-7.13	33.08	54.00	-20.92	AVG
3	2390.042	50.52	-7.11	43.41	74.00	-30.59	peak
4	2390.042	38.93	-7.11	31.82	54.00	-22.18	AVG

Remark:

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.



Temperature:	26℃	Relative Humidity:	54%
Pressure:	101 kPa	Polarization:	Horizontal
Test Voltage:	DC 3.7V from battery	Test Mode :	2480MHz



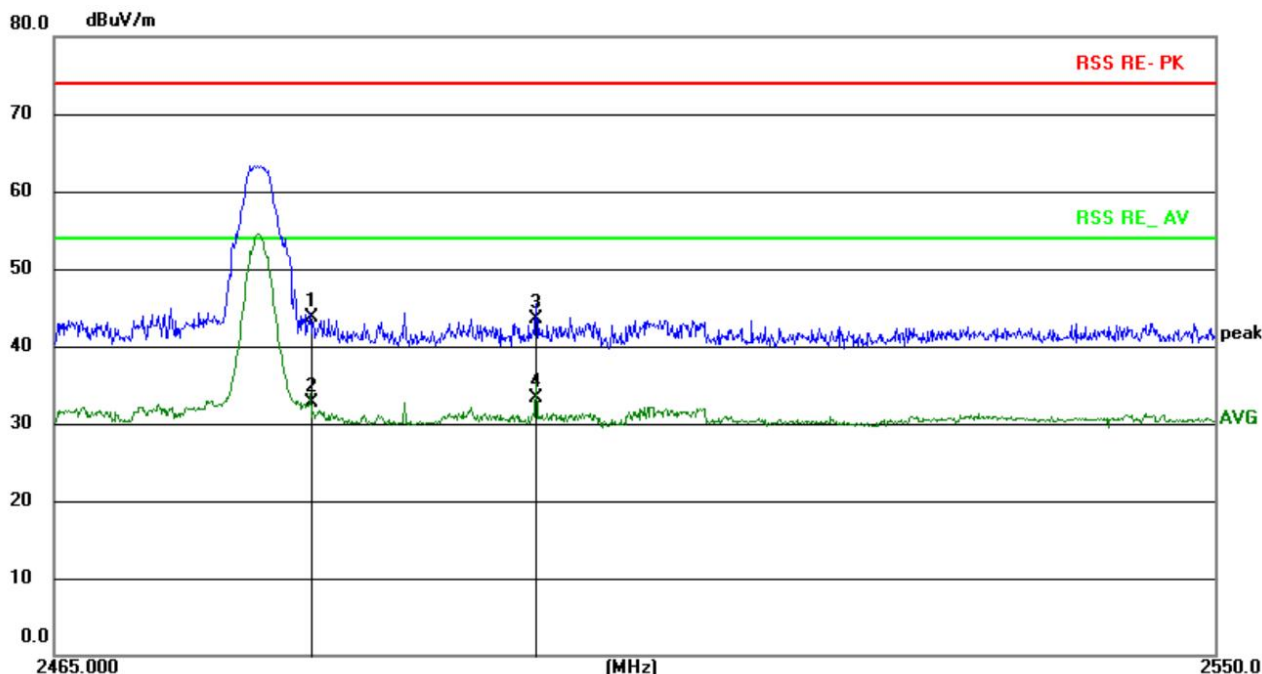
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	2483.538	51.73	-7.10	44.63	74.00	-29.37	peak
2	2483.538	39.61	-7.10	32.51	54.00	-21.49	AVG
3	2499.925	50.71	-7.09	43.62	74.00	-30.38	peak
4	2499.925	41.68	-7.09	34.59	54.00	-19.41	AVG

Remark:

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.



Temperature:	26℃	Relative Humidity:	54%
Pressure:	101 kPa	Polarization:	Vertical
Test Voltage:	DC 3.7V from battery	Test Mode :	2480MHz



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	2483.538	50.79	-7.10	43.69	74.00	-30.31	peak
2	2483.538	39.79	-7.10	32.69	54.00	-21.31	AVG
3	2499.925	50.66	-7.09	43.57	74.00	-30.43	peak
4	2499.925	40.48	-7.09	33.39	54.00	-20.61	AVG

Remark:

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.



6. POWER SPECTRAL DENSITY TEST

Test Requirement:	FCC part 15.247 RSS-247 Section 6.3.1
Test Method:	ANSIC63.10-2020+Cor 1-2023 + C63.10a-2024+ Errata to C63.10a-2024

6.1 APPLIED PROCEDURES / LIMIT

FCC Part15 (15.247) , Subpart C RSS-247 Section 6.3.1				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247	Power Spectral Density	8dBm/3kHz	2400-2483.5	PASS

6.2 TEST PROCEDURE

1. Set analyzer center frequency to DTS channel center frequency.
2. Set the span to 1.5 times the DTS bandwidth.
3. Set the RBW to: $3\text{ kHz} \leq \text{RBW} \leq 100\text{ kHz}$.
4. Set the VBW $\geq 3 \times \text{RBW}$.
5. Detector = peak.
6. Sweep time = auto couple.
7. Trace mode = max hold.
8. Allow trace to fully stabilize.
9. Use the peak marker function to determine the maximum amplitude level within the RBW.
10. If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

6.3 DEVIATION FROM STANDARD

No deviation.

6.4 TEST SETUP



6.5 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 6.4 Unless otherwise a special operating condition is specified in the follows during the testing.



6.6 TEST RESULT

Measurement Data : The detailed test data see Appendix I



7. 6 DB BANDWIDTH & 99% OCCUPIED BANDWIDTH

Test Requirement:	FCC part 15.247 RSS-247 Section 6.3.1 RSS-Gen Section 6.7
Test Method:	ANSIC63.10-2020+Cor 1-2023 + C63.10a-2024+ Errata to C63.10a-2024

7.1 APPLIED PROCEDURES / LIMIT

FCC Part15 (15.247) , Subpart C RSS-247 Section 6.3.1				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247(a)(2)	Bandwidth	$\geq 500\text{KHz}$ (6dB Occupied Bandwidth)	2400-2483.5	PASS

7.2 TEST PROCEDURE

99% BANDWIDTH

- The instrument center frequency is set to the nominal EUT channel center frequency. The frequency span for the spectrum analyzer shall be between 1.5 times and 5.0 times the OBW.
- The nominal IF filter bandwidth (3 dB RBW) shall be in the range of 1% to 5% of the OBW, and VBW shall be at least three times the RBW, unless otherwise specified by the applicable requirement.
- Set the reference level of the instrument as required, keeping the signal from exceeding the maximum input mixer level for linear operation. In general, the peak of the spectral envelope shall be more than $[10 \log (\text{OBW}/\text{RBW})]$ below the reference level. Specific guidance is given in 4.1.6.2.
- Step a) through step c) might require iteration to adjust within the specified range.
- Video averaging is not permitted. Where practical, a sample detection and single sweep mode shall be used. Otherwise, peak detection and max-hold mode (until the trace stabilizes) shall be used.
- Use the 99% power bandwidth function of the instrument (if available) and report the measured bandwidth.
- If the instrument does not have a 99% power bandwidth function, then the trace data points are recovered and directly summed in linear power 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; that frequency is recorded as the lower frequency. The process is repeated until 99.5% of the total is reached; that frequency is recorded as the upper frequency. The 99% power bandwidth is the difference between these two frequencies.
- The occupied bandwidth shall be reported by providing spectral plot(s) of the measuring instrument display; the plot axes and the scale units per division shall be clearly labeled. Tabular data may be reported in addition to the plot(s).

6 Db bandwidth

- Set RBW = 100 kHz.
- Set the video bandwidth (VBW) $\geq 3\text{RBW}$.
- Detector = Peak.
- Trace mode = max hold.
- Sweep = auto couple.
- Allow the trace to stabilize.
- Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by -6 dB relative to the maximum level measured in the fundamental emission.

7.3 DEVIATION FROM STANDARD

No deviation.



7.4 TEST SETUP



7.5 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 7.4 Unless otherwise a special operating condition is specified in the follows during the testing.

7.6 TEST RESULT

Measurement Data : The detailed test data see Appendix I



8. PEAK OUTPUT POWER TEST

Test Requirement:	FCC part 15.247 RSS-247 Section 6.3.2
Test Method:	ANSIC63.10-2020+Cor 1-2023 + C63.10a-2024+ Errata to C63.10a-2024

8.1 APPLIED PROCEDURES/LIMIT

FCC Part15 (15.247) , Subpart C RSS-247 Section 6.3.2				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247(b)(3)	Peak Output Power	1 watt or 30dBm	2400-2483.5	PASS
RSS-247 Section 6.3.2	EIRP Output Power	1 watt or 30dBm	2400-2483.5	PASS
		4 watt or 36dBm	2400-2483.5	PASS

8.2 TEST PROCEDURE

- Set the RBW $\geq$ DTS bandwidth.
- Set VBW $\geq$ [3 $\times$ RBW].
- Set span $\geq$ [3 $\times$ RBW].
- Sweep time = auto couple.
- Detector = peak.
- Trace mode = max hold.
- Allow trace to fully stabilize.
- Use peak marker function to determine the peak amplitude level.

8.3 DEVIATION FROM STANDARD

No deviation.

8.4 TEST SETUP



8.5 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 8.4 Unless otherwise a special operating condition is specified in the follows during the testing.

8.6 TEST RESULT

Measurement Data : The detailed test data see Appendix I



9. CONDUCTED BAND EDGE AND SPURIOUS EMISSION

Test Requirement:	FCC part 15.247 (b)(3) RSS-247 Section 6.3.2
Test Method:	ANSIC63.10-2020+Cor 1-2023 + C63.10a-2024+ Errata to C63.10a-2024

9.1 APPLICABLE STANDARD

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 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) & RSS-Gen 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)).

9.2 TEST PROCEDURE

Using the following spectrum analyzer setting:

- A) Set the RBW = 100KHz.
- B) Set the VBW = 300KHz.
- C) Sweep time = auto couple.
- D) Detector function = peak.
- E) Trace mode = max hold.
- F) Allow trace to fully stabilize.

9.3 DEVIATION FROM STANDARD

No deviation.

9.4 TEST SETUP



9.5 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 9.4 Unless otherwise a special operating condition is specified in the follows during the testing.

9.6 TEST RESULTS

Note: The conducted spurious emissions test has compensated for the maximum line loss measurement, and the recorded data represents the worst-case scenario.

Measurement Data : The detailed test data see Appendix I



11. ANTENNA REQUIREMENT

Standard requirement:	FCC Part15 C Section 15.203 /247(c) RSS-Gen Section 6.8
RSS-Gen 6.8 requirement: For intentional device, according to & RSS-Gen 6.8 requirement: For intentional device, 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: 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. 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(c) (1)(i) requirement: (i) Systems operating in the 2402-2483.5 MHz band that is used exclusively for fixed. Point-to-point operations may employ transmitting antennas with directional gain greater than 6dBi provided the maximum conducted output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6dBi.	
EUT Antenna:	
The antenna is Cable Antenna, the best case gain of the antennas is 1.4 dBi, reference to the appendix II for details	



12. TEST SETUP PHOTO

Reference to the appendix I for details.

13. EUT CONSTRUCTIONAL DETAILS

Reference to the appendix II for details.

***** END OF REPORT *****