



**CFR 47 FCC PART 15 SUBPART C
ISED RSS-247 ISSUE 2**

CERTIFICATION TEST REPORT

For

**IEEE 802.11b/g/n/a/ac 2T2R USB WiFi Module
Integrated BT 2.1+EDR/4.2/5.0**

MODEL NUMBER: SKI.WB638BU.2_668BU

FCC ID: 2AR82-SKIWB668BU2

IC: 24728-SKIWB668BU2

REPORT NUMBER: 4789861913-2

ISSUE DATE: March 23, 2021

Prepared for

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The results reported herein have been performed in accordance with the laboratory's terms of accreditation. This report shall not be reproduced except in full without the written approval of the Laboratory. The results in this report apply to the test sample(s) mentioned above at the time of the testing period only and are not to be used to indicate applicability to other similar products. This report does not imply that the product(s) has met the criteria for certification.



Revision History

<u>Rev.</u>	<u>Issue Date</u>	<u>Revisions</u>	<u>Revised By</u>
V0	03/23/2021	Initial Issue	

Note: This report is based on 4789476783-2 which is issued by UL Verification Services (Guangzhou) Co., Ltd, Song Shan Lake Branch at June 2, 2020. The EUT had already applied for the FCC ID, the customer changed two kinds of antenna, one is called KTC antenna and the other one called INNO-LINK antenna. So we only added the Radiated Unwanted Emissions and conducted output power tests in this report. For other data, please refer to the original report.



Summary of Test Results			
Clause	Test Items	FCC/ISED Rules	Test Results
1	Conducted Output Power	FCC 15.247 (b) (1) RSS-247 Clause 5.1 (b)	Pass
2	Radiated Bandedge and Spurious	FCC 15.247 (d) FCC 15.209 FCC 15.205 RSS-247 Clause 5.5 RSS-GEN Clause 8.9 RSS-GEN Clause 8.10	Pass
3	Antenna Requirement	FCC 15.203 RSS-GEN Clause 6.8	Pass

Note:
1.This test report is only published to and used by the applicant, and it is not for evidence purpose in China.
2.The measurement result for the sample received is <Pass> according to < CFR 47 FCC PART 15 SUBPART C >< ISED RSS-247 > when <Accuracy Method> decision rule is applied.



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1. ATTESTATION OF TEST RESULTS

Applicant Information

Company Name: Guangzhou Shikun Electronics Co., Ltd
Address: NO.6 Liankun Road,Huangpu District,Guangzhou,China

Manufacturer Information

Company Name: Guangzhou Shikun Electronics Co., Ltd
Address: NO.6 Liankun Road,Huangpu District,Guangzhou,China

EUT Description

EUT Name IEEE 802.11b/g/n/a/ac 2T2R USB WiFi Module
Integrated BT 2.1+EDR/4.2/5.0
Model SKI.WB638BU.2_668BU
Sample Status Normal
Sample ID 3722611
Sample Received date March 2, 2021
Date Tested March 2 ~ 23, 2021

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
CFR 47 FCC PART 15 SUBPART C	PASS
ISED RSS-247 Issue 2	PASS
ISED RSS-GEN Issue 5	PASS

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2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with KDB 558074 D01 15.247 Meas Guidance v05r02, KDB 414788 D01 Radiated Test Site v01r01, CFR 47 FCC Part2, CFR 47 FCC Part 15, ANSI C63.10-2013, ISED RSS-247 Issue 2 and ISED RSS-GEN Issue 5.

3. FACILITIES AND ACCREDITATION

Accreditation Certificate	<p>A2LA (Certificate No.: 4102.01) UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. has been assessed and proved to be in compliance with A2LA.</p> <p>FCC (FCC Designation No.: CN1187) UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. Has been recognized to perform compliance testing on equipment subject to the Commission's Declaration of Conformity (DoC) and Certification rules</p> <p>ISED (Company No.: 21320) UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. has been registered and fully described in a report filed with ISED. The Company Number is 21320 and the test lab Conformity Assessment Body Identifier (CABID) is CN0046.</p> <p>VCCI (Registration No.: G-20019, R-20004, C-20012 and T-20011) UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. has been assessed and proved to be in compliance with VCCI, the Membership No. is 3793. Facility Name: Chamber D, the VCCI registration No. is G-20019 and R-20004 Shielding Room B , the VCCI registration No. is C-20012 and T-20011</p>
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Note:

1. All tests measurement facilities use to collect the measurement data are located at Building 10, Innovation Technology Park, Song Shan Lake Hi tech Development Zone, Dongguan, 523808, China.
2. The test anechoic chamber in UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch had been calibrated and compared to the open field sites and the test anechoic chamber is shown to be equivalent to or worst case from the open field site.
3. For below 30MHz, lab had performed measurements at test anechoic chamber and comparing to measurements obtained on an open field site. And these measurements below 30MHz had been correlated to measurements performed on an OFS.



4. CALIBRATION AND UNCERTAINTY

4.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations, and is traceable to recognized national standards.

4.2. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

Test Item	Uncertainty
Conduction emission	3.62 dB
Radiated Emission (Included Fundamental Emission) (9 kHz ~ 30 MHz)	2.2 dB
Radiated Emission (Included Fundamental Emission) (30 MHz ~ 1 GHz)	4.00 dB
Radiated Emission (Included Fundamental Emission) (1 GHz to 26 GHz)	5.78 dB (1 GHz ~ 18 GHz)
	5.23 dB (18 GHz ~ 26 GHz)
Duty Cycle	±0.028%
20dB Emission Bandwidth and 99% Occupied Bandwidth	±0.0196%
Carrier Frequency Separation	±1.9%
Maximum Conducted Output Power	±0.743 dB
Number of Hopping Channel	±1.9%
Time of Occupancy	±0.028%
Conducted Band-edge Compliance	±1.328 dB
Conducted Unwanted Emissions In Non-restricted Frequency Bands	±0.746 dB (9 kHz ~ 1 GHz)
	±1.328dB (1 GHz ~ 26 GHz)
Note: This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.	



5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

EUT Name	IEEE 802.11b/g/n/a/ac 2T2R USB WiFi Module Integrated BT 2.1+EDR/4.2/5.0	
Model	SKI.WB638BU.2_668BU	
Product Description (Bluetooth)	Operation Frequency	2402 MHz ~ 2480 MHz
	Modulation Type	Data Rate
	GFSK	1Mbps
	π/4-DQPSK	2Mbps
	8DPSK	3Mbps
Bluetooth Version	5.0BR+EDR	
Rated Input	DC 3.3V	
Permissive Change	C2PC	

5.2. MAXIMUM OUTPUT POWER

Modulation	Frequency (MHz)	Channel Number	Max PEAK Output Power (dBm)
GFSK	2402-2480	0-78[79]	5.01
8DPSK	2402-2480	0-78[79]	7.54

5.3. PACKET TYPE CONFIGURATION

Modulation	Packet Type	Setting(Packet Length)
GFSK	DH1	27
	DH3	183
	DH5	339
π/4-DQPSK	2-DH1	54
	2-DH3	367
	2-DH5	679
8DPSK	3-DH1	83
	3-DH3	552
	3-DH5	1021



5.4. CHANNEL LIST

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
0	2402	20	2422	40	2442	60	2462
1	2403	21	2423	41	2443	61	2463
2	2404	22	2424	42	2444	62	2464
3	2405	23	2425	43	2445	63	2465
4	2406	24	2426	44	2446	64	2466
5	2407	25	2427	45	2447	65	2467
6	2408	26	2428	46	2448	66	2468
7	2409	27	2429	47	2449	67	2469
8	2410	28	2430	48	2450	68	2470
9	2411	29	2431	49	2451	69	2471
10	2412	30	2432	50	2452	70	2472
11	2413	31	2433	51	2453	71	2473
12	2414	32	2434	52	2454	72	2474
13	2415	33	2435	53	2455	73	2475
14	2416	34	2436	54	2456	74	2476
15	2417	35	2437	55	2457	75	2477
16	2418	36	2438	56	2458	76	2478
17	2419	37	2439	57	2459	77	2479
18	2420	38	2440	58	2460	78	2480
19	2421	39	2441	59	2461	/	/



5.5. TEST CHANNEL CONFIGURATION

Test Mode	Test Channel	Frequency
GFSK-DH5	CH 0(Low Channel), CH 39(MID Channel), CH 78(High Channel)	2402 MHz, 2441 MHz, 2480 MHz
8DPSK-3DH5	CH 0(Low Channel), CH 39(MID Channel), CH 78(High Channel)	2402 MHz, 2441 MHz, 2480 MHz
GFSK-DH5	Hopping	2402 MHz ~ 2480 MHz
8DPSK-3DH5	Hopping	2402 MHz ~ 2480 MHz

5.6. THE WORSE CASE POWER SETTING PARAMETER

The Worse Case Power Setting Parameter under 2400 ~ 2483.5MHz Band				
Test Software		QA tool		
Modulation Type	Transmit Antenna Number	Test Software setting value		
		CH 0	CH 39	CH 78
GFSK	1	7	7	7
8DPSK	1	7	7	7



5.7. DESCRIPTION OF AVAILABLE ANTENNAS

KTC ANTENNA:

Antenna	SN.	Frequency (MHz)	Antenna Type	MAX Antenna Gain (dBi)
1(BT)	A100-0062	2402-2480	Dipole Antenna	3.5

Modulation	Transmit and Receive Mode	Description
GFSK	<input checked="" type="checkbox"/> 1TX, 1RX	Antenna 1 can be used as transmitting/receiving antenna.
Π/4-DQPSK	<input checked="" type="checkbox"/> 1TX, 1RX	Antenna 1 can be used as transmitting/receiving antenna.
8-DPSK	<input checked="" type="checkbox"/> 1TX, 1RX	Antenna 1 can be used as transmitting/receiving antenna.

INNO-LINK ANTENNA:

Antenna	SN.	Frequency (MHz)	Antenna Type	MAX Antenna Gain (dBi)
1(BT)	INNO-EWFDKT-237	2402-2480	Dipole Antenna	2.44

Modulation	Transmit and Receive Mode	Description
GFSK	<input checked="" type="checkbox"/> 1TX, 1RX	Antenna 1 can be used as transmitting/receiving antenna.
Π/4-DQPSK	<input checked="" type="checkbox"/> 1TX, 1RX	Antenna 1 can be used as transmitting/receiving antenna.
8-DPSK	<input checked="" type="checkbox"/> 1TX, 1RX	Antenna 1 can be used as transmitting/receiving antenna.

Note:

1. The value of the antenna gain was declared by customer.
2. BT&WLAN 2.4G, BT& WLAN 5G can transmit simultaneously. (declared by client)
3. The EUT have two kinds of antennas, one is called KTC antenna and the other one called INNO-LINK antenna.



5.8. WORST-CASE CONFIGURATIONS

Bluetooth Mode	Modulation Technology	Modulation Type	Data Rate (Mbps)
BR	FHSS	GFSK	1Mbit/s
EDR	FHSS	8DPSK	3Mbit/s

Note: Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates.

5.9. TEST ENVIRONMENT

Environment Parameter	Selected Values During Tests	
Relative Humidity	45 ~ 70%	
Atmospheric Pressure:	101kPa	
Temperature	TN	22 ~ 28 °C
Voltage:	VL	N/A
	VN	DC 3.3V
	VH	N/A

Note: VL= Lower Extreme Test Voltage
VN= Nominal Voltage.
VH= Upper Extreme Test Voltage
TN= Normal Temperature

5.10. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Item	Equipment	Brand Name	Model Name	Remarks
1	Laptop	ThinkPad	X230i	/
2	Test fixture	/	/	/
3	AC/DC adapter	HUAWEI	HW-120150E2W	INPUT:100-240V~50/60Hz, 0.5A OUTPUT:12.0V, 1.5A

I/O CABLES

Cable No	Port	Connector Type	Cable Type	Cable Length(m)	Remarks
1	USB	NA	NA	1	/

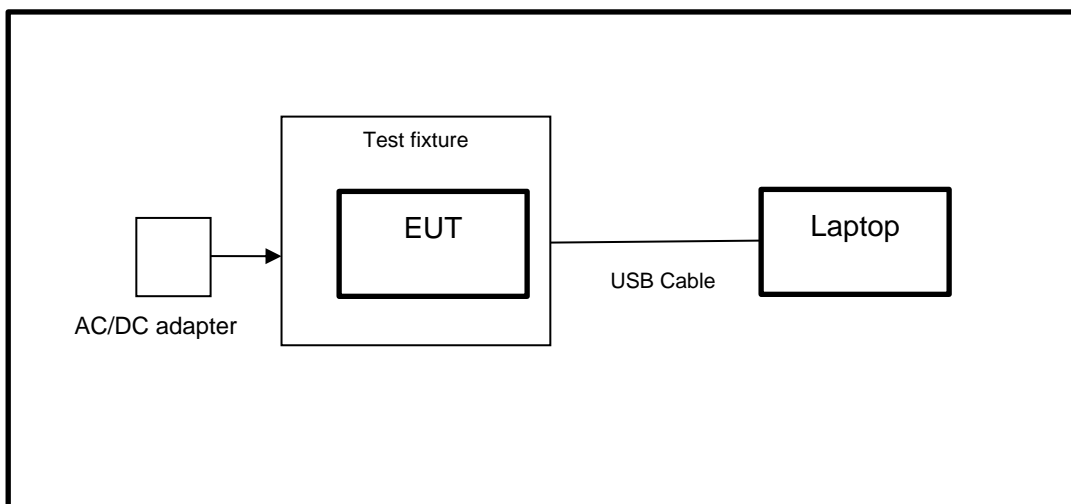
ACCESSORY

Item	Accessory	Brand Name	Model Name	Description
1	/	/	/	/

TEST SETUP

The EUT can work in an engineer mode with software.

SETUP DIAGRAM FOR TESTS





6. MEASURING INSTRUMENT AND SOFTWARE USED

Radiated Emissions					
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Due Date
MXE EMI Receiver	KESIGHT	N9038A	MY56400036	Nov. 12, 2020	Nov. 11, 2021
Hybrid Log Periodic Antenna	TDK	HLP-3003C	130960	Aug. 11, 2018	Aug. 10, 2021
Preamplifier	HP	8447D	2944A09099	Nov. 12, 2020	Nov. 11, 2021
EMI Measurement Receiver	R&S	ESR26	101377	Nov. 12, 2020	Nov. 11, 2021
Horn Antenna	TDK	HRN-0118	130939	Sept. 17, 2018	Sept. 17, 2021
Preamplifier	TDK	PA-02-0118	TRS-305-00067	Nov. 20, 2020	Nov. 19, 2021
Horn Antenna	Schwarzbeck	BBHA9170	#691	Aug. 11, 2018	Aug. 11, 2021
Preamplifier	TDK	PA-02-2	TRS-307-00003	Nov. 12, 2020	Nov. 11, 2021
Preamplifier	TDK	PA-02-3	TRS-308-00002	Nov. 12, 2020	Nov. 11, 2021
Loop antenna	Schwarzbeck	1519B	00008	Jan.17, 2019	Jan.17,2022
Preamplifier	TDK	PA-02-001-3000	TRS-302-00050	Nov. 12, 2020	Nov. 11, 2021
Preamplifier	Mini-Circuits	ZX60-83LN-S+	SUP01201941	Nov. 20, 2020	Nov. 19, 2021
High Pass Filter	Wi	WHKX10-2700-3000-18000-40SS	23	Nov. 12, 2020	Nov. 11, 2021
Band Reject Filter	Wainwright	WRCJV8-2350-2400-2483.5-2533.5-40SS	4	Nov. 12, 2020	Nov. 11, 2021
Software					
Description			Manufacturer	Name	Version
Test Software for Radiated Emissions			Farad	EZ-EMC	Ver. UL-3A1



Tonsend RF Test System					
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Due. Date
Wideband Radio Communication Tester	R&S	CMW500	155523	Nov.20,2020	Nov.19,2021
PXA Signal Analyzer	Keysight	N9030A	MY55410512	Nov.20,2020	Nov.19,2021
MXG Vector Signal Generator	Keysight	N5182B	MY56200284	Nov.20,2020	Nov.19,2021
MXG Vector Signal Generator	Keysight	N5172B	MY56200301	Nov.20,2020	Nov.19,2021
DC power supply	Keysight	E3642A	MY55159130	Nov.24,2020	Nov.23,2021
Software					
Description	Manufacturer	Name		Version	
Tonsend SRD Test System	Tonsend	JS1120-3 RF Test System		2.6.77.0518	

Other Instruments					
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
Dual Channel Power Meter	Keysight	N1912A	MY55416024	Nov. 20, 2020	Nov. 19, 2021
Power Sensor	Keysight	USB Wideband Power Sensor	MY5100022	Nov. 20, 2020	Nov. 19, 2021



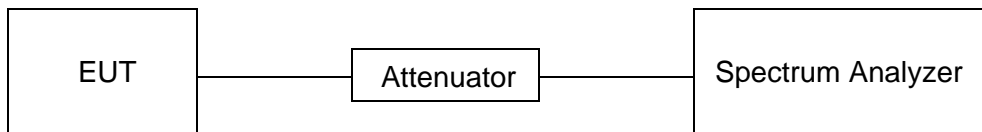
7. ANTENNA PORT TEST RESULTS

7.1. ON TIME AND DUTY CYCLE

LIMITS

None; for reporting purposes only

TEST SETUP



TEST ENVIRONMENT

Temperature	23.1°C	Relative Humidity	51.2%
Atmosphere Pressure	101kPa	Test Voltage	DC 3.3V

RESULTS

Please refer to Appendix B.

7.2. CONDUCTED OUTPUT POWER

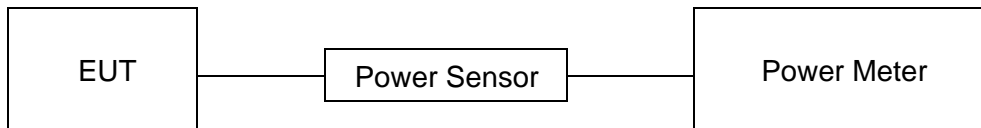
LIMITS

CFR 47 FCC Part15 (15.247) , Subpart C ISED RSS-247 ISSUE 2			
Section	Test Item	Limit	Frequency Range (MHz)
CFR 47 FCC 15.247 (b) (1) ISED RSS-247 Clause 5.4 (b)	Peak Conducted Output Power	Hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel : 1 watt or 30dBm; Hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel : 125 mW or 21dBm	2400-2483.5

TEST PROCEDURE

Place the EUT on the table and set it in the transmitting mode.
Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the Power sensor.
Measure peak power of each channel.

TEST SETUP





TEST ENVIRONMENT

Temperature	23.1°C	Relative Humidity	51.2%
Atmosphere Pressure	101kPa	Test Voltage	DC 3.3V

RESULTS

Please refer to Appendix A.



8. RADIATED TEST RESULTS

8.1. LIMITS AND PROCEDURE

Please refer to CFR 47 FCC §15.205 and §15.209.

Please refer to ISED RSS-GEN Clause 8.9 and Clause 8.10.

Radiation Disturbance Test Limit for FCC (Class B) (9 kHz ~ 1 GHz)

Emissions radiated outside of the specified frequency bands above 30 MHz			
Frequency Range (MHz)	Field Strength Limit (uV/m) at 3 m	Field Strength Limit (dBuV/m) at 3 m	
		Quasi-Peak	
30 - 88	100	40	
88 - 216	150	43.5	
216 - 960	200	46	
Above 960	500	54	
Above 1000	500	Peak	Average
		74	54

FCC Emissions radiated outside of the specified frequency bands below 30 MHz		
Frequency (MHz)	Field strength (microvolts/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

ISED General field strength limits at frequencies below 30 MHz

Table 6 – General field strength limits at frequencies below 30 MHz		
Frequency	Magnetic field strength (H-Field) (µA/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.



ISED Restricted bands please refer to ISED RSS-GEN Clause 8.10

Table 7 – Restricted frequency bands ^{Note 1}		
MHz	MHz	GHz
0.090 - 0.110	149.9 - 150.05	9.0 - 9.2
0.495 - 0.505	156.52475 - 156.52525	9.3 - 9.5
2.1735 - 2.1905	156.7 - 156.9	10.6 - 12.7
3.020 - 3.026	162.0125 - 167.17	13.25 - 13.4
4.125 - 4.128	167.72 - 173.2	14.47 - 14.5
4.17725 - 4.17775	240 - 285	15.35 - 16.2
4.20725 - 4.20775	322 - 335.4	17.7 - 21.4
5.677 - 5.683	399.9 - 410	22.01 - 23.12
6.215 - 6.218	608 - 614	23.6 - 24.0
6.26775 - 6.26825	960 - 1427	31.2 - 31.8
6.31175 - 6.31225	1435 - 1626.5	36.43 - 36.5
8.291 - 8.294	1645.5 - 1646.5	Above 38.6
8.362 - 8.366	1660 - 1710	
8.37625 - 8.38675	1718.8 - 1722.2	
8.41425 - 8.41475	2200 - 2300	
12.29 - 12.293	2310 - 2390	
12.51975 - 12.52025	2483.5 - 2500	
12.57675 - 12.57725	2655 - 2900	
13.36 - 13.41	3260 - 3267	
16.42 - 16.423	3332 - 3339	
16.69475 - 16.69525	3345.8 - 3358	
16.80425 - 16.80475	3500 - 4400	
25.5 - 25.67	4500 - 5150	
37.5 - 38.25	5350 - 5460	
73 - 74.6	7250 - 7750	
74.8 - 75.2	8025 - 8500	
108 - 138		

Note 1: Certain frequency bands listed in table 7 and in bands above 38.6 GHz are designated for licence-exempt applications. These frequency bands and the requirements that apply to related devices are set out in the 200 and 300 series of RSSs.

FCC Restricted bands of operation refer to FCC §15.205 (a):

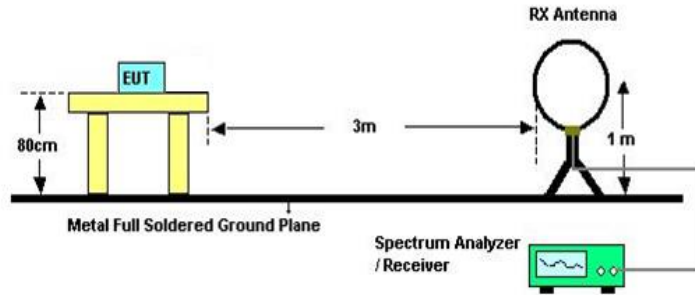
MHz	MHz	MHz	GHz
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
¹ 0.495-0.505	16.69475-16.69525	608-614	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	108-121.94	1718.8-1722.2	13.25-13.4
6.31175-6.31225	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3600-4400	(²)
13.36-13.41			

Note: ¹Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.

²Above 38.6c

TEST SETUP AND PROCEDURE

Below 30 MHz

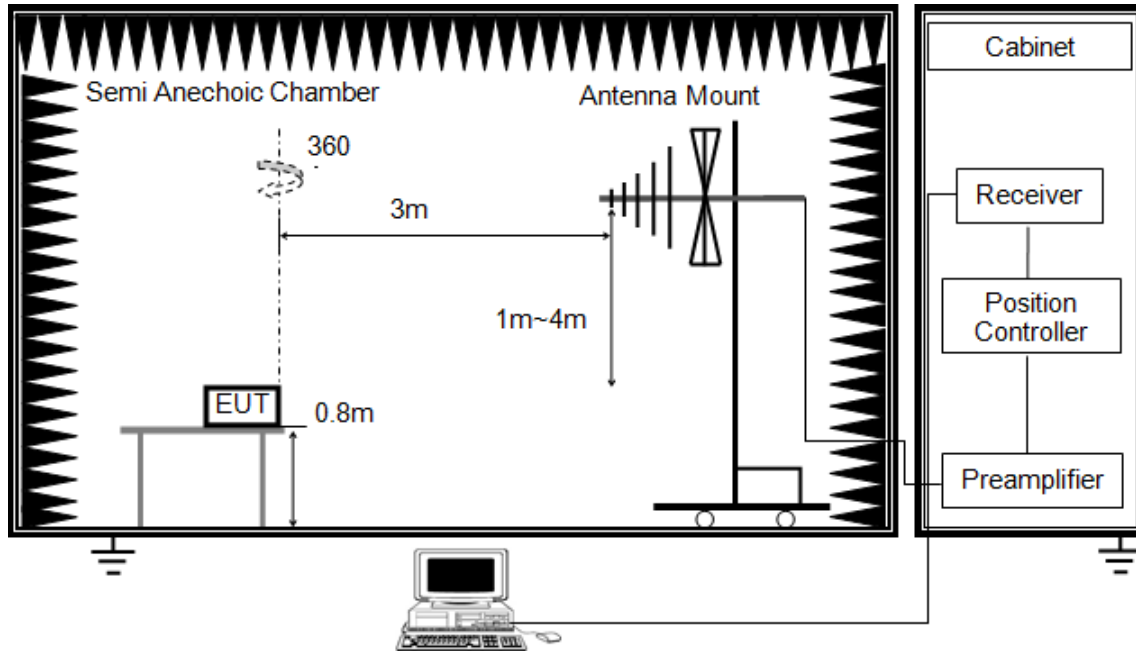


The setting of the spectrum analyser

RBW	200 Hz (From 9 kHz to 0.15 MHz)/ 9 kHz (From 0.15 MHz to 30 MHz)
VBW	200 Hz (From 9 kHz to 0.15 MHz)/ 9 kHz (From 0.15 MHz to 30 MHz)
Sweep	Auto
Trace	Max hold

1. The testing follows the guidelines in ANSI C63.10-2013 clause 6.4.
2. The EUT was arranged to its worst case and then turntable (from 0 degree to 360 degrees) 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. Both Horizontal, Face-on and Face-off polarizations of the antenna are set to make the measurement.
3. The EUT was placed on a turntable with 80 cm above ground.
4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a 1 m height antenna tower.
5. The radiated emission limits are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.
6. For measurement below 1 GHz, the initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak and average detector mode re-measured. If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak and average detector and reported.
7. Although these tests were performed other than open field site, adequate comparison measurements were confirmed against 30m open field site. Therefore sufficient tests were made to demonstrate that the alternative site produces results that correlate with the ones of tests made in an open field site based on KDB 414788.
8. The limits in CFR 47, Part 15, Subpart C, paragraph 15.209 (a), are identical to those in RSS-GEN Section 8.9, Table 6, since the measurements are performed in terms of magnetic field strength and converted to electric field strength levels (as reported in the table) using the free space impedance of 377Ω. For example, the measurement frequency X KHz resulted in a level of Y dBuV/m, which is equivalent to $Y - 51.5 = Z$ dBuA/m, which has the same margin, W dB, to the corresponding RSS-GEN Table 6 limit as it has to be 15.209(a) limit.

Below 1G and above 30MHz

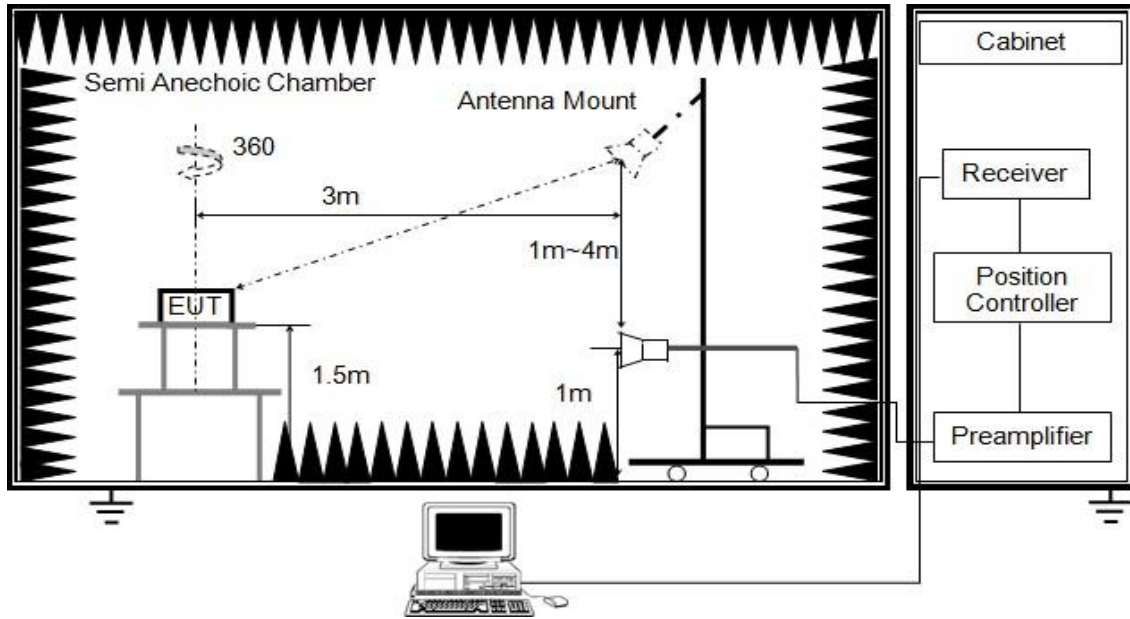


The setting of the spectrum Analyzer

RBW	120kHz
VBW	300kHz
Sweep	Auto
Detector	Peak/QP
Trace	Max hold

1. The testing follows the guidelines in ANSI C63.10-2013 clause 6.5.
2. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) 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. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
3. The EUT was placed on a turntable with 80cm above ground.
4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
5. For measurement below 1GHz, the initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured. If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.

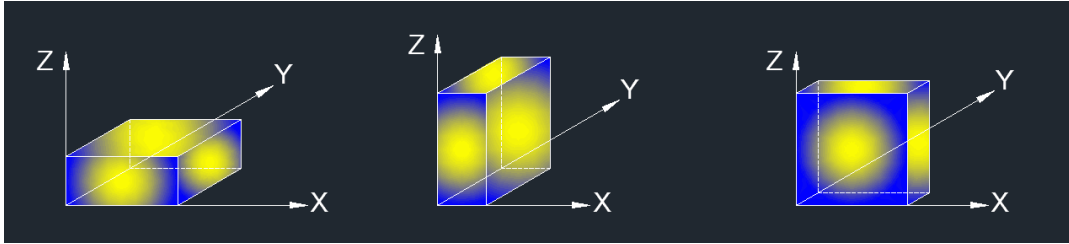
Above 1G



RBW	1MHz
VBW	PEAK: 3MHz AVG: see note 6
Sweep	Auto
Detector	Peak
Trace	Max hold

1. The testing follows the guidelines in ANSI C63.10-2013 clause 6.6.
2. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) 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. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
3. The EUT was placed on a turntable with 150cm above ground.
4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
5. For measurement above 1GHz, the emission measurement will be measured by the peak detector. This peak level, once corrected, must comply with the limit specified in Section 15.209.
6. For measurements above 1 GHz the resolution bandwidth is set to 1 MHz, then the video bandwidth is set to 3 MHz for peak measurements and 1 MHz resolution bandwidth with 1/T video bandwidth with peak detector. For the Duty Cycle please refer to clause 7.1.ON TIME AND DUTY CYCLE.

X axis, Y axis, Z axis positions:



Note :

1. For radiated test, EUT in each of three orthogonal axis emissions had been tested, but only the worst case (X axis) data recorded in the report.

Note 2: All the EUT's emissions had been evaluated for simultaneous transmission with the other WIFI 2.4GHz, WIFI 5GHz and BT transmitter and there were not any additional or worse emissions found. The worst case data has been recorded in the WIFI test report. (4789861913-3/-4).

TEST ENVIRONMENT

Temperature	24.5°C	Relative Humidity	56%
Atmosphere Pressure	101kPa	Test Voltage	DC 3.3V

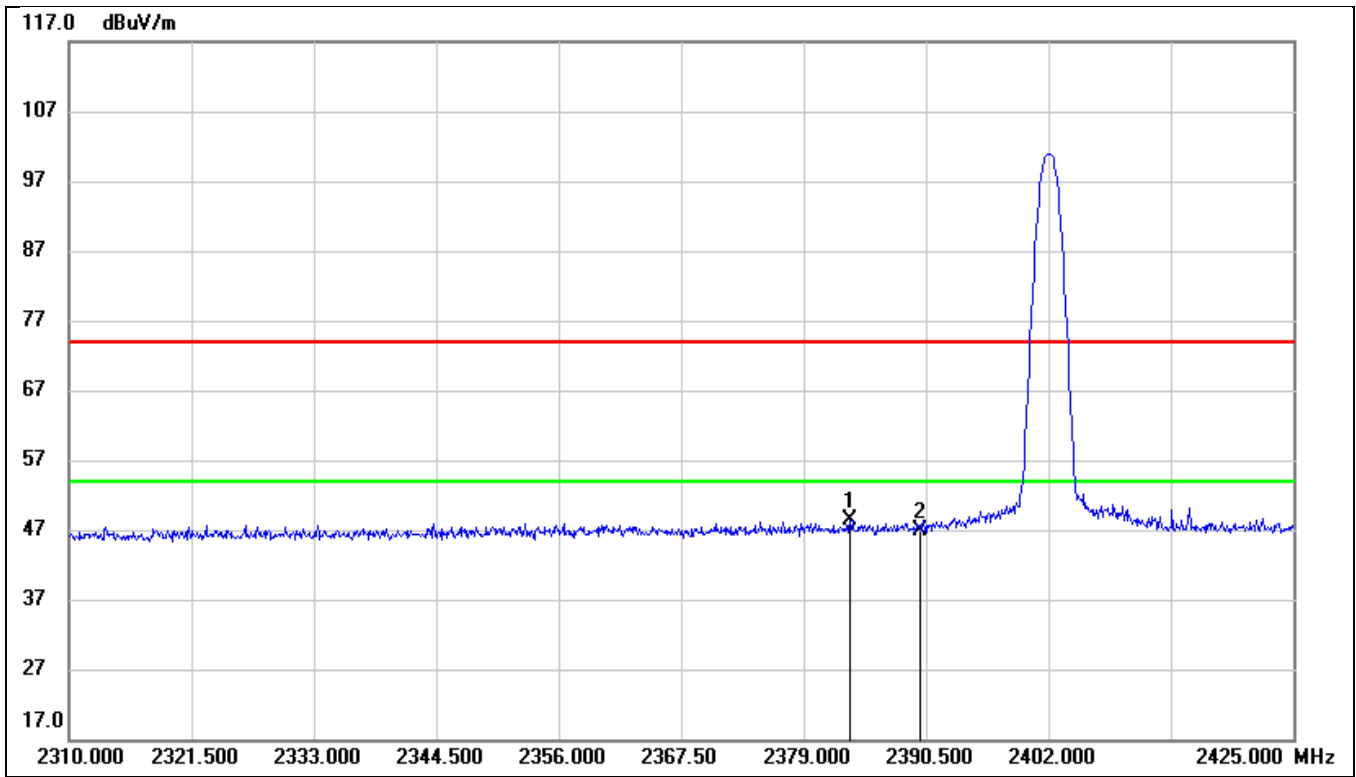


8.2. RESTRICTED BANDEDGE

KTC ANTENNA:

8.2.1. GFSK MODE

RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)



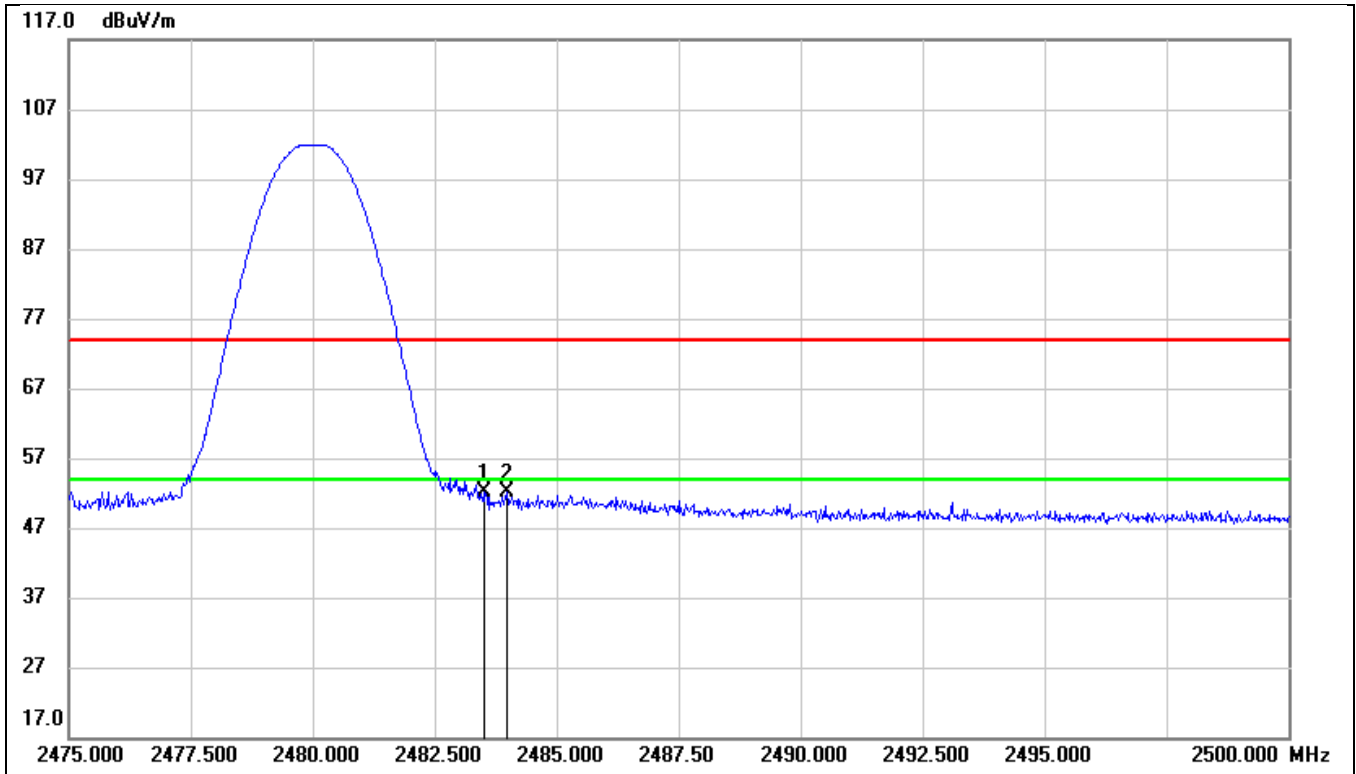
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2383.370	15.03	33.30	48.33	74.00	-25.67	peak
2	2390.000	13.58	33.35	46.93	74.00	-27.07	peak

- Note: 1. Measurement = Reading Level + Correct Factor.
 2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
 3. Peak: Peak detector.
 4. Only the worst case emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.



RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)

PEAK



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	18.38	33.71	52.09	74.00	-21.91	peak
2	2483.975	18.42	33.71	52.13	74.00	-21.87	peak

Note: 1. Measurement = Reading Level + Correct Factor.

2.If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3.Peak: Peak detector.

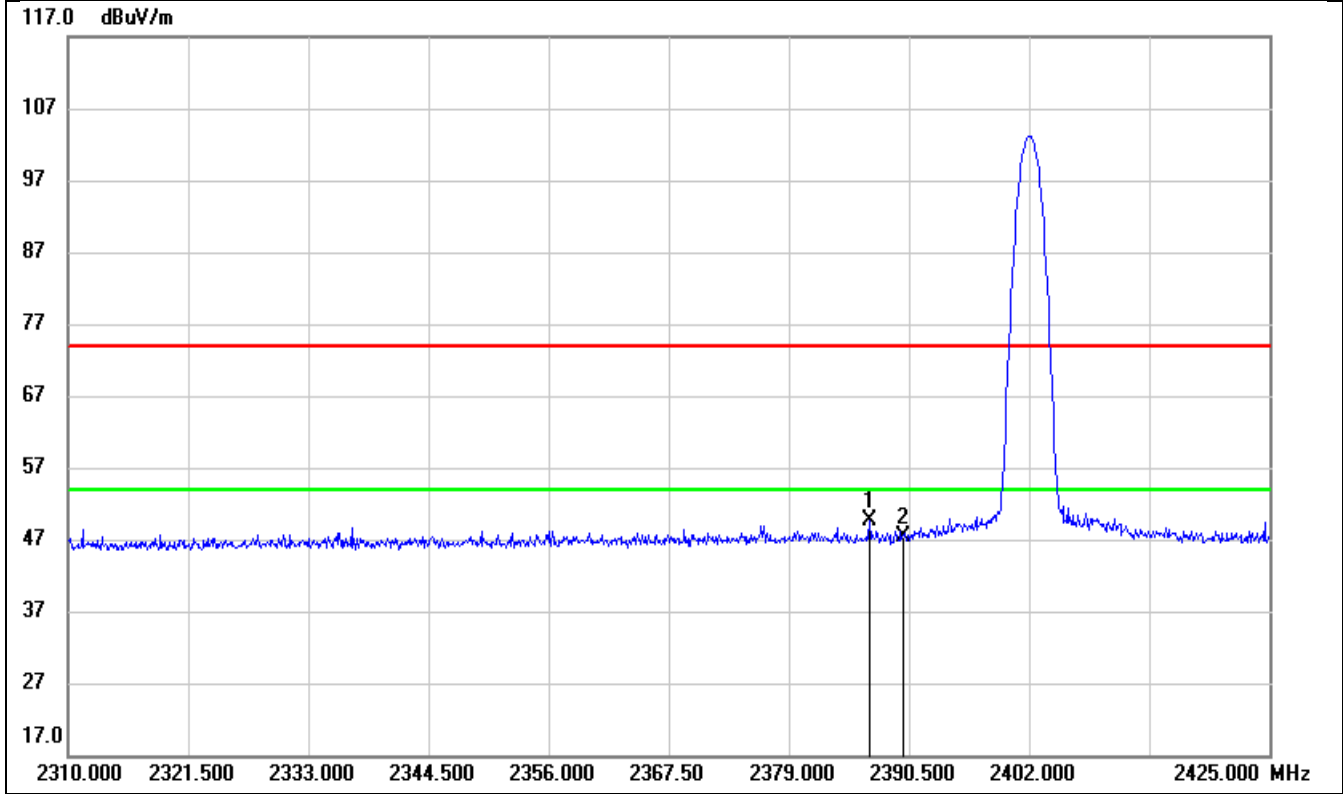
4.Only the worst case emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.

Note: Horizontal and Vertical have been tested, only the worst data was recorded in the report.



8.2.2. 8DPSK MODE

RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)

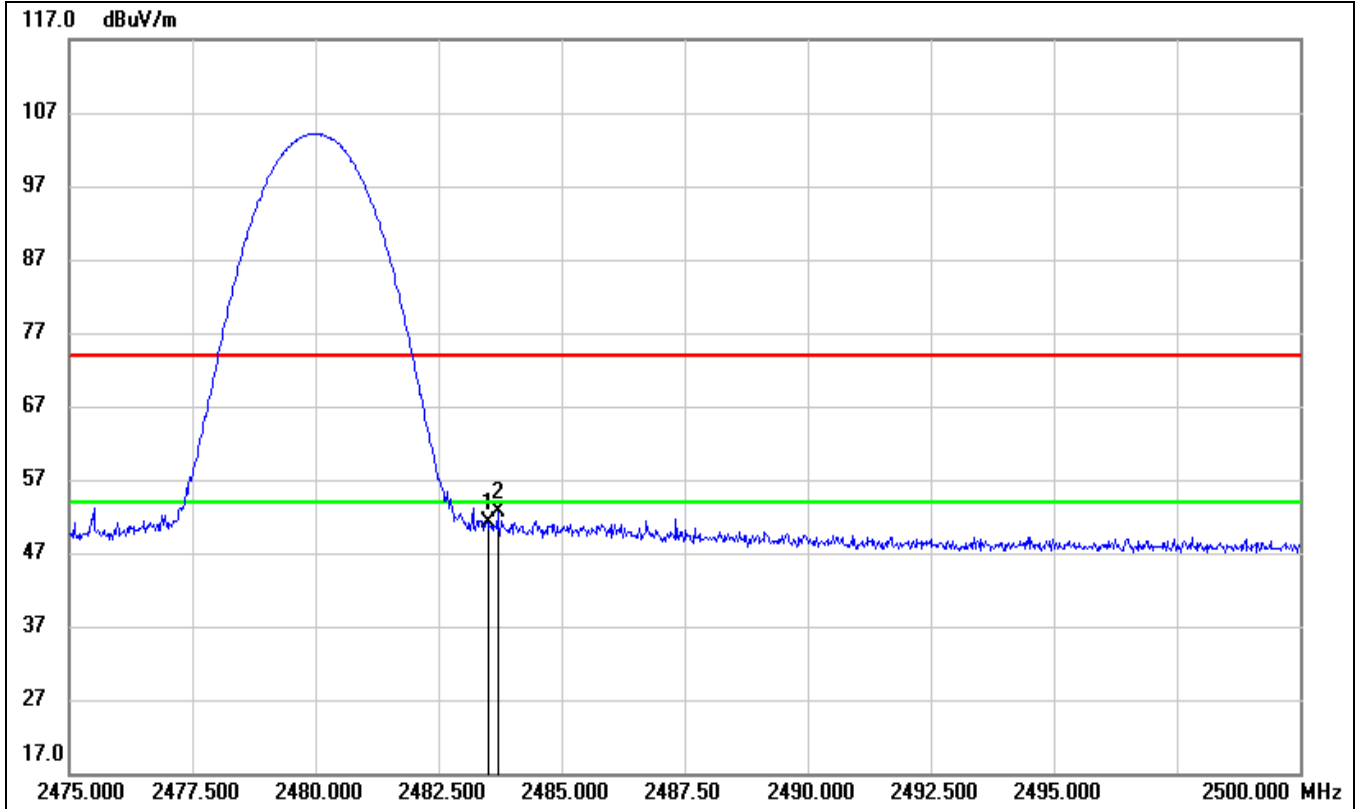


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2386.705	16.24	33.33	49.57	74.00	-24.43	peak
2	2390.000	14.01	33.35	47.36	74.00	-26.64	peak

- Note: 1. Measurement = Reading Level + Correct Factor.
 2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
 3. Peak: Peak detector.
 4. Only the worst case emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.



RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)
PEAK



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	17.32	33.71	51.03	74.00	-22.97	peak
2	2483.700	18.87	33.71	52.58	74.00	-21.42	peak

- Note: 1. Measurement = Reading Level + Correct Factor.
 2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
 3. Peak: Peak detector.
 4. Only the worst case emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.

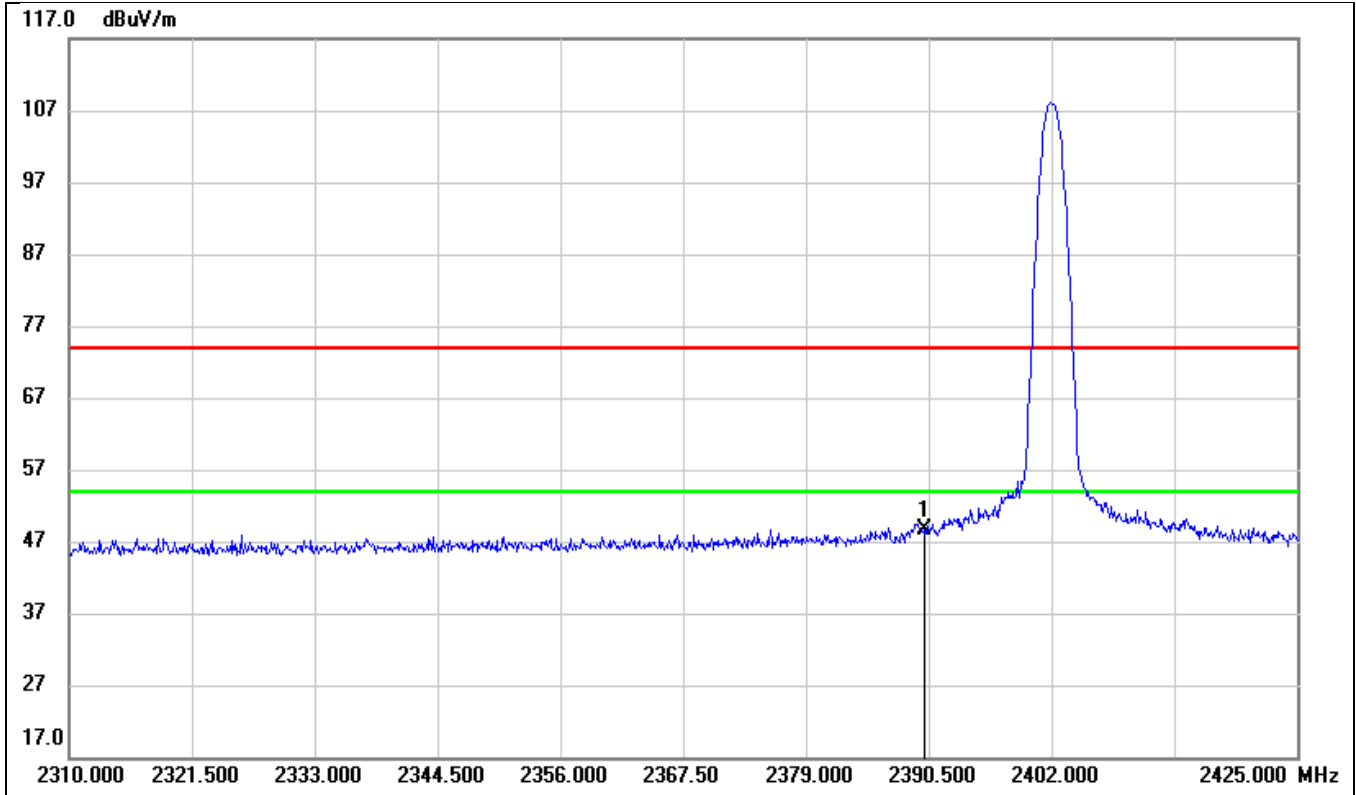
Note: Horizontal and Vertical have been tested, only the worst data was recorded in the report.



INNO-LINK ANTENNA:

8.2.3. GFSK MODE

RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)



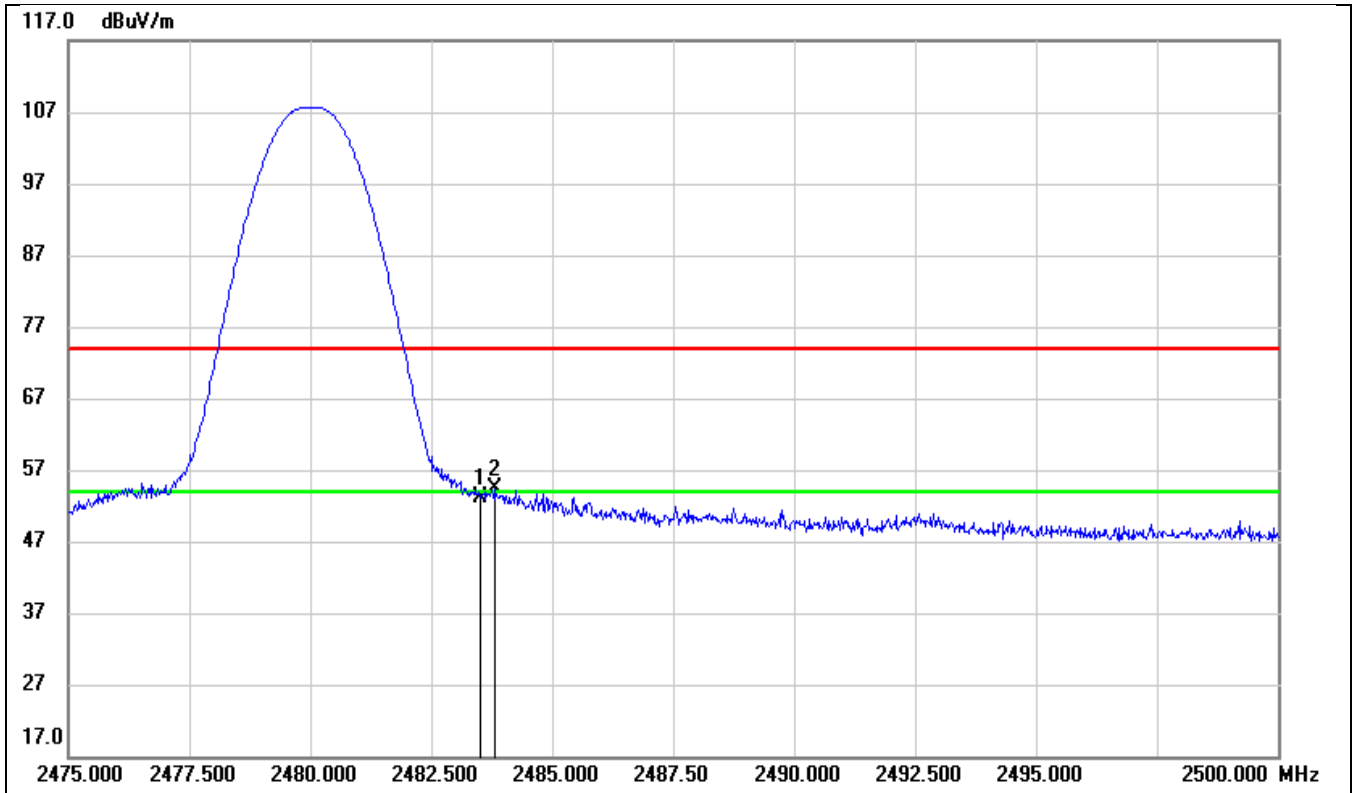
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2390.000	15.19	33.35	48.54	74.00	-25.46	peak

- Note: 1. Measurement = Reading Level + Correct Factor.
 5. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
 6. Peak: Peak detector.
 7. Only the worst case emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.



RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)

PEAK

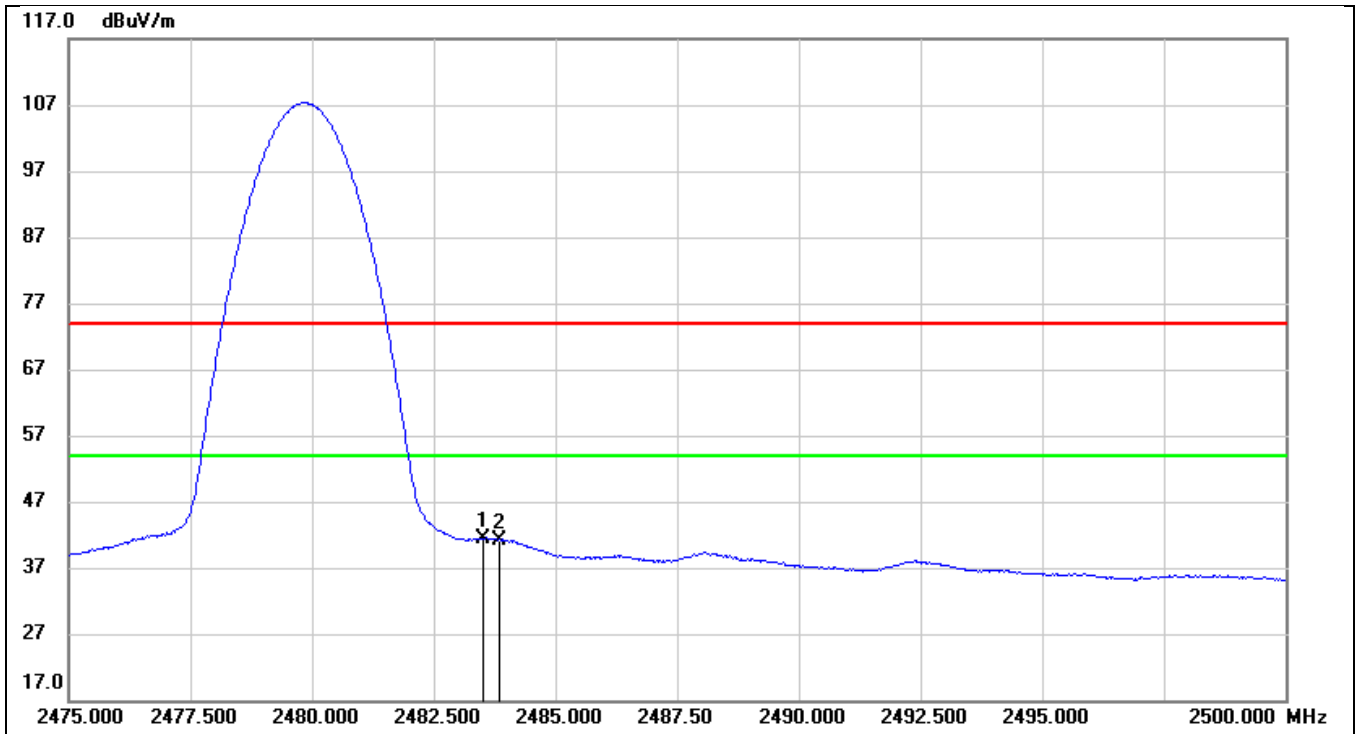


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	19.38	33.71	53.09	74.00	-20.91	peak
2	2483.825	20.63	33.71	54.34	74.00	-19.66	peak

- Note: 1. Measurement = Reading Level + Correct Factor.
 2.If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
 3.Peak: Peak detector.
 4.Only the worst case emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.



AVG



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	7.66	33.71	41.37	54.00	-12.63	AVG
2	2483.825	7.48	33.71	41.19	54.00	-12.81	AVG

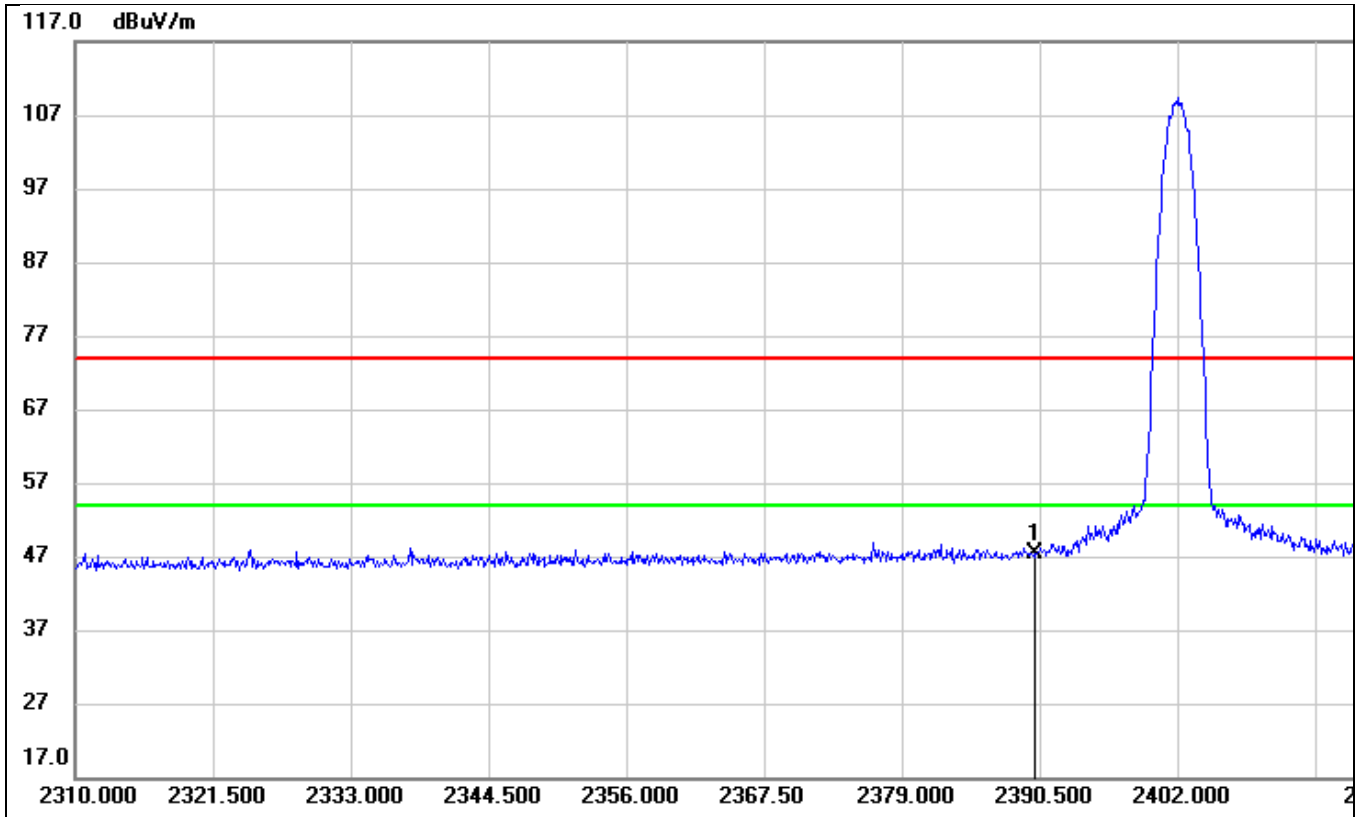
- Note:
1. Measurement = Reading Level + Correct Factor.
 2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
 3. Peak: Peak detector.
 4. AVG: $VBW=1/T_{on}$, where: T_{on} is the transmitting duration.
 5. For the transmitting duration, please refer to clause 7.1.
 6. Only the worst data was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.

Note: Horizontal and Vertical have been tested, only the worst data was recorded in the report.



8.2.4. 8DPSK MODE

RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)

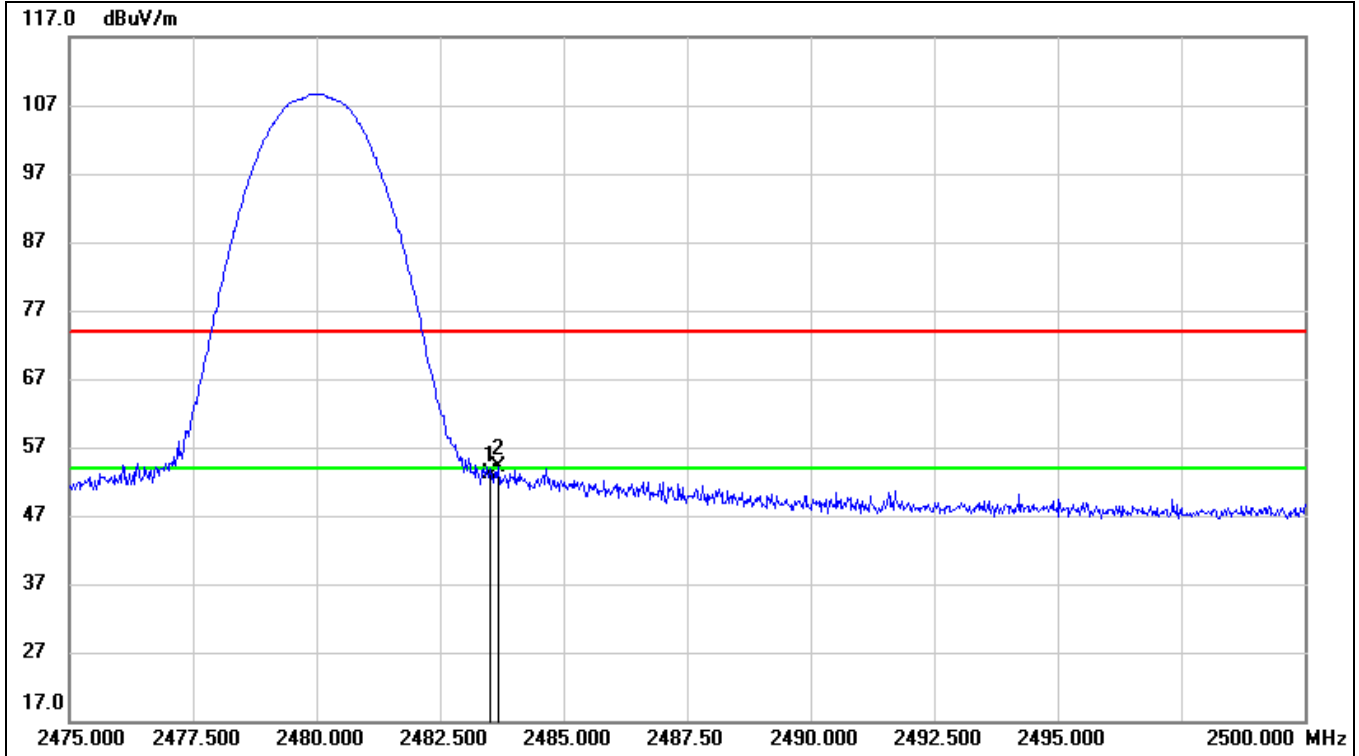


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2390.000	13.91	33.35	47.26	74.00	-26.74	peak

Note: 1. Measurement = Reading Level + Correct Factor.
 5. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
 6. Peak: Peak detector.
 7. Only the worst case emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.



RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)
PEAK

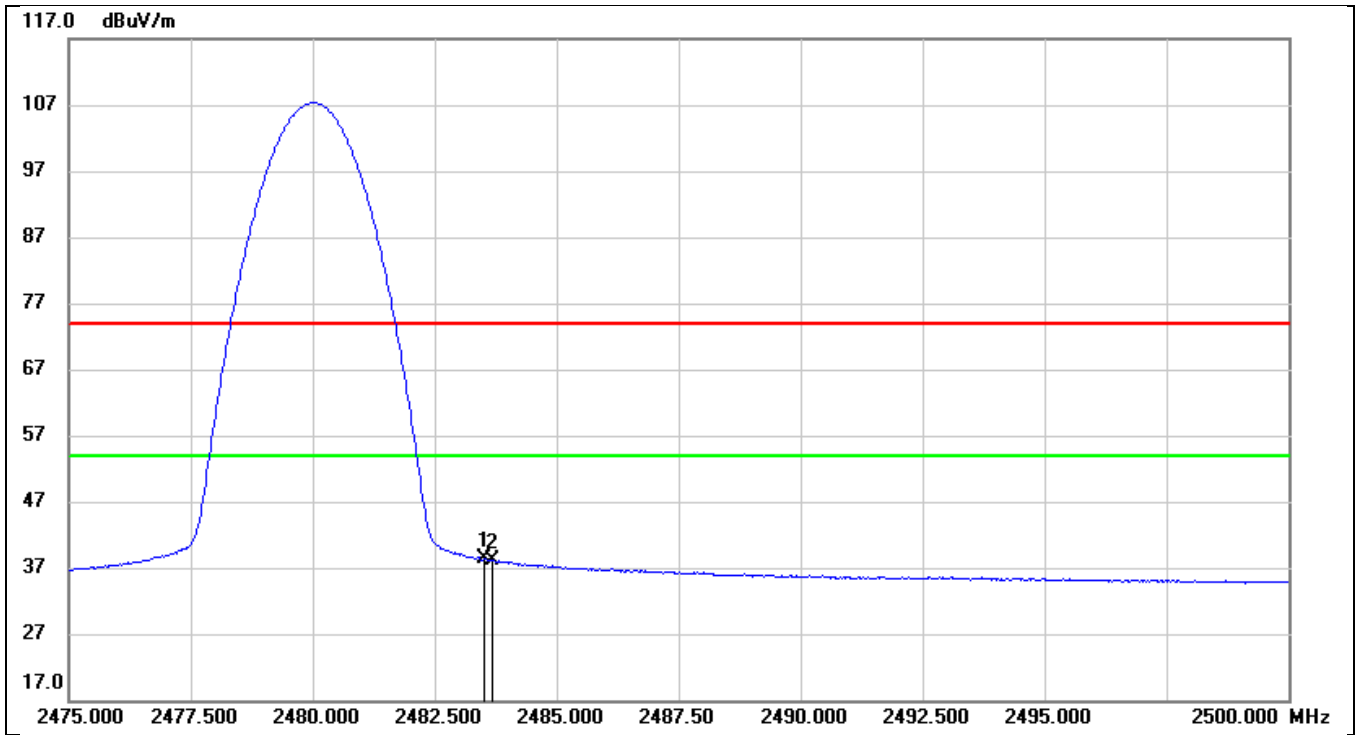


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	19.53	33.71	53.24	74.00	-20.76	peak
2	2483.675	20.51	33.71	54.22	74.00	-19.78	peak

Note: 1. Measurement = Reading Level + Correct Factor.
 5. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
 6. Peak: Peak detector.
 7. Only the worst case emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.



AVG



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	4.58	33.71	38.29	54.00	-15.71	AVG
2	2483.675	4.48	33.71	38.19	54.00	-15.81	AVG

- Note:
1. Measurement = Reading Level + Correct Factor.
 2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
 3. Peak: Peak detector.
 4. AVG: $VBW=1/Ton$, where: Ton is the transmitting duration.
 5. For the transmitting duration, please refer to clause 7.1.
 6. Only the worst data was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.

Note: Horizontal and Vertical have been tested, only the worst data was recorded in the report.

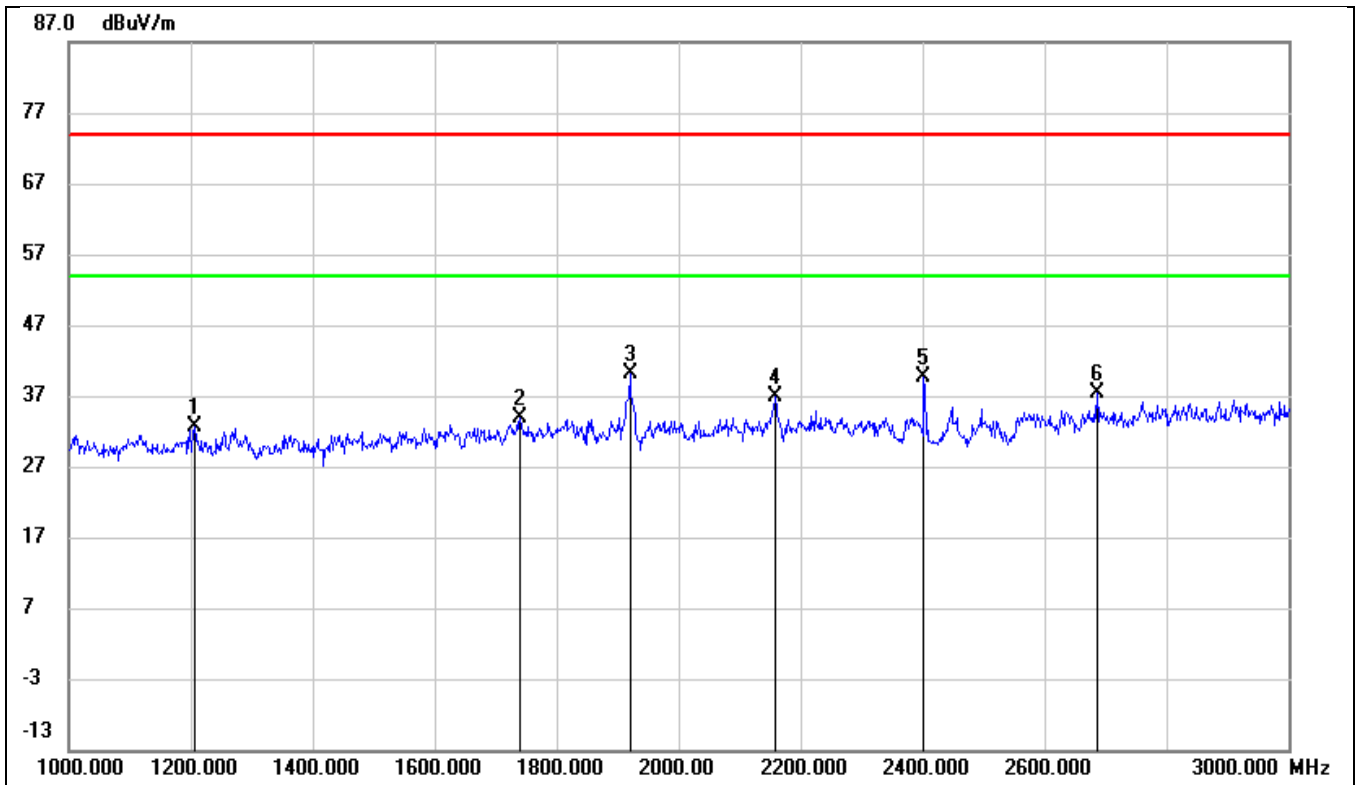


8.3. SPURIOUS EMISSIONS (1~3GHz)

KTC ANTENNA:

8.3.1. GFSK MODE

HARMONICS AND SPURIOUS EMISSIONS (LOW CHANNEL, HORIZONTAL)

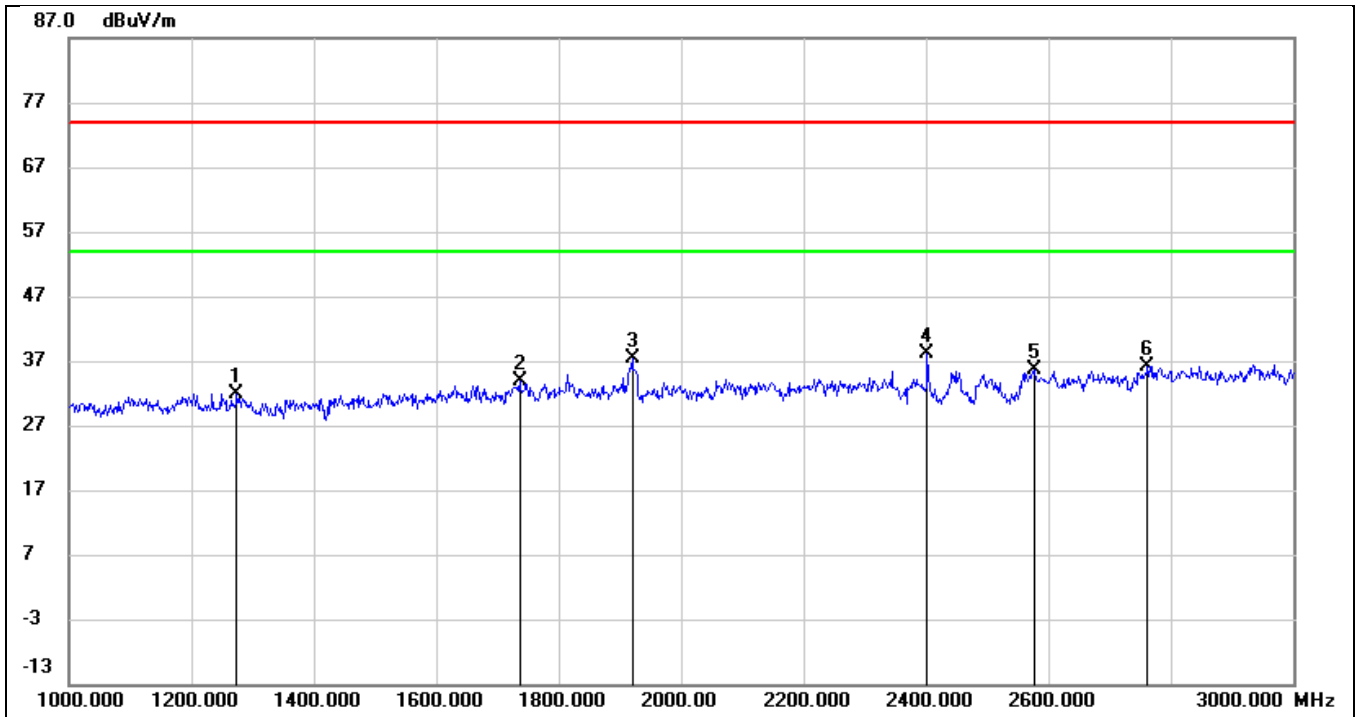


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1206.000	45.53	-12.98	32.55	74.00	-41.45	peak
2	1740.000	44.39	-10.51	33.88	74.00	-40.12	peak
3	1920.000	50.30	-10.13	40.17	74.00	-33.83	peak
4	2158.000	46.05	-9.29	36.76	74.00	-37.24	peak
5	2402.000	48.04	-8.39	39.65	/	/	fundamental
6	2686.000	44.80	-7.30	37.50	74.00	-36.50	peak

- Note: 1. Peak Result = Reading Level + Correct Factor.
 2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
 3. Peak: Peak detector.
 4. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for Band reject filter losses
 5. Proper operation of the transmitter prior to adding the filter to the measurement chain.



HARMONICS AND SPURIOUS EMISSIONS (LOW CHANNEL, VERTICAL)

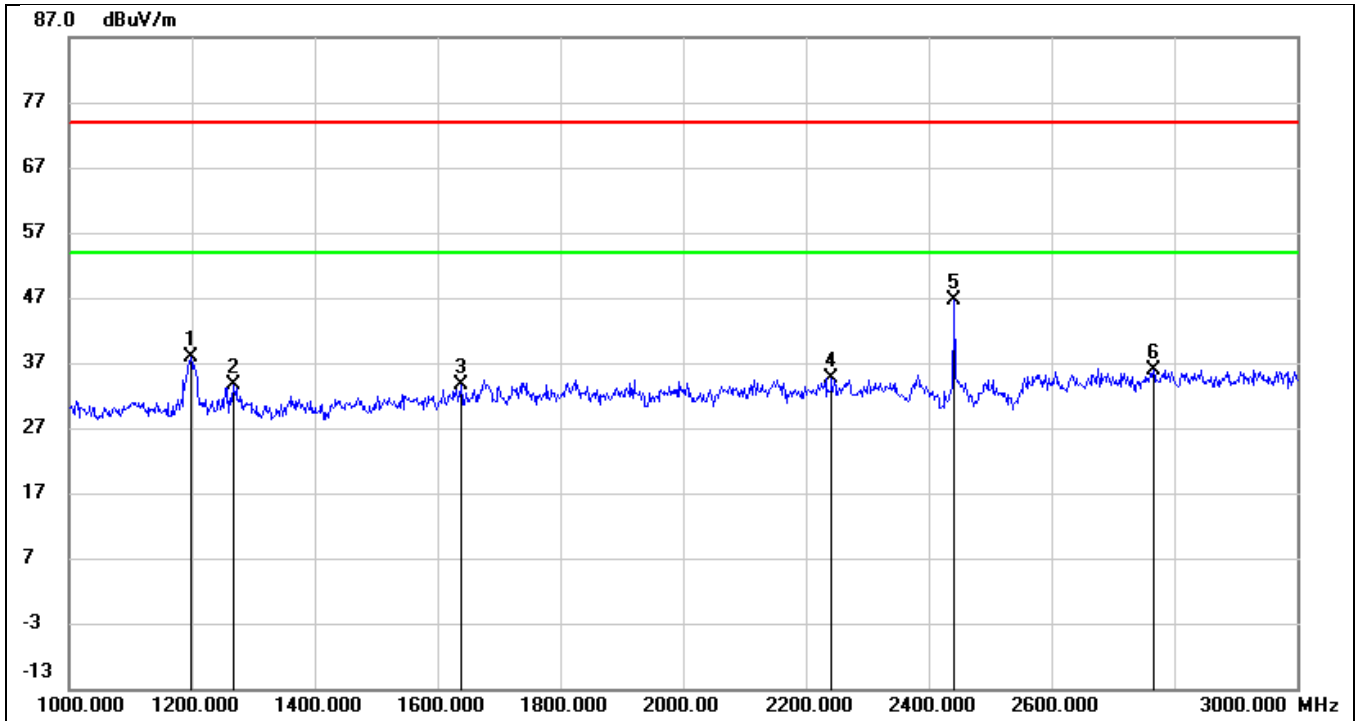


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1274.000	44.86	-12.89	31.97	74.00	-42.03	peak
2	1736.000	44.37	-10.52	33.85	74.00	-40.15	peak
3	1920.000	47.40	-10.13	37.27	74.00	-36.73	peak
4	2402.000	46.58	-8.39	38.19	/	/	fundamental
5	2576.000	43.49	-7.96	35.53	74.00	-38.47	peak
6	2762.000	43.04	-6.81	36.23	74.00	-37.77	peak

- Note:
1. Peak Result = Reading Level + Correct Factor.
 2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
 3. Peak: Peak detector.
 4. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for Band reject filter losses
 5. Proper operation of the transmitter prior to adding the filter to the measurement chain.



HARMONICS AND SPURIOUS EMISSIONS (MID CHANNEL, HORIZONTAL)

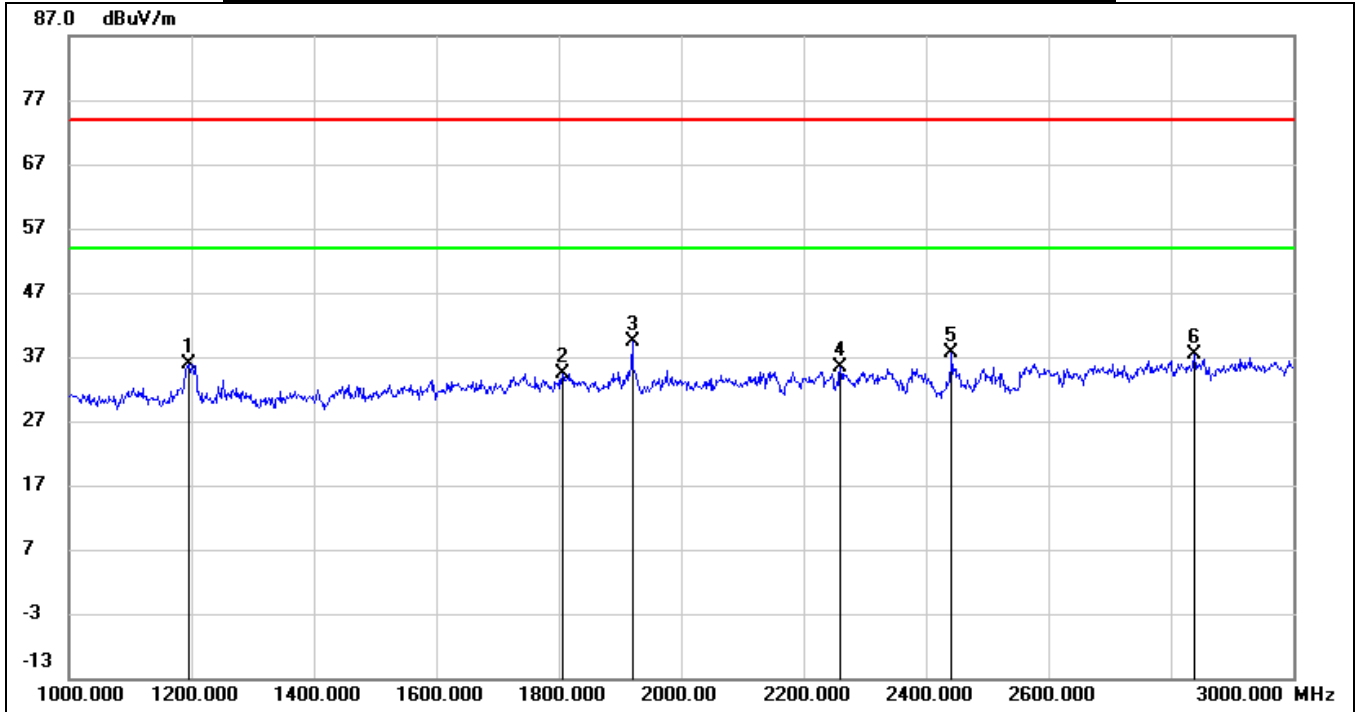


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1198.000	50.77	-13.00	37.77	74.00	-36.23	peak
2	1268.000	46.49	-12.90	33.59	74.00	-40.41	peak
3	1638.000	44.93	-11.27	33.66	74.00	-40.34	peak
4	2242.000	43.43	-8.91	34.52	74.00	-39.48	peak
5	2441.000	54.96	-8.33	46.63	/	/	fundamental
6	2766.000	42.74	-6.77	35.97	74.00	-38.03	peak

- Note: 1. Peak Result = Reading Level + Correct Factor.
 2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
 3. Peak: Peak detector.
 4. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for Band reject filter losses
 5. Proper operation of the transmitter prior to adding the filter to the measurement chain.



HARMONICS AND SPURIOUS EMISSIONS (MID CHANNEL, VERTICAL)

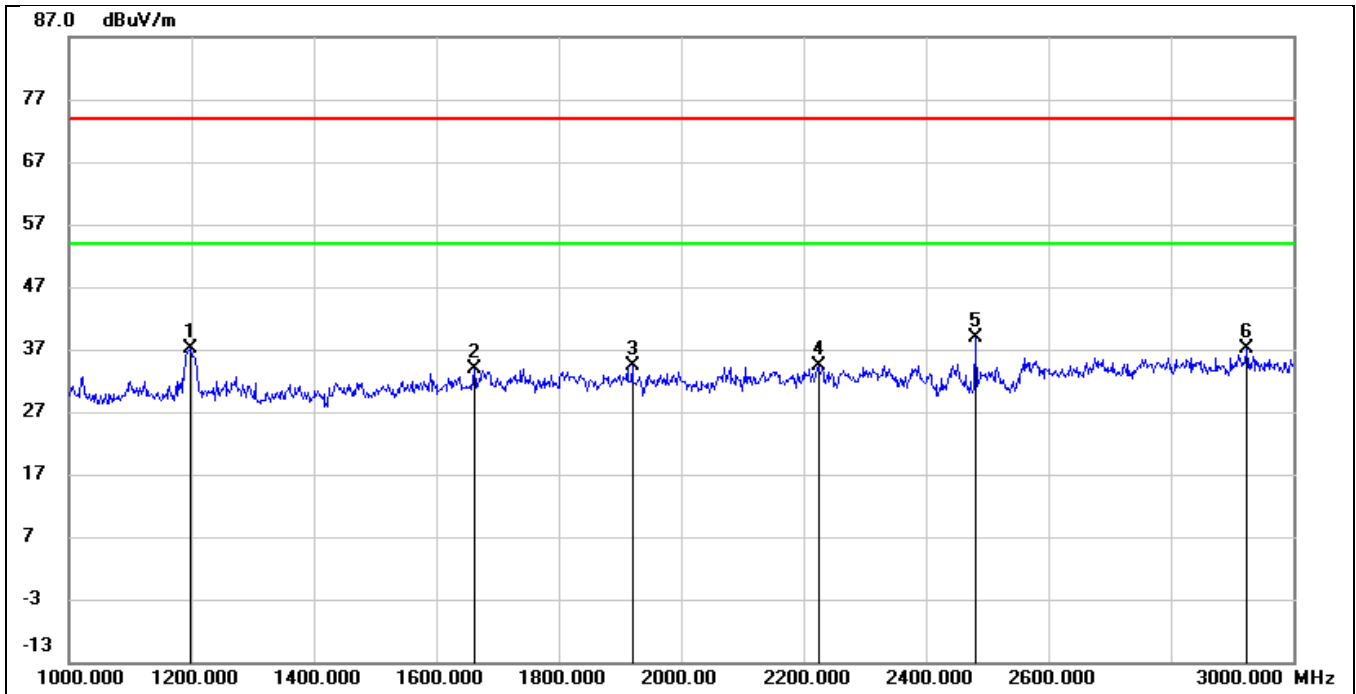


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1196.000	48.90	-13.01	35.89	74.00	-38.11	peak
2	1806.000	44.43	-10.06	34.37	74.00	-39.63	peak
3	1920.000	49.57	-10.13	39.44	74.00	-34.56	peak
4	2260.000	44.26	-8.85	35.41	74.00	-38.59	peak
5	2441.000	45.88	-8.33	37.55	/	/	fundamental
6	2838.000	43.74	-6.37	37.37	74.00	-36.63	peak

- Note:
1. Peak Result = Reading Level + Correct Factor.
 2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
 3. Peak: Peak detector.
 4. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for Band reject filter losses
 5. Proper operation of the transmitter prior to adding the filter to the measurement chain.



HARMONICS AND SPURIOUS EMISSIONS (HIGH CHANNEL, HORIZONTAL)

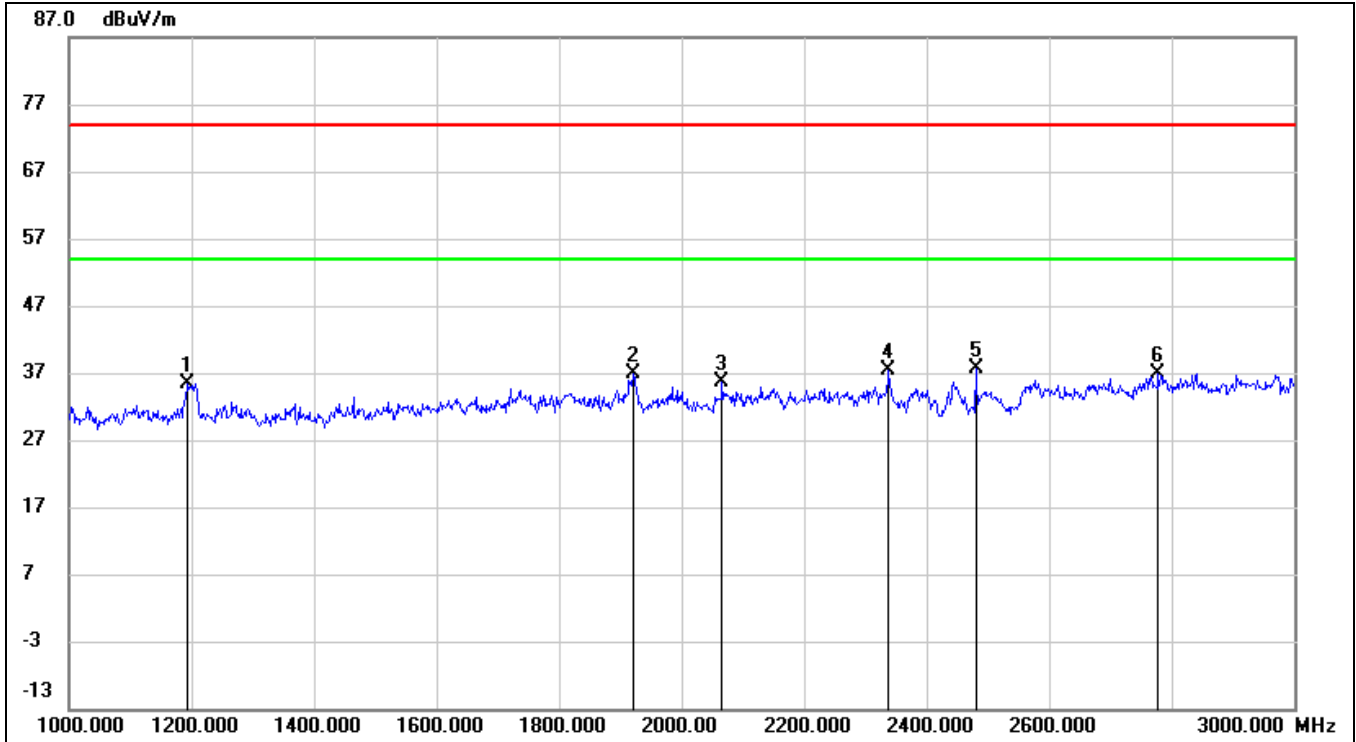


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1198.000	50.08	-13.00	37.08	74.00	-36.92	peak
2	1662.000	45.00	-11.09	33.91	74.00	-40.09	peak
3	1920.000	44.45	-10.13	34.32	74.00	-39.68	peak
4	2224.000	43.36	-8.97	34.39	74.00	-39.61	peak
5	2480.000	47.19	-8.26	38.93	/	/	fundamental
6	2924.000	43.17	-5.95	37.22	74.00	-36.78	peak

- Note: 1. Peak Result = Reading Level + Correct Factor.
 2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
 3. Peak: Peak detector.
 4. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for Band reject filter losses
 5. Proper operation of the transmitter prior to adding the filter to the measurement chain.



HARMONICS AND SPURIOUS EMISSIONS (HIGH CHANNEL, VERTICAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1194.000	48.38	-13.02	35.36	74.00	-38.64	peak
2	1920.000	47.10	-10.13	36.97	74.00	-37.03	peak
3	2066.000	45.54	-9.82	35.72	74.00	-38.28	peak
4	2338.000	45.94	-8.60	37.34	74.00	-36.66	peak
5	2480.000	45.88	-8.26	37.62	/	/	fundamental
6	2778.000	43.56	-6.69	36.87	74.00	-37.13	peak

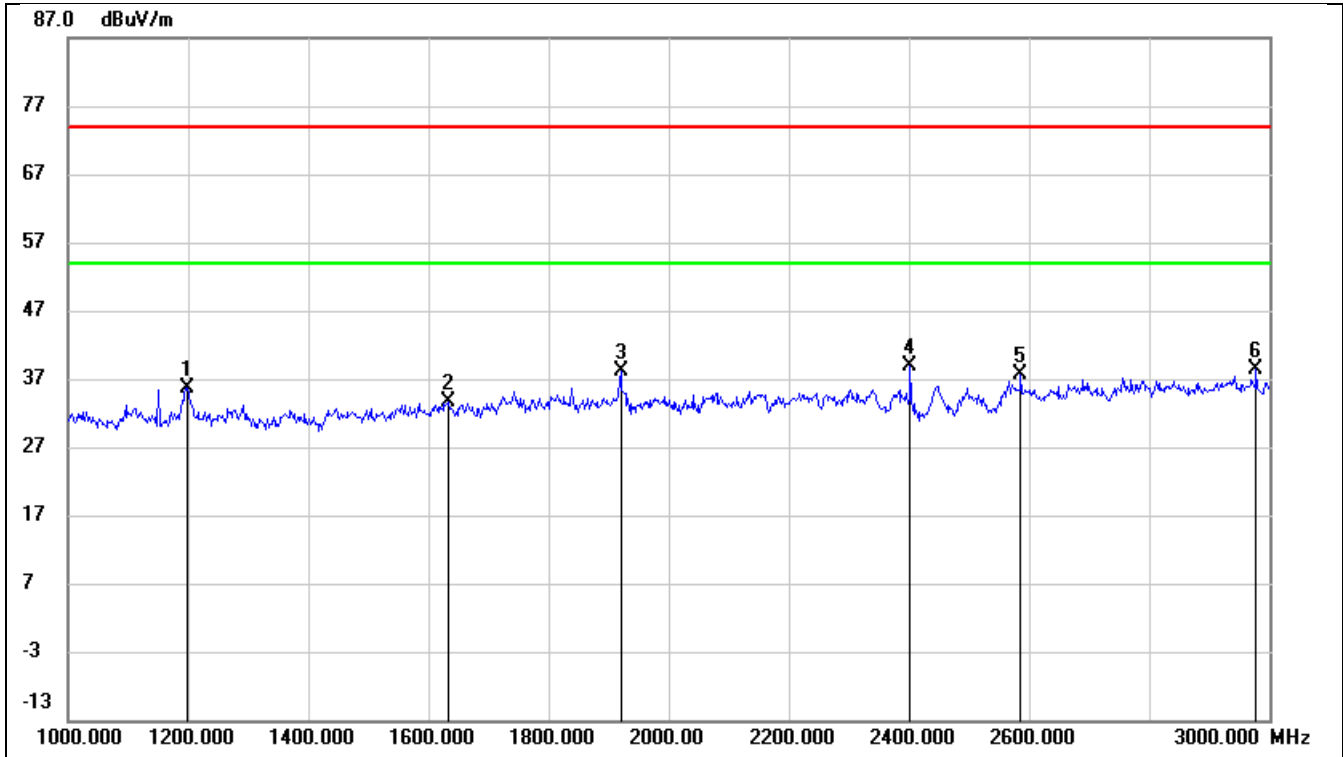
- Note: 1. Peak Result = Reading Level + Correct Factor.
 2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
 3. Peak: Peak detector.
 4. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for Band reject filter losses
 5. Proper operation of the transmitter prior to adding the filter to the measurement chain.

Note: All the test modes and channels have been tested, only the worst data record in the report.



**INNO-LINK ANTENNA:
8.3.2. GFSK MODE**

HARMONICS AND SPURIOUS EMISSIONS (LOW CHANNEL, HORIZONTAL)

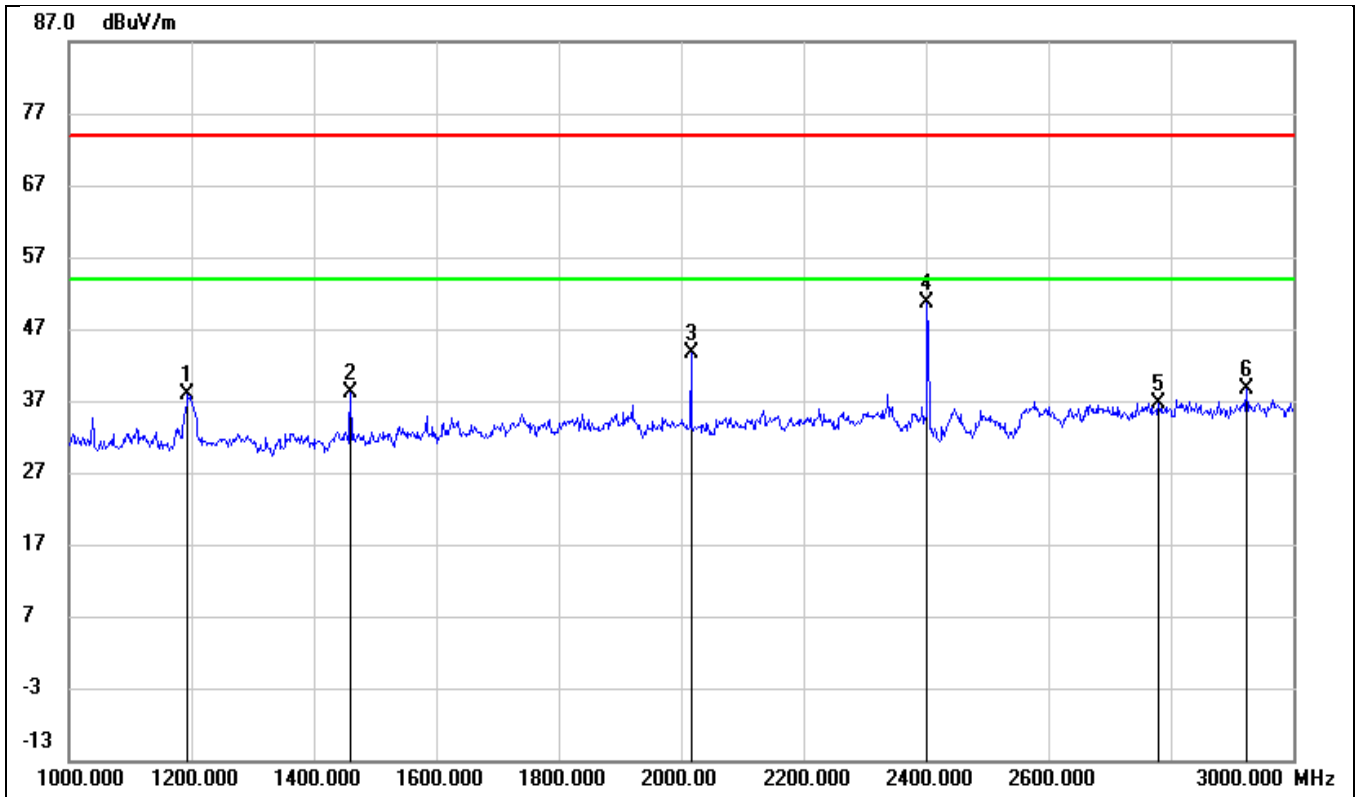


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1198.000	48.53	-13.00	35.53	74.00	-38.47	peak
2	1634.000	44.94	-11.30	33.64	74.00	-40.36	peak
3	1920.000	48.15	-10.13	38.02	74.00	-35.98	peak
4	2402.000	47.26	-8.39	38.87	/	/	fundamental
5	2586.000	45.50	-7.92	37.58	74.00	-36.42	peak
6	2978.000	43.98	-5.70	38.28	74.00	-35.72	peak

- Note: 1. Peak Result = Reading Level + Correct Factor.
 6. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
 7. Peak: Peak detector.
 8. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for Band reject filter losses
 9. Proper operation of the transmitter prior to adding the filter to the measurement chain.



HARMONICS AND SPURIOUS EMISSIONS (LOW CHANNEL, VERTICAL)

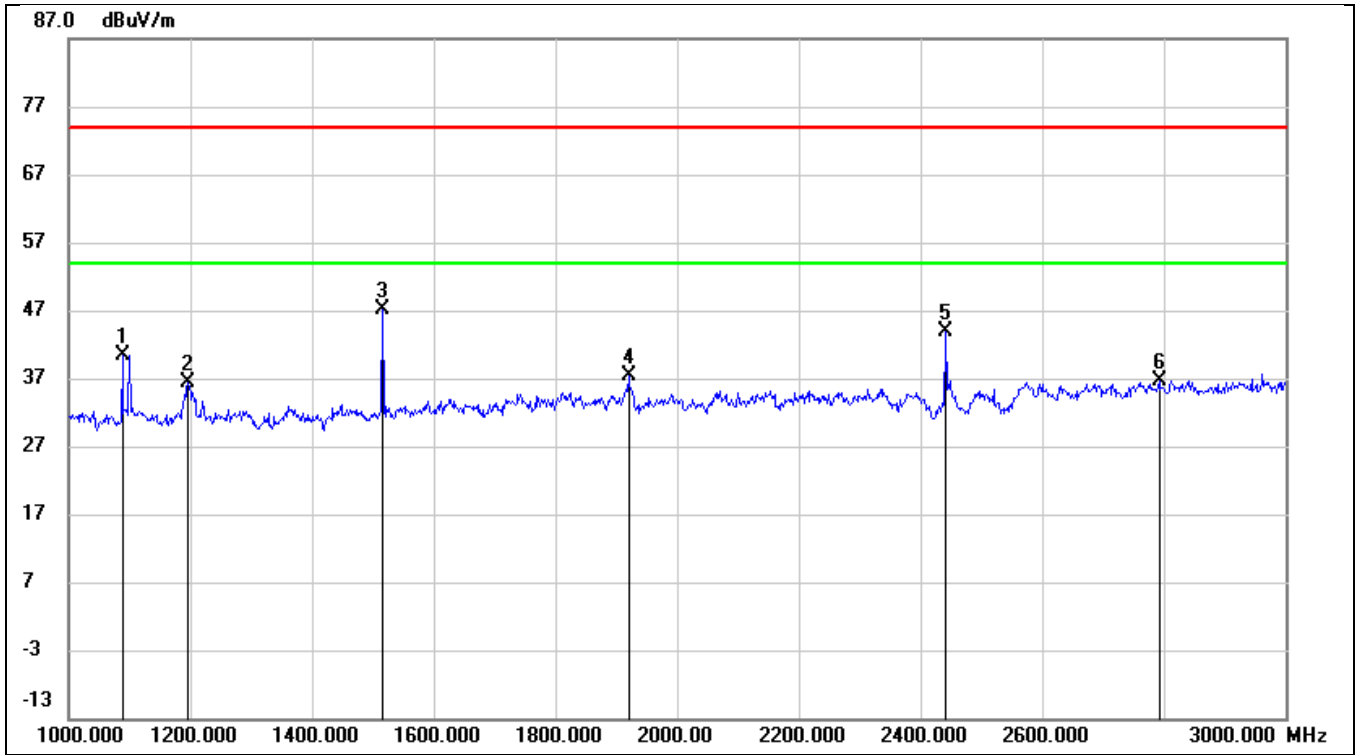


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1194.000	50.81	-13.02	37.79	74.00	-36.21	peak
2	1460.000	50.58	-12.42	38.16	74.00	-35.84	peak
3	2016.000	53.60	-10.09	43.51	74.00	-30.49	peak
4	2402.000	59.04	-8.39	50.65	/	/	fundamental
5	2780.000	43.41	-6.68	36.73	74.00	-37.27	peak
6	2924.000	44.55	-5.95	38.60	74.00	-35.40	peak

- Note: 1. Peak Result = Reading Level + Correct Factor.
 6. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
 7. Peak: Peak detector.
 8. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for Band reject filter losses
 9. Proper operation of the transmitter prior to adding the filter to the measurement chain.



HARMONICS AND SPURIOUS EMISSIONS (MID CHANNEL, HORIZONTAL)

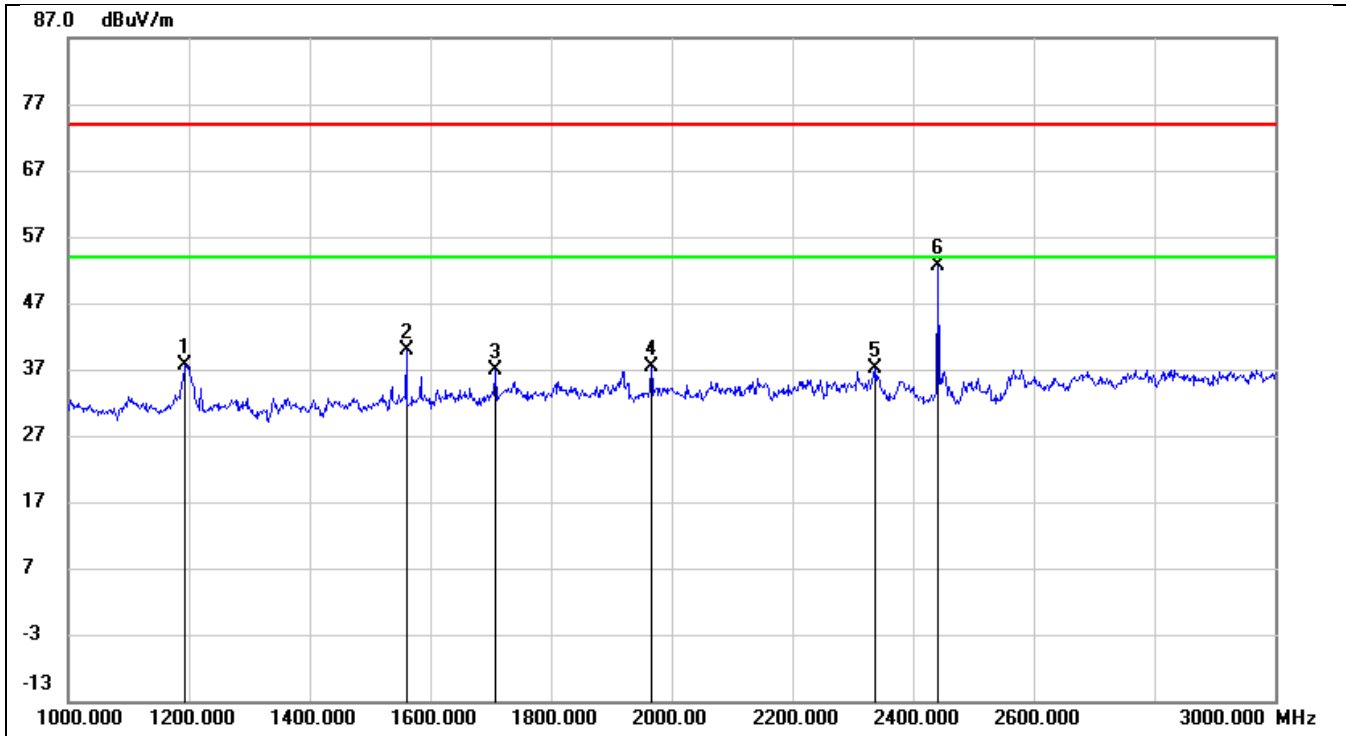


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1088.000	54.04	-13.55	40.49	74.00	-33.51	peak
2	1196.000	49.27	-13.01	36.26	74.00	-37.74	peak
3	1516.000	59.15	-12.12	47.03	74.00	-26.97	peak
4	1920.000	47.50	-10.13	37.37	74.00	-36.63	peak
5	2441.000	52.31	-8.32	43.99	/	/	fundamental
6	2792.000	43.22	-6.61	36.61	74.00	-37.39	peak

- Note: 1. Peak Result = Reading Level + Correct Factor.
 6. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
 7. Peak: Peak detector.
 8. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for Band reject filter losses
 9. Proper operation of the transmitter prior to adding the filter to the measurement chain.



HARMONICS AND SPURIOUS EMISSIONS (MID CHANNEL, VERTICAL)

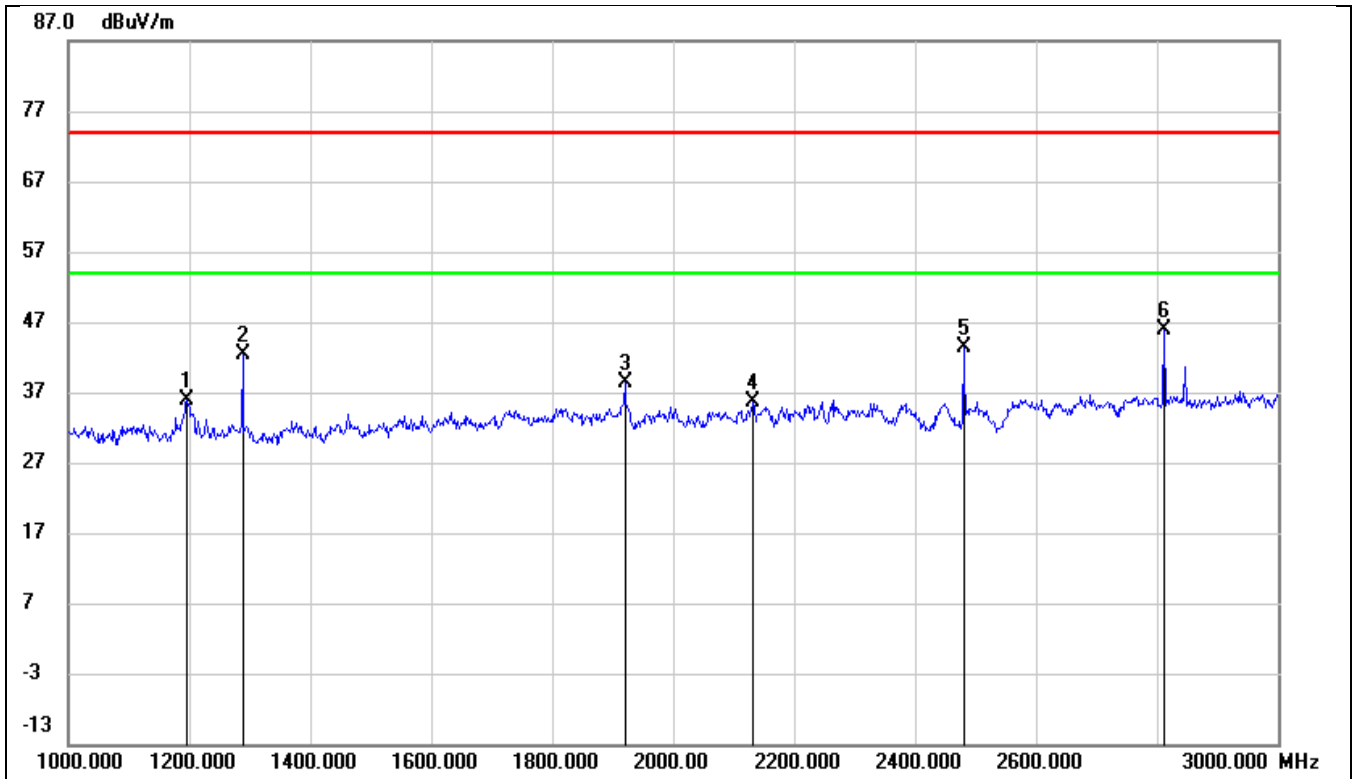


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1194.000	50.71	-13.02	37.69	74.00	-36.31	peak
2	1560.000	51.64	-11.83	39.81	74.00	-34.19	peak
3	1708.000	47.62	-10.74	36.88	74.00	-37.12	peak
4	1966.000	47.58	-10.16	37.42	74.00	-36.58	peak
5	2338.000	45.69	-8.60	37.09	74.00	-36.91	peak
6	2441.000	61.06	-8.32	52.74	/	/	fundamental

- Note: 1. Peak Result = Reading Level + Correct Factor.
 6. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
 7. Peak: Peak detector.
 8. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for Band reject filter losses
 9. Proper operation of the transmitter prior to adding the filter to the measurement chain.



HARMONICS AND SPURIOUS EMISSIONS (HIGH CHANNEL, HORIZONTAL)

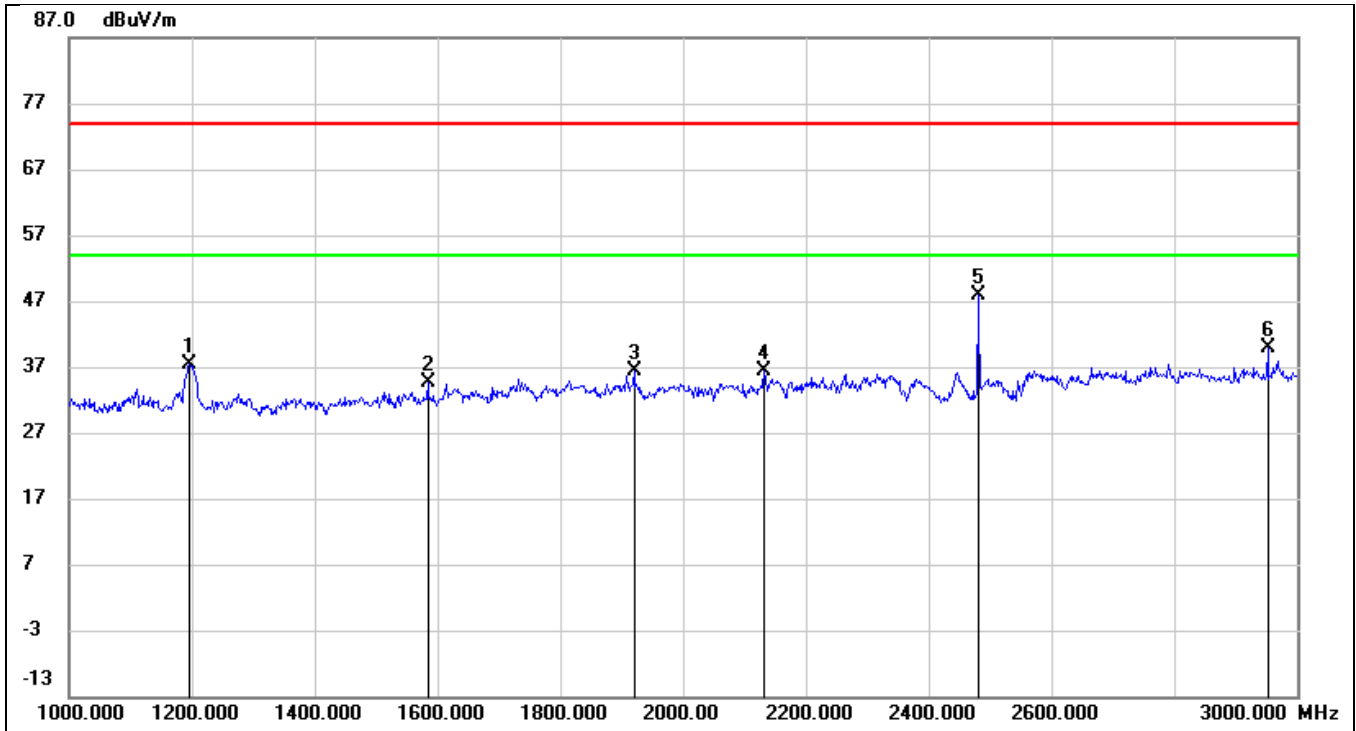


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1196.000	48.98	-13.01	35.97	74.00	-38.03	peak
2	1288.000	55.27	-12.86	42.41	74.00	-31.59	peak
3	1920.000	48.40	-10.13	38.27	74.00	-35.73	peak
4	2132.000	44.95	-9.43	35.52	74.00	-38.48	peak
5	2480.000	51.67	-8.26	43.41	/	/	fundamental
6	2812.000	52.29	-6.50	45.79	74.00	-28.21	peak

- Note: 1. Peak Result = Reading Level + Correct Factor.
 6. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
 7. Peak: Peak detector.
 8. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for Band reject filter losses
 9. Proper operation of the transmitter prior to adding the filter to the measurement chain.



HARMONICS AND SPURIOUS EMISSIONS (HIGH CHANNEL, VERTICAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1196.000	50.31	-13.01	37.30	74.00	-36.70	peak
2	1584.000	46.35	-11.66	34.69	74.00	-39.31	peak
3	1920.000	46.47	-10.13	36.34	74.00	-37.66	peak
4	2132.000	45.84	-9.43	36.41	74.00	-37.59	peak
5	2480.000	56.14	-8.26	47.88	/	/	fundamental
6	2952.000	45.76	-5.82	39.94	74.00	-34.06	peak

- Note: 1. Peak Result = Reading Level + Correct Factor.
 6. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
 7. Peak: Peak detector.
 8. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for Band reject filter losses
 9. Proper operation of the transmitter prior to adding the filter to the measurement chain.

Note: All the test modes and channels have been tested, only the worst data record in the report.

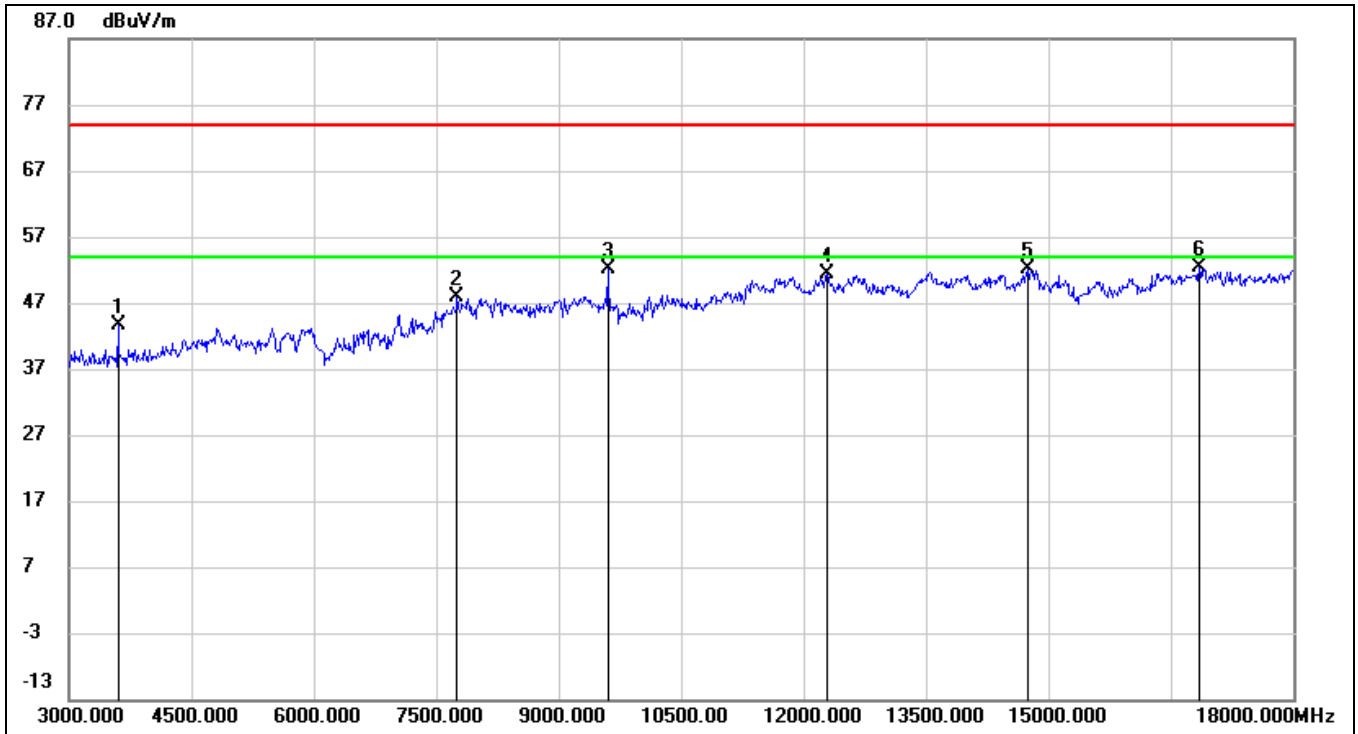


8.4. SPURIOUS EMISSIONS (3~18GHz)

KTC ANTENNA:

8.4.1. GFSK MODE

HARMONICS AND SPURIOUS EMISSIONS (LOW CHANNEL, HORIZONTAL)

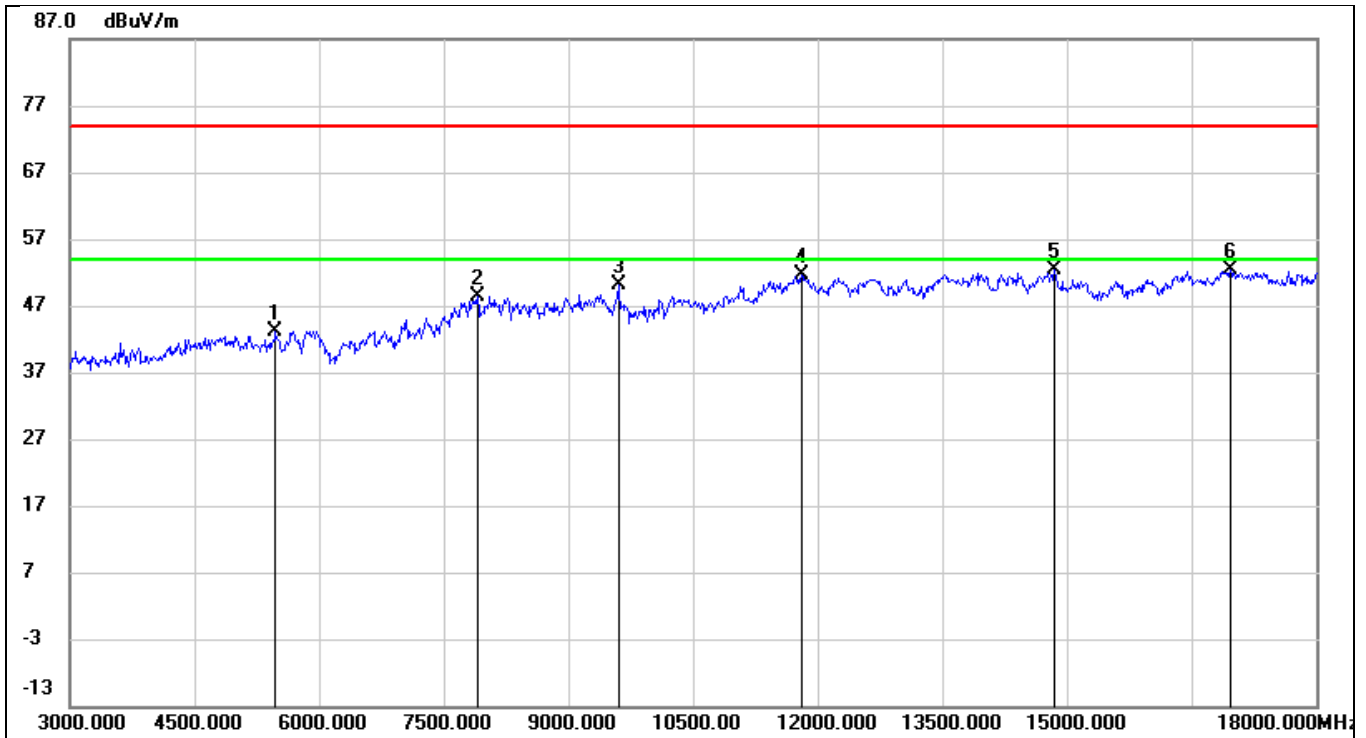


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	3600.000	46.72	-3.17	43.55	74.00	-30.45	peak
2	7755.000	39.05	8.94	47.99	74.00	-26.01	peak
3	9600.000	41.00	11.03	52.03	74.00	-21.97	peak
4	12285.000	35.38	16.08	51.46	74.00	-22.54	peak
5	14745.000	34.28	17.84	52.12	74.00	-21.88	peak
6	16845.000	31.29	21.10	52.39	74.00	-21.61	peak

- Note:
1. Peak Result = Reading Level + Correct Factor.
 2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
 3. Peak: Peak detector.
 4. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.
 5. Proper operation of the transmitter prior to adding the filter to the measurement chain.



HARMONICS AND SPURIOUS EMISSIONS (LOW CHANNEL, VERTICAL)

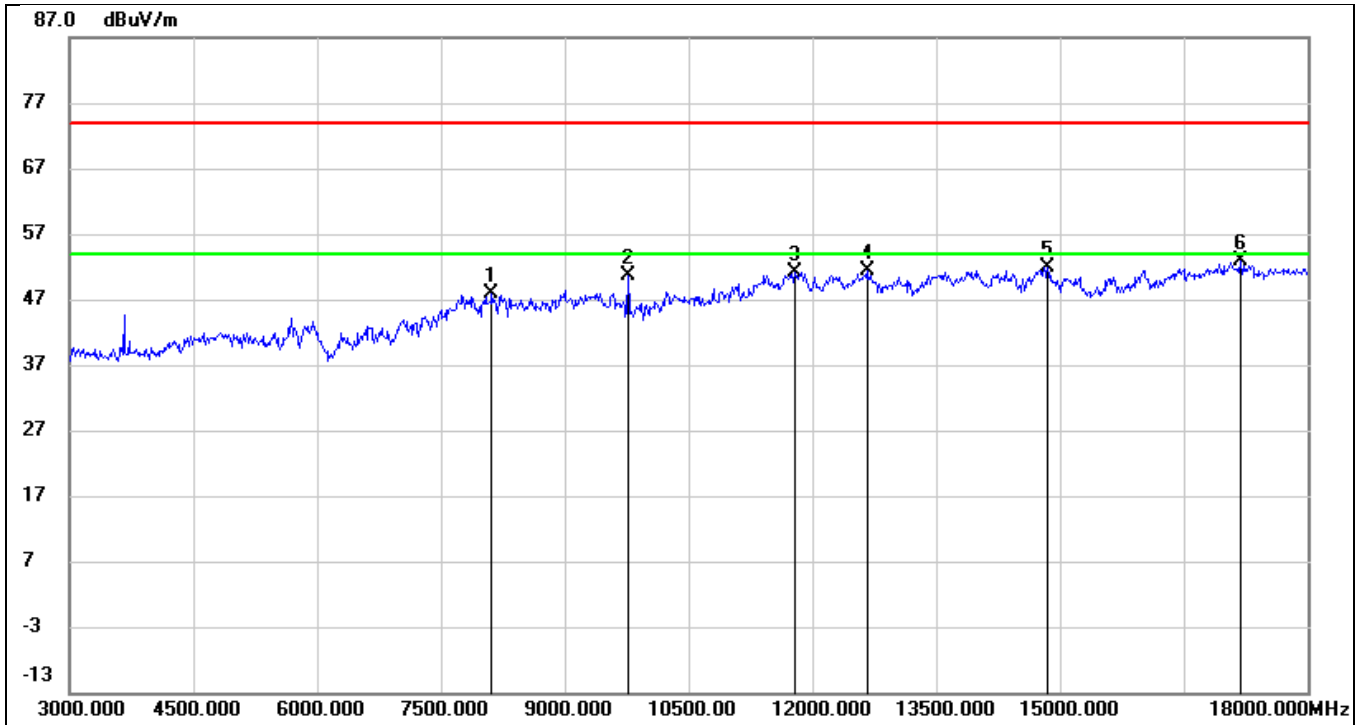


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5475.000	39.92	3.25	43.17	74.00	-30.83	peak
2	7905.000	39.52	8.84	48.36	74.00	-25.64	peak
3	9600.000	39.02	11.03	50.05	74.00	-23.95	peak
4	11805.000	36.31	15.26	51.57	74.00	-22.43	peak
5	14850.000	34.61	17.71	52.32	74.00	-21.68	peak
6	16965.000	31.11	21.36	52.47	74.00	-21.53	peak

- Note: 1. Peak Result = Reading Level + Correct Factor.
 2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
 3. Peak: Peak detector.
 4. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.
 5. Proper operation of the transmitter prior to adding the filter to the measurement chain.



HARMONICS AND SPURIOUS EMISSIONS (MID CHANNEL, HORIZONTAL)

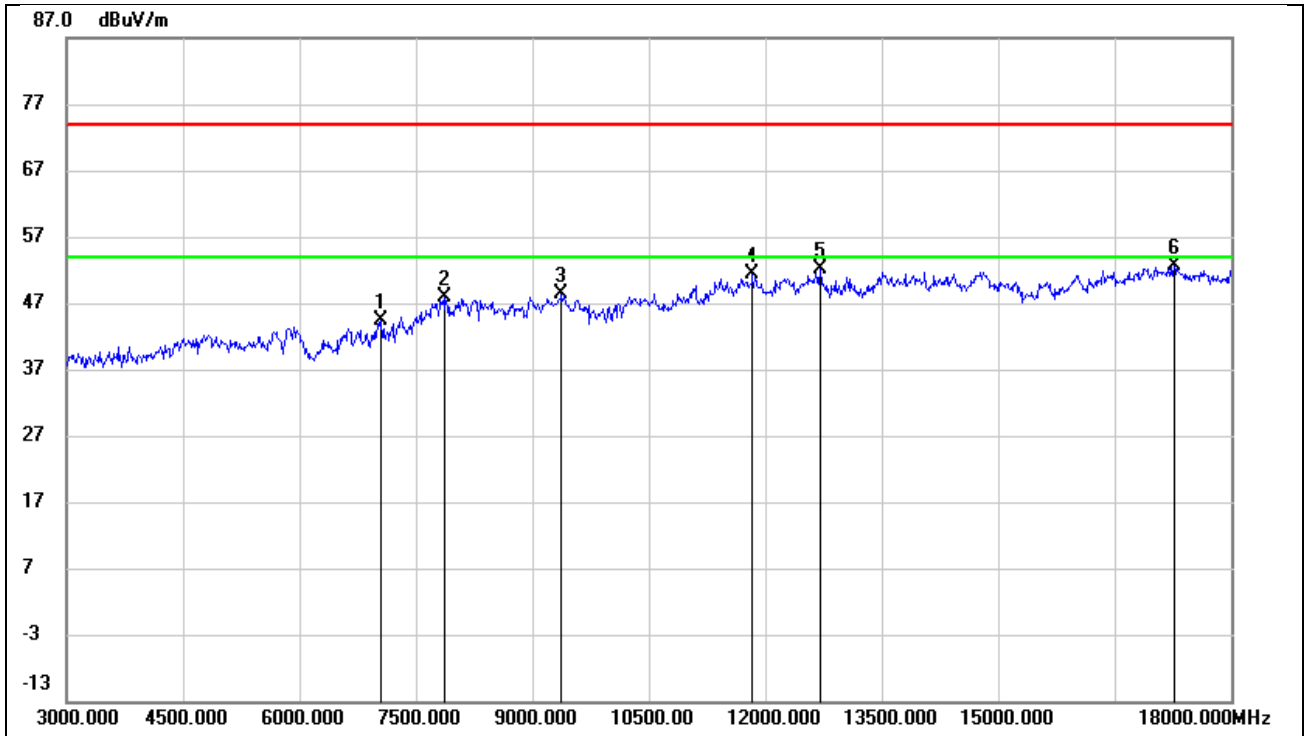


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	8115.000	37.64	10.13	47.77	74.00	-26.23	peak
2	9765.000	40.40	10.22	50.62	74.00	-23.38	peak
3	11790.000	35.95	15.26	51.21	74.00	-22.79	peak
4	12660.000	35.73	15.69	51.42	74.00	-22.58	peak
5	14850.000	34.14	17.71	51.85	74.00	-22.15	peak
6	17190.000	30.90	21.98	52.88	74.00	-21.12	peak

- Note: 1. Peak Result = Reading Level + Correct Factor.
 2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
 3. Peak: Peak detector.
 4. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.
 5. Proper operation of the transmitter prior to adding the filter to the measurement chain.



HARMONICS AND SPURIOUS EMISSIONS (MID CHANNEL, VERTICAL)

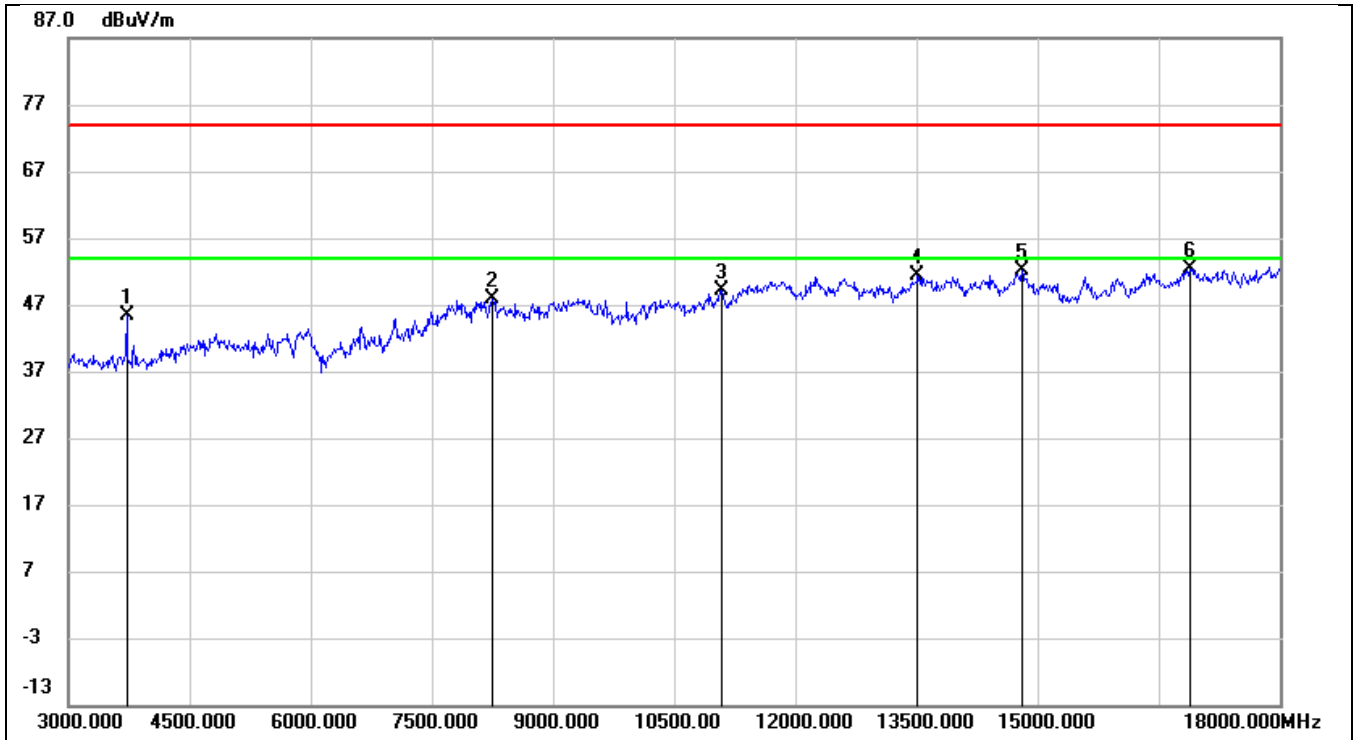


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	7050.000	36.67	7.63	44.30	74.00	-29.70	peak
2	7875.000	38.95	8.98	47.93	74.00	-26.07	peak
3	9375.000	37.58	10.83	48.41	74.00	-25.59	peak
4	11835.000	35.93	15.34	51.27	74.00	-22.73	peak
5	12705.000	36.44	15.64	52.08	74.00	-21.92	peak
6	17265.000	30.12	22.39	52.51	74.00	-21.49	peak

- Note:
1. Peak Result = Reading Level + Correct Factor.
 2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
 3. Peak: Peak detector.
 4. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.
 5. Proper operation of the transmitter prior to adding the filter to the measurement chain.



HARMONICS AND SPURIOUS EMISSIONS (HIGH CHANNEL, HORIZONTAL)

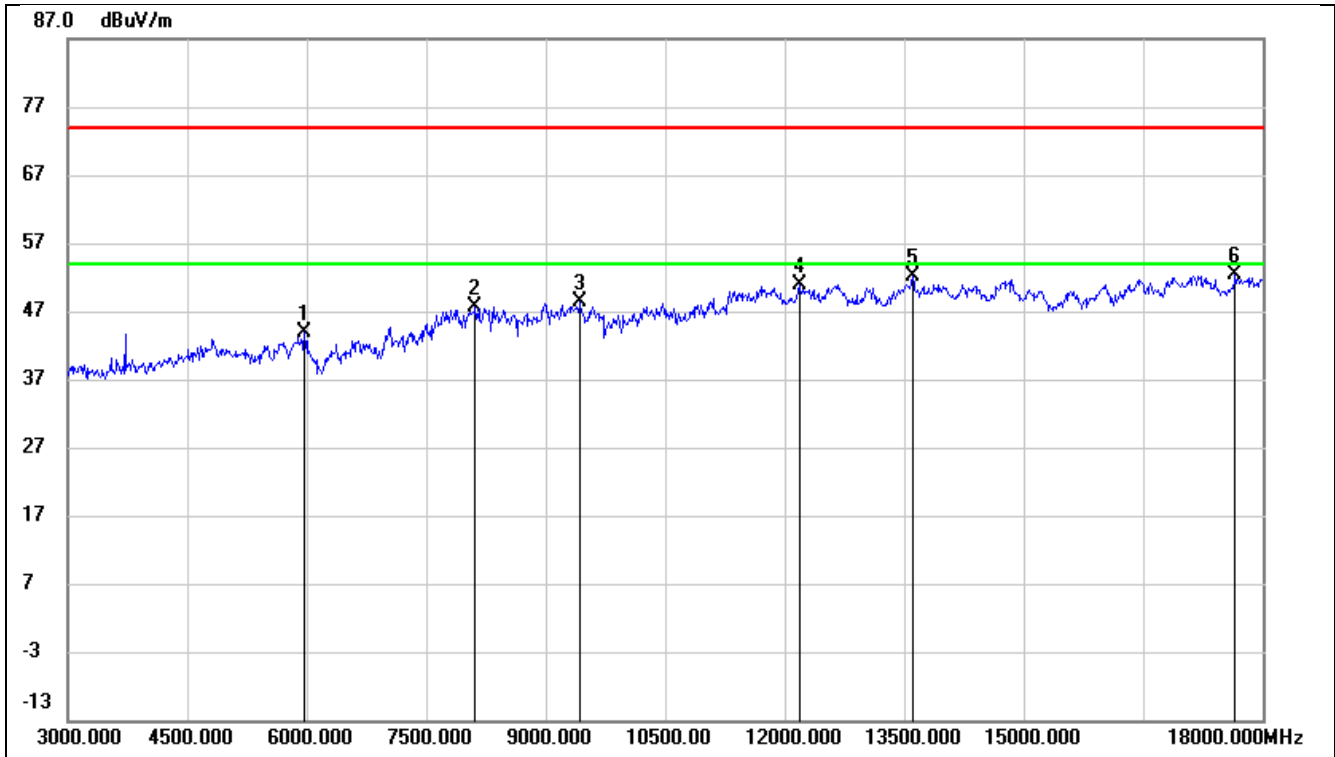


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	3720.000	48.28	-2.84	45.44	74.00	-28.56	peak
2	8250.000	38.12	9.75	47.87	74.00	-26.13	peak
3	11085.000	35.43	13.72	49.15	74.00	-24.85	peak
4	13515.000	34.21	17.19	51.40	74.00	-22.60	peak
5	14805.000	34.08	18.00	52.08	74.00	-21.92	peak
6	16890.000	30.91	21.49	52.40	74.00	-21.60	peak

- Note: 1. Peak Result = Reading Level + Correct Factor.
 2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
 3. Peak: Peak detector.
 4. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.
 5. Proper operation of the transmitter prior to adding the filter to the measurement chain.



HARMONICS AND SPURIOUS EMISSIONS (HIGH CHANNEL, VERTICAL)



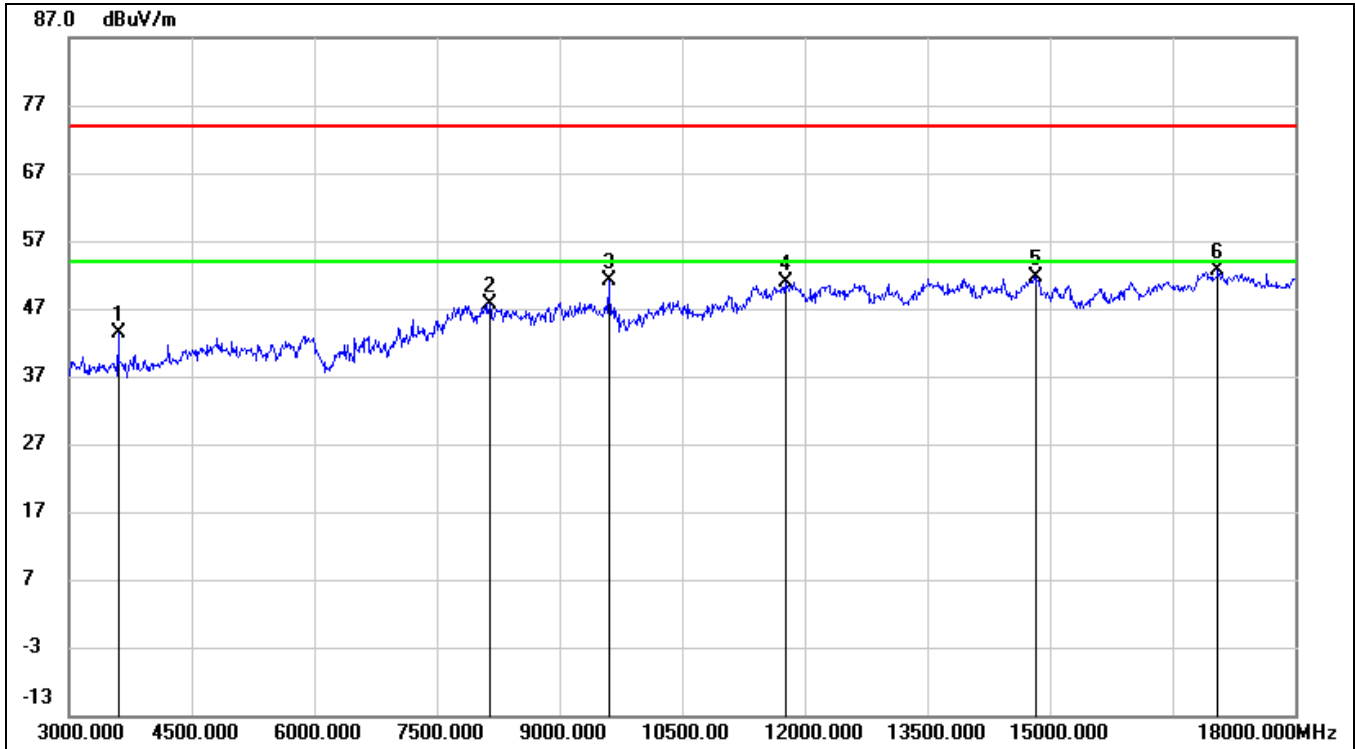
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5970.000	39.80	4.15	43.95	74.00	-30.05	peak
2	8115.000	37.48	10.13	47.61	74.00	-26.39	peak
3	9435.000	37.52	10.81	48.33	74.00	-25.67	peak
4	12180.000	35.01	15.84	50.85	74.00	-23.15	peak
5	13605.000	35.02	17.12	52.14	74.00	-21.86	peak
6	17655.000	29.12	23.14	52.26	74.00	-21.74	peak

- Note: 1. Peak Result = Reading Level + Correct Factor.
 2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
 3. Peak: Peak detector.
 4. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.
 5. Proper operation of the transmitter prior to adding the filter to the measurement chain.



8.4.2. 8DPSK MODE

HARMONICS AND SPURIOUS EMISSIONS (LOW CHANNEL, HORIZONTAL)

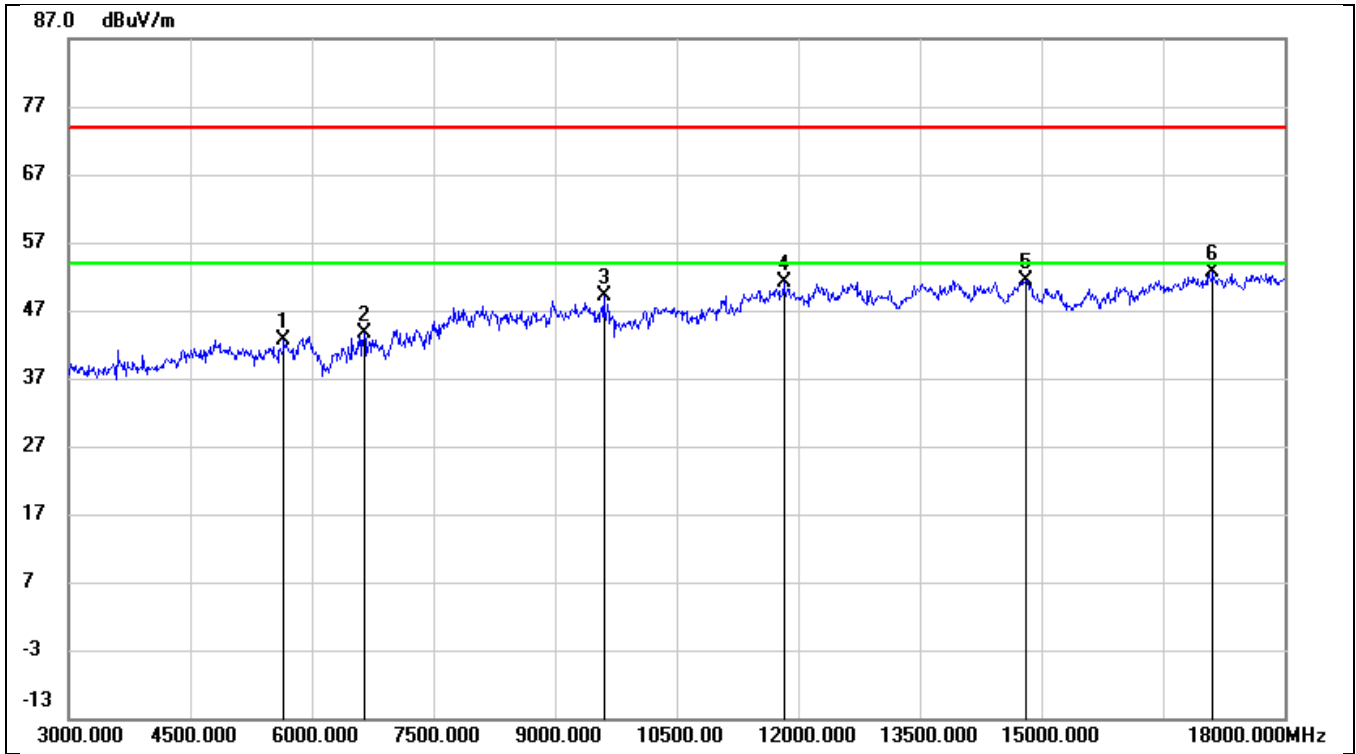


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	3600.000	46.63	-3.17	43.46	74.00	-30.54	peak
2	8145.000	37.68	10.01	47.69	74.00	-26.31	peak
3	9600.000	39.98	11.03	51.01	74.00	-22.99	peak
4	11760.000	35.55	15.29	50.84	74.00	-23.16	peak
5	14820.000	33.72	17.91	51.63	74.00	-22.37	peak
6	17055.000	30.93	21.60	52.53	74.00	-21.47	peak

- Note: 1. Peak Result = Reading Level + Correct Factor.
 2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
 3. Peak: Peak detector.
 4. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.
 5. Proper operation of the transmitter prior to adding the filter to the measurement chain.



HARMONICS AND SPURIOUS EMISSIONS (LOW CHANNEL, VERTICAL)

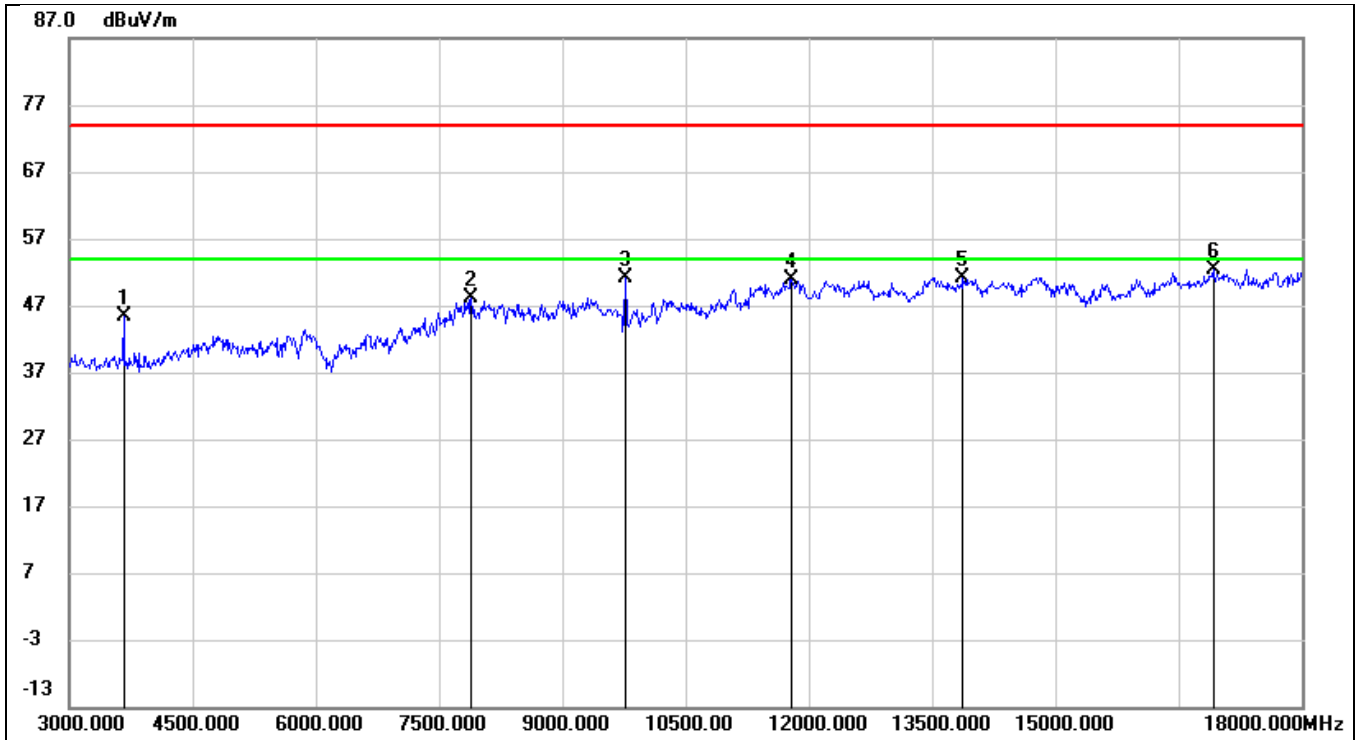


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5655.000	39.55	3.04	42.59	74.00	-31.41	peak
2	6645.000	37.60	5.95	43.55	74.00	-30.45	peak
3	9600.000	38.06	11.03	49.09	74.00	-24.91	peak
4	11820.000	35.78	15.29	51.07	74.00	-22.93	peak
5	14805.000	33.45	18.00	51.45	74.00	-22.55	peak
6	17115.000	30.66	21.91	52.57	74.00	-21.43	peak

- Note: 1. Measurement = Reading Level + Correct Factor.
 2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
 3. Peak: Peak detector.
 4. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.
 5. Proper operation of the transmitter prior to adding the filter to the measurement chain.



HARMONICS AND SPURIOUS EMISSIONS (MID CHANNEL, HORIZONTAL)

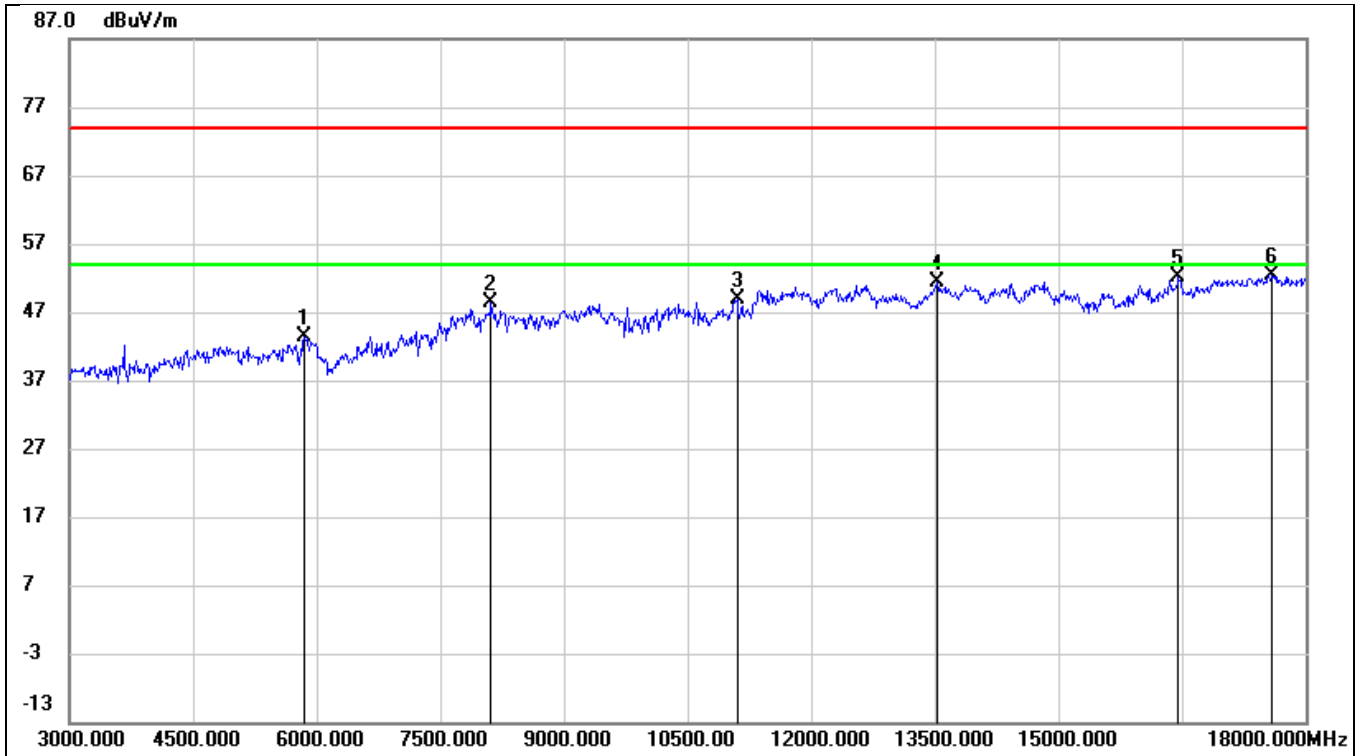


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	3660.000	48.50	-3.02	45.48	74.00	-28.52	peak
2	7890.000	39.11	8.91	48.02	74.00	-25.98	peak
3	9765.000	40.93	10.22	51.15	74.00	-22.85	peak
4	11790.000	35.64	15.26	50.90	74.00	-23.10	peak
5	13875.000	33.52	17.55	51.07	74.00	-22.93	peak
6	16920.000	30.96	21.51	52.47	74.00	-21.53	peak

- Note: 1. Peak Result = Reading Level + Correct Factor.
 2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
 3. Peak: Peak detector.
 4. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.
 5. Proper operation of the transmitter prior to adding the filter to the measurement chain.



HARMONICS AND SPURIOUS EMISSIONS (MID CHANNEL, VERTICAL)

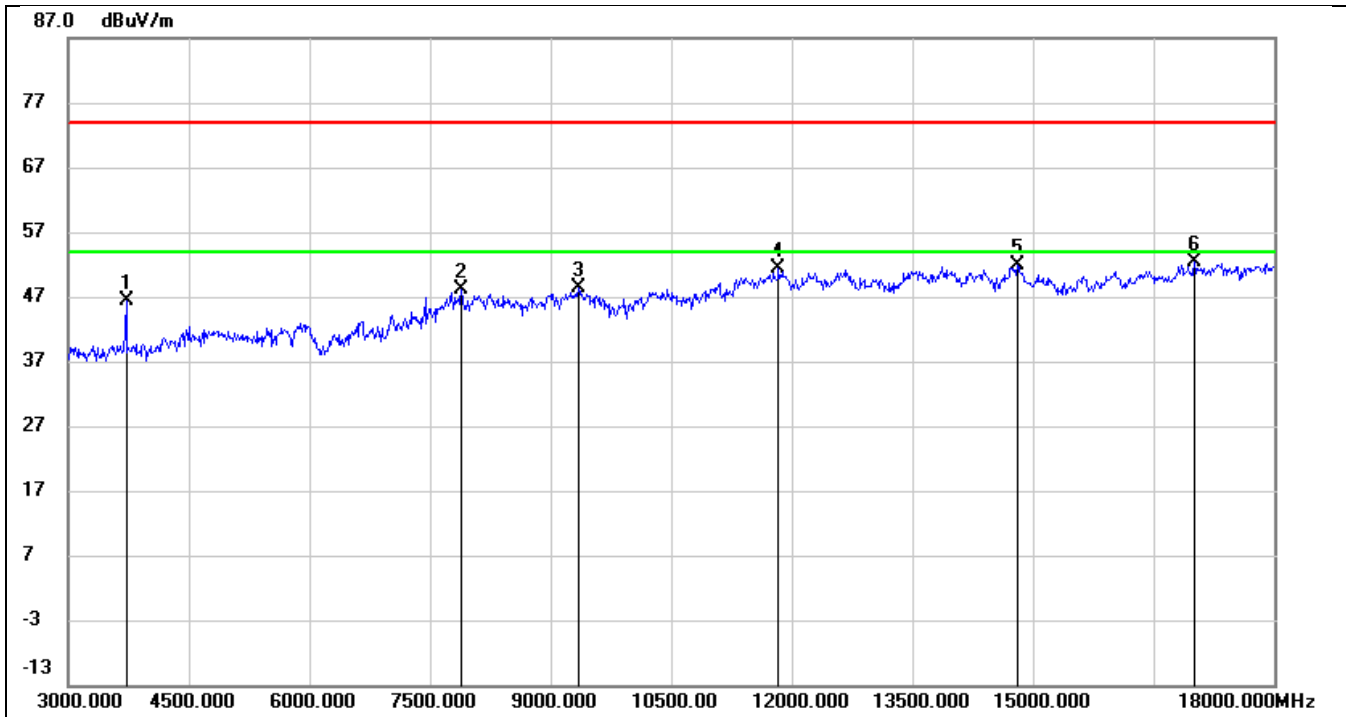


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5850.000	39.38	4.00	43.38	74.00	-30.62	peak
2	8115.000	38.16	10.13	48.29	74.00	-25.71	peak
3	11100.000	35.15	13.79	48.94	74.00	-25.06	peak
4	13530.000	34.08	17.19	51.27	74.00	-22.73	peak
5	16455.000	32.54	19.68	52.22	74.00	-21.78	peak
6	17580.000	29.84	22.60	52.44	74.00	-21.56	peak

- Note:
1. Peak Result = Reading Level + Correct Factor.
 2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
 3. Peak: Peak detector.
 4. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.
 5. Proper operation of the transmitter prior to adding the filter to the measurement chain.



HARMONICS AND SPURIOUS EMISSIONS (HIGH CHANNEL, HORIZONTAL)

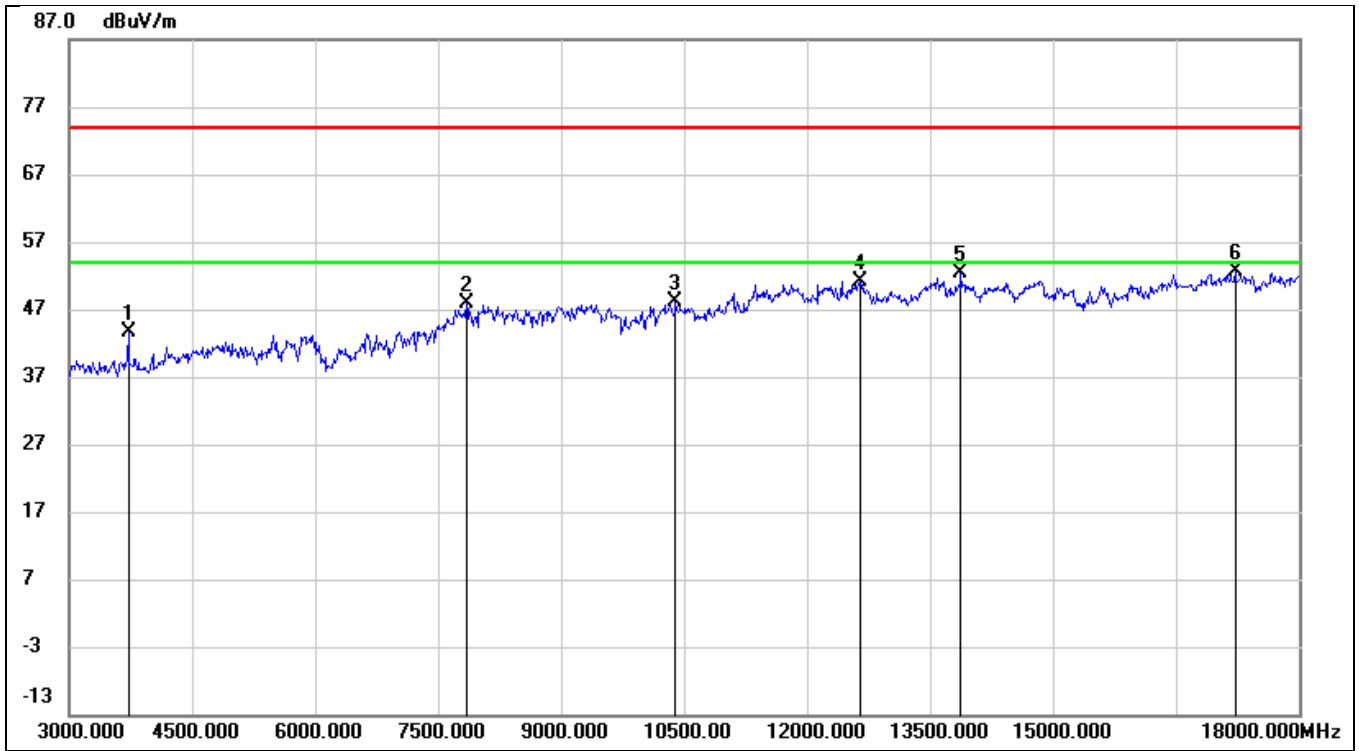


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	3720.000	49.25	-2.84	46.41	74.00	-27.59	peak
2	7890.000	39.19	8.91	48.10	74.00	-25.90	peak
3	9345.000	37.60	10.66	48.26	74.00	-25.74	peak
4	11835.000	36.15	15.34	51.49	74.00	-22.51	peak
5	14805.000	33.88	18.00	51.88	74.00	-22.12	peak
6	17010.000	31.16	21.31	52.47	74.00	-21.53	peak

- Note: 1. Peak Result = Reading Level + Correct Factor.
 2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
 3. Peak: Peak detector.
 4. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.
 5. Proper operation of the transmitter prior to adding the filter to the measurement chain.



HARMONICS AND SPURIOUS EMISSIONS (HIGH CHANNEL, VERTICAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	3720.000	46.53	-2.84	43.69	74.00	-30.31	peak
2	7845.000	38.76	9.14	47.90	74.00	-26.10	peak
3	10395.000	35.92	12.20	48.12	74.00	-25.88	peak
4	12645.000	35.39	15.71	51.10	74.00	-22.90	peak
5	13875.000	34.79	17.55	52.34	74.00	-21.66	peak
6	17220.000	30.59	22.12	52.71	74.00	-21.29	peak

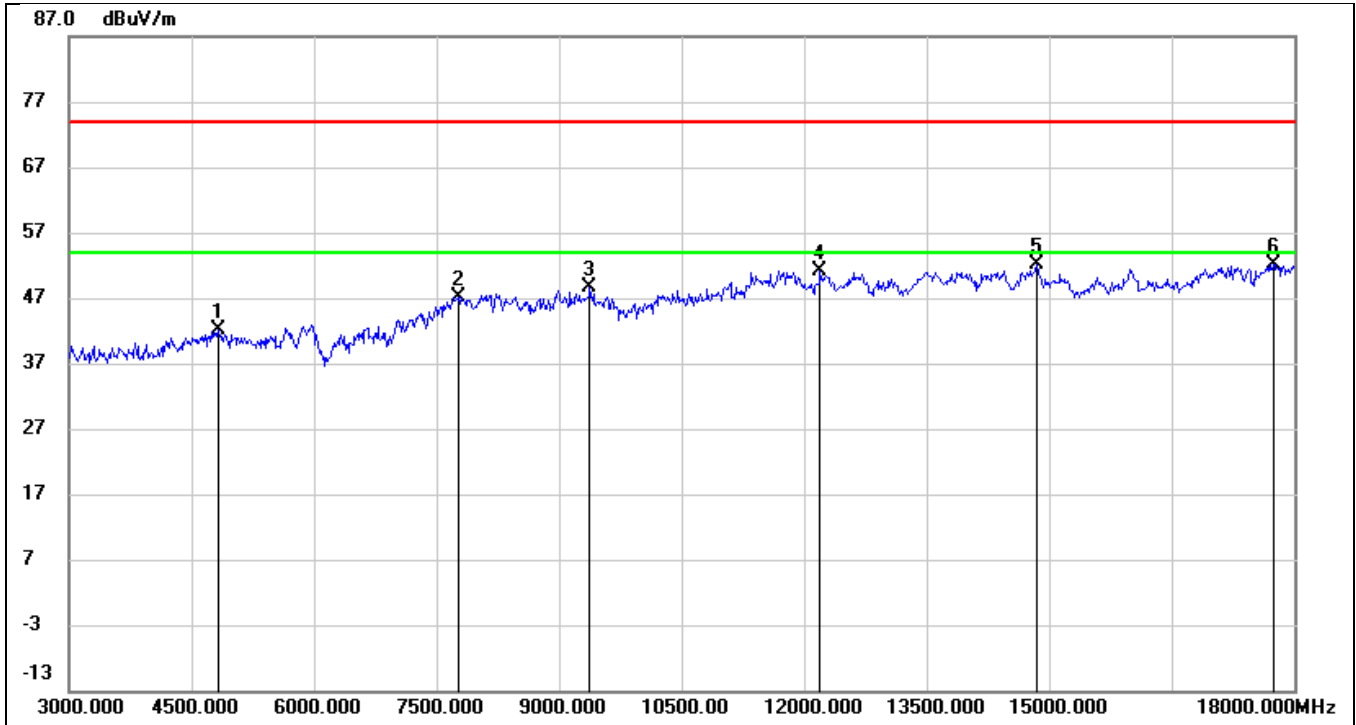
- Note:
1. Peak Result = Reading Level + Correct Factor.
 2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
 3. Peak: Peak detector.
 4. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.
 5. Proper operation of the transmitter prior to adding the filter to the measurement chain.



INNO-LINK ANTENNA:

8.4.3. GFSK MODE

HARMONICS AND SPURIOUS EMISSIONS (LOW CHANNEL, HORIZONTAL)

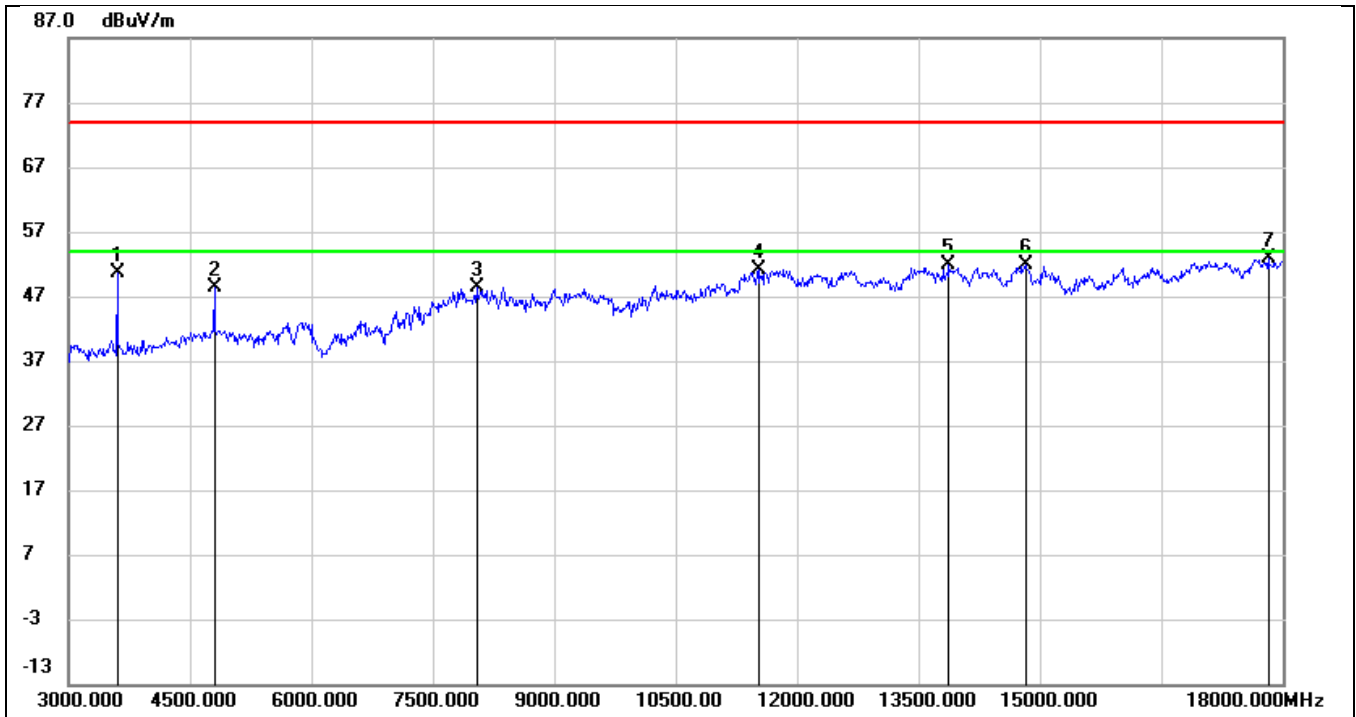


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4830.000	40.65	1.37	42.02	74.00	-31.98	peak
2	7770.000	37.98	9.09	47.07	74.00	-26.93	peak
3	9375.000	37.85	10.83	48.68	74.00	-25.32	peak
4	12195.000	35.29	15.93	51.22	74.00	-22.78	peak
5	14850.000	34.34	17.71	52.05	74.00	-21.95	peak
6	17745.000	28.51	23.72	52.23	74.00	-21.77	peak

- Note: 1. Peak Result = Reading Level + Correct Factor.
 6. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
 7. Peak: Peak detector.
 8. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.
 9. Proper operation of the transmitter prior to adding the filter to the measurement chain.



HARMONICS AND SPURIOUS EMISSIONS (LOW CHANNEL, VERTICAL)

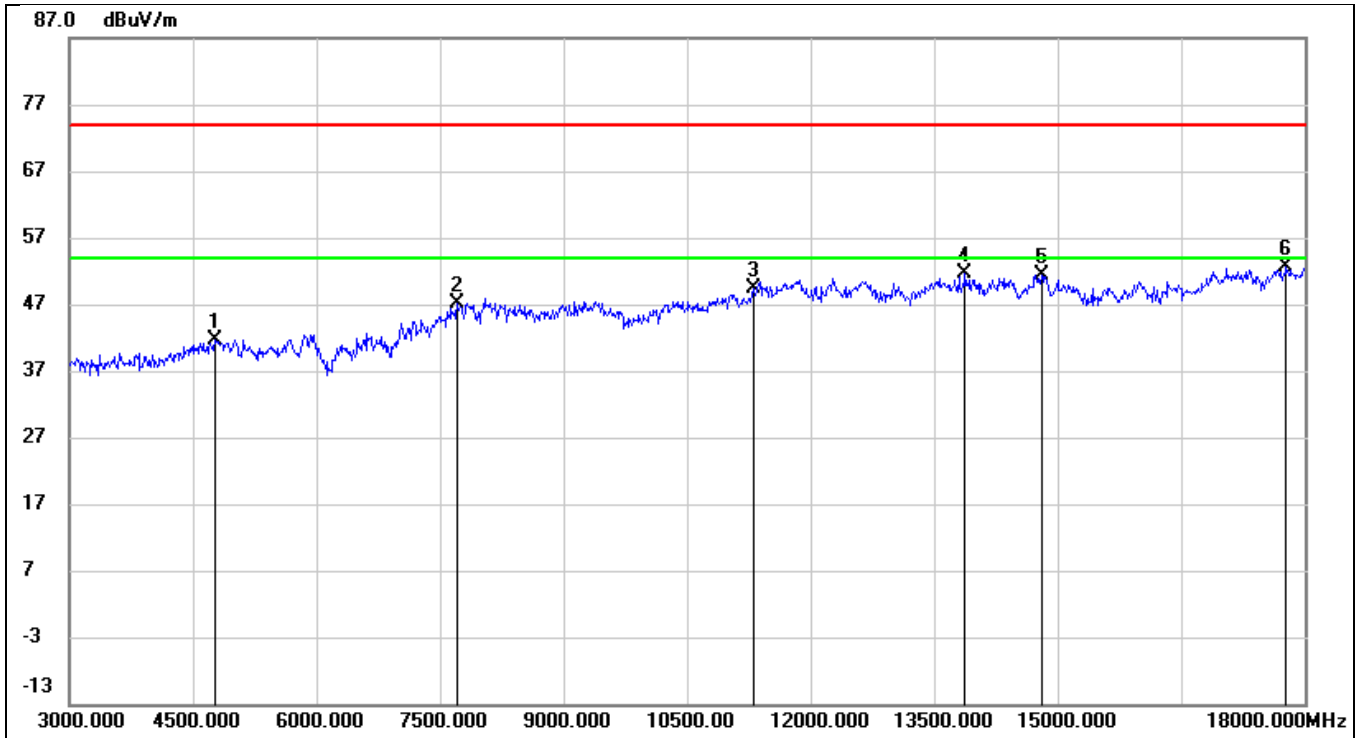


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	3600.000	53.86	-3.17	50.69	74.00	-23.31	peak
2	4800.000	47.06	1.40	48.46	74.00	-25.54	peak
3	8040.000	39.10	9.25	48.35	74.00	-25.65	peak
4	11520.000	36.56	14.66	51.22	74.00	-22.78	peak
5	13875.000	34.30	17.55	51.85	74.00	-22.15	peak
6	14820.000	33.87	17.91	51.78	74.00	-22.22	peak
7	17820.000	28.86	24.01	52.87	74.00	-21.13	peak

- Note: 1. Peak Result = Reading Level + Correct Factor.
 6. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
 7. Peak: Peak detector.
 8. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.
 9. Proper operation of the transmitter prior to adding the filter to the measurement chain.



HARMONICS AND SPURIOUS EMISSIONS (MID CHANNEL, HORIZONTAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4770.000	40.52	1.06	41.58	74.00	-32.42	peak
2	7710.000	38.67	8.54	47.21	74.00	-26.79	peak
3	11310.000	35.46	13.94	49.40	74.00	-24.60	peak
4	13875.000	34.09	17.55	51.64	74.00	-22.36	peak
5	14805.000	33.48	18.00	51.48	74.00	-22.52	peak
6	17775.000	28.65	23.91	52.56	74.00	-21.44	peak

Note: 1. Peak Result = Reading Level + Correct Factor.

4. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

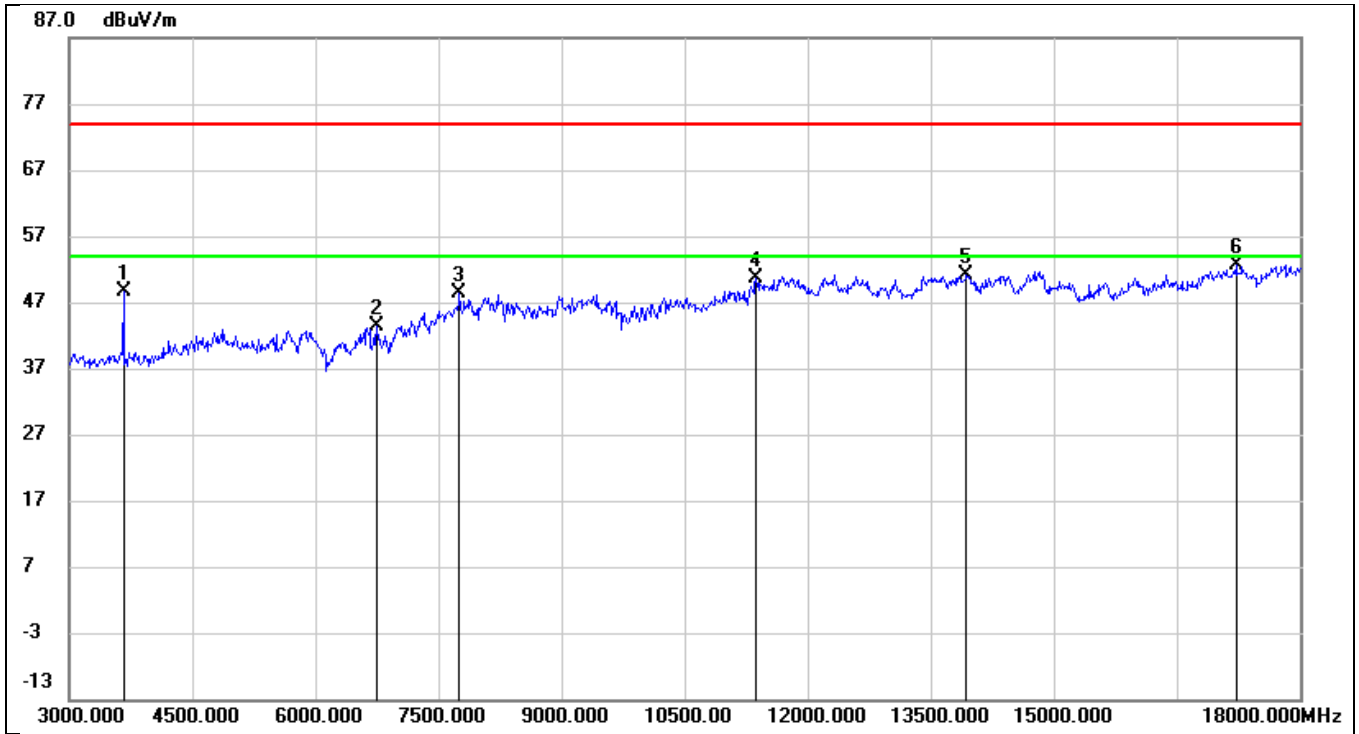
5. Peak: Peak detector.

4. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.

5. Proper operation of the transmitter prior to adding the filter to the measurement chain.



HARMONICS AND SPURIOUS EMISSIONS (MID CHANNEL, VERTICAL)

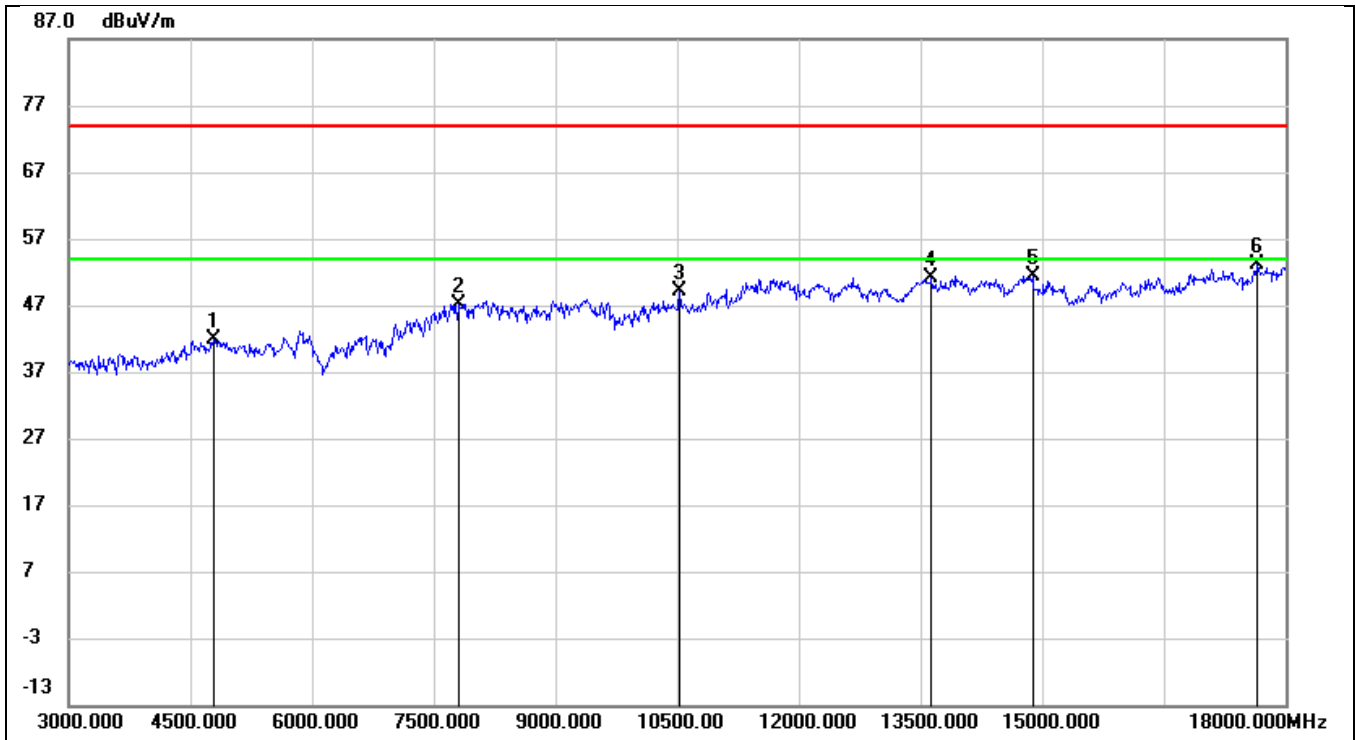


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	3660.000	51.68	-3.02	48.66	74.00	-25.34	peak
2	6750.000	37.40	5.95	43.35	74.00	-30.65	peak
3	7755.000	39.35	8.94	48.29	74.00	-25.71	peak
4	11370.000	36.03	14.49	50.52	74.00	-23.48	peak
5	13935.000	33.47	17.58	51.05	74.00	-22.95	peak
6	17220.000	30.53	22.12	52.65	74.00	-21.35	peak

- Note: 1. Peak Result = Reading Level + Correct Factor.
 6. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
 7. Peak: Peak detector.
 8. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.
 9. Proper operation of the transmitter prior to adding the filter to the measurement chain.



HARMONICS AND SPURIOUS EMISSIONS (HIGH CHANNEL, HORIZONTAL)

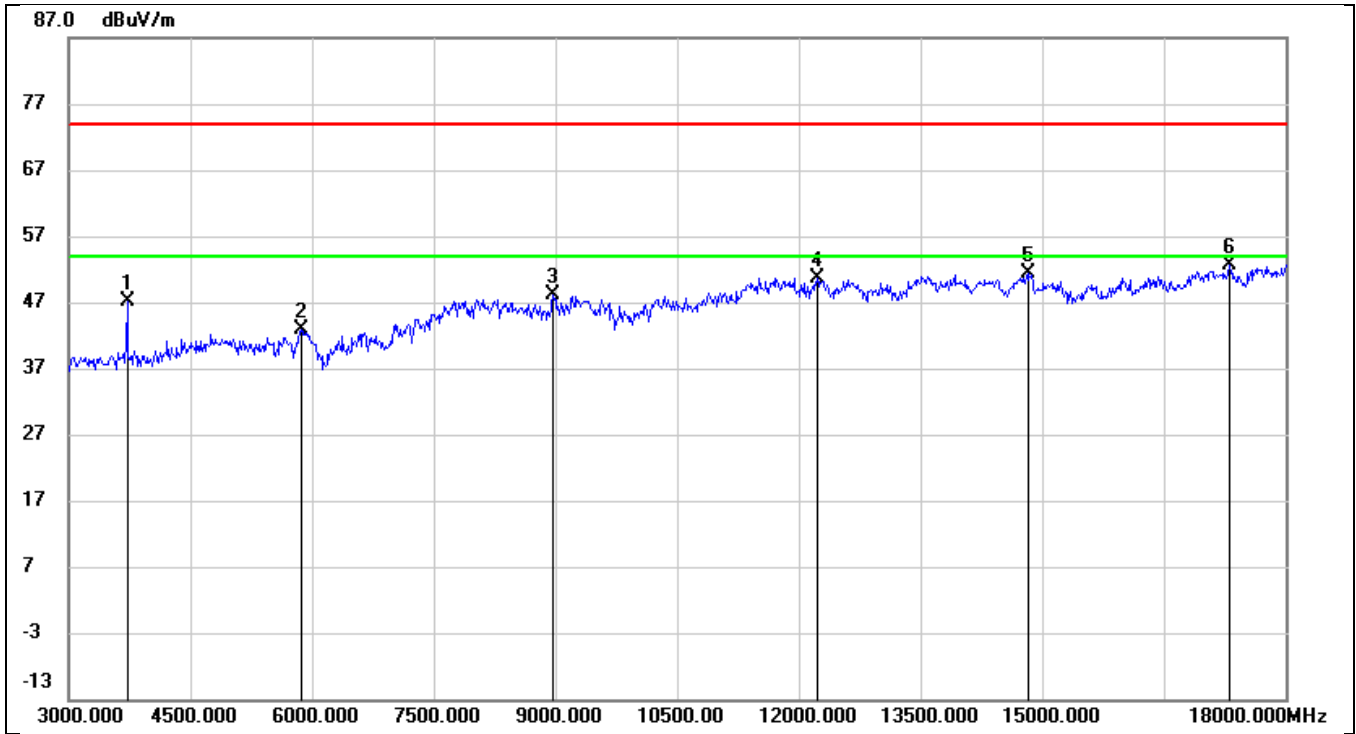


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4785.000	40.53	1.23	41.76	74.00	-32.24	peak
2	7800.000	37.81	9.35	47.16	74.00	-26.84	peak
3	10530.000	36.70	12.46	49.16	74.00	-24.84	peak
4	13635.000	33.95	17.28	51.23	74.00	-22.77	peak
5	14880.000	33.92	17.51	51.43	74.00	-22.57	peak
6	17655.000	30.08	23.14	53.22	74.00	-20.78	peak

- Note: 1. Peak Result = Reading Level + Correct Factor.
 6. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
 7. Peak: Peak detector.
 8. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.
 9. Proper operation of the transmitter prior to adding the filter to the measurement chain.



HARMONICS AND SPURIOUS EMISSIONS (HIGH CHANNEL, VERTICAL)



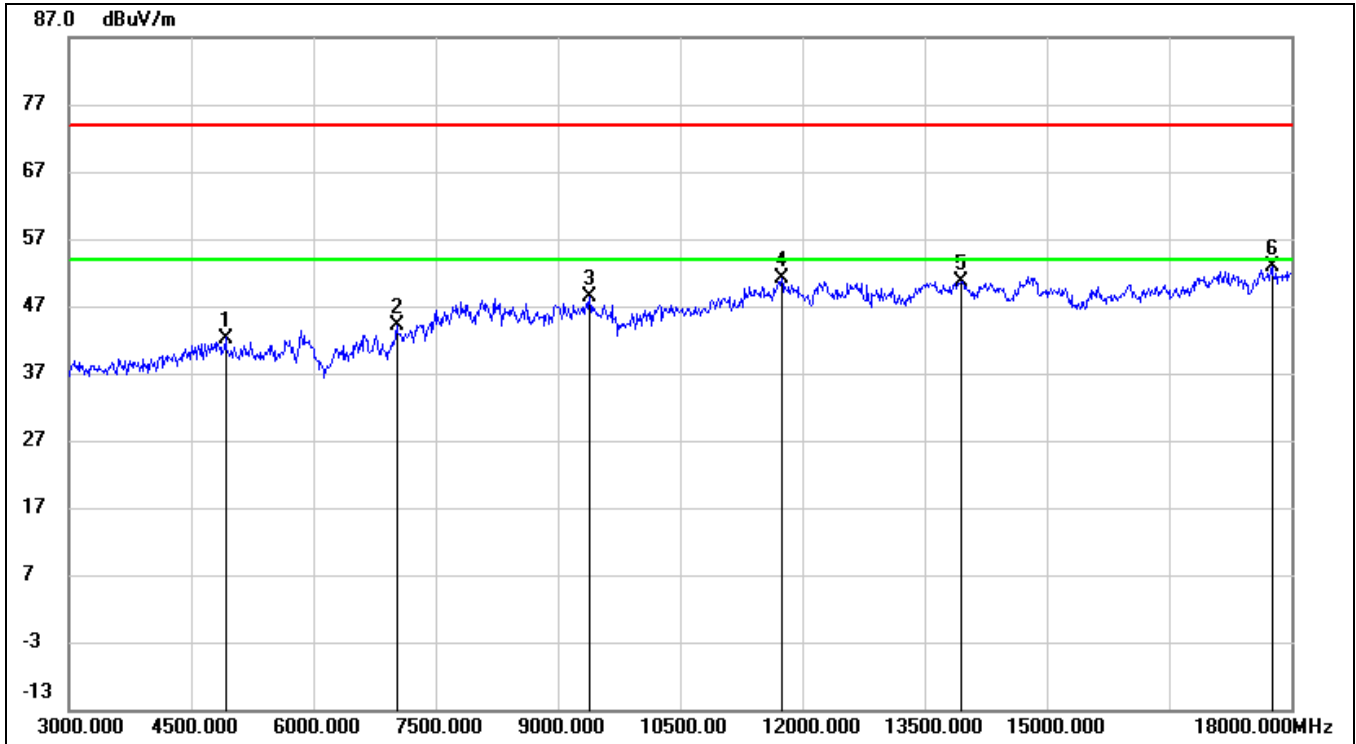
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	3720.000	50.08	-2.84	47.24	74.00	-26.76	peak
2	5865.000	38.61	4.16	42.77	74.00	-31.23	peak
3	8970.000	37.55	10.70	48.25	74.00	-25.75	peak
4	12225.000	34.67	15.99	50.66	74.00	-23.34	peak
5	14820.000	33.54	17.91	51.45	74.00	-22.55	peak
6	17310.000	30.03	22.54	52.57	74.00	-21.43	peak

- Note: 1. Peak Result = Reading Level + Correct Factor.
 6. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
 7. Peak: Peak detector.
 8. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.
 9. Proper operation of the transmitter prior to adding the filter to the measurement chain.



8.4.4. 8DPSK MODE

HARMONICS AND SPURIOUS EMISSIONS (LOW CHANNEL, HORIZONTAL)

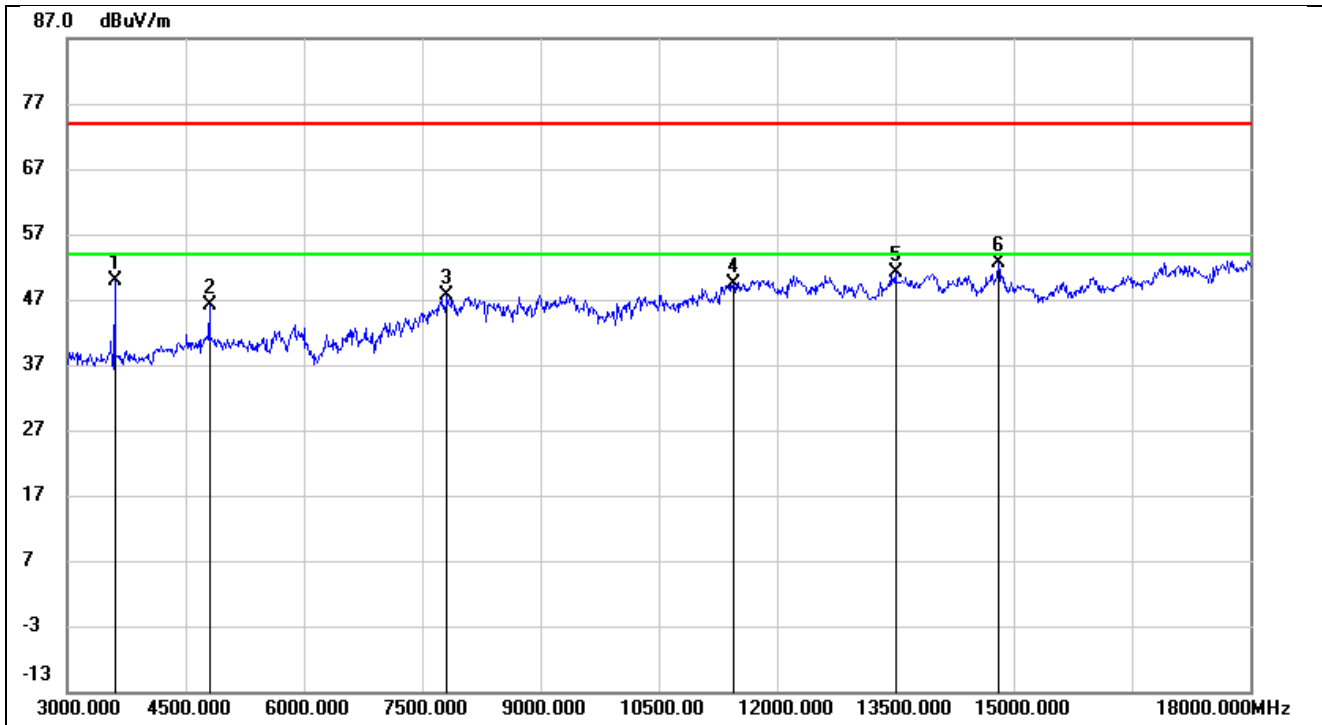


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4920.000	40.80	1.45	42.25	74.00	-31.75	peak
2	7020.000	36.54	7.61	44.15	74.00	-29.85	peak
3	9390.000	37.46	10.92	48.38	74.00	-25.62	peak
4	11745.000	35.80	15.30	51.10	74.00	-22.90	peak
5	13950.000	32.96	17.60	50.56	74.00	-23.44	peak
6	17760.000	29.06	23.82	52.88	74.00	-21.12	peak

- Note: 1. Peak Result = Reading Level + Correct Factor.
 6. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
 7. Peak: Peak detector.
 8. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.
 9. Proper operation of the transmitter prior to adding the filter to the measurement chain.



HARMONICS AND SPURIOUS EMISSIONS (LOW CHANNEL, VERTICAL)

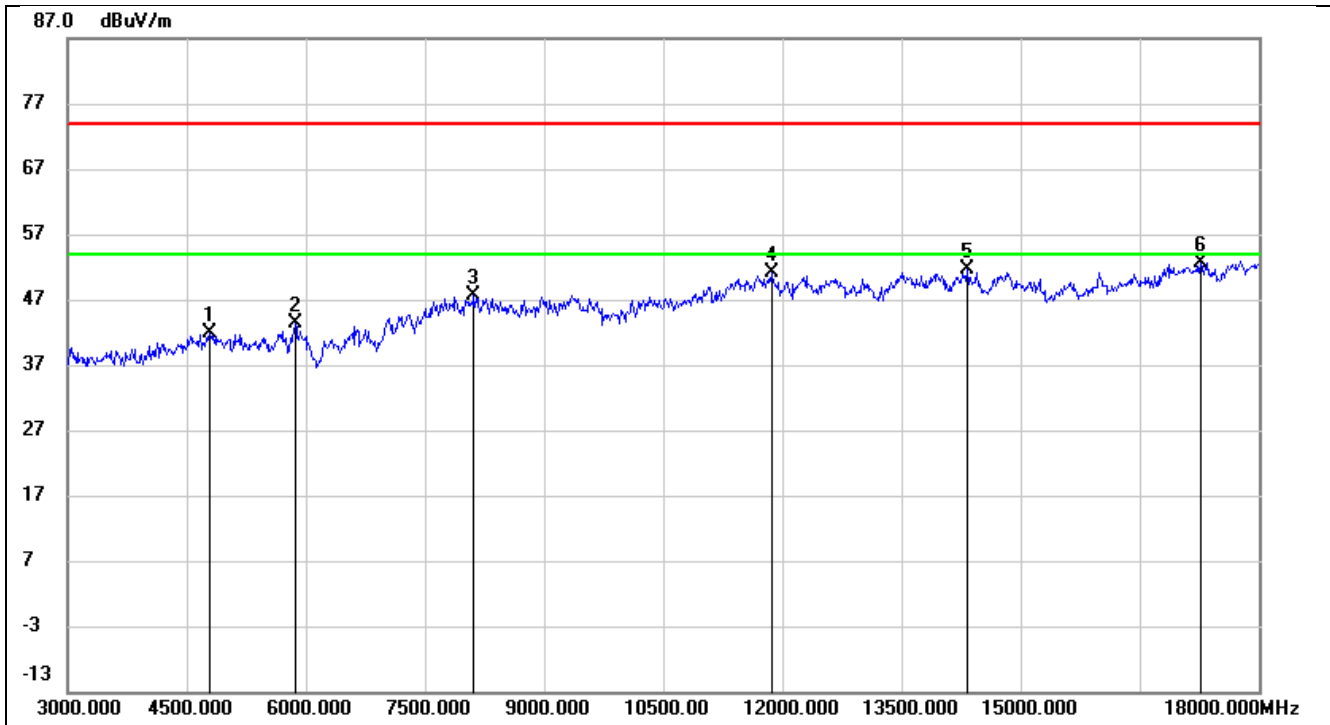


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	3600.000	52.93	-3.17	49.76	74.00	-24.24	peak
2	4800.000	44.75	1.40	46.15	74.00	-27.85	peak
3	7815.000	38.31	9.28	47.59	74.00	-26.41	peak
4	11445.000	34.62	14.71	49.33	74.00	-24.67	peak
5	13500.000	33.84	17.22	51.06	74.00	-22.94	peak
6	14805.000	34.61	18.00	52.61	74.00	-21.39	peak

- Note: 1. Measurement = Reading Level + Correct Factor.
 2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
 3. Peak: Peak detector.
 4. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.
 5. Proper operation of the transmitter prior to adding the filter to the measurement chain.



HARMONICS AND SPURIOUS EMISSIONS (MID CHANNEL, HORIZONTAL)

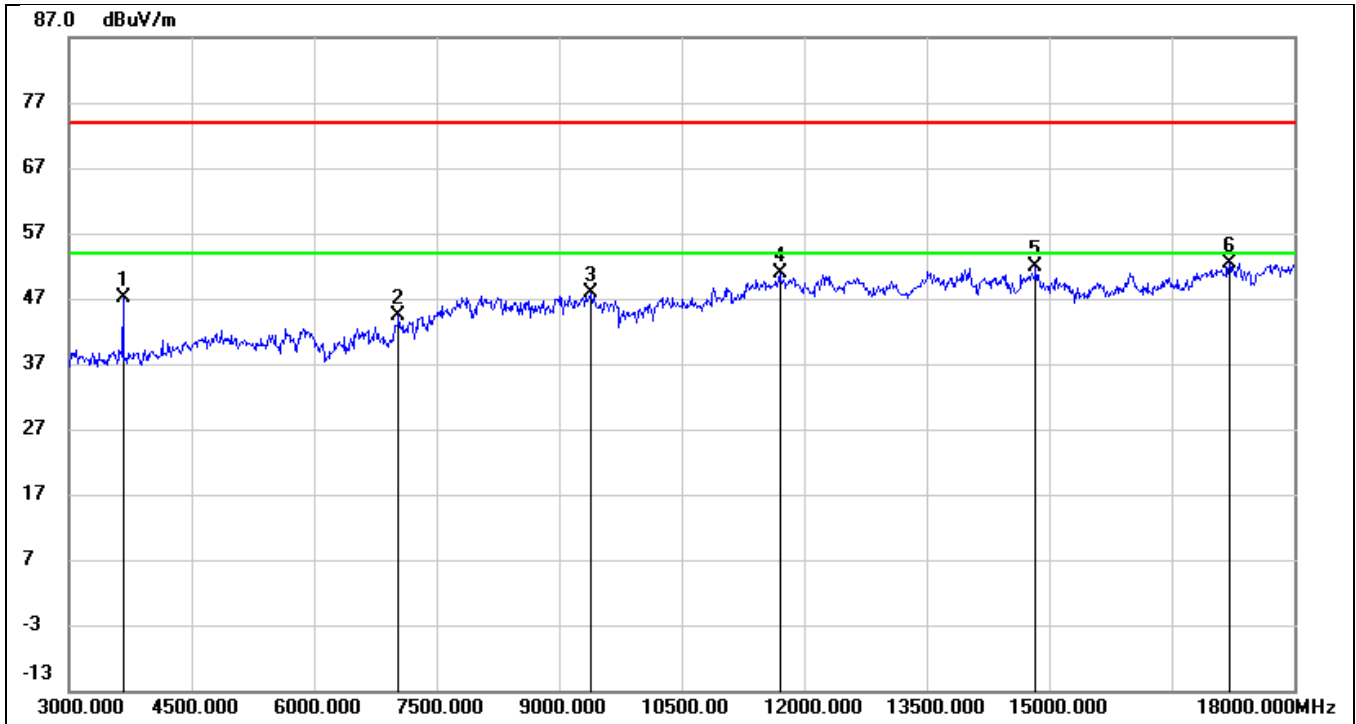


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4785.000	40.63	1.23	41.86	74.00	-32.14	peak
2	5865.000	39.21	4.16	43.37	74.00	-30.63	peak
3	8115.000	37.38	10.13	47.51	74.00	-26.49	peak
4	11865.000	35.63	15.42	51.05	74.00	-22.95	peak
5	14325.000	33.67	17.94	51.61	74.00	-22.39	peak
6	17265.000	30.12	22.39	52.51	74.00	-21.49	peak

- Note: 1. Peak Result = Reading Level + Correct Factor.
 6. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
 7. Peak: Peak detector.
 8. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.
 9. Proper operation of the transmitter prior to adding the filter to the measurement chain.



HARMONICS AND SPURIOUS EMISSIONS (MID CHANNEL, VERTICAL)

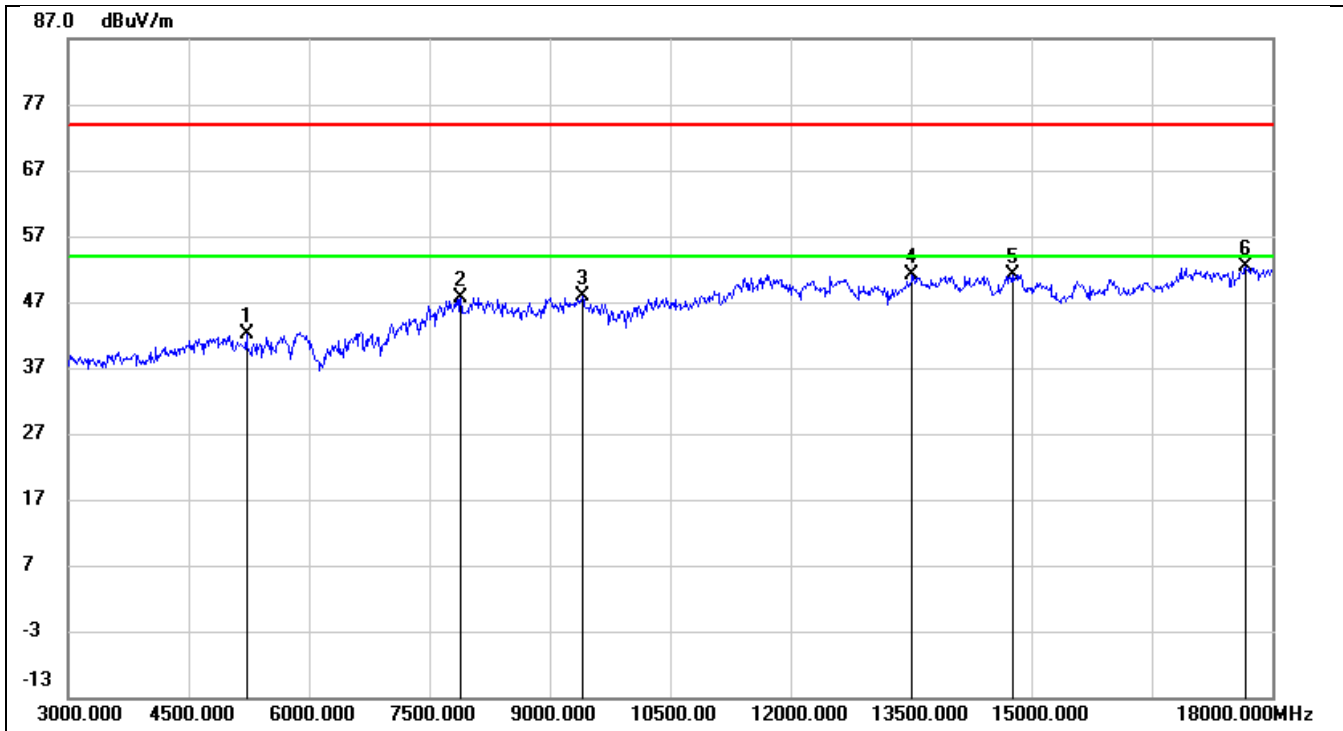


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	3660.000	50.27	-3.02	47.25	74.00	-26.75	peak
2	7035.000	36.80	7.62	44.42	74.00	-29.58	peak
3	9390.000	36.85	10.92	47.77	74.00	-26.23	peak
4	11700.000	35.46	15.35	50.81	74.00	-23.19	peak
5	14835.000	33.99	17.80	51.79	74.00	-22.21	peak
6	17205.000	30.38	22.02	52.40	74.00	-21.60	peak

- Note: 1. Peak Result = Reading Level + Correct Factor.
 6. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
 7. Peak: Peak detector.
 8. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.
 9. Proper operation of the transmitter prior to adding the filter to the measurement chain.



HARMONICS AND SPURIOUS EMISSIONS (HIGH CHANNEL, HORIZONTAL)

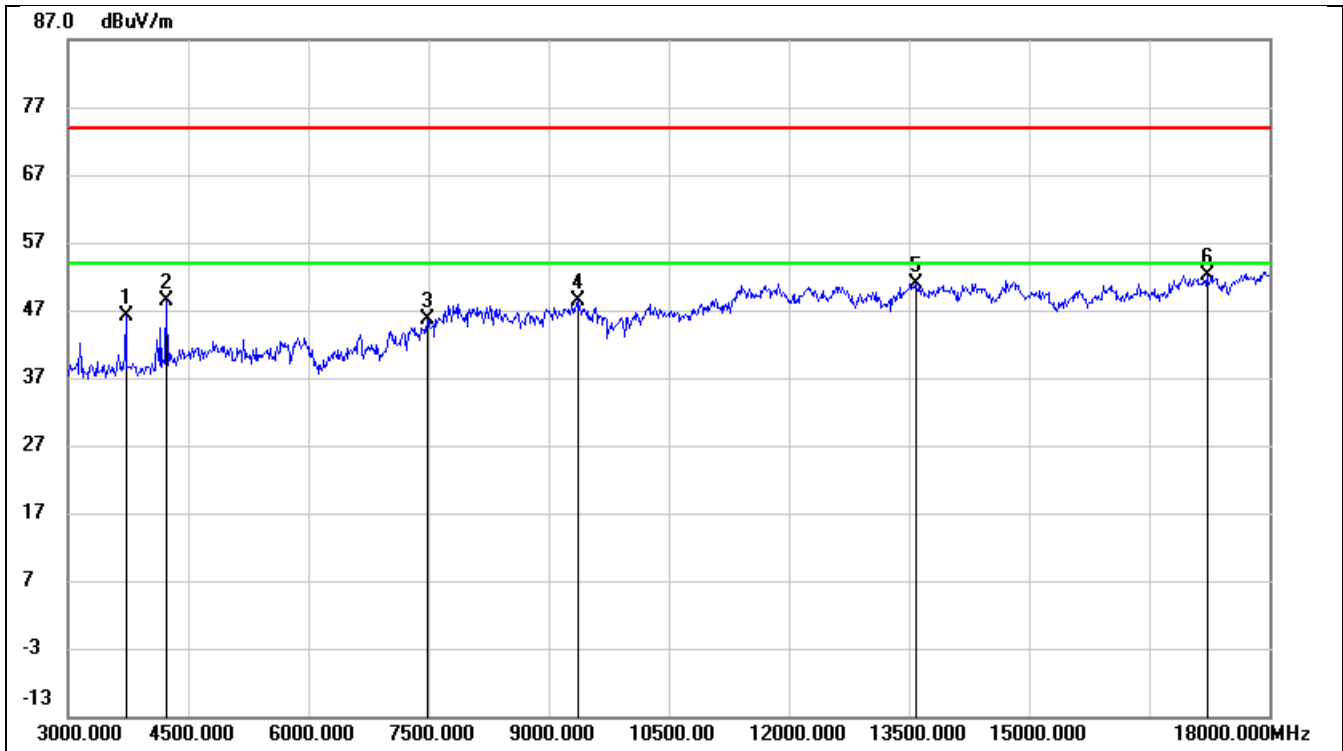


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5220.000	39.45	2.71	42.16	74.00	-31.84	peak
2	7890.000	38.75	8.91	47.66	74.00	-26.34	peak
3	9405.000	37.00	10.95	47.95	74.00	-26.05	peak
4	13515.000	34.03	17.19	51.22	74.00	-22.78	peak
5	14760.000	33.20	17.90	51.10	74.00	-22.90	peak
6	17670.000	29.08	23.24	52.32	74.00	-21.68	peak

- Note: 1. Peak Result = Reading Level + Correct Factor.
 6. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
 7. Peak: Peak detector.
 8. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.
 9. Proper operation of the transmitter prior to adding the filter to the measurement chain.



HARMONICS AND SPURIOUS EMISSIONS (HIGH CHANNEL, VERTICAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	3720.000	48.92	-2.84	46.08	74.00	-27.92	peak
2	4230.000	49.73	-1.23	48.50	74.00	-25.50	peak
3	7485.000	37.42	8.32	45.74	74.00	-28.26	peak
4	9360.000	37.62	10.75	48.37	74.00	-25.63	peak
5	13590.000	33.77	17.11	50.88	74.00	-23.12	peak
6	17220.000	30.05	22.12	52.17	74.00	-21.83	peak

- Note: 1. Peak Result = Reading Level + Correct Factor.
 6. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
 7. Peak: Peak detector.
 8. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.
 9. Proper operation of the transmitter prior to adding the filter to the measurement chain.

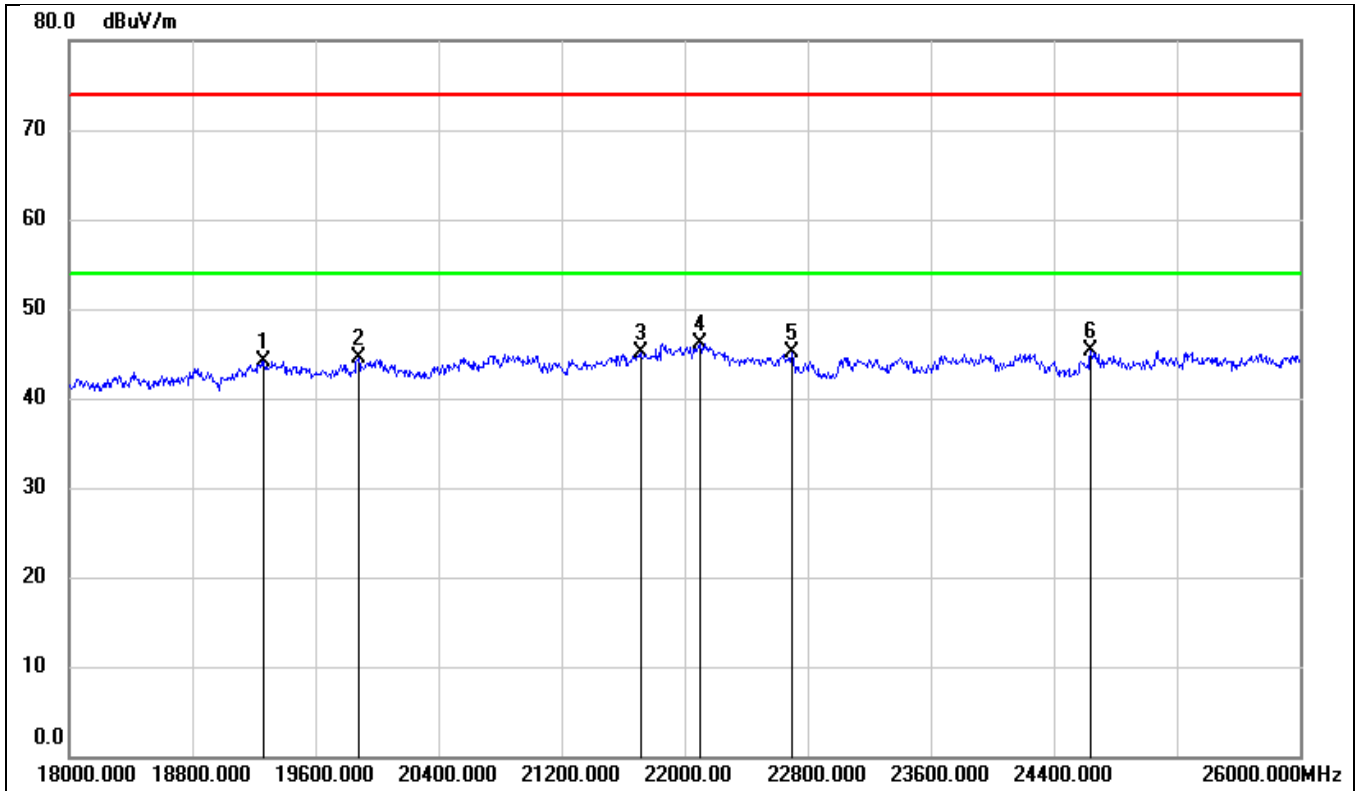


8.5. SPURIOUS EMISSIONS 18G ~ 26GHz

KTC ANTENNA:

8.5.1. GFSK MODE

SPURIOUS EMISSIONS (MID CHANNEL, WORST-CASE CONFIGURATION, HORIZONTAL)

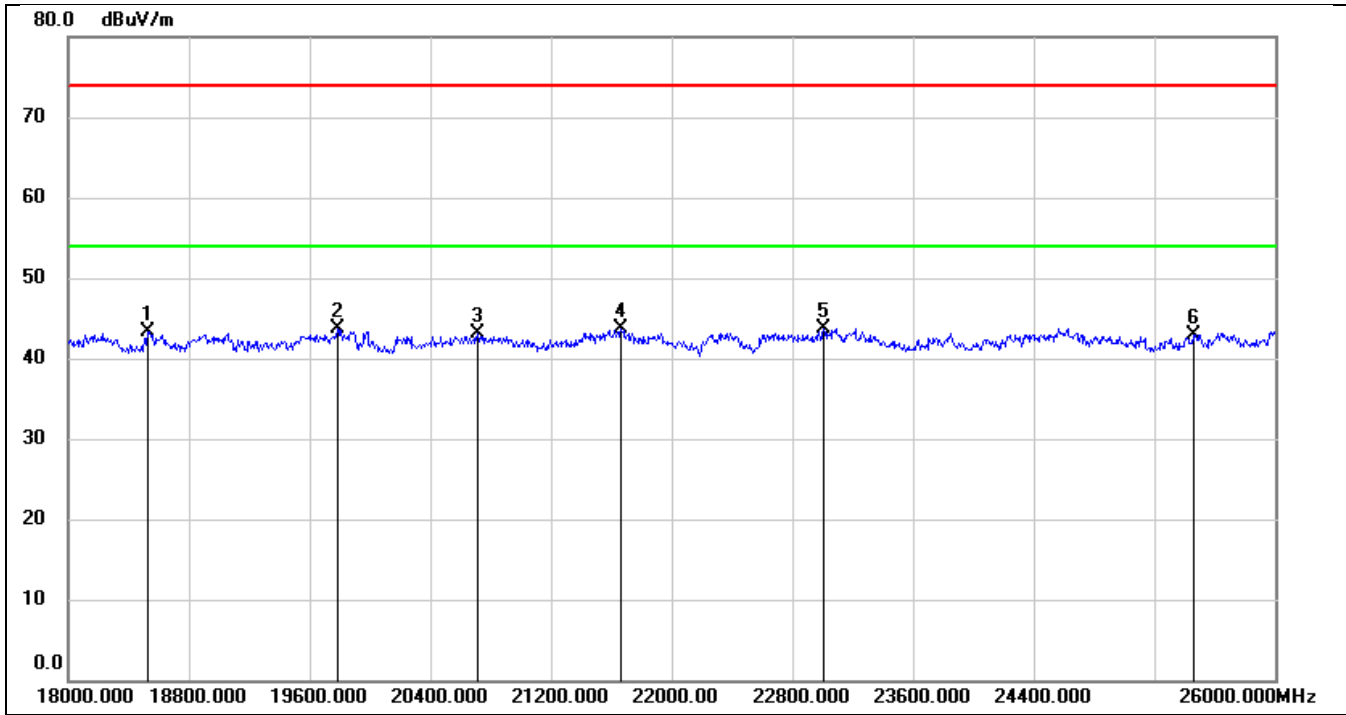


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	19264.000	49.77	-5.57	44.20	74.00	-29.80	peak
2	19880.000	49.86	-5.36	44.50	74.00	-29.50	peak
3	21712.000	49.44	-4.38	45.06	74.00	-28.94	peak
4	22096.000	50.54	-4.38	46.16	74.00	-27.84	peak
5	22696.000	48.78	-3.73	45.05	74.00	-28.95	peak
6	24640.000	47.53	-2.32	45.21	74.00	-28.79	peak

- Note: 1. Peak Result = Reading Level + Correct Factor.
 2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
 3. Peak: Peak detector.



SPURIOUS EMISSIONS (MID CHANNEL, WORST-CASE CONFIGURATION, VERTICAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	18528.000	48.61	-5.26	43.35	74.00	-30.65	peak
2	19784.000	49.07	-5.28	43.79	74.00	-30.21	peak
3	20712.000	48.21	-5.16	43.05	74.00	-30.95	peak
4	21664.000	48.23	-4.45	43.78	74.00	-30.22	peak
5	23008.000	47.10	-3.44	43.66	74.00	-30.34	peak
6	25456.000	44.72	-1.75	42.97	74.00	-31.03	peak

- Note: 1. Peak Result = Reading Level + Correct Factor.
 2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
 3. Peak: Peak detector.

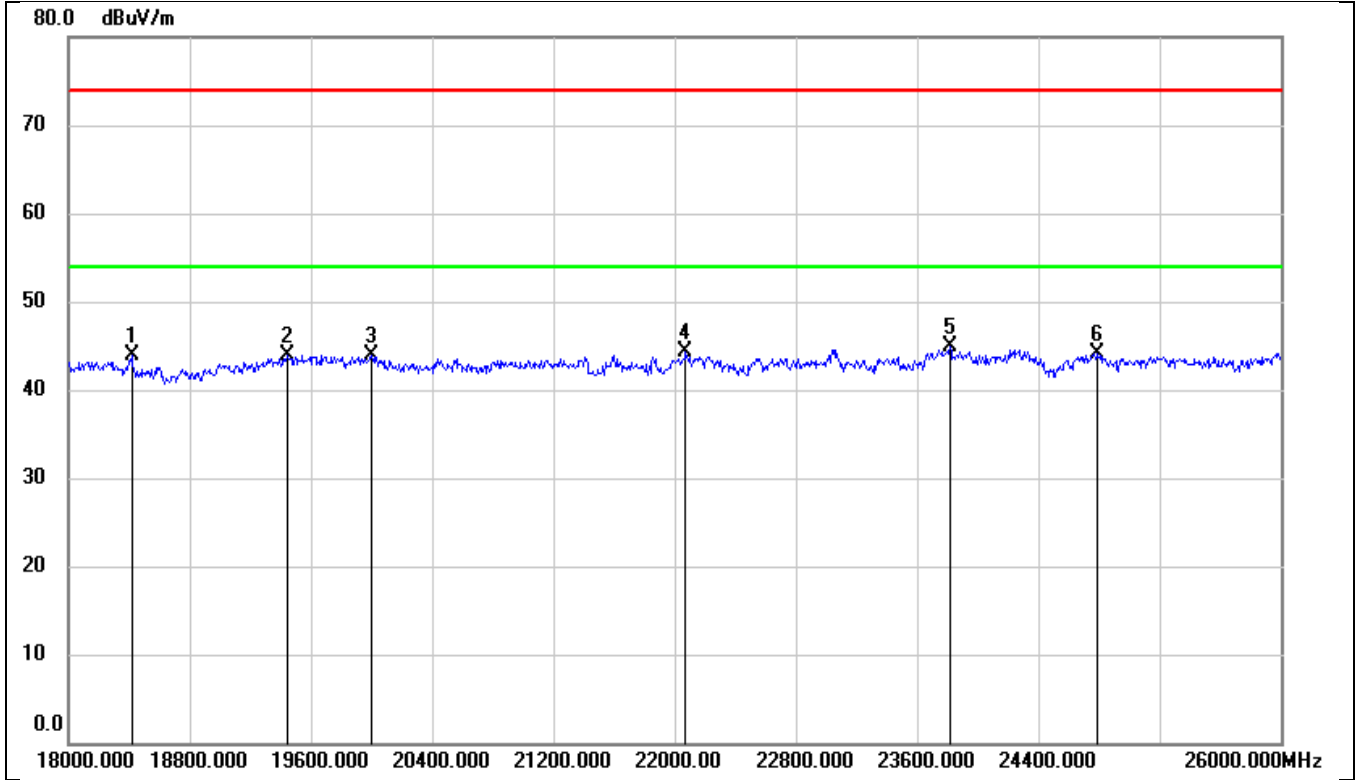
Note: All test mode has been tested, only the worst data record in the report.



INNO-LINK ANTENNA:

8.5.2. GFSK MODE

SPURIOUS EMISSIONS (MID CHANNEL, WORST-CASE CONFIGURATION, HORIZONTAL)

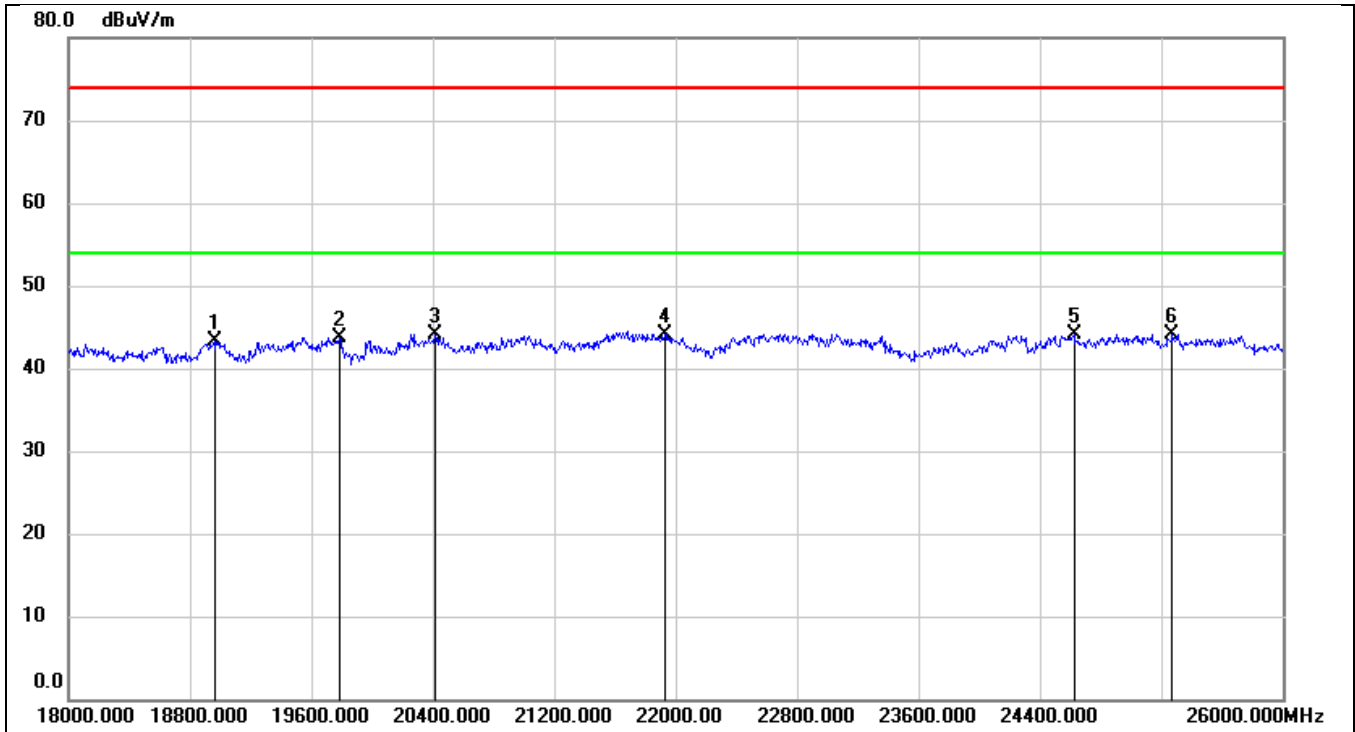


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	18416.000	49.23	-5.35	43.88	74.00	-30.12	peak
2	19440.000	49.46	-5.56	43.90	74.00	-30.10	peak
3	20000.000	49.31	-5.45	43.86	74.00	-30.14	peak
4	22072.000	48.77	-4.41	44.36	74.00	-29.64	peak
5	23816.000	47.89	-3.08	44.81	74.00	-29.19	peak
6	24792.000	46.48	-2.28	44.20	74.00	-29.80	peak

- Note: 1. Peak Result = Reading Level + Correct Factor.
 2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
 3. Peak: Peak detector.



SPURIOUS EMISSIONS (MID CHANNEL, WORST-CASE CONFIGURATION, VERTICAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	18960.000	48.51	-5.25	43.26	74.00	-30.74	peak
2	19784.000	49.07	-5.28	43.79	74.00	-30.21	peak
3	20416.000	49.63	-5.45	44.18	74.00	-29.82	peak
4	21928.000	48.55	-4.43	44.12	74.00	-29.88	peak
5	24624.000	46.49	-2.33	44.16	74.00	-29.84	peak
6	25272.000	45.73	-1.67	44.06	74.00	-29.94	peak

- Note: 1. Peak Result = Reading Level + Correct Factor.
 2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
 3. Peak: Peak detector.

Note: All the test modes and channels have been tested, only the worst data record in the report.

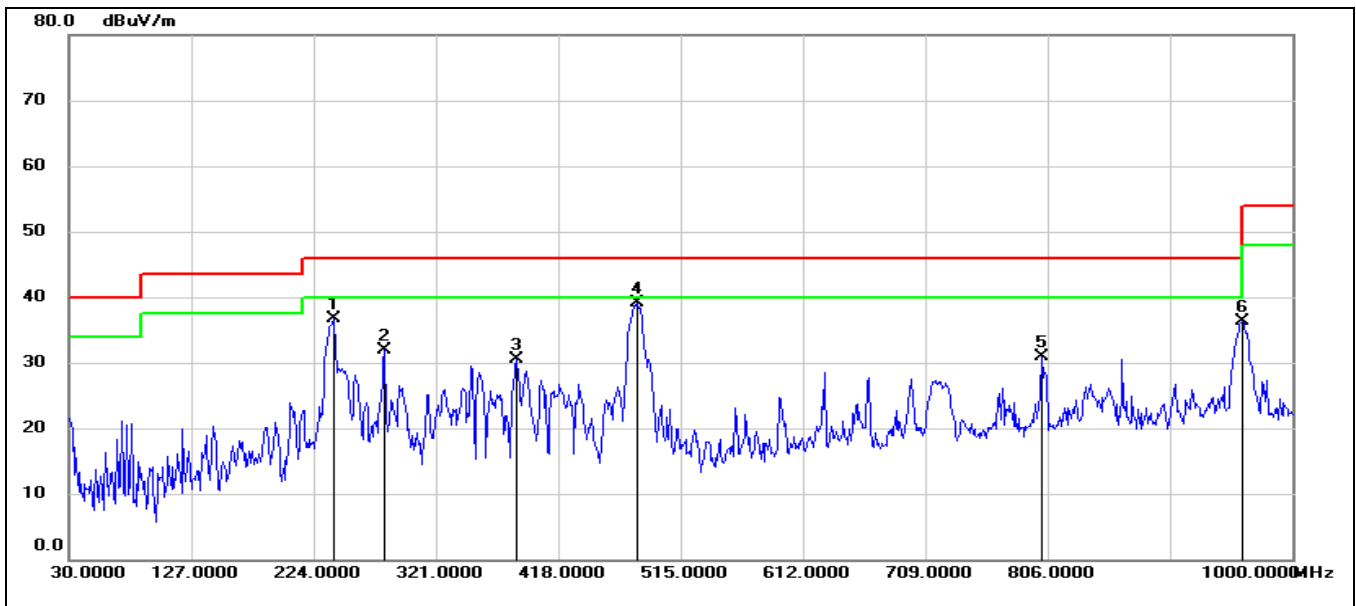


8.6. SPURIOUS EMISSIONS 30M ~ 1 GHz

KTC ANTENNA:

8.6.1. GFSK MODE

SPURIOUS EMISSIONS (MID CHANNEL, WORST-CASE CONFIGURATION, HORIZONTAL)

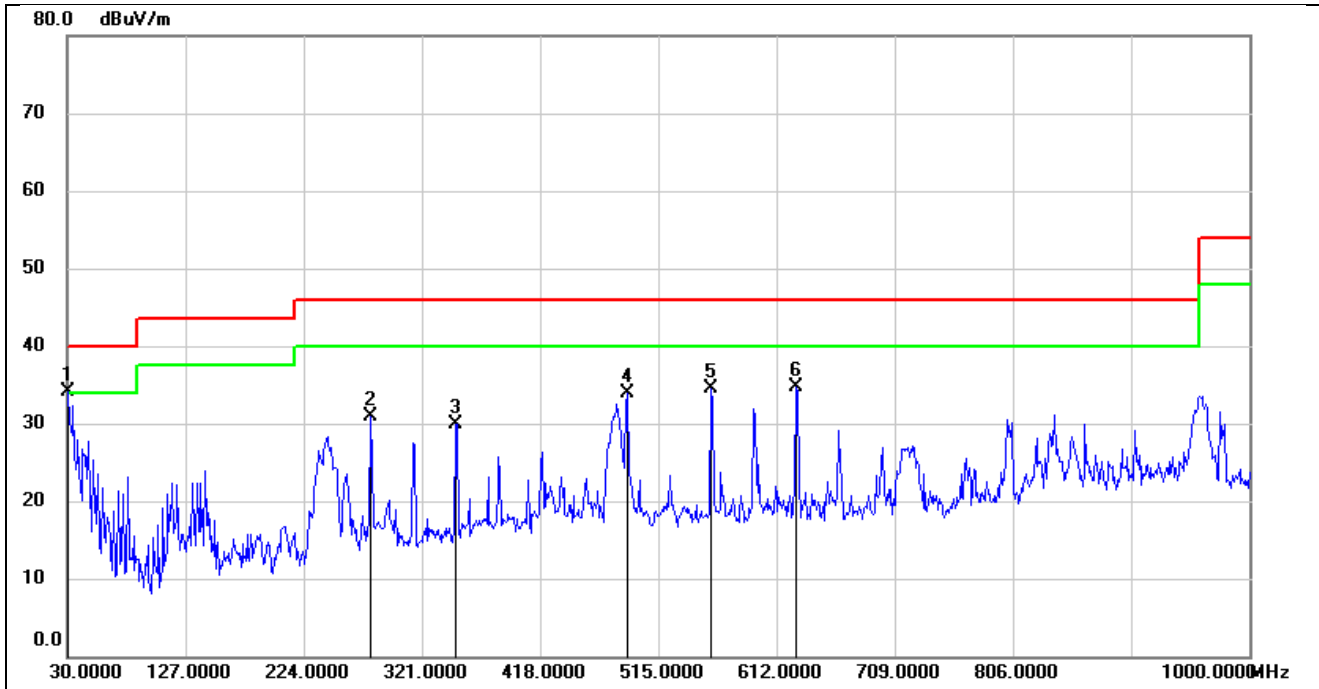


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	240.4900	53.77	-16.99	36.78	46.00	-9.22	QP
2	280.2600	47.10	-15.14	31.96	46.00	-14.04	QP
3	385.0200	43.47	-12.95	30.52	46.00	-15.48	QP
4	481.0500	50.34	-11.23	39.11	46.00	-6.89	QP
5	801.1500	36.35	-5.52	30.83	46.00	-15.17	QP
6	960.2300	39.80	-3.52	36.28	54.00	-17.72	QP

- Note: 1. Result Level = Read Level + Antenna Factor + Cable loss.
 2. If Peak Result complies with QP limit, QP Result is deemed to comply with QP limit.
 3. Test setup: RBW: 120 kHz, VBW: 300 kHz, Sweep time: auto.



SPURIOUS EMISSIONS (MID CHANNEL, WORST-CASE CONFIGURATION, VERTICAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	30.9700	51.24	-17.13	34.11	40.00	-5.89	QP
2	278.3200	46.05	-15.22	30.83	46.00	-15.17	QP
3	348.1600	43.54	-13.56	29.98	46.00	-16.02	QP
4	489.7800	44.95	-10.96	33.99	46.00	-12.01	QP
5	557.6800	44.34	-9.80	34.54	46.00	-11.46	QP
6	627.5200	43.11	-8.43	34.68	46.00	-11.32	QP

- Note: 1. Result Level = Read Level + Antenna Factor + Cable loss.
 2. If Peak Result complies with QP limit, QP Result is deemed to comply with QP limit.
 3. Test setup: RBW: 120 kHz, VBW: 300 kHz, Sweep time: auto

Note: All the test modes, antennas and channels have been tested, only the worst data record in the report.

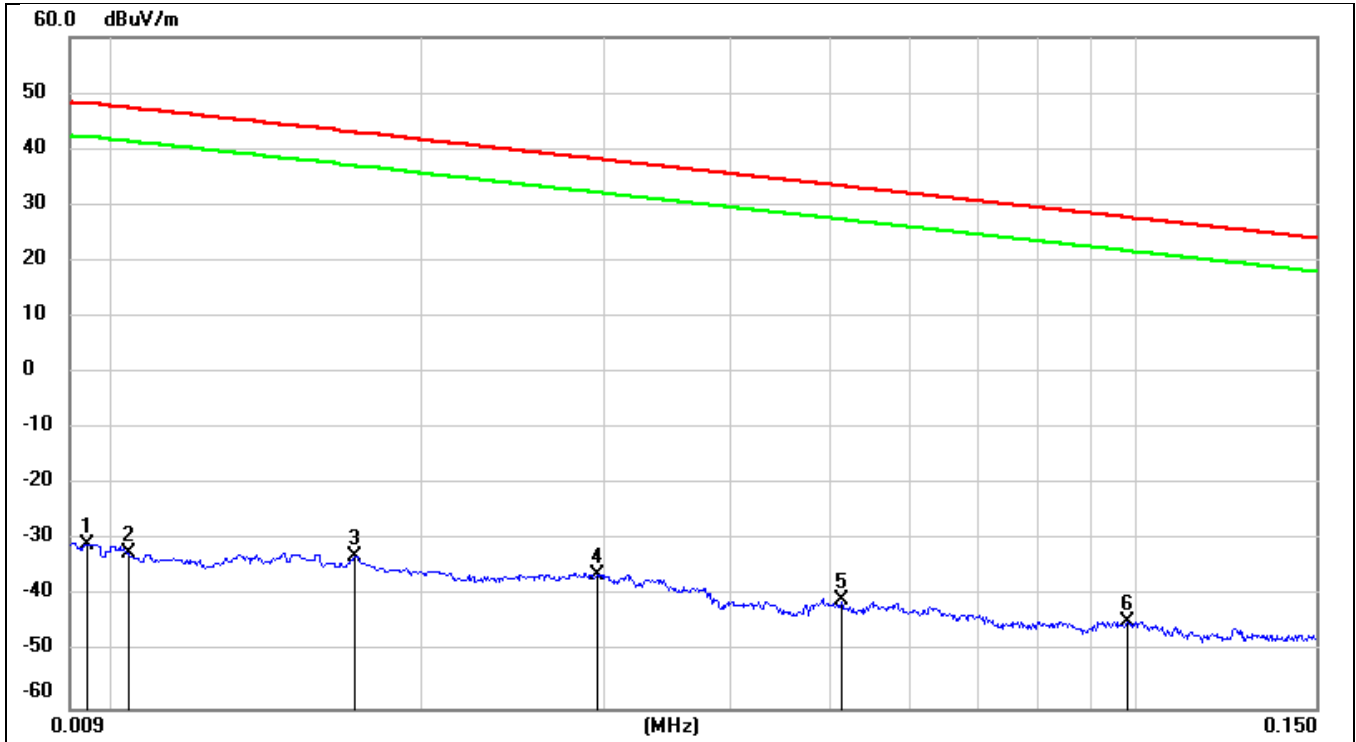


8.7. SPURIOUS EMISSIONS BELOW 30M

KTC ANTENNA:

8.7.1. GFSK MODE

SPURIOUS EMISSIONS (MID CHANNEL, LOOP ANTENNA FACE ON TO THE EUT, WORST-CASE CONFIGURATION)
9kHz~ 150kHz



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	FCC Result (dBuV/m)	FCC Limit (dBuV/m)	ISED Result (dBuA/m)	ISED Limit (dBuA/m)	Margin (dB)	Remark
1	0.0094	70.66	-101.35	-30.69	48.05	-82.19	-3.45	-78.74	peak
2	0.0103	69.05	-101.40	-32.35	47.34	-83.85	-4.16	-79.69	peak
3	0.0171	68.38	-101.36	-32.98	42.94	-84.48	-8.56	-75.92	peak
4	0.0296	65.33	-101.39	-36.06	38.18	-87.56	-13.32	-74.24	peak
5	0.0514	60.68	-101.48	-40.8	33.38	-92.30	-18.12	-74.18	peak
6	0.0981	57.27	-101.78	-44.51	27.77	-96.01	-23.73	-72.28	peak

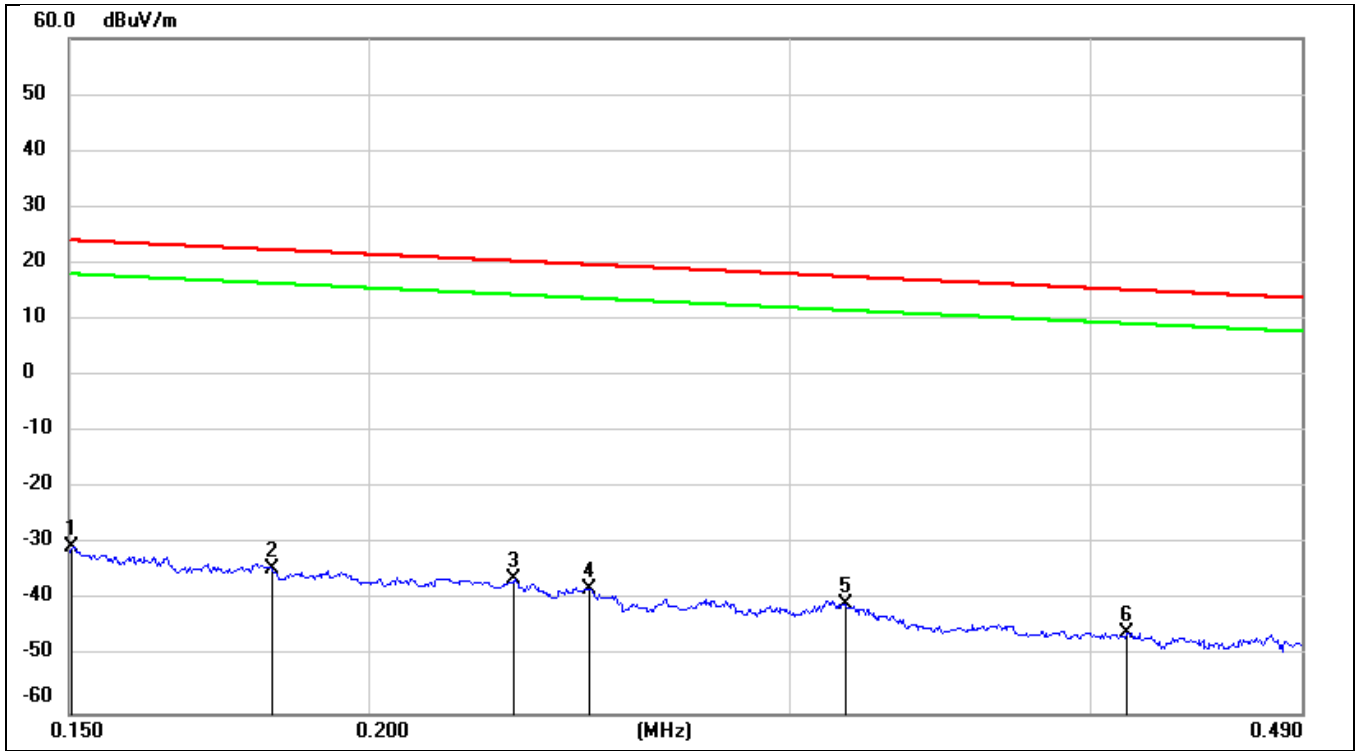
Note: 1. Measurement = Reading Level + Correct Factor (dBuA/m= dBuV/m- 20Log10[120π] = dBuV/m- 51.5).

2. If Peak Result complies with AV and QP limit, AV and QP Result are deemed to comply with AV limit.

3. All 3 polarizations(Horizontal, Face-on and Face-off) of the loop antenna had been tested, but only the worst data recorded in the report.



150kHz ~ 490kHz



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	FCC Result (dBuV/m)	FCC Limit (dBuV/m)	ISED Result (dBuA/m)	ISED Limit (dBuA/m)	Margin (dB)	Remark
1	0.1504	71.25	-101.63	-30.38	24.06	-81.88	-27.44	-54.44	peak
2	0.1824	67.34	-101.68	-34.34	22.38	-85.84	-29.12	-56.72	peak
3	0.2300	65.51	-101.77	-36.26	20.37	-87.76	-31.13	-56.63	peak
4	0.2472	63.95	-101.80	-37.85	19.74	-89.35	-31.76	-57.59	peak
5	0.3163	61.20	-101.87	-40.67	17.6	-92.17	-33.90	-58.27	peak
6	0.4142	56.23	-101.98	-45.75	15.26	-97.25	-36.24	-61.01	peak

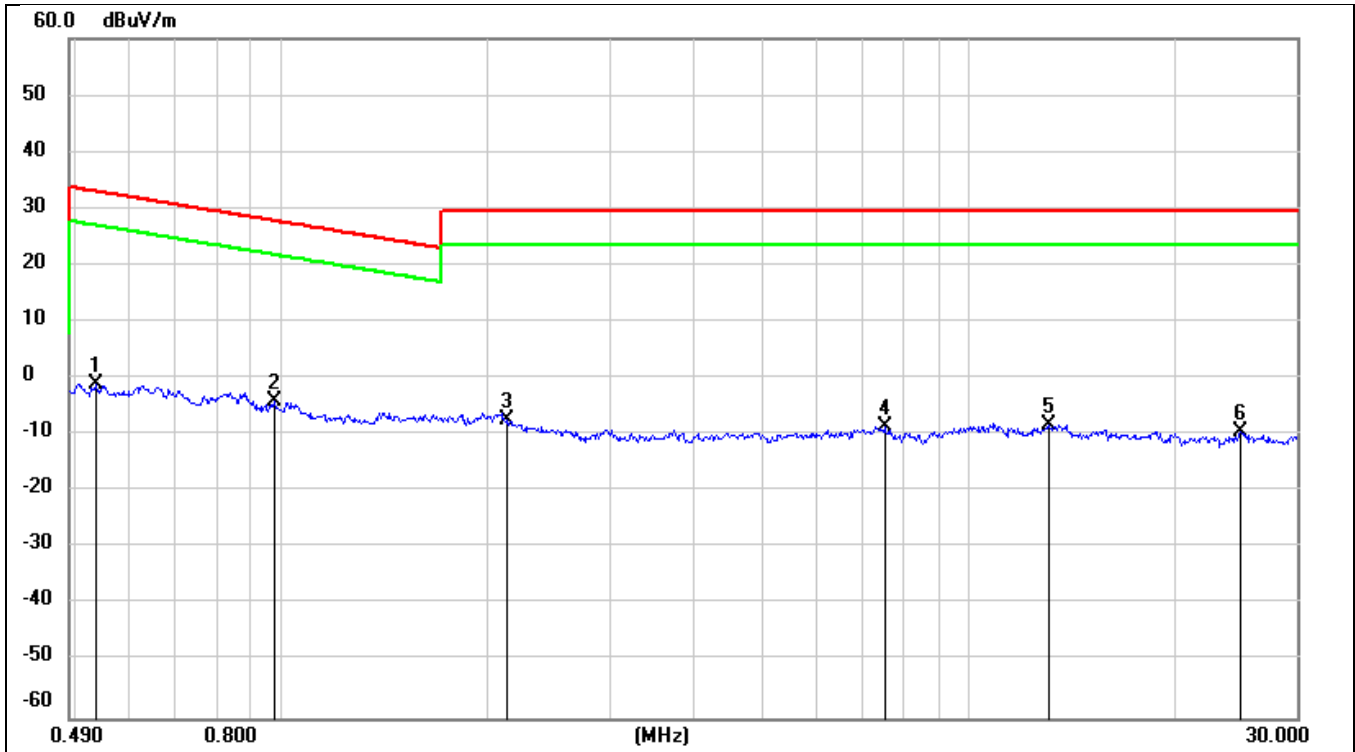
Note: 1. Measurement = Reading Level + Correct Factor (dBuA/m= dBuV/m- 20Log10[120π] = dBuV/m- 51.5).

2. If Peak Result complies with AV and QP limit, AV and QP Result are deemed to comply with AV limit.

3. All 3 polarizations(Horizontal, Face-on and Face-off) of the loop antenna had been tested, but only the worst data recorded in the report.



490kHz ~ 30MHz



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	FCC Result (dBuV/m)	FCC Limit (dBuV/m)	ISED Result (dBuA/m)	ISED Limit (dBuA/m)	Margin (dB)	Remark
1	0.5361	60.96	-62.08	-1.12	33.02	-52.62	-18.48	-34.14	peak
2	0.9737	58.21	-62.25	-4.04	27.83	-55.54	-23.67	-31.87	peak
3	2.1199	54.33	-61.79	-7.46	29.54	-58.96	-21.96	-37.00	peak
4	7.5429	52.58	-61.14	-8.56	29.54	-60.06	-21.96	-38.10	peak
5	13.0907	52.63	-60.93	-8.3	29.54	-59.80	-21.96	-37.84	peak
6	24.8353	50.99	-60.46	-9.47	29.54	-60.97	-21.96	-39.01	peak

Note: 1. Measurement = Reading Level + Correct Factor (dBuA/m= dBuV/m- 20Log10[120π] = dBuV/m- 51.5).

2. If Peak Result complies with AV and QP limit, AV and QP Result are deemed to comply with AV limit.

3. All 3 polarizations(Horizontal, Face-on and Face-off) of the loop antenna had been tested, but only the worst data recorded in the report.

Note: All test mode has been tested, only the worst data record in the report.

Note: All the test modes, channels and antennas have been tested, only the worst data record in the report.



9. ANTENNA REQUIREMENTS

APPLICABLE REQUIREMENTS

Please refer to FCC §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. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. 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.

Please refer to FCC §15.247(b)(4)

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

RESULTS

Complies



Appendix A: Maximum conducted output power Test Result

Test Mode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
DH5	Ant1	2402	4.13	<=30	PASS
		2441	5.01	<=30	PASS
		2480	4.52	<=30	PASS
3DH5	Ant1	2402	7.18	<=21	PASS
		2441	7.68	<=21	PASS
		2480	7.54	<=21	PASS



Appendix B: Duty Cycle Test Result

Mode	On Time (msec)	Period (msec)	Duty Cycle x (Linear)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	1/T Minimum VBW (kHz)	Final setting For VBW (kHz)
GFSK	2.873	5.006	0.574	57.4%	2.41	0.35	0.5
8DPSK	2.873	4.990	0.576	56.6%	2.40	0.35	0.5

Note:

Duty Cycle Correction Factor= $10\log(1/x)$.

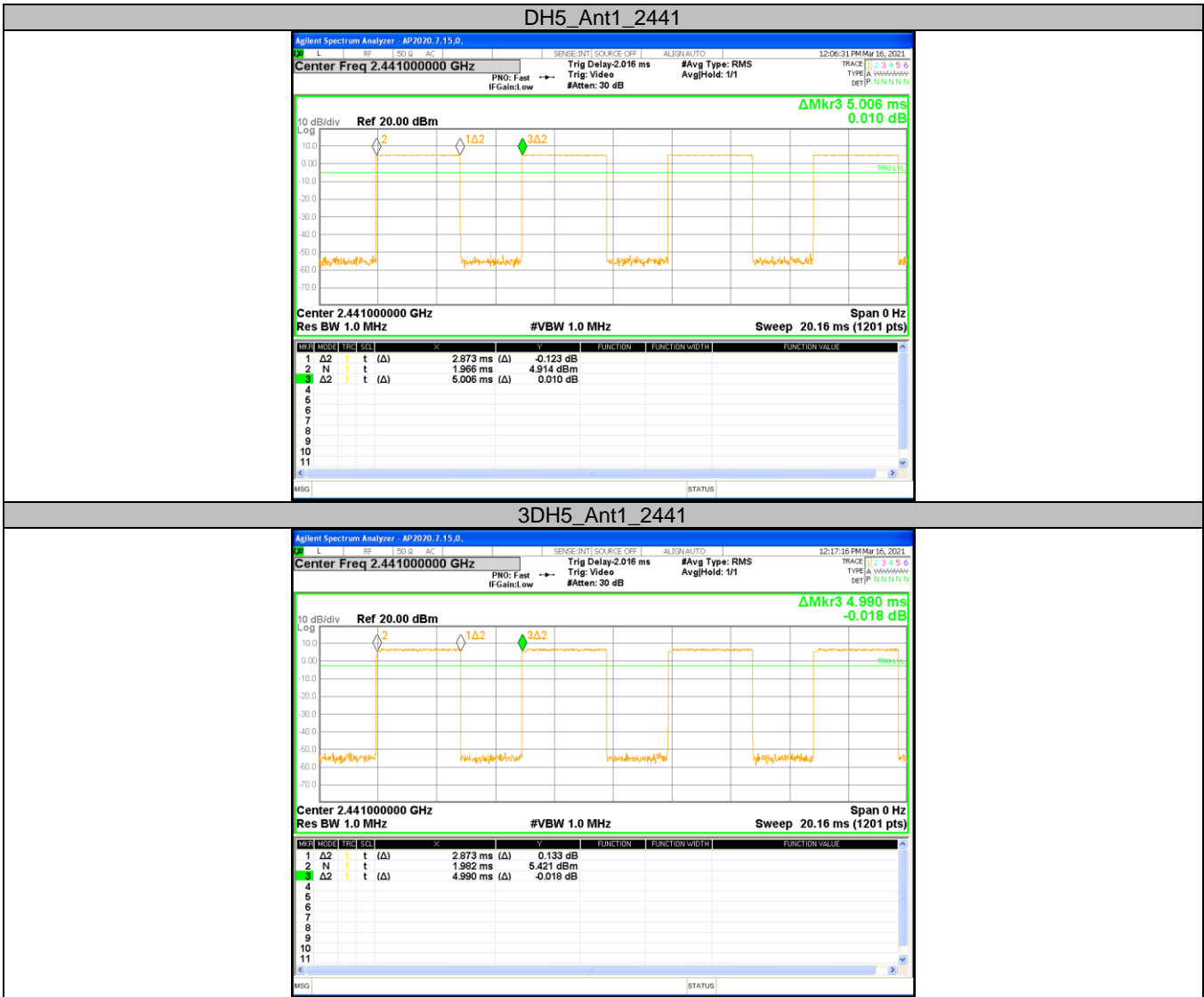
Where: x is Duty Cycle (Linear)

Where: T is On Time

If that calculated VBW is not available on the analyzer then the next higher value should be used.



Test Graphs



End of Report