



Radio Test Report
FCC ID: S9E-73355046

Report No.	:	TBR-C-202506-0272-81	
Applicant	:	Trimble Inc.	
Equipment Under Test (EUT)			
EUT Name	:	HCB2	
Model No.	:	73355046	
Series Model No.	:	N/A	
Brand Name	:	Trimble	
Sample ID	:	HC-C-202506-0272-01-01&HC-C-202506-0272-02-01	
Receipt Date	:	2025-07-23	
Test Date	:	2025-07-23 to 2026-07-22	
Issue Date	:	2026-07-22	
Standards	:	FCC Part 15 Subpart C 15.247	
Test Method	:	ANSI C63.10: 2020+Cor.1:2023+C63.10a: 2024+Errata to C63.10a: 2024 KDB 558074 D01 15.247 Meas Guidance v05r02	
Conclusions	:	PASS	
		In the configuration tested, the EUT complied with the standards specified above.	
Test By	:	Gold. zhang	
Reviewed By	:	Henry huang	
Approved By	:	IVAN SU	
This report details the results of the testing carried out on one sample. The results contained in this test report do not relate to other samples of the same product. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in the report.			

Contents

CONTENTS	2
REVISION HISTORY	4
1. GENERAL INFORMATION ABOUT EUT	5
1.1 Client Information	5
1.2 General Description of EUT (Equipment Under Test)	5
1.3 Block Diagram Showing the Configuration of System Tsted	7
1.4 Description of Support Units	7
1.5 Description of Test Mode	8
1.6 Description of Test Software Setting	9
1.7 Measurement Uncertainty	9
1.8 Test Facility	10
2. TEST SUMMARY	11
3. TEST SOFTWARE	11
4. TEST EQUIPMENT AND TEST SITE	12
5. CONDUCTED EMISSION	14
5.1 Test Standard and Limit	14
5.2 Test Setup	14
5.3 Test Procedure	14
5.4 Deviation From Test Standard	14
5.5 EUT Operating Mode	15
5.6 Test Data	15
6. RADIATED AND CONDUCTED UNWANTED EMISSIONS	16
6.1 Test Standard and Limit	16
6.2 Test Setup	17
6.3 Test Procedure	18
6.4 Deviation From Test Standard	19
6.5 EUT Operating Mode	19
6.6 Test Data	19
7. RESTRICTED BANDS AND BAND EDGE REQUIREMENT	20
7.1 Test Standard and Limit	20
7.2 Test Setup	20
7.3 Test Procedure	21
7.4 Deviation From Test Standard	21
7.5 EUT Operating Mode	21
7.6 Test Data	21
8. 99% OCCUPIED AND 20DB BANDWIDTH	22
8.1 Test Standard and Limit	22
8.2 Test Setup	22
8.3 Test Procedure	22
8.4 Deviation From Test Standard	23
8.5 EUT Operating Mode	23



8.6 Test Data.....	23
9. PEAK OUTPUT POWER TEST	24
9.1 Test Standard and Limit	24
9.2 Test Setup.....	24
9.3 Test Procedure	24
9.4 Deviation From Test Standard.....	25
9.5 EUT Operating Mode	25
9.6 Test Data.....	25
10. CARRIER FREQUENCY SEPARATION.....	26
10.1 Test Standard and Limit	26
10.2 Test Setup	26
10.3 Test Procedure	26
10.4 Deviation From Test Standard	27
10.5 Antenna Connected Construction.....	27
10.6 Test Data	27
11. TIME OF OCCUPANCY (DWELL TIME).....	28
11.1 Test Standard and Limit	28
11.2 Test Setup	28
11.3 Test Procedure	28
11.4 Deviation From Test Standard	29
11.5 Antenna Connected Construction.....	29
11.6 Test Data	29
12. NUMBER OF HOPPING FREQUENCIES.....	30
12.1 Test Standard and Limit	30
12.2 Test Setup	30
12.3 Test Procedure	30
12.4 Deviation From Test Standard	31
12.5 Antenna Connected Construction.....	31
12.6 Test Data	31
13. DUTY CYCLE.....	32
13.1 Test Standard and Limit	32
13.2 Test Setup	32
13.3 Test Procedure	32
13.4 Deviation From Test Standard	32
13.5 Antenna Connected Construction.....	32
13.6 Test Data	32
14. ANTENNA REQUIREMENT	33
14.1 Test Standard and Limit	33
14.2 Deviation From Test Standard	33
14.3 Antenna Connected Construction.....	33
14.4 Test Data	33
ATTACHMENT A-- CONDUCTED EMISSION TEST DATA.....	34
ATTACHMENT B--UNWANTED EMISSIONS DATA.....	36
ATTACHMENT C--RESTRICTED BANDS DATA.....	50



Revision History

Report No.	Version	Description	Issued Date
TBR-C-202506-0272-81	Rev.01	Initial issue of report	2026-07-22



1. General Information about EUT

1.1 Client Information

Applicant	:	Trimble Inc.
Address	:	5475 Kellenburger Rd, Dayton, OH 45424
Manufacturer	:	Trimble Inc.
Address	:	5475 Kellenburger Rd, Dayton, OH 45424

1.2 General Description of EUT (Equipment Under Test)

EUT Name	:	HCB2
Models No.	:	73355046
Model Different	:	N/A
Product Description	Operation Frequency:	Bluetooth(BR+EDR): 2402MHz~2480MHz
	Number of Channel:	79 channels
	Antenna Gain:	4.0dBi FPC Antenna 2
	Modulation Type:	GFSK(1Mbps) $\pi/4$ -DQPSK(2Mbps) 8DPSK(3Mbps)
Power Rating	:	DC 5V
Software Version	:	13.35.369
Hardware Version	:	Rev.E
Remark: (1)The antenna gain provided by the applicant, the verified for the RF conduction test provided by TOBY test lab. (2)The above antenna information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications, the laboratory shall not be held responsible. (3)For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.		



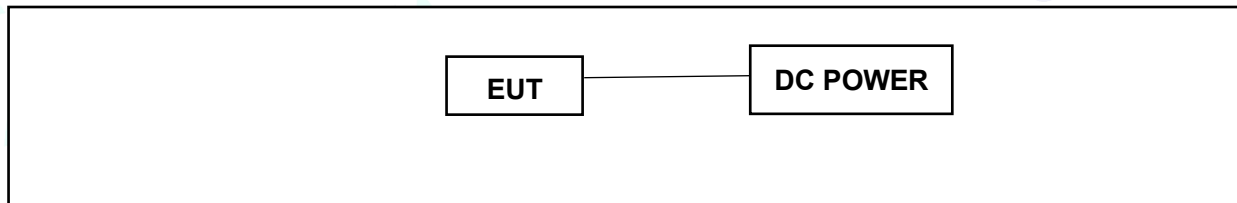
(4) Channel List:

Bluetooth Channel List					
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
00	2402	27	2429	54	2456
01	2403	28	2430	55	2457
02	2404	29	2431	56	2458
03	2405	30	2432	57	2459
04	2406	31	2433	58	2460
05	2407	32	2434	59	2461
06	2408	33	2435	60	2462
07	2409	34	2436	61	2463
08	2410	35	2437	62	2464
09	2411	36	2438	63	2465
10	2412	37	2439	64	2466
11	2413	38	2440	65	2467
12	2414	39	2441	66	2468
13	2415	40	2442	67	2469
14	2416	41	2443	68	2470
15	2417	42	2444	69	2471
16	2418	43	2445	70	2472
17	2419	44	2446	71	2473
18	2420	45	2447	72	2474
19	2421	46	2448	73	2475
20	2422	47	2449	74	2476
21	2423	48	2450	75	2477
22	2424	49	2451	76	2478
23	2425	50	2452	77	2479
24	2426	51	2453	78	2480
25	2427	52	2454		
26	2428	53	2455		

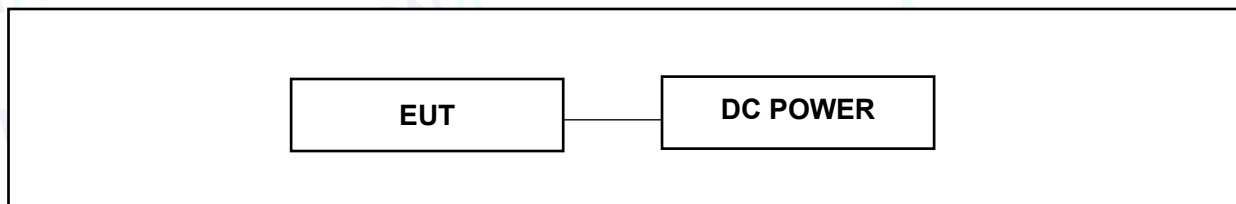


1.3 Block Diagram Showing the Configuration of System Tsted

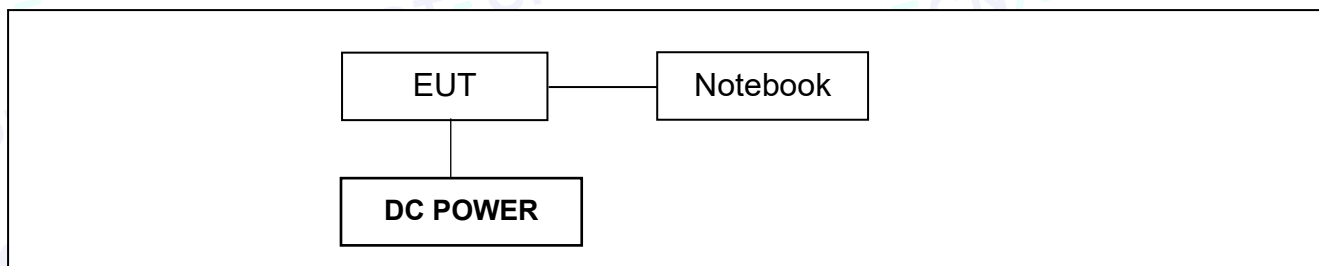
AC Power Line conducted emission



Radiated Test



Conducted Measurements Test



1.4 Description of Support Units

Equipment Information				
Name	Model	S/N	Manufacturer	Used “√”
Notebook	Inspiron 5493	-----	DELL	√
Adapter	CD112	-----	UGREEN	√



1.5 Description of Test Mode

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned follow was evaluated respectively.

For Conducted Test(AC POWER)	
Final Test Mode	Description
Mode 1	TX GFSK Mode Channel 00
For Radiated and RF Conducted Test	
Final Test Mode	Description
Mode 1	TX GFSK Mode Channel 00
Mode 2	TX Mode(GFSK) Channel 00/39/78
Mode 3	TX Mode($\pi/4$ -DQPSK) Channel 00/39/78
Mode 4	TX Mode(8DPSK) Channel 00/39/78
Mode 5	Hopping Mode(GFSK)
Mode 6	Hopping Mode($\pi/4$ -DQPSK)
Mode 7	Hopping Mode(8DPSK)
Note: Report on two types of antennas: FPC Antenna (2.4G Ant2 4.0dBi) and Dipole Antenna (2.4G Ant2 3.0dBi). FPC Antenna. Above 1GHz and Restricted Bands Data, only the worst mode BT 1M data is evaluated. Dipole Antenna. Above 1GHz, only the worst mode BT 1M data is evaluated	

Note:

- (1) For all test, we have verified the construction and function in typical operation. And all the test modes were carried out with the EUT in transmitting operation in maximum power with all kinds of data rate.
According to ANSI C63.10 standards, the measurements are performed at the highest, middle, lowest available channels, and the worst case data rate as follows:
TX Mode: GFSK (1 Mbps)
TX Mode: $\pi/4$ -DQPSK (2 Mbps)
TX Mode: 8DPSK (3 Mbps)
- (2) During the testing procedure, the continuously transmitting with the maximum power mode was programmed by the customer.
- (3) The EUT is considered a Mobile unit; in normal use it was positioned on X-plane. The worst case was found positioned on X-plane. Therefore only the test data of this X-plane was used for radiated emission measurement test.



1.6 Description of Test Software Setting

During testing channel & Power controlling software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product power parameters of RF setting.

Test Software Version	Terminal command		
Frequency	2402 MHz	2441MHz	2480 MHz
GFSK	N/A	N/A	N/A
$\pi/4$ -DQPSK	N/A	N/A	N/A
8DPSK	N/A	N/A	N/A

1.7 Measurement Uncertainty

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

Test Item	Parameters	Expanded Uncertainty (U_{Lab})
Conducted Emission	Level Accuracy: 9kHz~150kHz 150kHz to 30MHz	± 3.50 dB ± 3.10 dB
Radiated Emission	Level Accuracy: 9kHz to 30 MHz	± 4.60 dB
Radiated Emission	Level Accuracy: 30MHz to 1000 MHz	± 4.50 dB
Radiated Emission	Level Accuracy: Above 1000MHz	± 4.20 dB
RF Power-Conducted	---	± 0.95 dB
Power Spectral Density-Conducted	---	± 3 dB
Occupied Bandwidth	---	$\pm 3.8\%$
Unwanted Emission-Conducted	---	± 2.72 dB
Temperature	---	$\pm 0.6^{\circ}\text{C}$
Humidity	---	$\pm 4\%$
Supply voltages	---	$\pm 2\%$



1.8 Test Facility

The testing report were performed by the Shenzhen Toby Technology Co., Ltd., in their facilities located at 1/F., Building 6, Rundongsheng Industrial Zone, Longzhu, Xixiang, Bao'an District, Shenzhen, Guangdong, China. At the time of testing, the following bodies accredited the Laboratory:

CNAS (L5813)

The Laboratory has been accredited by CNAS to ISO/IEC 17025: 2017 General Requirements for the Competence of Testing and Calibration Laboratories for the competence in the field of testing. And the Registration No.: CNAS L5813.

A2LA Certificate No.: 4750.01

The laboratory has been accredited by American Association for Laboratory Accreditation(A2LA) to ISO/IEC 17025: 2017 General Requirements for the Competence of Testing and Calibration Laboratories for the technical competence in the field of Electrical Testing. And the A2LA Certificate No.: 4750.01.FCC Accredited Test Site Number: 854351. Designation Number: CN1223.

IC Registration No.: (11950A)

The Laboratory has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing. The site registration: Site# 11950A. CAB identifier: CN0056.



2. Test Summary

Standard Section		Test Item	Test Sample(s)	Judgment	Remark
FCC	/				
FCC 15.207(a)	/	Conducted Emission	HC-C-202506-0272-02-01	PASS	N/A
FCC 15.209 & 15.247(d)	/	Radiated Unwanted Emissions	HC-C-202506-0272-02-01	PASS	N/A
FCC 15.203	/	Antenna Requirement	HC-C-202506-0272-01-01	PASS	N/A
FCC 15.247(a)	/	99% Occupied Bandwidth & 20dB Bandwidth	HC-C-202506-0272-01-01	PASS	N/A
FCC 15.247(b)(1)	/	Peak Output Power	HC-C-202506-0272-01-01	PASS	N/A
FCC 15.247(a)(1)	/	Carrier frequency separation	HC-C-202506-0272-01-01	PASS	N/A
FCC 15.247(a)(1)(iii)	/	Time of occupancy	HC-C-202506-0272-01-01	PASS	N/A
FCC 15.247(a)(1)(iii)	/	Number of Hopping Frequency	HC-C-202506-0272-01-01	PASS	N/A
FCC 15.247(d)	/	Band Edge	HC-C-202506-0272-01-01	PASS	N/A
FCC 15.207	/	Conducted Unwanted Emissions	HC-C-202506-0272-02-01	PASS	N/A
FCC 15.205	/	Emissions in Restricted Bands	HC-C-202506-0272-02-01	PASS	N/A
/	/	On Time and Duty Cycle	HC-C-202506-0272-01-01	/	N/A
Note: N/A is an abbreviation for Not Applicable.					

3. Test Software

Test Item	Test Software	Manufacturer	Version No.
Conducted Emission	EZ-EMC	EZ	CDI-03A2
Radiation Emission	EZ-EMC	EZ	FA-03A2RE
Radiation Emission	EZ-EMC	EZ	FA-03A2RE+
RF Conducted Measurement	MTS-8310	MWRFTtest	V2.0.0.0
RF Test System	JS1120	Tonscend	V3.2.22



4. Test Equipment and Test Site

Test Site				
No.	Test Site	Manufacturer	Specification	Used
TB-EMCSR001	Shielding Chamber #1	YIHENG	7.5*4.0*3.0 (m)	√
TB-EMCSR002	Shielding Chamber #2	YIHENG	8.0*4.0*3.0 (m)	X
TB-EMCCA001	3m Anechoic Chamber #A	ETS	9.0*6.0*6.0 (m)	X
TB-EMCCB002	3m Anechoic Chamber #B	YIHENG	9.0*6.0*6.0 (m)	√

Conducted Emission Test					
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Due Date
EMI Test Receiver	Rohde & Schwarz	ESCI	100321	Jun. 16, 2025	Jun. 15, 2026
RF Switching Unit	Compliance Direction Systems Inc	RSU-A4	34403	Jun. 16, 2025	Jun. 15, 2026
AMN	SCHWARZBECK	NNBL 8226-2	8226-2/164	Jun. 16, 2025	Jun. 15, 2026
LISN	Rohde & Schwarz	ENV216	101131	Jun. 16, 2025	Jun. 15, 2026

Radiation Emission Test(B Site)					
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Due Date
Spectrum Analyzer	Agilent	N9020A	MY49100060	Aug. 29, 2024	Aug. 28, 2025
Spectrum Analyzer	Rohde & Schwarz	FSV40-N	102197	Jun. 16, 2025	Jun. 15, 2026
EMI Test Receiver	Rohde & Schwarz	ESU-8	100472/008	Feb. 20, 2025	Feb.19, 2026
Bilog Antenna	SCHWARZBECK	VULB 9168	1225	Nov. 13, 2023	Nov. 12, 2025
Horn Antenna	SCHWARZBECK	BBHA 9120 D	2463	Jun. 14, 2024	Jun. 13, 2026
Horn Antenna	SCHWARZBECK	BBHA 9170	1118	Feb. 27, 2024	Feb.26, 2026
Loop Antenna	SCHWARZBECK	FMZB 1519 B	1519B-059	Jun. 14, 2024	Jun. 13, 2026
HF Amplifier	Tonscend	TAP9E6343	AP21C806117	Aug. 29, 2024	Aug. 28, 2025
HF Amplifier	Tonscend	TAP051845	AP21C806141	Aug. 29, 2024	Aug. 28, 2025
HF Amplifier	Tonscend	TAP0184050	AP21C806129	Aug. 29, 2024	Aug. 28, 2025
Highpass Filter	CD	HPM-6.4/18G	---	N/A	N/A
Highpass Filter	CD	HPM-2.8/18G	---	N/A	N/A
Highpass Filter	XINBO	XBLBQ-HTA67(8-25G)	22052702-1	N/A	N/A

Antenna Conducted Emission					
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Due Date
Spectrum Analyzer	Rohde & Schwarz	FSV40-N	102197	Jun. 16, 2025	Jun. 15, 2026
MXA Signal Analyzer	KEYSIGHT	N9020B	MY60110172	Aug. 29, 2024	Aug. 28, 2025
MXA Signal Analyzer	Agilent	N9020A	MY47380425	Aug. 29, 2024	Aug. 28, 2025
RF Power Sensor	DARE!! Instruments	RadiPowerRPR3006W	17100015SNO26	Aug. 29, 2024	Aug. 28, 2025
	DARE!! Instruments	RadiPowerRPR3006W	17100015SNO29	Aug. 29, 2024	Aug. 28, 2025
	DARE!! Instruments	RadiPowerRPR3006W	17100015SNO31	Aug. 29, 2024	Aug. 28, 2025
	DARE!! Instruments	RadiPowerRPR3006W	17100015SNO33	Aug. 29, 2024	Aug. 28, 2025
RF Control Unit	Tonsced	JS0806-2	21F8060439	Aug. 29, 2024	Aug. 28, 2025
Attenuator	YINSAIGE	DC-18G 10dB	DC18G	N/A	N/A
Attenuator	YINSAIGE	DC-40G 10dB	DC40G	N/A	N/A



Conducted Emission Test

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Due Date
EMI Test Receiver	Rohde & Schwarz	ESCI	100321	May. 15, 2026	May. 14, 2027
RF Switching Unit	Compliance Direction Systems Inc	RSU-A4	34403	May. 15, 2026	May. 14, 2027
AMN	SCHWARZBECK	NNBL 8226-2	8226-2/164	May. 15, 2026	May. 14, 2027
LISN	Rohde & Schwarz	ENV216	101131	May. 15, 2026	May. 14, 2027

Radiation Emission Test(B Site)

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Due Date
Spectrum Analyzer	Agilent	N9020A	MY49100060	Aug. 27, 2025	Aug. 26, 2026
Spectrum Analyzer	Rohde & Schwarz	FSV40-N	102197	May. 15, 2026	May. 14, 2027
EMI Test Receiver	Rohde & Schwarz	ESU-8	100472/008	Jan. 30, 2026	Jan. 29, 2027
Bilog Antenna	SCHWARZBECK	VULB 9168	1225	Oct. 18, 2025	Oct. 17, 2027
Horn Antenna	SCHWARZBECK	BBHA 9120 D	2463	May. 15, 2026	May. 14, 2027
Horn Antenna	SCHWARZBECK	BBHA 9170	1118	Jan. 31, 2026	Jan. 30, 2028
HF Amplifier	Tonscend	TAP9E6343	AP21C806117	May. 15, 2026	May. 14, 2027
HF Amplifier	Tonscend	TAP051845	AP21C806141	Aug. 27, 2025	Aug. 26, 2026
HF Amplifier	Tonscend	TAP0184050	AP21C806129	Aug. 27, 2025	Aug. 26, 2026
Pre-amplifier	HP	8449B	3008A00849	Feb. 02, 2026	Feb.01, 2027
Highpass Filter	CD	HPM-6.4/18G	---	N/A	N/A
Highpass Filter	CD	HPM-2.8/18G	---	N/A	N/A
Highpass Filter	XINBO	XBLBQ-HTA67(8-25G)	22052702-1	N/A	N/A

Antenna Conducted Emission

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Due Date
Spectrum Analyzer	Rohde & Schwarz	FSV40-N	102197	May. 15, 2026	May. 14, 2027
MXA Signal Analyzer	KEYSIGHT	N9020B	MY60110172	Aug. 27, 2025	Aug. 26, 2026
MXA Signal Analyzer	Agilent	N9020A	MY47380425	Aug. 27, 2025	Aug. 26, 2026
Vector Signal Generator	Agilent	N5182A	MY50141294	Aug. 27, 2025	Aug. 26, 2026
Analog Signal Generator	Agilent	N5181A	MY48180463	Aug. 27, 2025	Aug. 26, 2026
Vector Signal Generator	KEYSIGHT	N5182B	MY59101429	Aug. 27, 2025	Aug. 26, 2026
Analog Signal Generator	KEYSIGHT	N5173B	MY61252685	Aug. 27, 2025	Aug. 26, 2026
RF Control Unit	Tonsced	JS0806-2	21F8060439	Aug. 27, 2025	Aug. 26, 2026
Power Control Box	Tonsced	JS0806-4ADC	21C8060387	N/A	N/A
RF Power Sensor	DARE!! Instruments	RadiPowerRPR3 006W	17I00015SNO26	Aug. 27, 2025	Aug. 26, 2026
			17I00015SNO29	Aug. 27, 2025	Aug. 26, 2026
			17I00015SNO31	Aug. 27, 2025	Aug. 26, 2026
			17I00015SNO33	Aug. 27, 2025	Aug. 26, 2026
Attenuator	YINSAIGE	DC-18G 10dB	DC18G	N/A	N/A



5. Conducted Emission

5.1 Test Standard and Limit

5.1.1 Test Standard

RSS-Gen 8.8

FCC Part 15.207

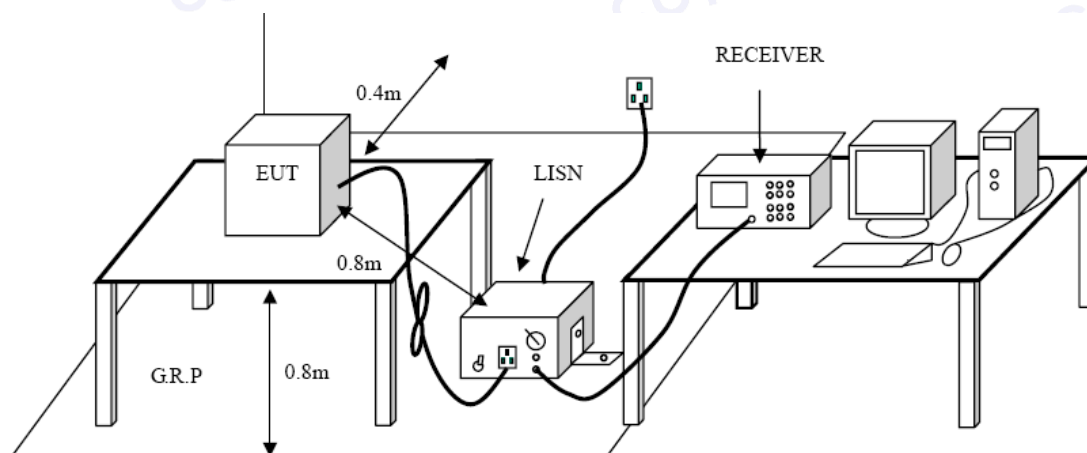
5.1.2 Test Limit

Frequency	Maximum RF Line Voltage (dB μ V)	
	Quasi-peak Level	Average Level
150kHz~500kHz	66 ~ 56 *	56 ~ 46 *
500kHz~5MHz	56	46
5MHz~30MHz	60	50

Notes:

- (1) *Decreasing linearly with logarithm of the frequency.
- (2) The lower limit shall apply at the transition frequencies.
- (3) The limit decrease in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

5.2 Test Setup



5.3 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.
- The bandwidth of EMI test receiver is set at 9 kHz, and the test frequency band is from 0.15MHz to 30MHz.

5.4 Deviation From Test Standard

No deviation



5.5 EUT Operating Mode

Please refer to the description of test mode.

5.6 Test Data

Please refer to the Attachment A inside test report.



6. Radiated and Conducted Unwanted Emissions

6.1 Test Standard and Limit

6.1.1 Test Standard

RSS-Gen 8.9 & RSS 247 5.5

FCC Part 15.209 & FCC Part 15.247(d)

6.1.2 Test Limit

General field strength limits at frequencies Below 30MHz		
Frequency (MHz)	Field Strength (microvolt/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

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

General field strength limits at frequencies above 30 MHz		
Frequency (MHz)	Field strength (μV/m at 3 m)	Measurement Distance (meters)
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

General field strength limits at frequencies Above 1000MHz		
Frequency (MHz)	Distance of 3m (dBuV/m)	
	Peak	Average
Above 1000	74	54

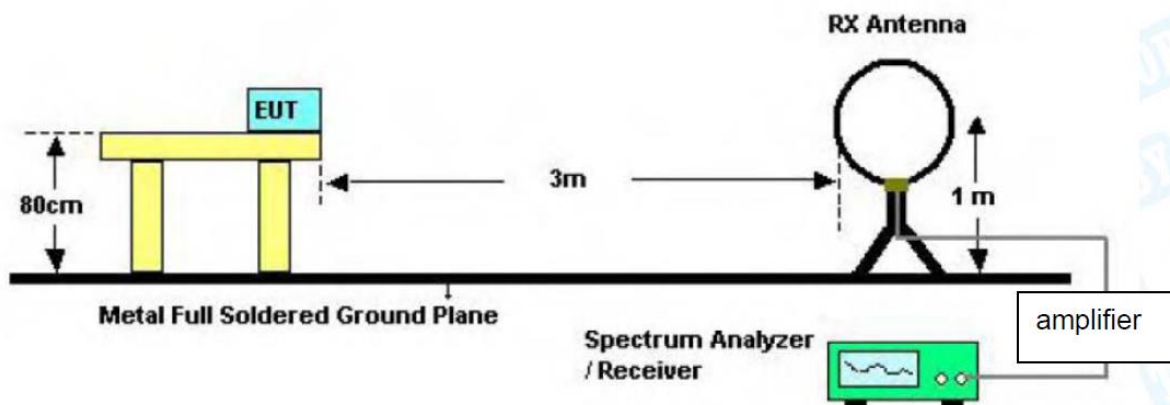
Note:
 (1) The tighter limit applies at the band edges.
 (2) Emission Level(dBuV/m)=20log Emission Level(uV/m)

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated device is operating, the RF power that is produced 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 that the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of root-mean-square averaging over a time interval, as permitted under section 5.4(d), the attenuation required shall be 30 dB instead of 20 dB.

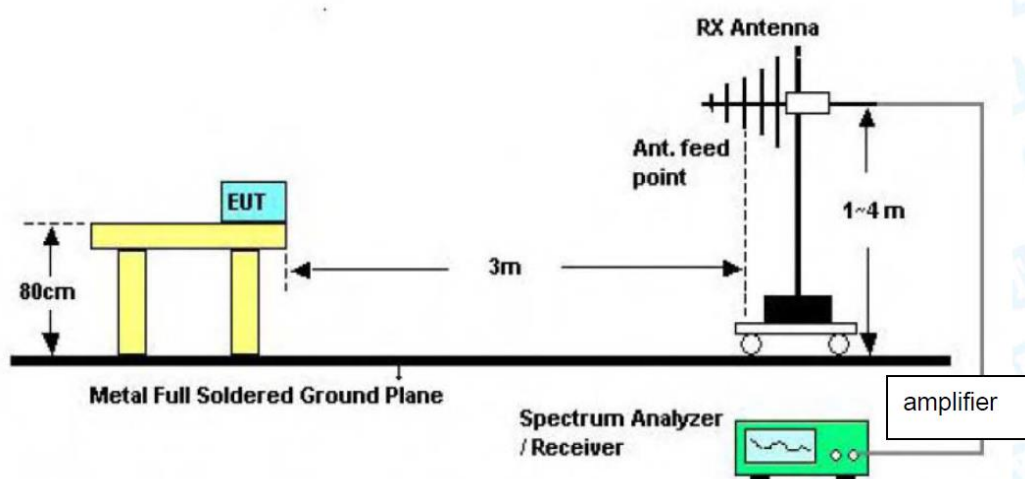


6.2 Test Setup

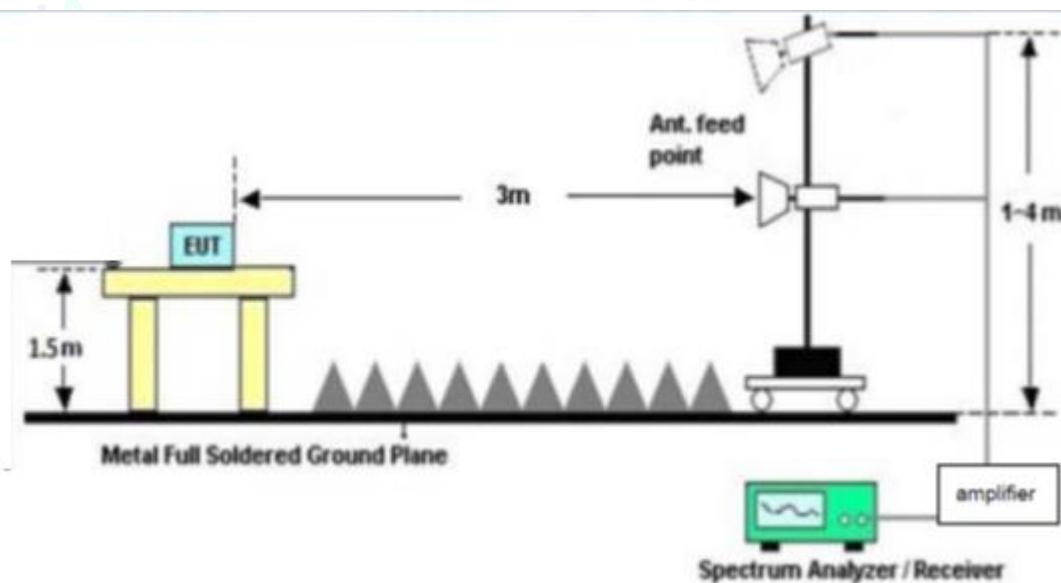
Radiated measurement



Below 30MHz Test Setup



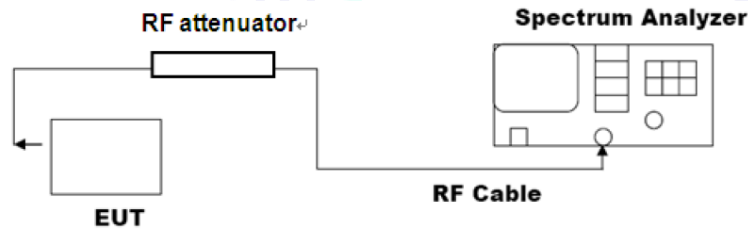
Below 1000MHz Test Setup



Above 1GHz Test Setup



Conducted measurement



6.3 Test Procedure

---Radiated measurement

- The measuring distance of 3m shall be used for measurements at frequency up to 1GHz and above 1 GHz. The EUT was placed on a rotating 0.8m high above ground, the table was rotated 360 degrees to determine the position of the highest radiation.
- Measurements at frequency above 1GHz. The EUT was placed on a rotating 1.5m high above the ground. RF absorbers covered the ground plane with a minimum area of 3.0m by 3.0m between the EUT and measurement receiver antenna. The RF absorber shall not exceed 30cm in high above the conducting floor. The table was rotated 360 degrees to determine the position of the highest radiation.
- The Test antenna shall vary between 1m and 4m, Both Horizontal and Vertical antenna are set to make measurement.
- 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 Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit Below 1 GHz, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed. But the Peak Value and average value both need to comply with applicable limit above 1 GHz.
- Testing frequency range 30MHz-1GHz the measuring instrument use VBW=120 kHz with Quasi-peak detection. Testing frequency range 9KHz-150Hz the measuring instrument use VBW=200Hz with Quasi-peak detection. Testing frequency range 9KHz-30MHz the measuring instrument use VBW=9kHz with Quasi-peak detection.
- Testing frequency range above 1GHz the measuring instrument use RBW=1 MHz and VBW=3 MHz with Peak Detector for Peak Values, and use RBW=1 MHz and VBW=3 MHz with Peak Detector for Average Values.
- For the actual test configuration, please see the test setup photo.



--- Conducted measurement

● Reference level measurement

Establish a reference level by using the following procedure:

- Set instrument center frequency to channel center frequency.
- Set the span to ≥ 1.5 times the bandwidth.
- Set the RBW = 100 kHz.
- Set the VBW $\geq [3 \times \text{RBW}]$.
- Detector = peak.
- Sweep time = auto couple.
- Trace mode = max hold.
- Allow trace to fully stabilize.
- Use the peak marker function to determine the maximum PSD level.

Note that the channel found to contain the maximum PSD level can be used to establish the reference level.

● Emission level measurement

Establish an emission level by using the following procedure:

- Set the center frequency and span to encompass frequency range to be measured.
- Set the RBW = 100 kHz.
- Set the VBW $\geq [3 \times \text{RBW}]$.
- Detector = peak.
- Sweep time = auto couple.
- Trace mode = max hold.
- Allow trace to fully stabilize.
- Use the peak marker function to determine the maximum amplitude level.

Ensure that the amplitude of all unwanted emissions outside of the authorized frequency band (excluding restricted frequency bands) is attenuated by at least the minimum requirements specified in 11.11. Report the three highest emissions relative to the limit.

6.4 Deviation From Test Standard

No deviation

6.5 EUT Operating Mode

Please refer to the description of test mode.

6.6 Test Data

Radiated measurement please refer to the Attachment B inside test report.

Conducted measurement please refer to the external appendix report of BT.



7. Restricted Bands and Band Edge Requirement

7.1 Test Standard and Limit

7.1.1 Test Standard

RSS-Gen 8.10 & RSS 247 5.5

FCC Part 15.205 & FCC Part 15.247(d)

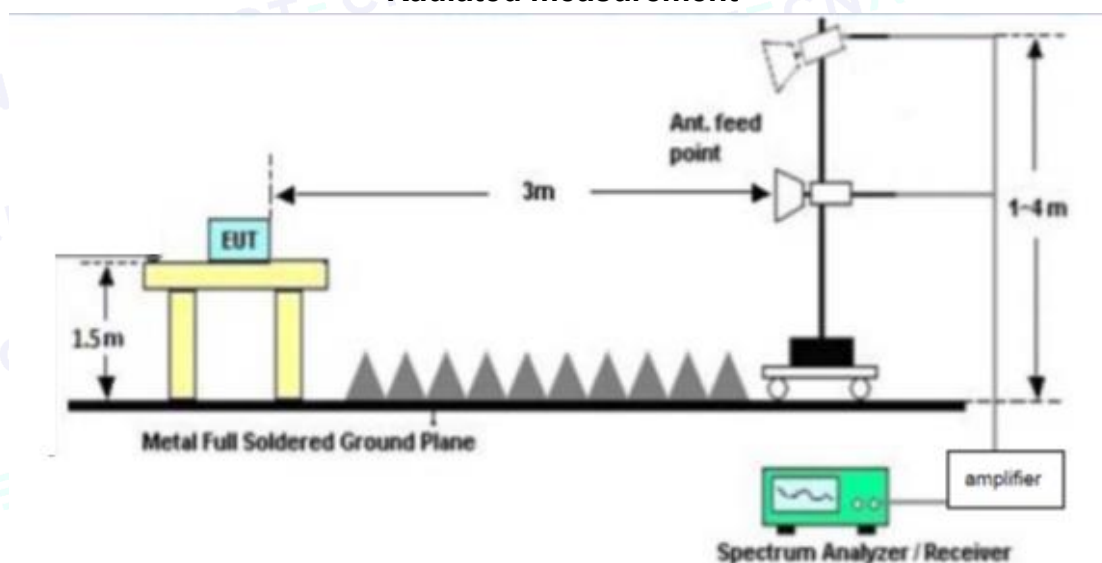
7.1.2 Test Limit

Restricted Frequency Band (MHz)	Distance Meters(at 3m)	
	Peak (dBuV/m)	Average (dBuV/m)
2310 ~2390	74	54
2483.5 ~2500	74	54
	Peak (dBm) _{see 7.3 e)}	Average (dBm) _{see 7.3 e)}
2310 ~2390	-21.20	-41.20
2483.5 ~2500	-21.20	-41.20

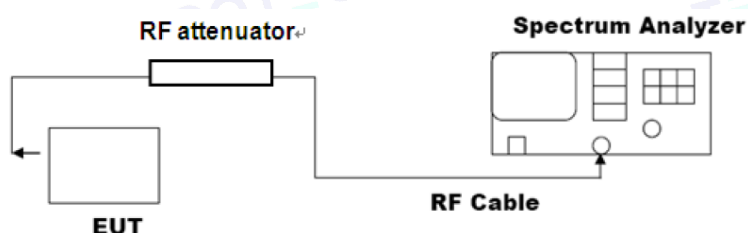
Note: According the ANSI C63.10 11.12.2 antenna-port conducted measurements may also be used as an alternative to radiated measurements for determining compliance in the restricted frequency bands requirements. If conducted measurements are performed, then proper impedance matching must be ensured and an additional radiated test for cabinet/case emissions is required.

7.2 Test Setup

Radiated measurement



Conducted measurement



7.3 Test Procedure

---Radiated measurement

- Measurements at frequency above 1GHz. The EUT was placed on a rotating 1.5m high above the ground. RF absorbers covered the ground plane with a minimum area of 3.0m by 3.0m between the EUT and measurement receiver antenna. The RF absorber shall not exceed 30cm in high above the conducting floor. The table was rotated 360 degrees to determine the position of the highest radiation.

- The Test antenna shall vary between 1m and 4m, Both Horizontal and Vertical antenna are set to make measurement.

- 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.

- The Peak Value and average value both need to comply with applicable limit above 1 GHz.

- Testing frequency range above 1GHz the measuring instrument use RBW=1 MHz and VBW=3 MHz with Peak Detector for Peak Values, and use RBW=1 MHz and VBW=3 MHz with Peak Detector for Average Values.

- For the actual test configuration, please see the test setup photo.

--- Conducted measurement

- a) Measure the conducted output power (in dBm) using the detector specified by the appropriate regulatory agency (see 11.12.2.3 through 11.12.2.5 for guidance regarding measurement procedures for determining quasi-peak, peak, and average conducted output power, respectively).

- b) Add the maximum transmit antenna gain (in dBi) to the measured output power level to determine the EIRP (see 11.12.2.6 for guidance on determining the applicable antenna gain).

- c) Add the appropriate maximum ground reflection factor to the EIRP (6 dB for frequencies ≤ 30 MHz; 4.7 dB for frequencies between 30 MHz and 1000 MHz, inclusive; and 0 dB for frequencies > 1000 MHz).

- d) For MIMO devices, measure the power of each chain and sum the EIRP of all chains in linear terms (i.e., watts and mW).

- e) Convert the resultant EIRP to an equivalent electric field strength using the following relationship:

$$E = \text{EIRP} - 20 \log d + 104.8$$

where

E is the electric field strength in dBuV/m

EIRP is the equivalent isotropically radiated power in dBm

d is the specified measurement distance in m

- f) Compare the resultant electric field strength level with the applicable regulatory limit.

- g) Perform the radiated spurious emission test.

7.4 Deviation From Test Standard

No deviation

7.5 EUT Operating Mode

Please refer to the description of test mode.

7.6 Test Data

Please refer to the Attachment C inside test report.



8. 99% Occupied and 20dB Bandwidth

8.1 Test Standard and Limit

8.1.1 Test Standard

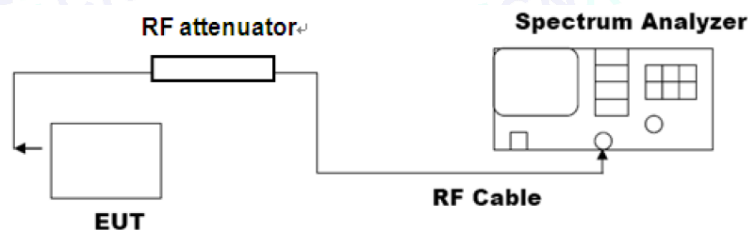
RSS-Gen 6.7 & RSS 247 6.2.3.1

FCC Part 15.205 & FCC Part 15.247(a)

8.1.2 Test Limit

For an FHSS system operating in the 2400 to 2483.5 MHz band, there are no limits for 20dB bandwidth and 99% occupied bandwidth.

8.2 Test Setup



8.3 Test Procedure

- The occupied bandwidth is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers are each equal to 0.5% of the total mean power of the given emission. The following procedure shall be used for measuring 99% power bandwidth:
 - a) 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.
 - b) The nominal IF filter bandwidth (3 dB RBW) shall be in the range of 1% to 5% of the OBW, and VBW shall be approximately three times the RBW, unless otherwise specified by the applicable requirement.
 - c) 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 $[10 \log (OBW/RBW)]$ below the reference level. Specific guidance is given in 4.1.5.2.
 - d) Step a) through step c) might require iteration to adjust within the specified range.
 - e) 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.
 - f) Use the 99% power bandwidth function of the instrument (if available) and report the measured bandwidth.
 - g) 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.
 - h) The occupied bandwidth shall be reported by providing 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).



8.4 Deviation From Test Standard

No deviation

8.5 EUT Operating Mode

Please refer to the description of test mode.

8.6 Test Data

Please refer to the external appendix report of BT.



9. Peak Output Power Test

9.1 Test Standard and Limit

9.1.1 Test Standard

RSS 247 5.4(2)

FCC Part 15.247(b)(1)

9.1.2 Test Limit

FCC Limit:

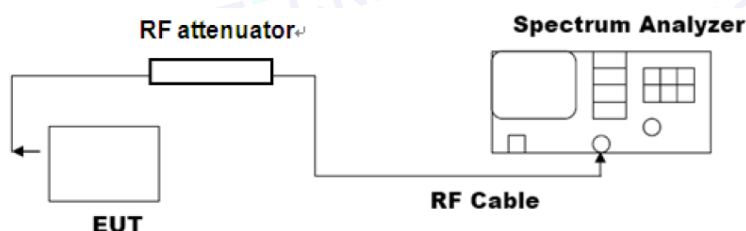
Test Item	Limit	Frequency Range(MHz)
Peak Output Power	$P_{\text{max-pk}} \leq 1 \text{ W}$ $N_{\text{ch}} \geq 75$ $f \geq \text{MAX} \{ 25 \text{ kHz, BW}_{20\text{dB}} \}$ max. $\text{BW}_{20\text{dB}}$ not specified $t_{\text{ch}} \leq 0.4 \text{ s}$ for $T = 0.4 * N_{\text{ch}}$	2400~2483.5
	$P_{\text{max-pk}} \leq 0.125 \text{ W}$ $N_{\text{ch}} \geq 15$ $f \geq [\text{MAX}\{25 \text{ kHz, } 0.67 * \text{BW}_{20\text{dB}}\}$ OR $\text{MAX}\{25 \text{ kHz, BW}_{20\text{dB}}\}]$ max. $\text{BW}_{20\text{dB}}$ not specified $t_{\text{ch}} \leq 0.4 \text{ s}$ for $T = 0.4 * N_{\text{ch}}$	
t_{ch} = average time of occupancy; T = period; N_{ch} = # hopping frequencies; BW = bandwidth; f = hopping channel carrier frequency separation		

IC Limit:

- if the hopset uses 75 or more hopping channels, the maximum peak conducted output power shall not exceed 1.0 W.
- if the hopset uses less than 75 hopping channels the maximum peak conducted output power shall not exceed 0.125 W.
- the e.i.r.p. shall not exceed 4 W, except as provided in sections 6.5 a) and b).

FHS operating in the band 2400-2483.5 MHz may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided that the systems operate with an output power no greater than 0.125 W.

9.2 Test Setup



9.3 Test Procedure

● This is an RF-conducted test to evaluate maximum peak output power. Use a direct connection between the antenna port of the unlicensed wireless device and the spectrum analyzer, through suitable attenuation. The hopping shall be disabled for this test:

a) Use the following spectrum analyzer settings:

- Span: Approximately five times the 20 dB bandwidth, centered on a hopping channel.
- RBW > 20 dB bandwidth of the emission being measured.



-
- 3) VBW $\geq$ RBW.
 - 4) Sweep: Auto.
 - 5) Detector function: Peak.
 - 6) Trace: Max hold.
- b) Allow trace to stabilize.
 - c) Use the marker-to-peak function to set the marker to the peak of the emission.
 - d) The indicated level is the peak output power, after any corrections for external attenuators and cables.
 - e) A plot of the test results and setup description shall be included in the test report.

NOTE-A peak responding power meter may be used, where the power meter and sensor system video bandwidth is greater than the occupied bandwidth of the unlicensed wireless device, rather than a spectrum analyzer.

9.4 Deviation From Test Standard

No deviation

9.5 EUT Operating Mode

Please refer to the description of test mode.

9.6 Test Data

Please refer to the external appendix report of BT.



10. Carrier frequency separation

10.1 Test Standard and Limit

10.1.1 Test Standard

RSS 247 6.2.3.1

FCC Part 15.247(a)(1)

10.1.2 Test Limit

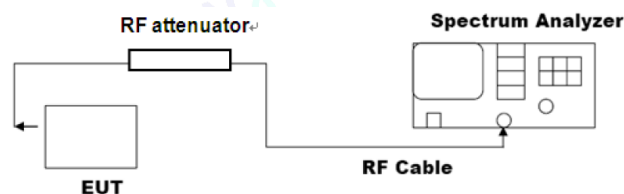
FCC Limit:

Test Item	Limit	Frequency Range(MHz)
Carrier frequency separation	$P_{\text{max-pk}} \leq 1 \text{ W}$ $N_{\text{ch}} \geq 75$ $f \geq \text{MAX} \{ 25 \text{ kHz, BW}_{20\text{dB}} \}$ max. $\text{BW}_{20\text{dB}}$ not specified $t_{\text{ch}} \leq 0.4 \text{ s}$ for $T = 0.4 * N_{\text{ch}}$	2400~2483.5
	$P_{\text{max-pk}} \leq 0.125 \text{ W}$ $N_{\text{ch}} \geq 15$ $f \geq [\text{MAX}\{25 \text{ kHz, } 0.67 * \text{BW}_{20\text{dB}}\}$ OR $\text{MAX}\{25 \text{ kHz, BW}_{20\text{dB}}\}]$ max. $\text{BW}_{20\text{dB}}$ not specified $t_{\text{ch}} \leq 0.4 \text{ s}$ for $T = 0.4 * N_{\text{ch}}$	
t_{ch} = average time of occupancy; T = period; N_{ch} = # hopping frequencies; BW = bandwidth; f = hopping channel carrier frequency separation		

IC Limit:

FHS operating in the band 2400-2483.5 MHz may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided that the systems operate with an output power no greater than 0.125 W.

10.2 Test Setup



10.3 Test Procedure

● The EUT shall have its hopping function enabled. Use the following spectrum analyzer settings:

- Span: Wide enough to capture the peaks of two adjacent channels.
- RBW: Start with the RBW set to approximately 30% of the channel spacing; adjust as necessary to best identify the center of each individual channel.
- Video (or average) bandwidth (VBW) $\geq$ RBW.
- Sweep: Auto.
- Detector function: Peak.
- Trace: Max hold.
- Allow the trace to stabilize.

Use the marker-delta function to determine the separation between the peaks of the



adjacent channels.

Compliance of an EUT with the appropriate regulatory limit shall be determined. A plot of the data shall be included in the test report.

10.4 Deviation From Test Standard

No deviation

10.5 Antenna Connected Construction

Please refer to the description of test mode.

10.6 Test Data

Please refer to the external appendix report of BT.



11. Time of occupancy (dwell time)

11.1 Test Standard and Limit

11.1.1 Test Standard

RSS 247 6.2.3.1

FCC Part 15.247(a)(1)(iii)

11.1.2 Test Limit

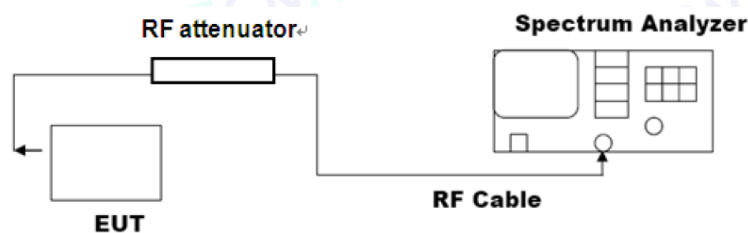
FCC Limit:

Test Item	Limit	Frequency Range(MHz)
Time of occupancy (dwell time)	$P_{\text{max-pk}} \leq 1 \text{ W}$ $N_{\text{ch}} \geq 75$ $f \geq \text{MAX} \{ 25 \text{ kHz, BW}_{20\text{dB}} \}$ max. $\text{BW}_{20\text{dB}}$ not specified $t_{\text{ch}} \leq 0.4 \text{ s for } T = 0.4 * N_{\text{ch}}$	2400~2483.5
	$P_{\text{max-pk}} \leq 0.125 \text{ W}$ $N_{\text{ch}} \geq 15$ $f \geq [\text{MAX}\{25 \text{ kHz, } 0.67 * \text{BW}_{20\text{dB}}\}$ OR $\text{MAX}\{25 \text{ kHz, BW}_{20\text{dB}}\}]$ max. $\text{BW}_{20\text{dB}}$ not specified $t_{\text{ch}} \leq 0.4 \text{ s for } T = 0.4 * N_{\text{ch}}$	
t_{ch} = average time of occupancy; T = period; N_{ch} = # hopping frequencies; BW = bandwidth; f = hopping channel carrier frequency separation		

IC Limit:

FHS operating in the band 2400-2483.5 MHz shall use at least 15 hopping channels. The average time of occupancy on any channel shall not be greater than 0.4 s within a period of 0.4 s, multiplied by the number of hopping channels employed. Transmissions on particular hopping frequencies may be avoided or suppressed provided that at least 15 hopping channels are used.

11.2 Test Setup



11.3 Test Procedure

● The EUT shall have its hopping function enabled. Use the following spectrum analyzer settings:

- Span: Zero span, centered on a hopping channel.
- RBW shall be < channel spacing and where possible RBW should be set >> $1/T$, where T is the expected transmission time per hop.
- Sweep: As necessary to capture the entire dwell time per hopping channel; where possible use a video trigger and trigger delay so that the transmitted signal starts a little to the right of the start of the plot. The trigger level might need slight adjustment to prevent triggering when the system hops on an adjacent channel; a second plot might be needed with a longer sweep time to show two successive hops on a channel.



d) Detector function: Peak.

e) Trace: Max hold.

Use the marker-delta function to determine the transmit time per hop. If this value varies with different modes of operation (data rate, modulation format, number of hopping channels, etc.), then repeat this test for each variation in transmit time.

Repeat the measurement using a longer sweep time to determine the number of hops over the period specified in the requirements. The sweep time shall be equal to, or less than, the period specified in the requirements. Determine the number of hops over the sweep time and calculate the total number of hops in the period specified in the requirements, using the following equation:

(Number of hops in the period specified in the requirements) =

(number of hops on spectrum analyzer) × (period specified in the requirements / analyzer sweep time)

The average time of occupancy is calculated from the transmit time per hop multiplied by the number of hops in the period specified in the requirements. If the number of hops in a specific time varies with different modes of operation (data rate, modulation format, number of hopping channels, etc.), then repeat this test for each variation.

The measured transmit time and time between hops shall be consistent with the values described in the operational description for the EUT.

11.4 Deviation From Test Standard

No deviation

11.5 Antenna Connected Construction

Please refer to the description of test mode.

11.6 Test Data

Please refer to the external appendix report of BT.



12. Number of hopping frequencies

12.1 Test Standard and Limit

12.1.1 Test Standard

RSS 247 6.2.3.1

FCC Part 15.247(a)(1)(iii)

12.1.2 Test Limit

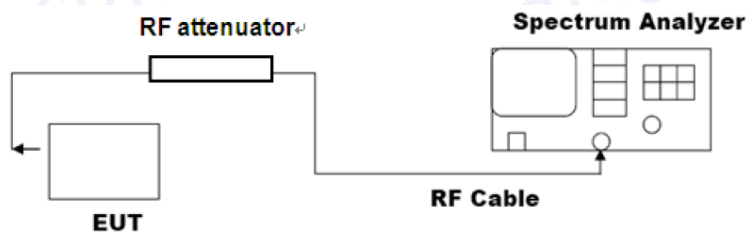
FCC Limit:

Test Item	Limit	Frequency Range(MHz)
Carrier frequency separation	$P_{\text{max-pk}} \leq 1 \text{ W}$ $N_{\text{ch}} \geq 75$ $f \geq \text{MAX} \{ 25 \text{ kHz, BW}_{20\text{dB}} \}$ max. $\text{BW}_{20\text{dB}}$ not specified $t_{\text{ch}} \leq 0.4 \text{ s}$ for $T = 0.4 * N_{\text{ch}}$	2400~2483.5
	$P_{\text{max-pk}} \leq 0.125 \text{ W}$ $N_{\text{ch}} \geq 15$ $f \geq [\text{MAX}\{25 \text{ kHz, } 0.67 * \text{BW}_{20\text{dB}}\}$ OR $\text{MAX}\{25 \text{ kHz, BW}_{20\text{dB}}\}]$ max. $\text{BW}_{20\text{dB}}$ not specified $t_{\text{ch}} \leq 0.4 \text{ s}$ for $T = 0.4 * N_{\text{ch}}$	
t_{ch} = average time of occupancy; T = period; N_{ch} = # hopping frequencies; BW = bandwidth; f = hopping channel carrier frequency separation		

IC Limit:

FHS operating in the band 2400-2483.5 MHz shall use at least 15 hopping channels.

12.2 Test Setup



12.3 Test Procedure

● The EUT shall have its hopping function enabled. Use the following spectrum analyzer settings:

- Span: The frequency band of operation. Depending on the number of channels the device supports, it may be necessary to divide the frequency range of operation across multiple spans, to allow the individual channels to be clearly seen.
- RBW: To identify clearly the individual channels, set the RBW to less than 30% of the channel spacing or the 20 dB bandwidth, whichever is smaller.
- VBW $\geq$ RBW.
- Sweep: Auto.
- Detector function: Peak.
- Trace: Max hold.
- Allow the trace to stabilize.

It might prove necessary to break the span up into subranges to show clearly all of the hopping frequencies.

Compliance of an EUT with the appropriate regulatory limit shall be determined for the number of hopping channels. A plot of the data shall be included in the test report.



12.4 Deviation From Test Standard

No deviation

12.5 Antenna Connected Construction

Please refer to the description of test mode.

12.6 Test Data

Please refer to the external appendix report of BT.



13. Duty cycle

13.1 Test Standard and Limit

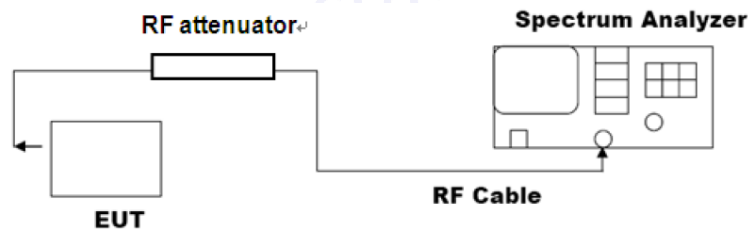
13.1.1 Test Standard

/

13.1.2 Test Limit

/

13.2 Test Setup



13.3 Test Procedure

● Measurements of duty cycle and transmission duration shall be performed using one of the following techniques:

a) The zero-span mode on a spectrum analyzer or EMI receiver if the response time and spacing between bins on the sweep are sufficient to permit accurate measurements of the ON and OFF times

of the transmitted signal:

1) Set the center frequency of the instrument to the center frequency of the transmission.

2) Set RBW $\geq 8\text{MHz}$ if possible; otherwise, set RBW to the largest available value.

3) Set VBW $\geq 8\text{MHz}$. Set detector = peak or average.

4) The zero-span 0MHz measurement method shall not be used unless both RBW and VBW are $> 1/T$

and the number of sweep points across duration T exceeds 100. (For example, if VBW and/or

RBW are limited to 8 MHz,

13.4 Deviation From Test Standard

No deviation

13.5 Antenna Connected Construction

Please refer to the description of test mode.

13.6 Test Data

Please refer to the external appendix report of BLE.



14. Antenna Requirement

14.1 Test Standard and Limit

14.1.1 Test Standard

RSS Gen 6.8

FCC Part 15.203

14.1.2 Requirement (RSS-Gen 6.8)

The applicant for equipment certification shall provide a list of all antenna types that may be used with the transmitter, where applicable (i.e. for transmitters with detachable antenna), indicating the maximum permissible antenna gain (in dBi) and the required impedance for each antenna. The test report shall demonstrate the compliance of the transmitter with the limit for maximum equivalent isotropically radiated power (e.i.r.p.) specified in the applicable RSS, when the transmitter is equipped with any antenna type, selected from this list.

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

14.1.2 Requirement (FCC Part 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.

14.2 Deviation From Test Standard

No deviation

14.3 Antenna Connected Construction

The gains of the antenna used for transmitting is 4.0dBi, and the antenna designed with permanent attachment and no consideration of replacement. Please see the EUT photo for details.

14.4 Test Data

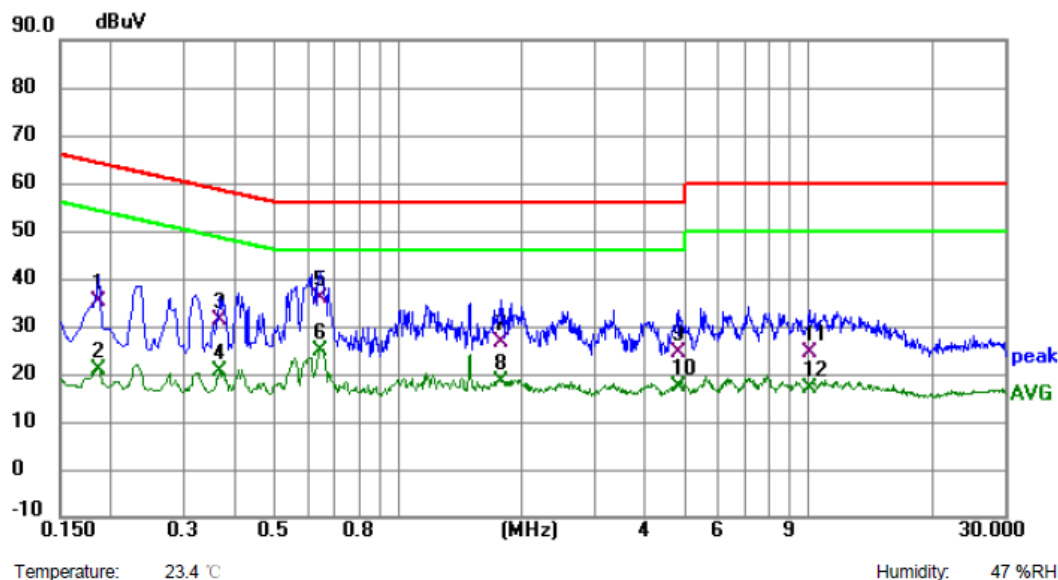
The EUT antenna is FPC Antenna. It complies with the standard requirement.

Antenna Type
☐ Permanent attached antenna
☒ Unique connector antenna
☐ Professional installation antenna



Attachment A-- Conducted Emission Test Data

Test Voltage:	DC 5V
Terminal:	Line
Test Mode:	Mode 1 FPC Antenna 2
Remark:	Only worse case is reported.



No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over	
		MHz	Level	Factor	ment			Detector
			dBuV	dB	dBuV	dBuV	dB	
1		0.186	25.61	9.74	35.35	64.21	-28.86	QP
2		0.186	11.18	9.74	20.92	54.21	-33.29	AVG
3		0.366	21.55	9.81	31.36	58.59	-27.23	QP
4		0.366	10.63	9.81	20.44	48.59	-28.15	AVG
5	*	0.645	26.11	9.78	35.89	56.00	-20.11	QP
6		0.645	14.88	9.78	24.66	46.00	-21.34	AVG
7		1.788	16.70	9.83	26.53	56.00	-29.47	QP
8		1.788	8.57	9.83	18.40	46.00	-27.60	AVG
9		4.848	14.78	9.72	24.50	56.00	-31.50	QP
10		4.848	7.56	9.72	17.28	46.00	-28.72	AVG
11		10.046	14.54	9.80	24.34	60.00	-35.66	QP
12		10.046	7.24	9.80	17.04	50.00	-32.96	AVG

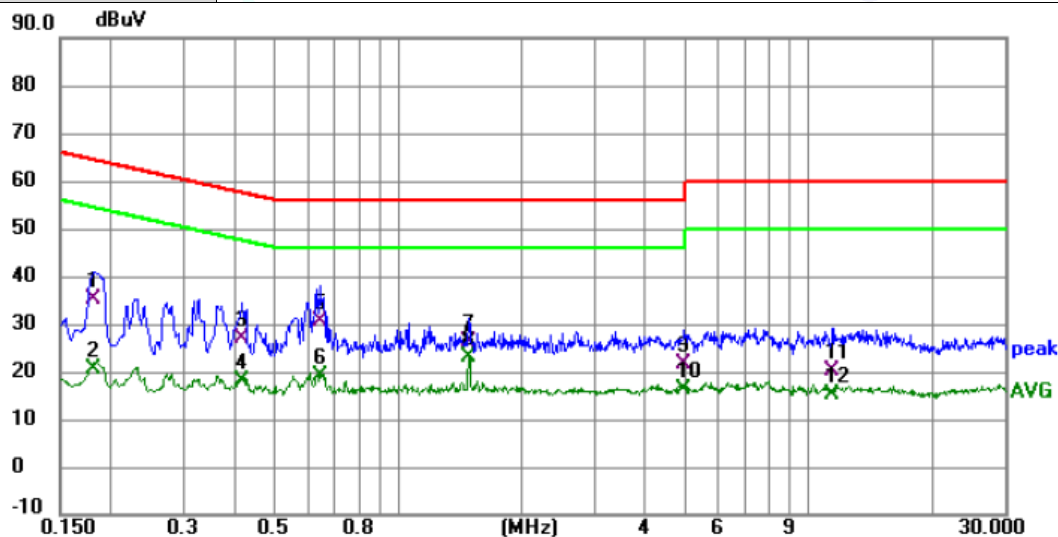
Remark:

1. Corr. Factor (dB) = LISN Factor (dB) + Cable Loss (dB)

2. Margin (dB) = QuasiPeak/Average (dBuV) - Limit (dBuV)



Test Voltage:	DC 5V
Terminal:	Neutral
Test Mode:	Mode 1 FPC Antenna 2
Remark:	Only worse case is reported.



No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over	
		MHz	Level	Factor	ment			Detector
			dBuV	dB	dBuV	dBuV	dB	
1		0.181	25.51	9.70	35.21	64.44	-29.23	QP
2		0.181	10.78	9.70	20.48	54.44	-33.96	AVG
3		0.415	17.10	9.77	26.87	57.55	-30.68	QP
4		0.415	8.28	9.77	18.05	47.55	-29.50	AVG
5		0.645	20.91	9.74	30.65	56.00	-25.35	QP
6		0.645	9.50	9.74	19.24	46.00	-26.76	AVG
7		1.491	16.38	9.78	26.16	56.00	-29.84	QP
8	*	1.491	13.38	9.78	23.16	46.00	-22.84	AVG
9		4.974	12.00	9.69	21.69	56.00	-34.31	QP
10		4.974	6.54	9.69	16.23	46.00	-29.77	AVG
11		11.400	10.35	9.83	20.18	60.00	-39.82	QP
12		11.400	5.25	9.83	15.08	50.00	-34.92	AVG

Remark:

1. Corr. Factor (dB) = LISN Factor (dB) + Cable Loss (dB)

2. Margin (dB) = QuasiPeak/Average (dBuV) - Limit (dBuV)



Attachment B--Unwanted Emissions Data

---Radiated Unwanted Emissions

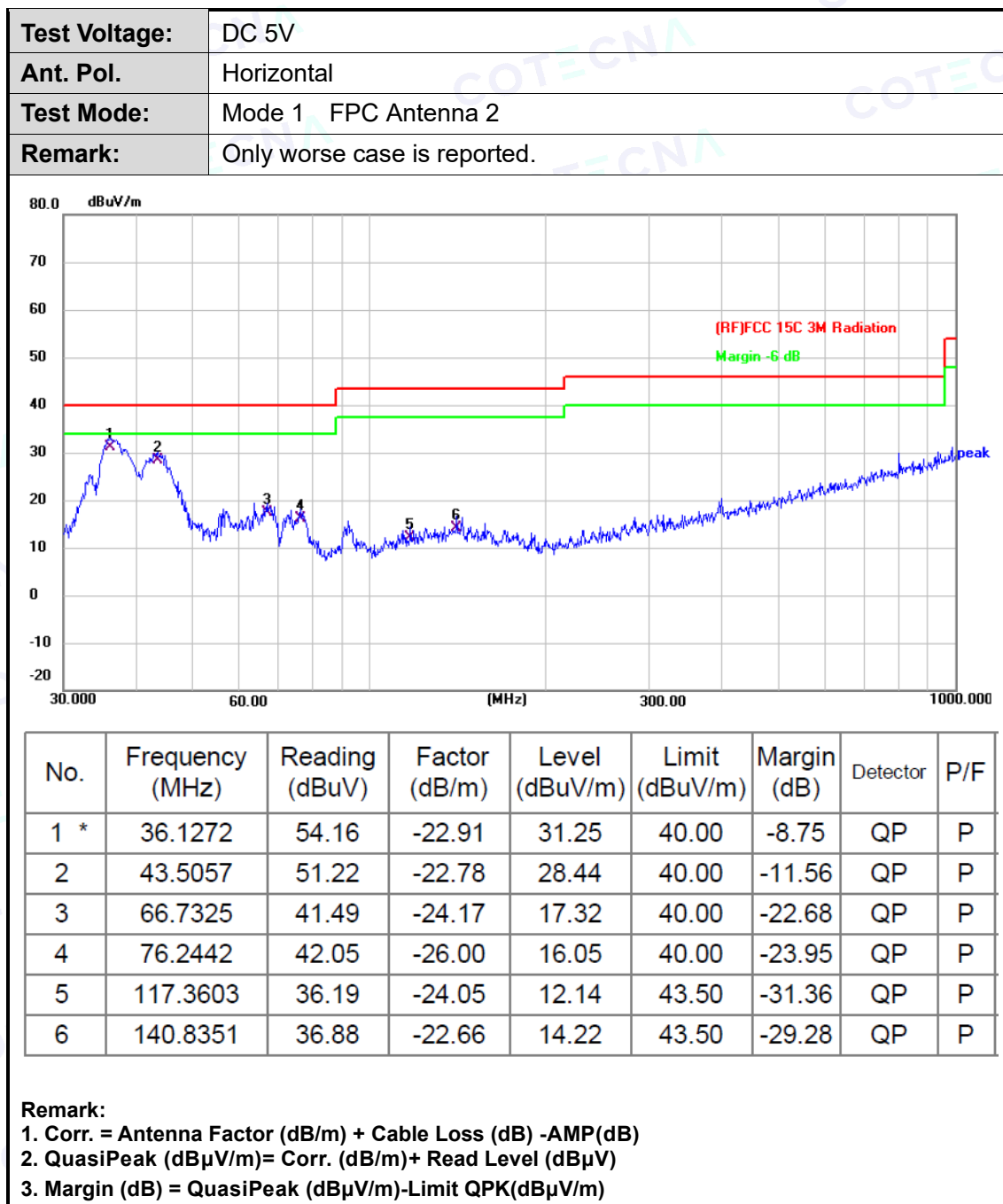
9 KHz~30 MHz

From 9 KHz to 30 MHz: Conclusion: PASS

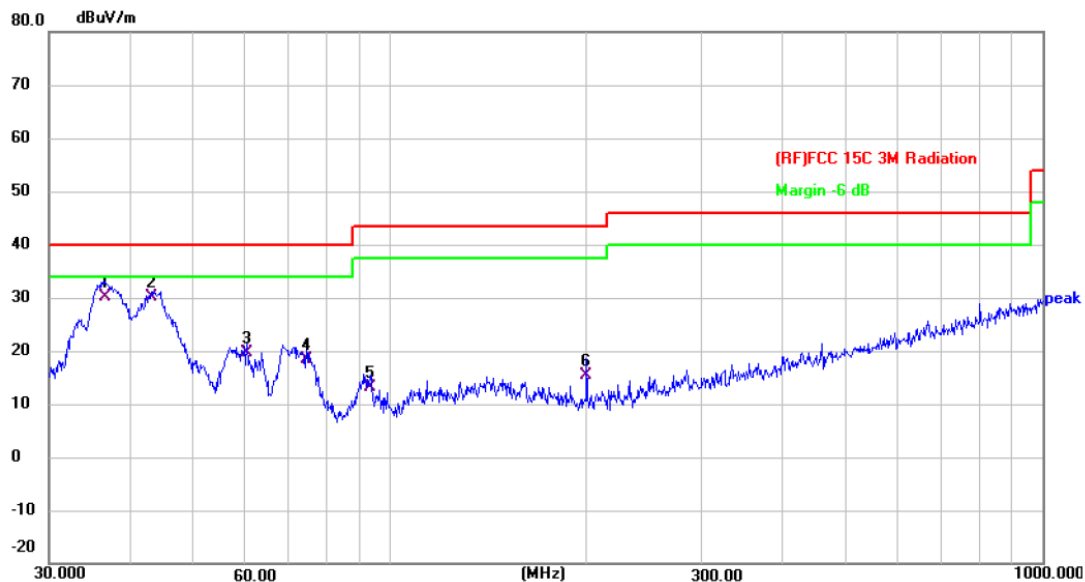
Note: The amplitude of spurious emissions which are attenuated by more than 20dB

Below the permissible value has no need to be reported.

30MHz~1GHz



Test Voltage:	DC 5V
Ant. Pol.	Vertical
Test Mode:	Mode 1 FPC Antenna 2
Remark:	Only worse case is reported.



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1 *	36.5092	53.16	-22.91	30.25	40.00	-9.75	QP	P
2	43.0505	52.81	-22.80	30.01	40.00	-9.99	QP	P
3	60.2801	43.26	-23.68	19.58	40.00	-20.42	QP	P
4	74.3955	43.94	-25.53	18.41	40.00	-21.59	QP	P
5	93.1132	39.58	-26.37	13.21	43.50	-30.29	QP	P
6	199.9856	40.29	-24.91	15.38	43.50	-28.12	QP	P

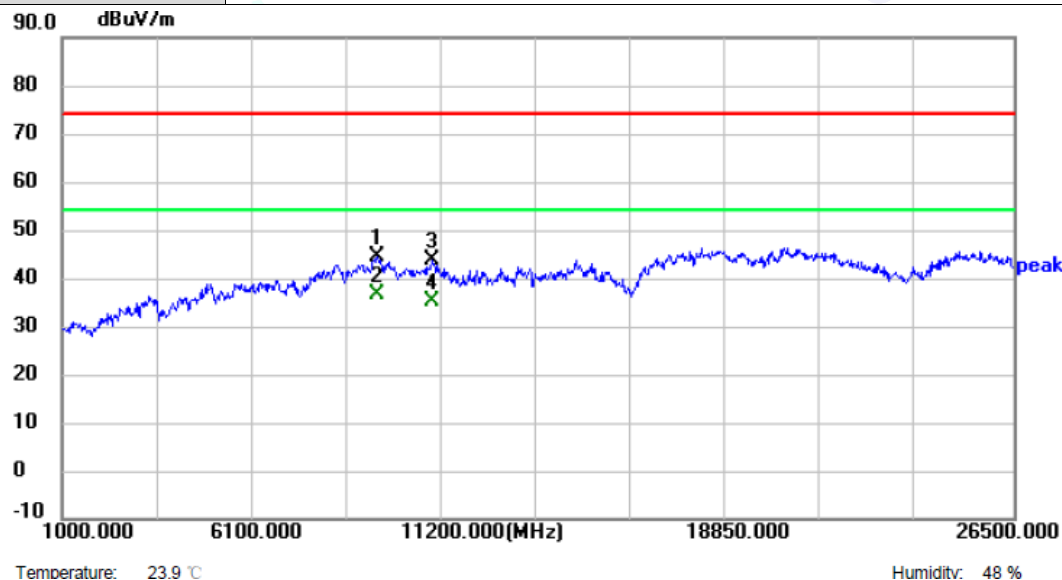
Remark:

1. Corr. = Antenna Factor (dB/m) + Cable Loss (dB) -AMP(dB)
2. QuasiPeak (dBμV/m)= Corr. (dB/m)+ Read Level (dBμV)
3. Margin (dB) = QuasiPeak (dBμV/m)-Limit QPK(dBμV/m)



Above 1GHz

Test Voltage:	DC 5V
Ant. Pol.	Horizontal
Test Mode:	1DH5 Mode TX 2402 MHz FPC Antenna 2
Remark:	Only worse case is reported.



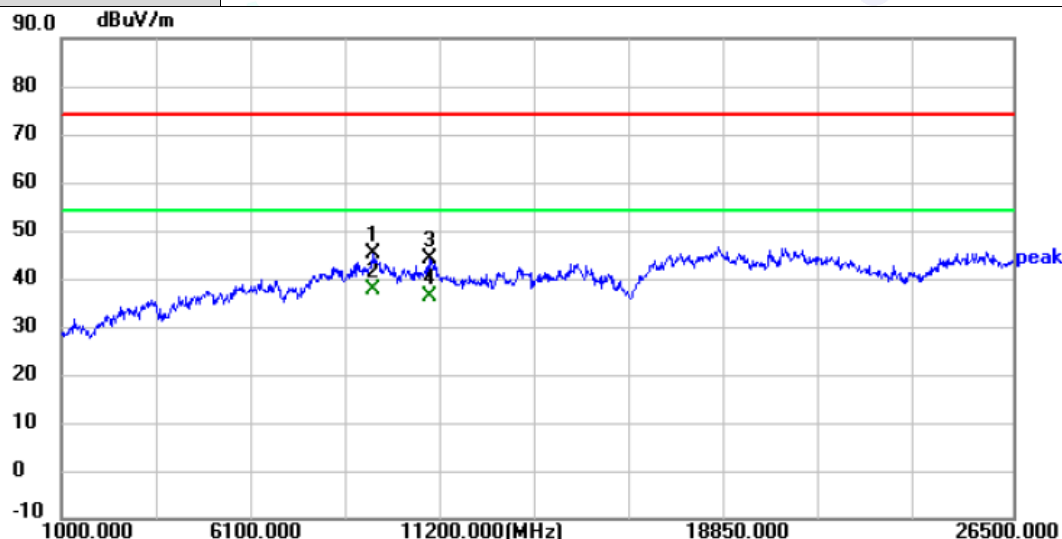
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1	9440.5000	44.03	0.27	44.30	74.00	-29.70	peak	P
2 *	9440.5000	36.22	0.27	36.49	54.00	-17.51	AVG	P
3	10919.5000	43.45	0.15	43.60	74.00	-30.40	peak	P
4	10919.5000	35.20	0.15	35.35	54.00	-18.65	AVG	P

Remark:

1. Corr. = Antenna Factor (dB/m) + Cable Loss (dB) -AMP(dB)
2. Peak/AVG (dBuV/m)= Corr. (dB/m)+ Read Level (dBuV)
3. Margin (dB) = Peak/AVG (dBuV/m)-Limit PK/AVG(dBuV/m)
4. The tests evaluated 1-26.5GHz, The testing has been conformed to the 10th harmonic of the highest fundamental frequency. Test with highpass filter (Pass Frequency: 2.8-18G and 8-25G), and 18GHz-26.5GHz is the noise, No other signals were detected.
5. No report for the emission which below the prescribed limit.
6. The peak value < average limit, So only show the peak value.



Test Voltage:	DC 5V
Ant. Pol.	Vertical
Test Mode:	1DH5 Mode TX 2402 MHz FPC Antenna 2
Remark:	Only worse case is reported.



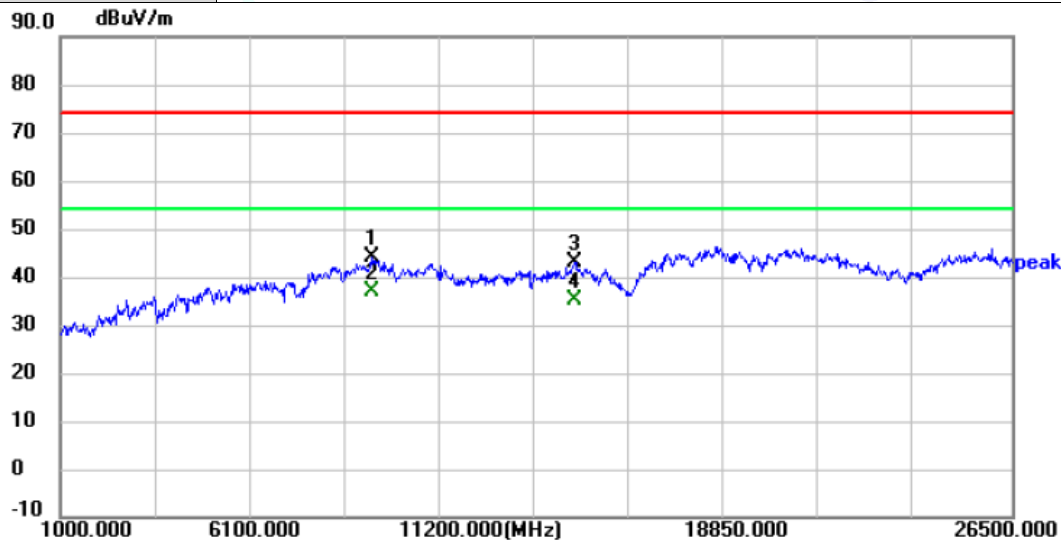
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1	9364.0000	45.51	-0.46	45.05	74.00	-28.95	peak	P
2 *	9364.0000	37.97	-0.46	37.51	54.00	-16.49	AVG	P
3	10894.0000	43.98	0.04	44.02	74.00	-29.98	peak	P
4	10894.0000	36.34	0.04	36.38	54.00	-17.62	AVG	P

Remark:

1. Corr. = Antenna Factor (dB/m) + Cable Loss (dB) -AMP(dB)
2. Peak/AVG (dBuV/m)= Corr. (dB/m)+ Read Level (dBuV)
3. Margin (dB) = Peak/AVG (dBuV/m)-Limit PK/AVG(dBuV/m)
4. The tests evaluated 1-26.5GHz, The testing has been conformed to the 10th harmonic of the highest fundamental frequency. Test with highpass filter (Pass Frequency: 2.8-18G and 8-25G), and 18GHz-26.5GHz is the noise, No other signals were detected.
5. No report for the emission which below the prescribed limit.
6. The peak value < average limit, So only show the peak value.



Test Voltage:	DC 5V
Ant. Pol.	Horizontal
Test Mode:	1DH5 Mode TX 2441MHz FPC Antenna 2
Remark:	Only worse case is reported.



Temperature: 23.9 °C

Humidity: 48 %

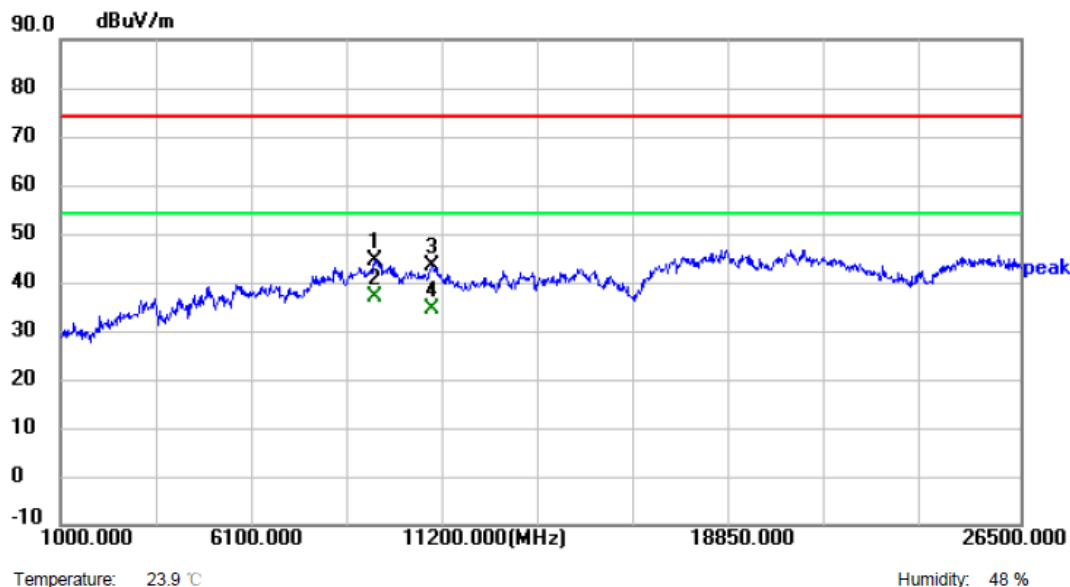
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1	9338.5000	44.83	-0.87	43.96	74.00	-30.04	peak	P
2 *	9338.5000	37.66	-0.87	36.79	54.00	-17.21	AVG	P
3	14770.0000	38.96	4.05	43.01	74.00	-30.99	peak	P
4	14770.0000	31.15	4.05	35.20	54.00	-18.80	AVG	P

Remark:

1. Corr. = Antenna Factor (dB/m) + Cable Loss (dB) -AMP(dB)
2. Peak/AVG (dBuV/m)= Corr. (dB/m)+ Read Level (dBuV)
3. Margin (dB) = Peak/AVG (dBuV/m)-Limit PK/AVG(dBuV/m)
4. The tests evaluated 1-26.5GHz, The testing has been conformed to the 10th harmonic of the highest fundamental frequency. Test with highpass filter (Pass Frequency: 2.8-18G and 8-25G), and 18GHz-26.5GHz is the noise, No other signals were detected.
5. No report for the emission which below the prescribed limit.
6. The peak value < average limit, So only show the peak value.



Test Voltage:	DC 5V
Ant. Pol.	Vertical
Test Mode:	1DH5 Mode TX 2441MHz FPC Antenna 2
Remark:	Only worse case is reported.



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1	9364.0000	45.08	-0.46	44.62	74.00	-29.38	peak	P
2 *	9364.0000	37.38	-0.46	36.92	54.00	-17.08	AVG	P
3	10868.5000	43.41	-0.11	43.30	74.00	-30.70	peak	P
4	10868.5000	34.71	-0.11	34.60	54.00	-19.40	AVG	P

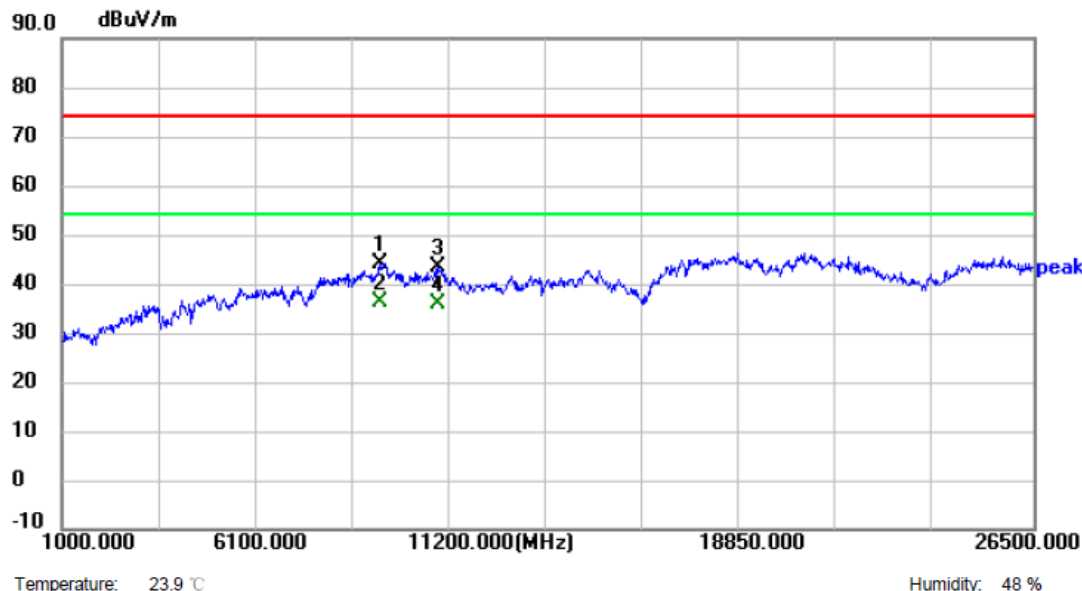
Remark:

Remark:

1. Corr. = Antenna Factor (dB/m) + Cable Loss (dB) -AMP(dB)
2. Peak/AVG (dBμV/m)= Corr. (dB/m)+ Read Level (dBμV)
3. Margin (dB) = Peak/AVG (dBμV/m)-Limit PK/AVG(dBμV/m)
4. The tests evaluated 1-26.5GHz, The testing has been conformed to the 10th harmonic of the highest fundamental frequency. Test with highpass filter (Pass Frequency: 2.8-18G and 8-25G), and 18GHz-26.5GHz is the noise, No other signals were detected.
5. No report for the emission which below the prescribed limit.
6. The peak value < average limit, So only show the peak value.



Test Voltage:	DC 5V
Ant. Pol.	Horizontal
Test Mode:	1DH5 Mode TX 2480MHz FPC Antenna 2
Remark:	Only worse case is reported.



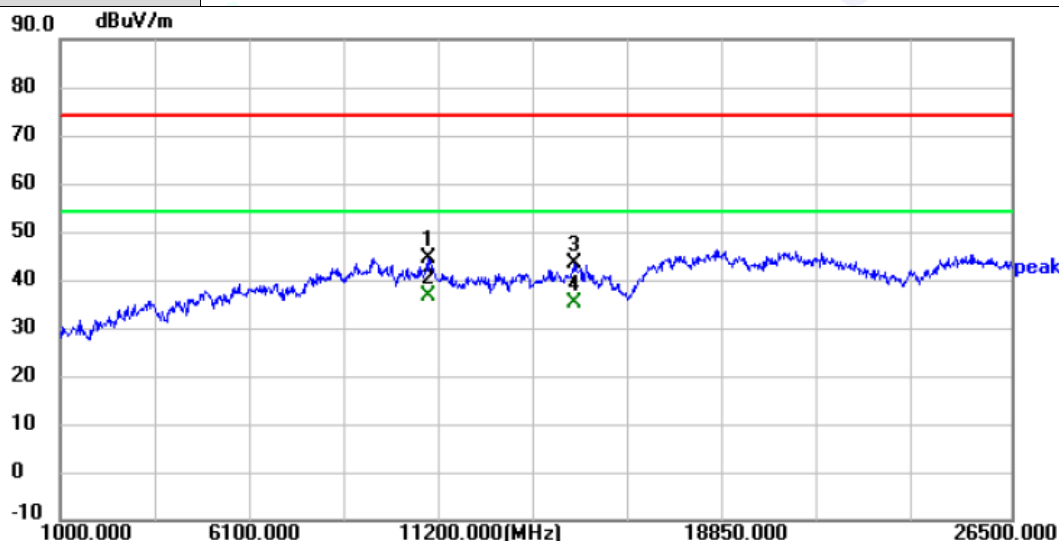
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1	9364.0000	44.70	-0.46	44.24	74.00	-29.76	peak	P
2 *	9364.0000	36.77	-0.46	36.31	54.00	-17.69	AVG	P
3	10894.0000	43.41	0.04	43.45	74.00	-30.55	peak	P
4	10894.0000	35.68	0.04	35.72	54.00	-18.28	AVG	P

Remark:

1. Corr. = Antenna Factor (dB/m) + Cable Loss (dB) -AMP(dB)
2. Peak/AVG (dBuV/m)= Corr. (dB/m)+ Read Level (dBuV)
3. Margin (dB) = Peak/AVG (dBuV/m)-Limit PK/AVG(dBuV/m)
4. The tests evaluated 1-26.5GHz, The testing has been conformed to the 10th harmonic of the highest fundamental frequency. Test with highpass filter (Pass Frequency: 2.8-18G and 8-25G), and 18GHz-26.5GHz is the noise, No other signals were detected.
5. No report for the emission which below the prescribed limit.
6. The peak value < average limit, So only show the peak value.



Test Voltage:	DC 5V
Ant. Pol.	Vertical
Test Mode:	1DH5 Mode TX 2480MHz FPC Antenna 2
Remark:	Only worse case is reported.



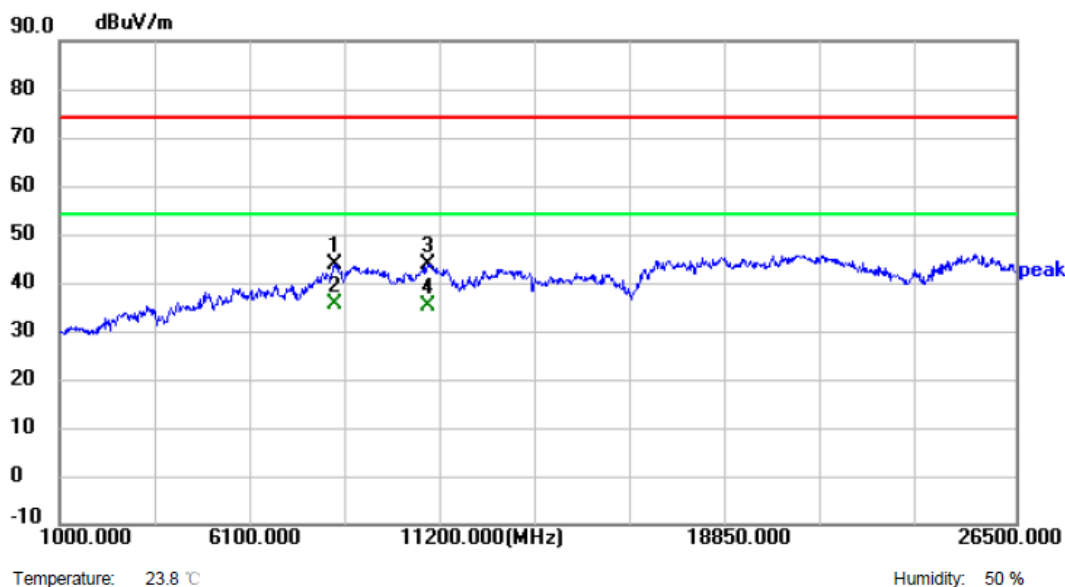
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1	10894.0000	44.35	0.04	44.39	74.00	-29.61	peak	P
2 *	10894.0000	36.41	0.04	36.45	54.00	-17.55	AVG	P
3	14770.0000	39.20	4.05	43.25	74.00	-30.75	peak	P
4	14770.0000	31.03	4.05	35.08	54.00	-18.92	AVG	P

Remark:

1. Corr. = Antenna Factor (dB/m) + Cable Loss (dB) -AMP(dB)
2. Peak/AVG (dBuV/m)= Corr. (dB/m)+ Read Level (dBuV)
3. Margin (dB) = Peak/AVG (dBuV/m)-Limit PK/AVG(dBuV/m)
4. The tests evaluated 1-26.5GHz, The testing has been conformed to the 10th harmonic of the highest fundamental frequency. Test with highpass filter (Pass Frequency: 2.8-18G and 8-25G), and 18GHz-26.5GHz is the noise, No other signals were detected.
5. No report for the emission which below the prescribed limit.
6. The peak value < average limit, So only show the peak value.



Test Voltage:	DC 5V
Ant. Pol.	Horizontal
Test Mode:	1DH5 Mode TX 2402MHz Dipole Antenna 2
Remark:	Only worse case is reported.



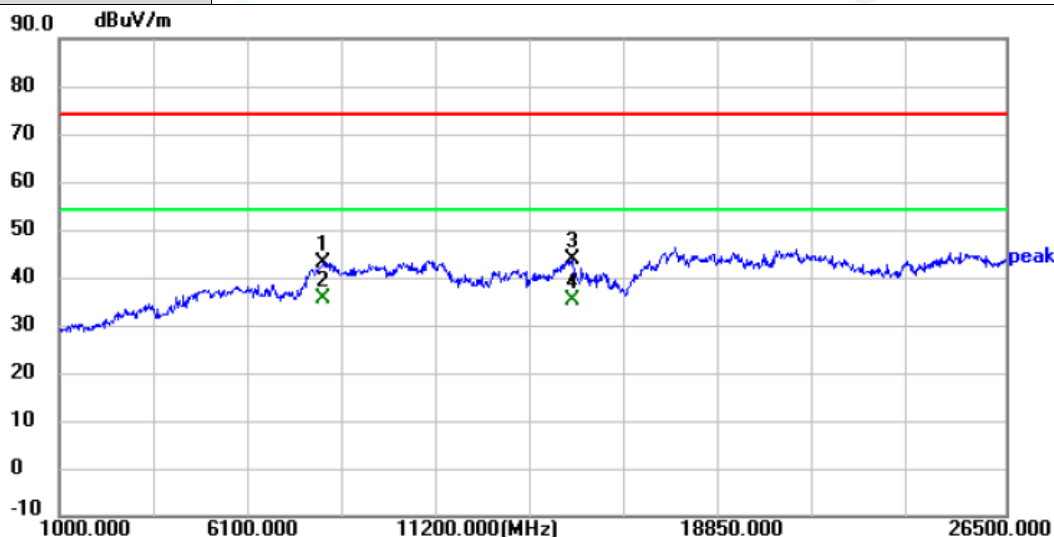
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1	8344.0000	48.43	-4.59	43.84	74.00	-30.16	peak	P
2 *	8344.0000	40.07	-4.59	35.48	54.00	-18.52	AVG	P
3	10843.0000	43.89	-0.26	43.63	74.00	-30.37	peak	P
4	10843.0000	35.55	-0.26	35.29	54.00	-18.71	AVG	P

Remark:

1. Corr. = Antenna Factor (dB/m) + Cable Loss (dB) -AMP(dB)
2. Peak/AVG (dBuV/m)= Corr. (dB/m)+ Read Level (dBuV)
3. Margin (dB) = Peak/AVG (dBuV/m)-Limit PK/AVG(dBuV/m)
4. The tests evaluated 1-26.5GHz, The testing has been conformed to the 10th harmonic of the highest fundamental frequency. Test with highpass filter (Pass Frequency: 2.8-18G and 8-25G), and 18GHz-26.5GHz is the noise, No other signals were detected.
5. No report for the emission which below the prescribed limit.
6. The peak value < average limit, So only show the peak value.



Test Voltage:	DC 5V
Ant. Pol.	Vertical
Test Mode:	1DH5 Mode TX 2402MHz Dipole Antenna 2
Remark:	Only worse case is reported.



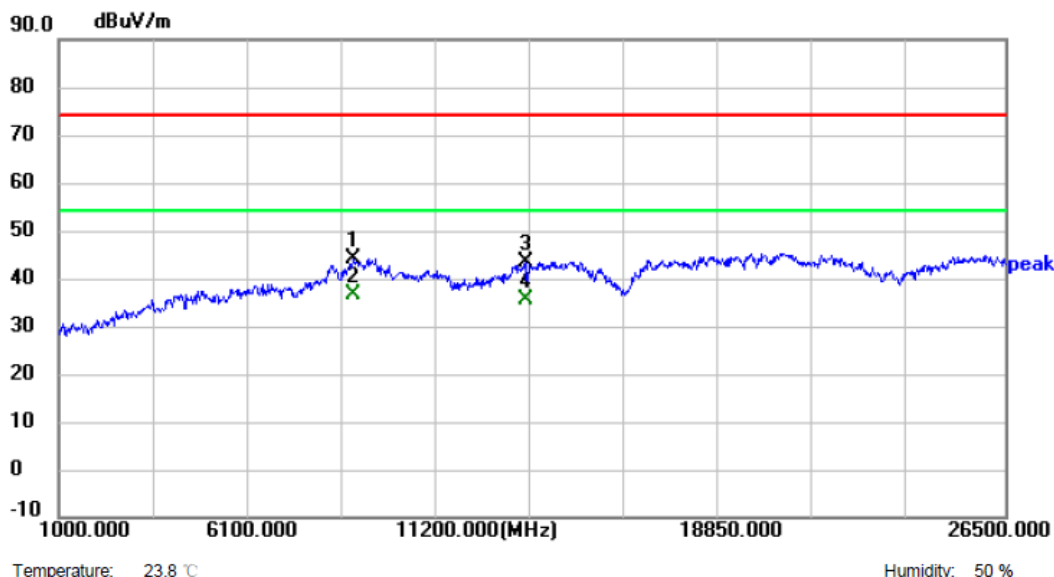
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1	8114.5000	48.19	-5.16	43.03	74.00	-30.97	peak	P
2 *	8114.5000	40.80	-5.16	35.64	54.00	-18.36	AVG	P
3	14821.0000	39.38	4.33	43.71	74.00	-30.29	peak	P
4	14821.0000	30.74	4.33	35.07	54.00	-18.93	AVG	P

Remark:

1. Corr. = Antenna Factor (dB/m) + Cable Loss (dB) -AMP(dB)
2. Peak/AVG (dBuV/m)= Corr. (dB/m)+ Read Level (dBuV)
3. Margin (dB) = Peak/AVG (dBuV/m)-Limit PK/AVG(dBuV/m)
4. The tests evaluated 1-26.5GHz, The testing has been conformed to the 10th harmonic of the highest fundamental frequency. Test with highpass filter (Pass Frequency: 2.8-18G and 8-25G), and 18GHz-26.5GHz is the noise, No other signals were detected.
5. No report for the emission which below the prescribed limit.
6. The peak value < average limit, So only show the peak value.



Test Voltage:	DC 5V
Ant. Pol.	Horizontal
Test Mode:	1DH5 Mode TX 2441MHz Dipole Antenna 2
Remark:	Only worse case is reported.



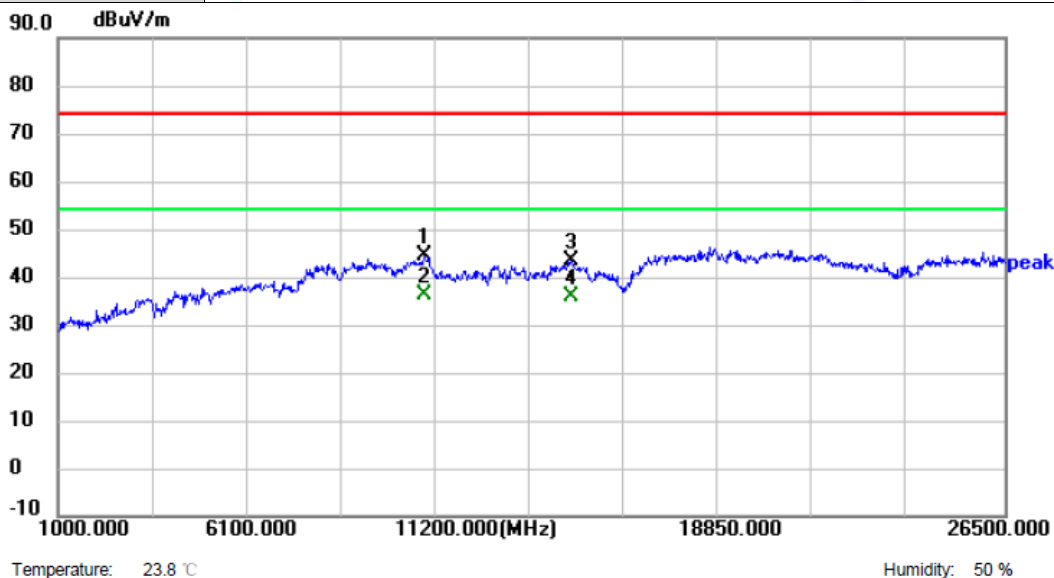
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1	8930.5000	47.24	-3.13	44.11	74.00	-29.89	peak	P
2 *	8930.5000	39.64	-3.13	36.51	54.00	-17.49	AVG	P
3	13571.5000	41.85	1.54	43.39	74.00	-30.61	peak	P
4	13571.5000	33.88	1.54	35.42	54.00	-18.58	AVG	P

Remark:

1. Corr. = Antenna Factor (dB/m) + Cable Loss (dB) -AMP(dB)
2. Peak/AVG (dBuV/m)= Corr. (dB/m)+ Read Level (dBuV)
3. Margin (dB) = Peak/AVG (dBuV/m)-Limit PK/AVG(dBuV/m)
4. The tests evaluated 1-26.5GHz, The testing has been conformed to the 10th harmonic of the highest fundamental frequency. Test with highpass filter (Pass Frequency: 2.8-18G and 8-25G), and 18GHz-26.5GHz is the noise, No other signals were detected.
5. No report for the emission which below the prescribed limit.
6. The peak value < average limit, So only show the peak value.



Test Voltage:	DC 5V
Ant. Pol.	Vertical
Test Mode:	1DH5 Mode TX 2441MHz Dipole Antenna 2
Remark:	Only worse case is reported.



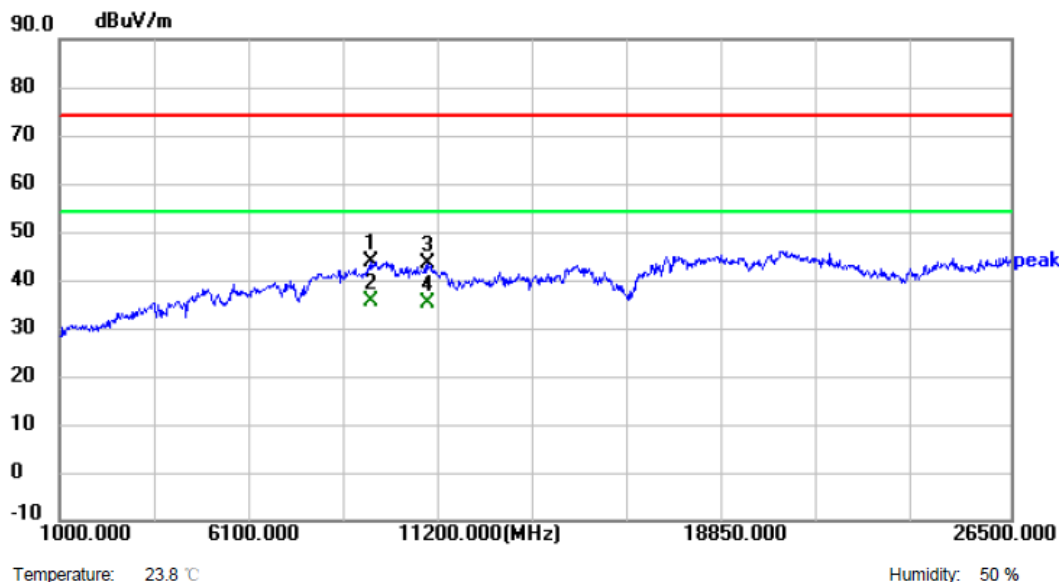
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1	10868.5000	44.41	-0.11	44.30	74.00	-29.70	peak	P
2 *	10868.5000	36.38	-0.11	36.27	54.00	-17.73	AVG	P
3	14846.5000	38.97	4.38	43.35	74.00	-30.65	peak	P
4	14846.5000	31.40	4.38	35.78	54.00	-18.22	AVG	P

Remark:

1. Corr. = Antenna Factor (dB/m) + Cable Loss (dB) -AMP(dB)
2. Peak/AVG (dBuV/m)= Corr. (dB/m)+ Read Level (dBuV)
3. Margin (dB) = Peak/AVG (dBuV/m)-Limit PK/AVG(dBuV/m)
4. The tests evaluated 1-26.5GHz, The testing has been conformed to the 10th harmonic of the highest fundamental frequency. Test with highpass filter (Pass Frequency: 2.8-18G and 8-25G), and 18GHz-26.5GHz is the noise, No other signals were detected.
5. No report for the emission which below the prescribed limit.
6. The peak value < average limit, So only show the peak value.



Test Voltage:	DC 5V
Ant. Pol.	Horizontal
Test Mode:	1DH5 Mode TX 2480MHz Dipole Antenna 2
Remark:	Only worse case is reported.



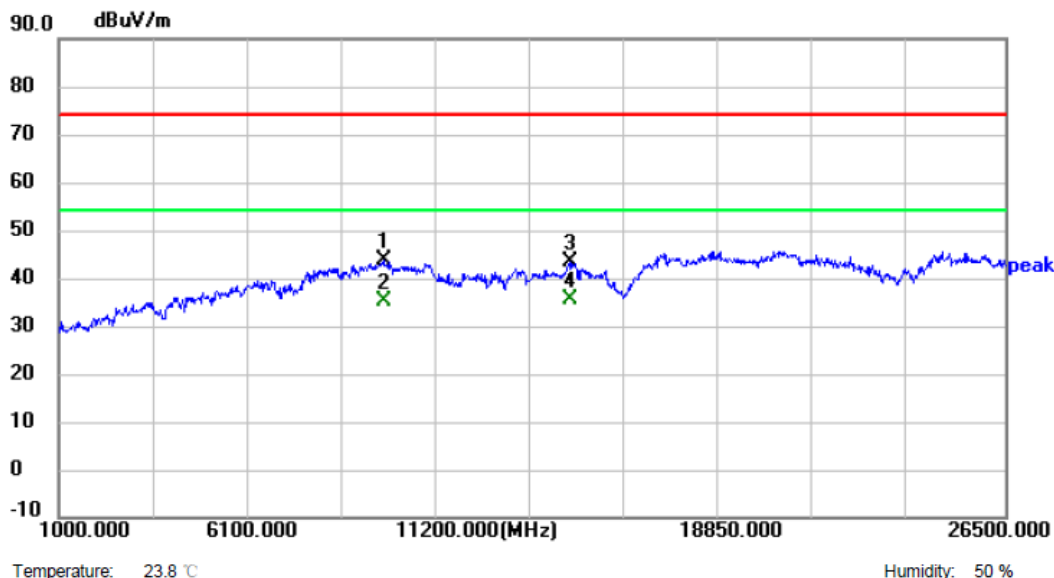
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1	9364.0000	44.20	-0.46	43.74	74.00	-30.26	peak	P
2 *	9364.0000	35.89	-0.46	35.43	54.00	-18.57	AVG	P
3	10894.0000	43.41	0.04	43.45	74.00	-30.55	peak	P
4	10894.0000	35.22	0.04	35.26	54.00	-18.74	AVG	P

Remark:

1. Corr. = Antenna Factor (dB/m) + Cable Loss (dB) -AMP(dB)
2. Peak/AVG (dBuV/m)= Corr. (dB/m)+ Read Level (dBuV)
3. Margin (dB) = Peak/AVG (dBuV/m)-Limit PK/AVG(dBuV/m)
4. The tests evaluated 1-26.5GHz, The testing has been conformed to the 10th harmonic of the highest fundamental frequency. Test with highpass filter (Pass Frequency: 2.8-18G and 8-25G), and 18GHz-26.5GHz is the noise, No other signals were detected.
5. No report for the emission which below the prescribed limit.
6. The peak value < average limit, So only show the peak value.



Test Voltage:	DC 5V
Ant. Pol.	Vertical
Test Mode:	1DH5 Mode TX 2480MHz Dipole Antenna 2
Remark:	Only worse case is reported.



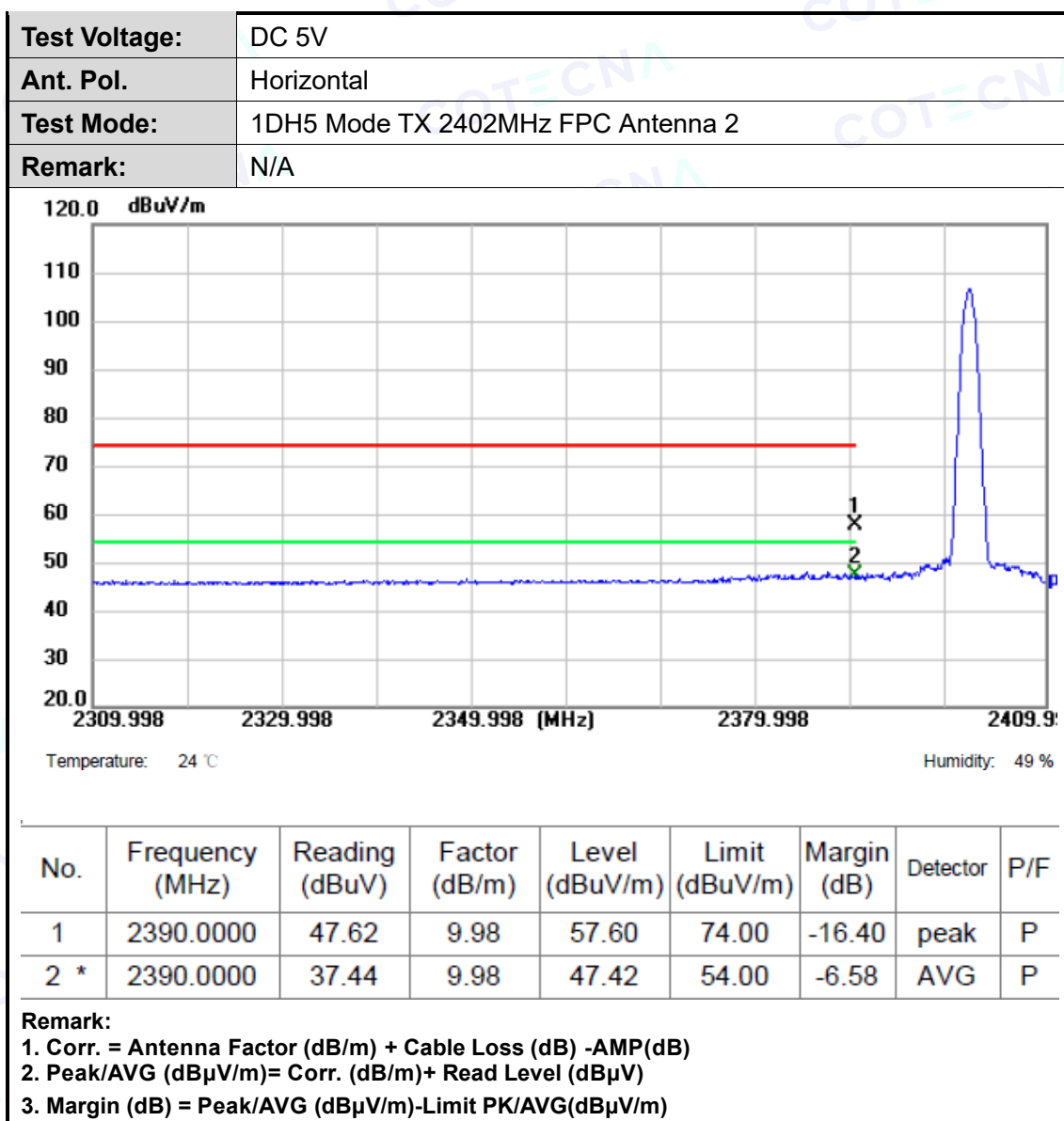
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1	9746.5000	44.43	-0.74	43.69	74.00	-30.31	peak	P
2	9746.5000	35.99	-0.74	35.25	54.00	-18.75	AVG	P
3	14770.0000	39.20	4.05	43.25	74.00	-30.75	peak	P
4 *	14770.0000	31.51	4.05	35.56	54.00	-18.44	AVG	P

Remark:

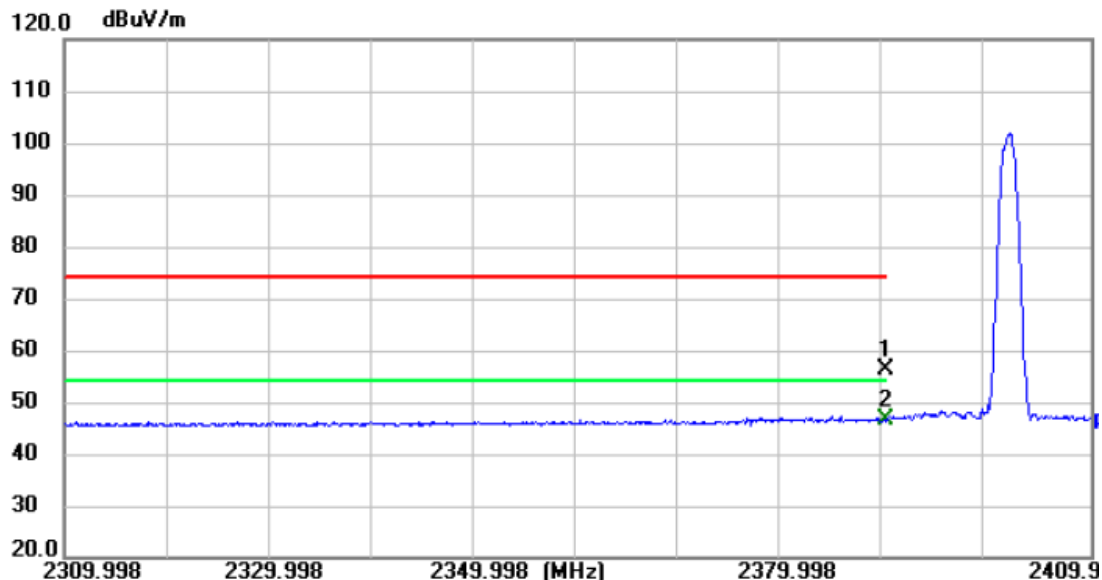
1. Corr. = Antenna Factor (dB/m) + Cable Loss (dB) -AMP(dB)
2. Peak/AVG (dBuV/m)= Corr. (dB/m)+ Read Level (dBuV)
3. Margin (dB) = Peak/AVG (dBuV/m)-Limit PK/AVG(dBuV/m)
4. The tests evaluated 1-26.5GHz, The testing has been conformed to the 10th harmonic of the highest fundamental frequency. Test with highpass filter (Pass Frequency: 2.8-18G and 8-25G), and 18GHz-26.5GHz is the noise, No other signals were detected.
5. No report for the emission which below the prescribed limit.
6. The peak value < average limit, So only show the peak value.



Attachment C--Restricted Bands Data



Test Voltage:	DC 5V
Ant. Pol.	Vertical
Test Mode:	1DH5 Mode TX 2402MHz FPC Antenna 2
Remark:	N/A



Temperature: 24 °C

Humidity: 49 %

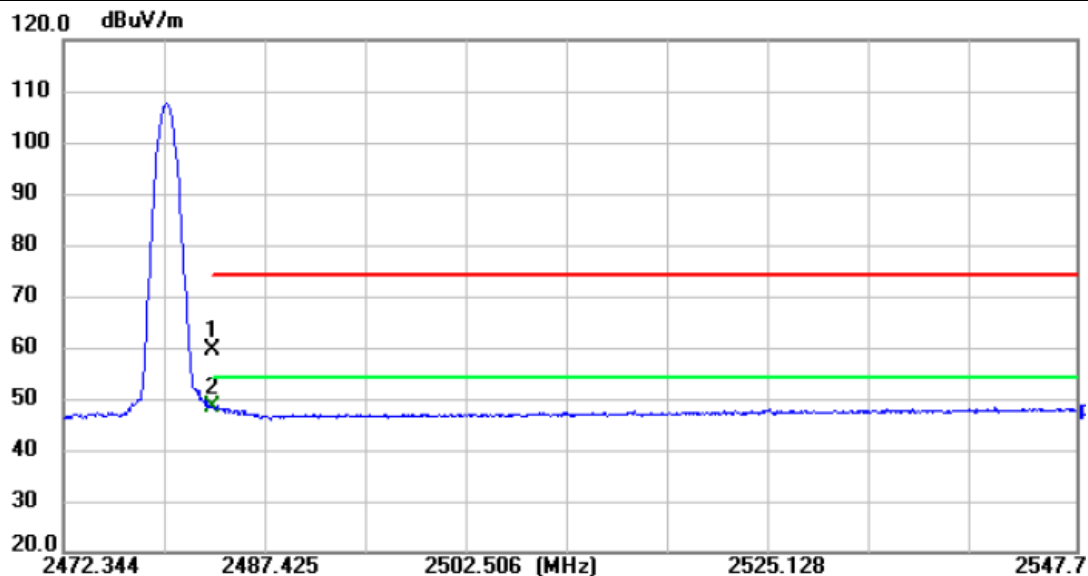
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1	2390.0000	46.30	9.98	56.28	74.00	-17.72	peak	P
2 *	2390.0000	36.59	9.98	46.57	54.00	-7.43	AVG	P

Remark:

1. Corr. = Antenna Factor (dB/m) + Cable Loss (dB) -AMP(dB)
2. Peak/AVG (dBuV/m)= Corr. (dB/m)+ Read Level (dBuV)
3. Margin (dB) = Peak/AVG (dBuV/m)-Limit PK/AVG(dBuV/m)



Test Voltage:	DC 5V
Ant. Pol.	Horizontal
Test Mode:	1DH5 Mode TX 2480MHz FPC Antenna 2
Remark:	N/A



Temperature: 24 °C

Humidity: 49 %

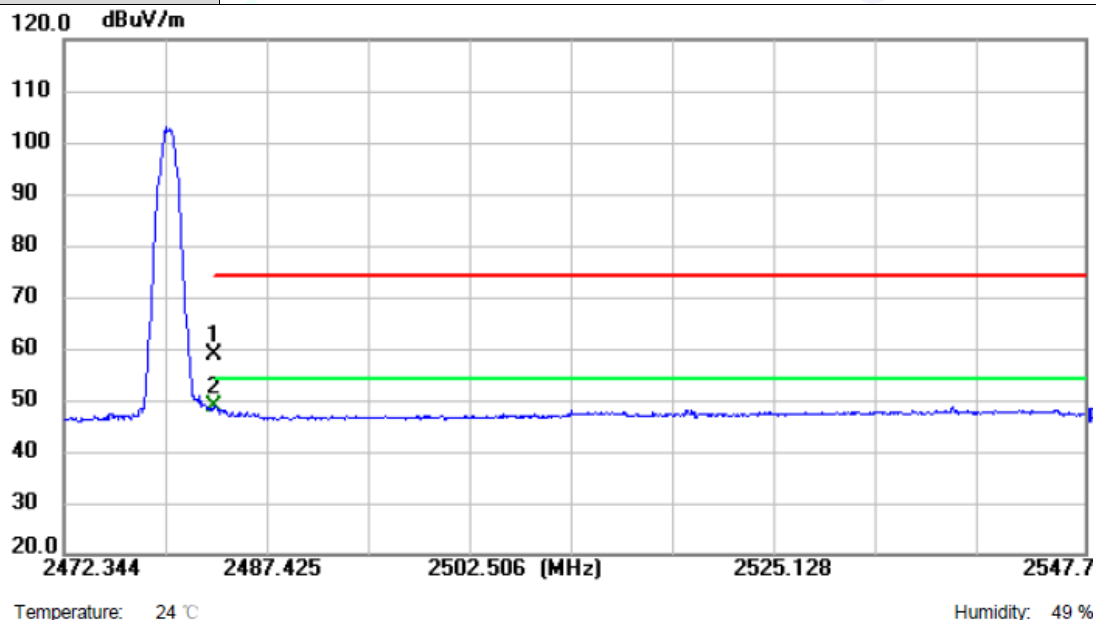
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1	2483.5000	49.27	10.20	59.47	74.00	-14.53	peak	P
2 *	2483.5000	38.30	10.20	48.50	54.00	-5.50	AVG	P

Remark:

1. Corr. = Antenna Factor (dB/m) + Cable Loss (dB) -AMP(dB)
2. Peak/AVG (dBμV/m)= Corr. (dB/m)+ Read Level (dBμV)
3. Margin (dB) = Peak/AVG (dBμV/m)-Limit PK/AVG(dBμV/m)



Test Voltage:	DC 5V
Ant. Pol.	Vertical
Test Mode:	1DH5 Mode TX 2480MHz FPC Antenna 2
Remark:	N/A



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1	2483.5000	48.61	10.20	58.81	74.00	-15.19	peak	P
2 *	2483.5000	38.38	10.20	48.58	54.00	-5.42	AVG	P

Remark:

1. Corr. = Antenna Factor (dB/m) + Cable Loss (dB) -AMP(dB)
2. Peak/AVG (dBμV/m)= Corr. (dB/m)+ Read Level (dBμV)
3. Margin (dB) = Peak/AVG (dBμV/m)-Limit PK/AVG(dBμV/m)

-----END OF THE REPORT-----

