FCC Co-location Test Report

FCC ID	:	**XHM-MP82F22**
Equipment	:	**XHM-MP82F22**
Brand Name	:	**TOUCH DYNAMIC**
Model Name	:	**Quest VIII**
Applicant/ Manufacturer	:	**FLYTECH TECHNOLOGY CO., Ltd. No. 168, Sing-Ai Rd., Neihu District 11494, Taipei City, Taiwan**
Standard	:	**47 CFR FCC Part 15**

The product was received on Jun. 01, 2020, and testing was started from Jun. 08, 2020 and completed on Jun. 08, 2020. We, SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory, would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.10-2013 and shown compliance with the applicable technical standards.

The report must not be used by the client to claim product certification, approval, or endorsement by TAF or any agency of government.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory, the test report shall not be reproduced except in full.

Approved by: Allen Lin

SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory

No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.)

Table of Contents

History of this test report

Report No.	Version	Description	Issued Date
FR052112CO	01	Initial issue of report	Jun. 30, 2020

Summary of Test Result

Report Clause	Ref. Std. Clause	Test Items	Result (PASS/FAIL)	Remark
3.1	15.247(d)/15.407(b)	Emissions in Restricted Frequency Bands	PASS	-

Declaration of Conformity:
The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.
Comments and explanations:
None

Reviewed by: Sam Tsai

Report Producer: Yunha Liou

1.1 Testing Applied Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- 47 CFR FCC Part 15
- ANSI C63.10-2013

1.2 Testing Location Information

Testing Location			
☒	HWA YA	ADD : No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.)	
		TEL : 886-3-327-3456	FAX : 886-3-327-0973
Test site Designation No. TW1190 with FCC.			
☐	JHUBEI	ADD : No.8, Ln. 724, Bo'ai St., Zhubei City, Hsinchu County, Taiwan (R.O.C.)	
		TEL : 886-3-656-9065	FAX : 886-3-656-9085
Test site Designation No. TW0006 with FCC.			
☐	Wen Shan	ADD : No.14-1, Ln. 19, Wen 33rd St., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C.)	
		TEL : 886-3-318-0787	FAX : 886-3-318-0287
Test site Designation No. TW0006 with FCC.			

Test Condition	Test Site No.	Test Engineer	Test Environment	Test Date
Radiated	03CH03-HY	Jeff	21.3~25.8°C / 51~63%	08/Jun/2020

1.3 Measurement Uncertainty

ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report. The measurement uncertainties given below are based on a 95% confidence level (based on a coverage factor (k=2)

Test Items	Uncertainty	Remark
Radiated Emission (1GHz ~ 18GHz)	3.6 dB	Confidence levels of 95%
Radiated Emission (18GHz ~ 40GHz)	3.5 dB	Confidence levels of 95%
Conducted Emission	1.0 dB	Confidence levels of 95%
Temperature	0.41 °C	Confidence levels of 95%
Humidity	3.4 %	Confidence levels of 95%

2 Test Configuration of EUT

2.1 Test Condition

RF Conducted	Abbreviation	Remark
TnomVnom	Tnom	20°C
-	Vnom	110V

2.2 The Worst Case Measurement Configuration

The Worst Case Mode for Following Conformance Tests	
Tests Item	Emissions in Restricted Frequency Bands
Test Condition	Radiated measurement If EUT consist of multiple antenna assembly (multiple antenna are used in EUT regardless of spatial multiplexing MIMO configuration), the radiated test should be performed with highest antenna gain of each antenna type.
Operating Mode	Normal Link
1	Adapter Mode ; 2.4G+Bluetooth
2	Adapter Mode ; 5G+Bluetooth
Orthogonal Planes of EUT	**Y Plane**
	

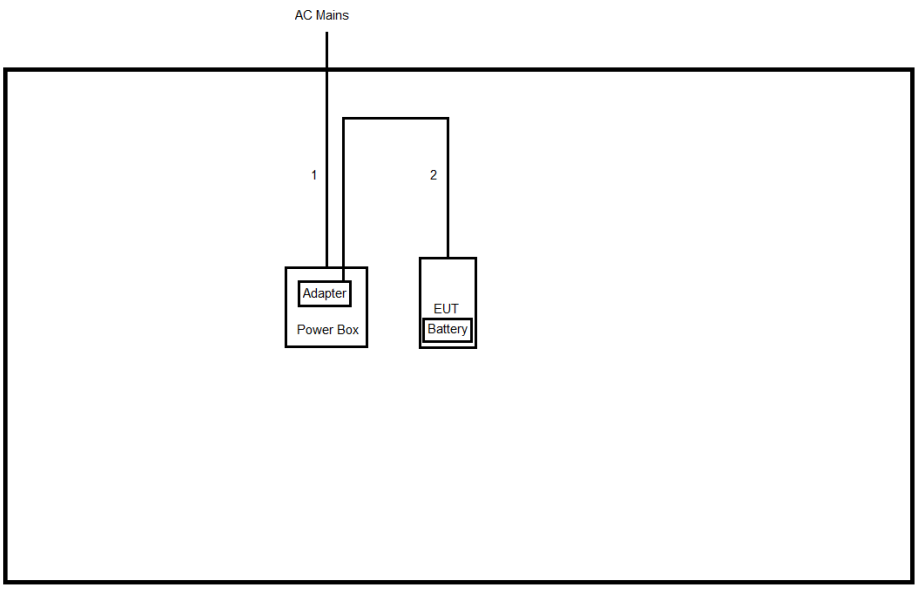
2.3 Accessories

Accessories Information				
AC Adapter	**Brand Name**	Asian Power Devices	**Model Name**	WA-36A12R
	Power Rating	I/P: 100 - 240Vac,0.9 A, O/P:12 Vdc, 3 A		
	Power Cord	1.8 meter, Non-Shielded cable, w/o ferrite core		
Battery 1	**Brand Name**	SMP	**Model Name**	BA750000
	Power Rating	3.85Vdc,7454 mAh,28.69 Wh	**Type**	Li-ion
Battery 2	**Brand Name**	Formosa	**Model Name**	HL502430
	Power Rating	3.7 Vdc,300mAh,1.11 Wh	**Type**	Li-ion
LCD Panel	**Brand Name**	Interchangeable	**Model Name**	Interchangeable
MSR	**Brand Name**	Flytech	**Model Name**	P-2M301
Mini Smart Card2	**Brand Name**	Flytech	**Model Name**	P-2M302
VP3300	**Brand Name**	Flytech	**Model Name**	P-2M303
Augusta	**Brand Name**	Flytech	**Model Name**	P-2M305

Reminder: Regarding to more detail and other information, please refer to user manual.

2.4 Test Setup Diagram

Test Setup Diagram - Radiated Test



Item	Connection	Shielded	Length(m)	Remark
1	AC Power Cable	No	1.8	-
2	DC Power Cable	No	1.8	-

3 Co-location Test Result

3.1 Emissions in Restricted Frequency Bands

3.1.1 Emissions in Restricted Frequency Bands Limit

Restricted Band Emissions Limit			
Frequency Range (MHz)	**Field Strength (uV/m)**	**Field Strength (dBuV/m)**	**Measure Distance (m)**
0.009~0.490	2400/F(kHz)	48.5 - 13.8	300
0.490~1.705	24000/F(kHz)	33.8 - 23	30
1.705~30.0	30	29	30
30~88	100	40	3
88~216	150	43.5	3
216~960	200	46	3
Above 960	500	54	3

Note 1: Test distance for frequencies at or above 30 MHz, measurements may be performed at a distance other than the limit distance provided they are not performed in the near field and the emissions to be measured can be detected by the measurement equipment. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade (inverse of linear distance for field-strength measurements, inverse of linear distance-squared for power-density measurements).

Note 2: Test distance for frequencies at below 30 MHz, measurements may be performed at a distance closer than the EUT limit distance; however, an attempt should be made to avoid making measurements in the near field. When performing measurements below 30 MHz at a closer distance than the limit distance, the results shall be extrapolated to the specified distance by either making measurements at a minimum of two or more distances on at least one radial to determine the proper extrapolation factor or by using the square of an inverse linear distance extrapolation factor (40 dB/decade). The test report shall specify the extrapolation method used to determine compliance of the EUT.

Note 3: Using the distance of 1m during the test for above 18 GHz, and the test value to correct for the distance factor at 3m.

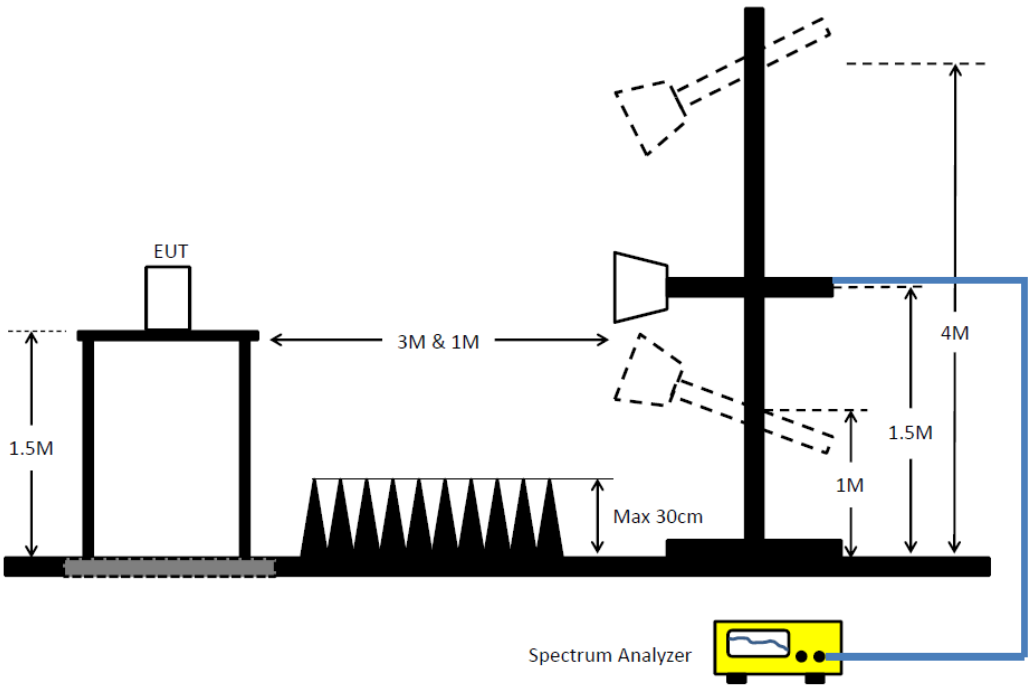
3.1.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

3.1.3 Test Procedures

Test Method
▪ The average emission levels shall be measured in [duty cycle ≥ 98 or duty factor].
▪ For the transmitter unwanted emissions shall be measured using following options below:
▪ Refer as ANSI C63.10, clause 11.12 for restricted frequency bands.
▪ For radiated measurement.
▪ Refer as ANSI C63.10, clause 6.6 for radiated emissions above 1GHz.
▪ The any unwanted emissions level shall not exceed the fundamental emission level.
▪ All amplitude of spurious emissions that are attenuated by more than 20 dB below the permissible value has no need to be reported.
▪ Use the following spectrum analyzer settings:
▪ Set RBW=100 kHz for f < 1 GHz; VBW=3 * RBW; Sweep = auto; Detector function = peak; Trace = max hold.
▪ Set RBW = 1 MHz, VBW= 3MHz for f ≥ 1 GHz for peak measurement. For average measurement, refer as 1.1.4.

3.1.4 Test Setup

Emissions in Restricted Frequency Bands
Above 1GHz


3.1.5 Test Result of Emissions in Restricted Frequency Bands

Refer as Appendix A

4 Test Equipment and Calibration Data

Instrument for Radiated Test

Instrument	Manufacturer	Model No.	Serial No.	Spec.	Calibration Date	Calibration Due Date
3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH03-HY	1GHz ~ 18GHz 3m	30/Aug/2019	29/Aug/2020
Signal Analyzer	R&S	FSV40	101500	10Hz ~ 40GHz	15/Aug/2019	14/Aug/2020
Microwave System Preamplifier	KEYSIGHT	83017A	MY53270196	1GHz ~ 26.5GHz	09/Sep/2019	08/Sep/2020
Double Ridged Guide Horn Antenna	SCHWARZBECK	BBHA 9120 D	BBHA 9120 D 1531	1GHz ~ 18GHz	26/Mar/2020	25/Mar/2021
RF CABLE 5+6m	HUBER+SUHNER	SUOFLEX 104	SN 805801/4+SN 804300/4	1GHz ~ 40GHz	18/Mar/2020	17/Mar/2021
Broadband Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA 9170221	18GHz ~ 40GHz	13/Mar/2020	12/Mar/2021
Preamplifier	MITEQ	TTA1840-35-HG	1864481	18GHz ~ 40GHz	10/Mar/2020	09/Mar/2021

Summary

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
Mode 1	Pass	AV	1.92G	43.74	54.00	-10.26	-0.05	3	Horizontal	360	1.50	43.79	25.82	4.68	30.55
Mode 2	Pass	AV	1.92G	43.59	54.00	-10.41	-0.05	3	Horizontal	0	1.50	43.64	25.82	4.68	30.55

Mode Configure

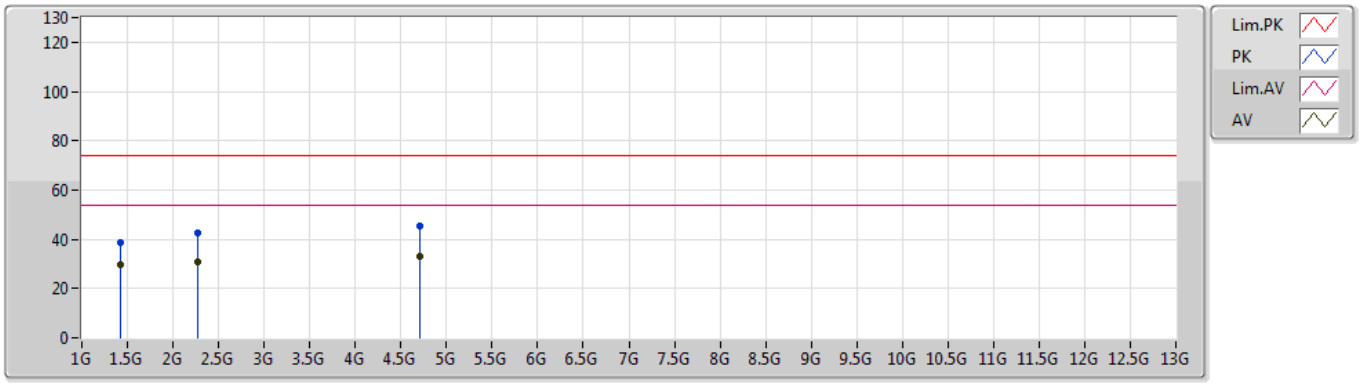
Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
Mode 1	Pass	AV	1.427G	29.78	54.00	-24.22	-1.62	3	Vertical	0	1.50	31.40	25.89	3.94	31.45
Mode 1	Pass	AV	2.268G	30.99	54.00	-23.01	2.83	3	Vertical	0	1.50	28.16	28.03	5.10	30.30
Mode 1	Pass	AV	4.7G	32.89	54.00	-21.11	8.49	3	Vertical	0	1.50	24.40	30.90	7.05	29.46
Mode 1	Pass	PK	1.427G	38.47	74.00	-35.53	-1.62	3	Vertical	0	1.50	40.09	25.89	3.94	31.45
Mode 1	Pass	PK	2.268G	42.67	74.00	-31.33	2.83	3	Vertical	0	1.50	39.84	28.03	5.10	30.30
Mode 1	Pass	PK	4.7G	45.44	74.00	-28.56	8.49	3	Vertical	0	1.50	36.95	30.90	7.05	29.46
Mode 1	Pass	AV	1.92G	43.74	54.00	-10.26	-0.05	3	Horizontal	360	1.50	43.79	25.82	4.68	30.55
Mode 1	Pass	AV	2.556G	41.35	54.00	-12.65	2.73	3	Horizontal	360	1.50	38.62	27.42	5.46	30.15
Mode 1	Pass	AV	4.98G	33.47	54.00	-20.53	9.06	3	Horizontal	360	1.50	24.41	31.20	7.19	29.33
Mode 1	Pass	PK	1.92G	42.76	74.00	-31.24	-0.05	3	Horizontal	360	1.50	42.81	25.82	4.68	30.55
Mode 1	Pass	PK	2.556G	50.11	74.00	-23.89	2.73	3	Horizontal	360	1.50	47.38	27.42	5.46	30.15
Mode 1	Pass	PK	4.98G	46.76	74.00	-27.24	9.06	3	Horizontal	360	1.50	37.70	31.20	7.19	29.33
Mode 2	Pass	AV	1.592G	26.60	54.00	-27.40	-1.48	3	Vertical	360	1.50	28.08	25.33	4.19	31.00
Mode 2	Pass	AV	2.176G	28.41	54.00	-25.59	2.75	3	Vertical	360	1.50	25.66	28.11	4.98	30.34
Mode 2	Pass	AV	4.35G	32.09	54.00	-21.91	7.61	3	Vertical	360	1.50	24.48	30.30	6.87	29.56
Mode 2	Pass	PK	1.592G	38.87	74.00	-35.13	-1.48	3	Vertical	360	1.50	40.35	25.33	4.19	31.00
Mode 2	Pass	PK	2.176G	41.02	74.00	-32.98	2.75	3	Vertical	360	1.50	38.27	28.11	4.98	30.34
Mode 2	Pass	PK	4.35G	45.02	74.00	-28.98	7.61	3	Vertical	360	1.50	37.41	30.30	6.87	29.56
Mode 2	Pass	AV	1.92G	43.59	54.00	-10.41	-0.05	3	Horizontal	0	1.50	43.64	25.82	4.68	30.55
Mode 2	Pass	AV	2.396G	36.23	54.00	-17.77	2.67	3	Horizontal	0	1.50	33.56	27.61	5.29	30.23
Mode 2	Pass	AV	4.59G	32.41	54.00	-21.59	8.17	3	Horizontal	0	1.50	24.24	30.68	7.00	29.51
Mode 2	Pass	PK	1.92G	43.30	74.00	-30.70	-0.05	3	Horizontal	0	1.50	43.35	25.82	4.68	30.55
Mode 2	Pass	PK	2.396G	44.15	74.00	-29.85	2.67	3	Horizontal	0	1.50	41.48	27.61	5.29	30.23
Mode 2	Pass	PK	4.59G	44.45	74.00	-29.55	8.17	3	Horizontal	0	1.50	36.28	30.68	7.00	29.51

Remark :

Level (dBuV/m) = Raw(Read Level) + AF(Antenna Factor) + CL(Cable Loss) - PA(Preamp Factor)

Radiated Emissions above 1GHz_Mode 1

08/06/2020



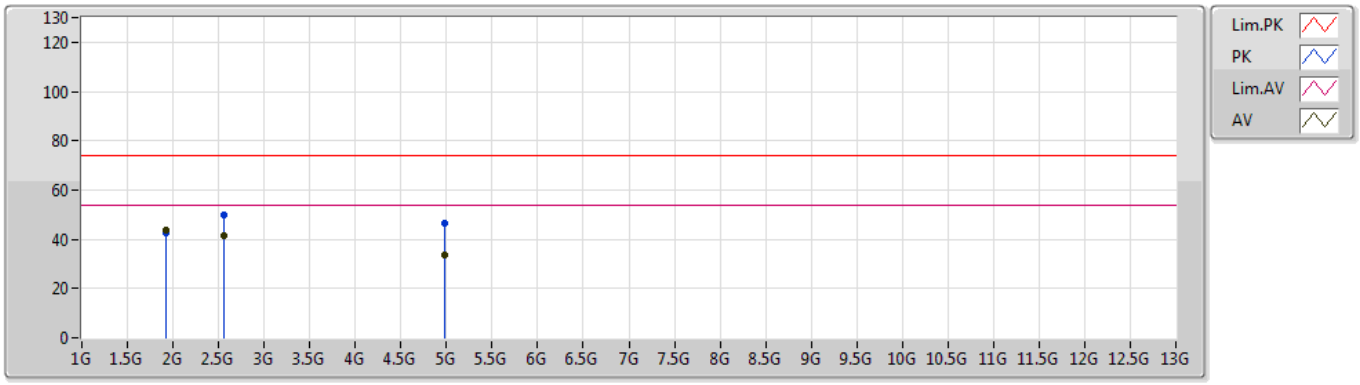
Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)	(dB)	(dB)	(dB)
AV	1.427G	29.78	54.00	-24.22	-1.62	3	Vertical	0	1.50	-	31.40	25.89	3.94	31.45
AV	2.268G	30.99	54.00	-23.01	2.83	3	Vertical	0	1.50	-	28.16	28.03	5.10	30.30
AV	4.7G	32.89	54.00	-21.11	8.49	3	Vertical	0	1.50	-	24.40	30.90	7.05	29.46
PK	1.427G	38.47	74.00	-35.53	-1.62	3	Vertical	0	1.50	-	40.09	25.89	3.94	31.45
PK	2.268G	42.67	74.00	-31.33	2.83	3	Vertical	0	1.50	-	39.84	28.03	5.10	30.30
PK	4.7G	45.44	74.00	-28.56	8.49	3	Vertical	0	1.50	-	36.95	30.90	7.05	29.46

Remark :

Level (dBuV/m) = Raw(Read Level) + AF(Antenna Factor) + CL(Cable Loss) - PA(Preamp Factor) 052112

Radiated Emissions above 1GHz_Mode 1

08/06/2020



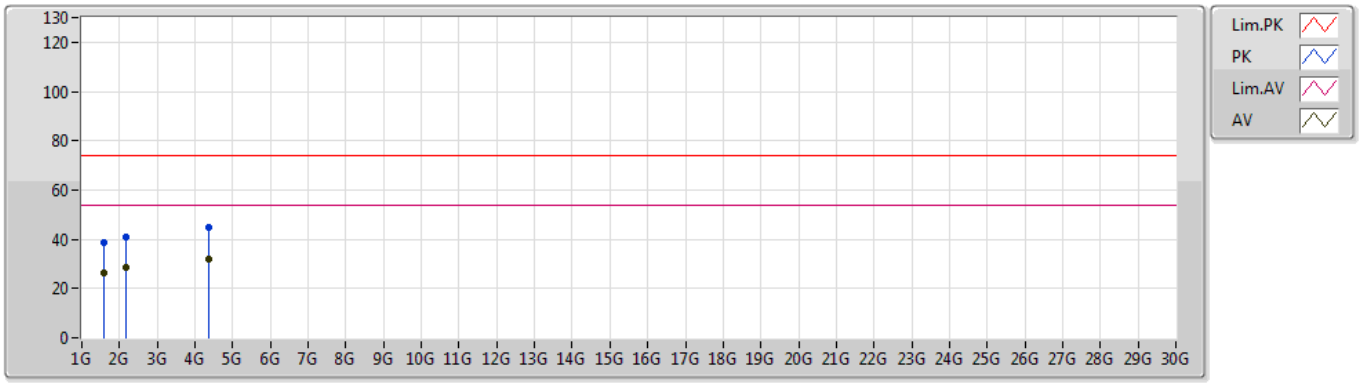
Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)	(dB)	(dB)	(dB)
AV	1.92G	43.74	54.00	-10.26	-0.05	3	Horizontal	360	1.50	-	43.79	25.82	4.68	30.55
AV	2.556G	41.35	54.00	-12.65	2.73	3	Horizontal	360	1.50	-	38.62	27.42	5.46	30.15
AV	4.98G	33.47	54.00	-20.53	9.06	3	Horizontal	360	1.50	-	24.41	31.20	7.19	29.33
PK	1.92G	42.76	74.00	-31.24	-0.05	3	Horizontal	360	1.50	-	42.81	25.82	4.68	30.55
PK	2.556G	50.11	74.00	-23.89	2.73	3	Horizontal	360	1.50	-	47.38	27.42	5.46	30.15
PK	4.98G	46.76	74.00	-27.24	9.06	3	Horizontal	360	1.50	-	37.70	31.20	7.19	29.33

Remark :

Level (dBuV/m) = Raw(Read Level) + AF(Antenna Factor) + CL(Cable Loss) - PA(Preamp Factor) 052112

Radiated Emissions above 1GHz_Mode 2

08/06/2020



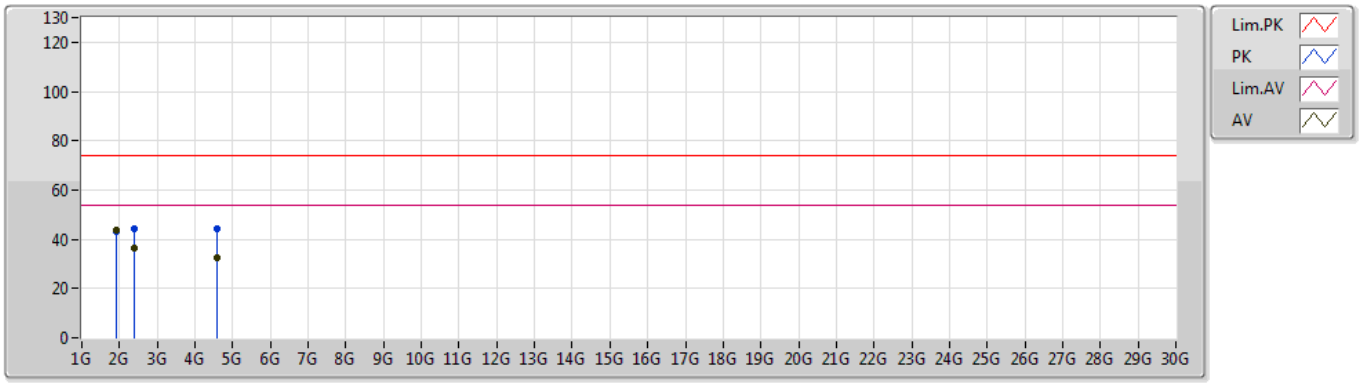
Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)	(dB)	(dB)	(dB)
AV	1.592G	26.60	54.00	-27.40	-1.48	3	Vertical	360	1.50	-	28.08	25.33	4.19	31.00
AV	2.176G	28.41	54.00	-25.59	2.75	3	Vertical	360	1.50	-	25.66	28.11	4.98	30.34
AV	4.35G	32.09	54.00	-21.91	7.61	3	Vertical	360	1.50	-	24.48	30.30	6.87	29.56
PK	1.592G	38.87	74.00	-35.13	-1.48	3	Vertical	360	1.50	-	40.35	25.33	4.19	31.00
PK	2.176G	41.02	74.00	-32.98	2.75	3	Vertical	360	1.50	-	38.27	28.11	4.98	30.34
PK	4.35G	45.02	74.00	-28.98	7.61	3	Vertical	360	1.50	-	37.41	30.30	6.87	29.56

Remark :

Level (dBuV/m) = Raw(Read Level) + AF(Antenna Factor) + CL(Cable Loss) - PA(Preamp Factor) 052112

Radiated Emissions above 1GHz_Mode 2

08/06/2020



Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)	(dB)	(dB)	(dB)
AV	1.92G	43.59	54.00	-10.41	-0.05	3	Horizontal	0	1.50	-	43.64	25.82	4.68	30.55
AV	2.396G	36.23	54.00	-17.77	2.67	3	Horizontal	0	1.50	-	33.56	27.61	5.29	30.23
AV	4.59G	32.41	54.00	-21.59	8.17	3	Horizontal	0	1.50	-	24.24	30.68	7.00	29.51
PK	1.92G	43.30	74.00	-30.70	-0.05	3	Horizontal	0	1.50	-	43.35	25.82	4.68	30.55
PK	2.396G	44.15	74.00	-29.85	2.67	3	Horizontal	0	1.50	-	41.48	27.61	5.29	30.23
PK	4.59G	44.45	74.00	-29.55	8.17	3	Horizontal	0	1.50	-	36.28	30.68	7.00	29.51

Remark :

Level (dBuV/m) = Raw(Read Level) + AF(Antenna Factor) + CL(Cable Loss) - PA(Preamp Factor) 052112