

FCC Test Report

FCC ID : UDX-60070010
Equipment : Network Camera
Brand Name : Cisco Systems, Inc.
Model Name : MV22-HW
Applicant / Manufacturer : Cisco Systems, Inc.
170 West Tasman Drive San Jose, CA. 95134 USA
Standard : 47 CFR FCC Part 15.247

The product was received on May 11, 2018, and testing was started from May 16, 2018 and completed on May 22, 2018. 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.)

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TEST SETUP PHOTOS V01	
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History of this test report

[illegible]

Summary of Test Result

Report Clause	Ref. Std. Clause	Test Items	Result (PASS/FAIL)	Remark
1.1.2	15.203	Antenna Requirement	PASS	FCC 15.203
3.1	15.207	AC Power-line Conducted Emissions	PASS	FCC 15.207
3.2	15.247(a)	DTS Bandwidth	PASS	≥500kHz
3.3	15.247(b)	Maximum Conducted Output Power	PASS	Power [dBm]:30
3.4	15.247(e)	Power Spectral Density	PASS	PSD [dBm/3kHz]:8
3.5	15.247(d)	Emissions in Non-restricted Frequency Bands	PASS	Non-Restricted Bands: >30 dBc
3.6	15.247(d)	Emissions in Restricted Frequency Bands	PASS	Restricted Bands: FCC 15.209

Reviewed by: Jeremy Lin

Report Producer: Debby Hung

1 General Description

1.1 Information

1.1.1 RF General Information

Frequency Range (MHz)	Bluetooth Mode	Ch. Frequency (MHz)	Channel Number
2400-2483.5	LE	2402-2480	0-39 [40]

Band	Mode	BWch (MHz)	Nant
2.4-2.4835GHz	BT-LE(1Mbps)	1.0	1TX

Note:

- ♦ Bluetooth LE uses a GFSK (1Mbps) modulation for DSSS.
- ♦ BWch is the nominal channel bandwidth.

1.1.2 Antenna Information

Ant.	Brand	Model Name	Antenna Type	Connector
1	ARISTOTLE	RFA-25-AP609-DB1	PIFA Antenna	I-PEX
2	ARISTOTLE	RFA-25-AP609-DB2	Dipole Antenna	I-PEX

Ant.	Gain (dBi)		
	2.4G	5G	BT
1	-1.27	-1.07	-1.27
2	-1.12	-1.29	-

For 2.4 GHz function:

For IEEE 802.11b/g/n mode (1TX/1RX)

The EUT support diversity function, Ant. 1 or Ant. 2 can be used as transmitting/receiving antenna.

For 5 GHz function:

For IEEE 802.11a/n mode (1TX/1RX)

The EUT support diversity function, Ant. 1 or Ant. 2 can be used as transmitting/receiving antenna.

For Bluetooth function:

For Bluetooth mode (1TX/1RX)

Only Ant. 1 can be used as transmitting/receiving antenna.

1.1.3 EUT Information

Operational Condition			
EUT Power Type	From PoE		
EUT Function	<input checked="" type="checkbox"/> Point-to-multipoint	<input type="checkbox"/> Point-to-point	
Type of EUT			
<input checked="" type="checkbox"/>	Stand-alone		
<input type="checkbox"/>	Combined (EUT where the radio part is fully integrated within another device)		
	Combined Equipment - Brand Name / Model No.: ...		
<input type="checkbox"/>	Plug-in radio (EUT intended for a variety of host systems)		
	Host System - Brand Name / Model No.: ...		
<input type="checkbox"/>	Other:		

1.1.4 Mode Test Duty Cycle

Mode	DC	DCF(dB)	T(s)	VBW(Hz) $\geq 1/T$
BT-LE(1Mbps)	0.63	2.007	393.75u	3k

1.2 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
- ♦ KDB 558074 D01 v04

1.3 Testing Location Information

Testing Location			
<input checked="" type="checkbox"/>	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.			
<input type="checkbox"/>	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.			

Test Condition	Test Site No.	Test Engineer	Test Environment	Test Date
RF Conducted	TH06-HY	Tim	25.5°C / 63%	16/May/2018
Radiated	03CH09-HY	Jerry	24.5°C / 55%	22/May/2018
AC Conduction	CO04-HY	Daniel	23.8°C / 53%	16/May/2018

1.4 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
Conducted Emission (150kHz ~ 30MHz)	3.6 dB	Confidence levels of 95%
Radiated Emission (9kHz ~ 30MHz)	3.0 dB	Confidence levels of 95%
Radiated Emission (30MHz ~ 1,000MHz)	4.3 dB	Confidence levels of 95%
Radiated Emission (1GHz ~ 18GHz)	3.9 dB	Confidence levels of 95%
Radiated Emission (18GHz ~ 40GHz)	3.5 dB	Confidence levels of 95%
Conducted Emission	1.3 dB	Confidence levels of 95%
Temperature	0.7 °C	Confidence levels of 95%
Humidity	4 %	Confidence levels of 95%

2 Test Configuration of EUT

2.1 Test Condition

RF Conducted	Abbreviation	Remark
TnomVnom	Tnom	20°C
-	Vnom	120V

2.2 Test Channel Mode




Test Software Version	QRCT V3.0.210.0
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Mode	Power Setting
BT-LE(1Mbps)	-
2402MHz	default
2440MHz	default
2480MHz	default

2.3 The Worst Case Measurement Configuration

The Worst Case Mode for Following Conformance Tests	
Tests Item	AC power-line conducted emissions
Condition	AC power-line conducted measurement for line and neutral
Operating Mode	CTX
1	PoE mode – PIFA antenna

The Worst Case Mode for Following Conformance Tests	
Tests Item	DTS Bandwidth Maximum Conducted Output Power Power Spectral Density Emissions in Non-restricted Frequency Bands
Test Condition	Conducted measurement at transmit chains

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 < 1GHz	CTX		
1	PoE mode – PIFA antenna		
Operating Mode > 1GHz	CTX		
Orthogonal Planes of EUT	X Plane	Y Plane	Z Plane
			
Worst Planes of EUT			V

The Worst Case Mode for Following Conformance Tests	
Tests Item	Simultaneous Transmission Analysis
Operating Mode	Normal Link
1	Bluetooth+WLAN 2.4GHz
2	Bluetooth+WLAN 5GHz
Refer to Sporton Test Report No.: FA851622 for Co-location RF Exposure Evaluation and Appendix G for Radiated Emission Co-location.	

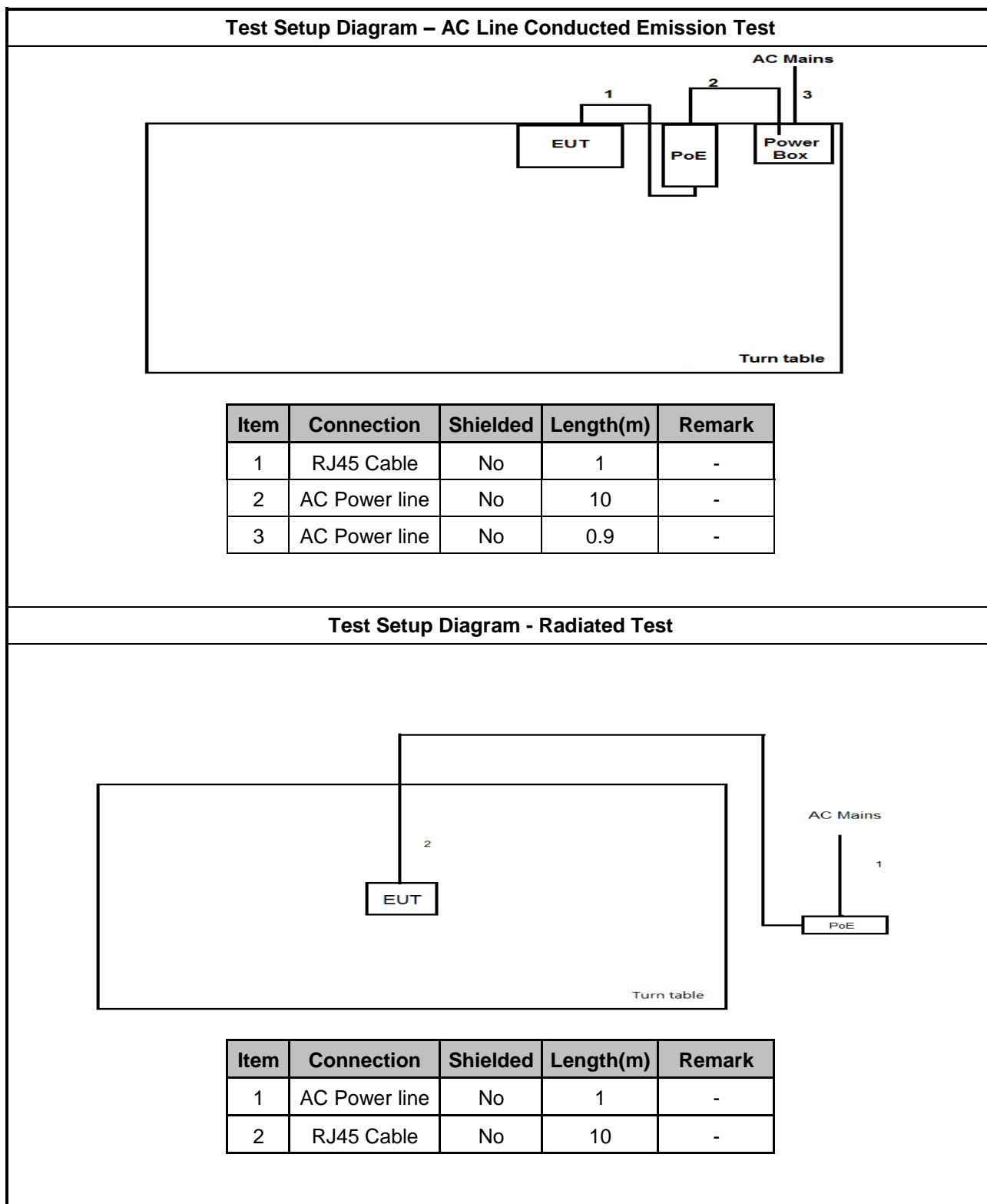
2.4 Support Equipment

Support Equipment – RF Conducted				
No.	Equipment	Brand Name	Model Name	FCC ID
1	Notebook	DELL	E5410	-
2	Adapter for NB	DELL	HA65NM130	-
3	AC Source	GW	APS-9102	-

Support Equipment – Radiated Emission				
No.	Equipment	Brand Name	Model Name	FCC ID
1	PoE (remote)	CISCO	MA-INJ-4	-

Support Equipment – AC Conduction				
No.	Equipment	Brand Name	Model Name	FCC ID
1	PoE	CISCO	MA-INJ-4	-

2.5 Test Setup Diagram



3 Transmitter Test Result

3.1 AC Power-line Conducted Emissions

3.1.1 AC Power-line Conducted Emissions Limit

AC Power-line Conducted Emissions Limit		
Frequency Emission (MHz)	Quasi-Peak	Average
0.15-0.5	66 - 56 *	56 - 46 *
0.5-5	56	46
5-30	60	50

Note 1: * Decreases with the logarithm of the frequency.

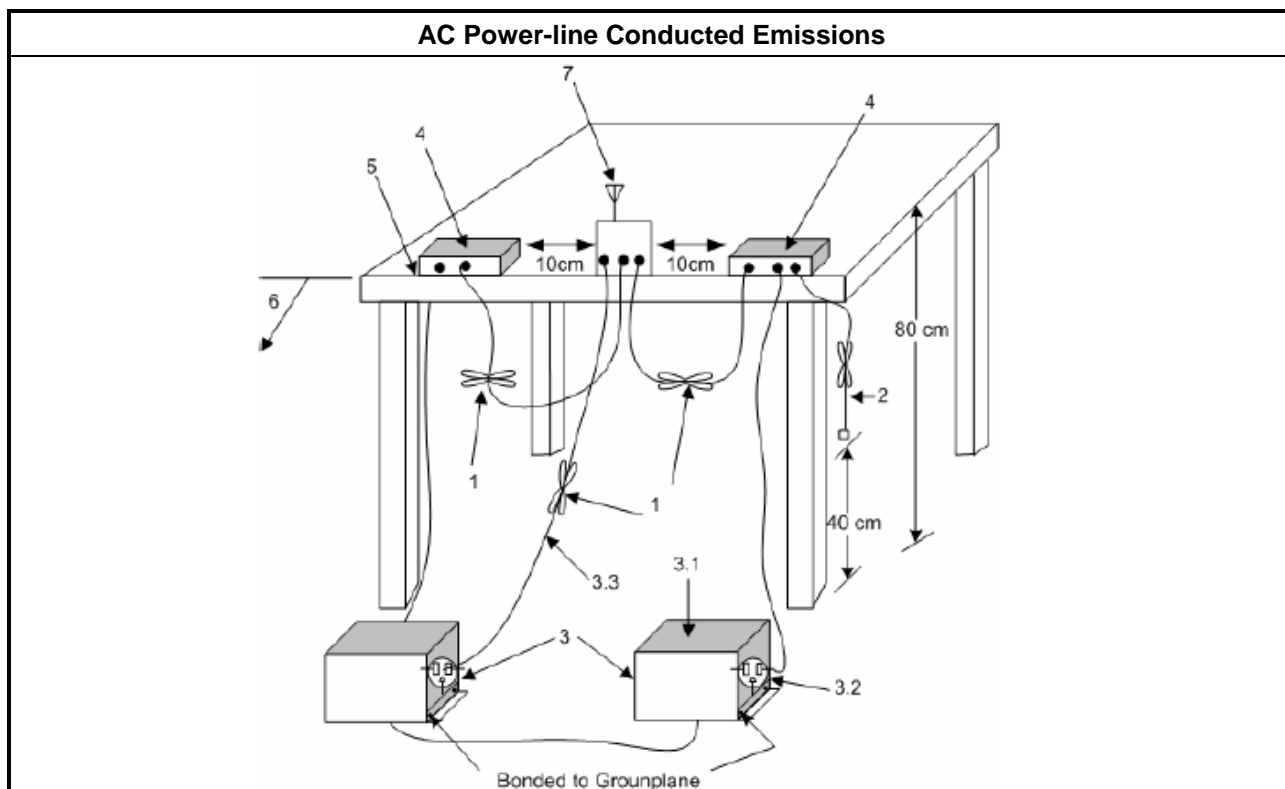
3.1.2 Measuring Instruments

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

3.1.3 Test Procedures

Test Method
<ul style="list-style-type: none"> Refer as ANSI C63.10-2013, clause 6.2 foray power-line conducted emissions.

3.1.4 Test Setup





3.1.5 Test Result of AC Power-line Conducted Emissions

Refer as Appendix A

3.2 DTS Bandwidth

3.2.1 6dB Bandwidth Limit

6dB Bandwidth Limit	
Systems using digital modulation techniques:	
▪	6 dB bandwidth \geq 500 kHz.

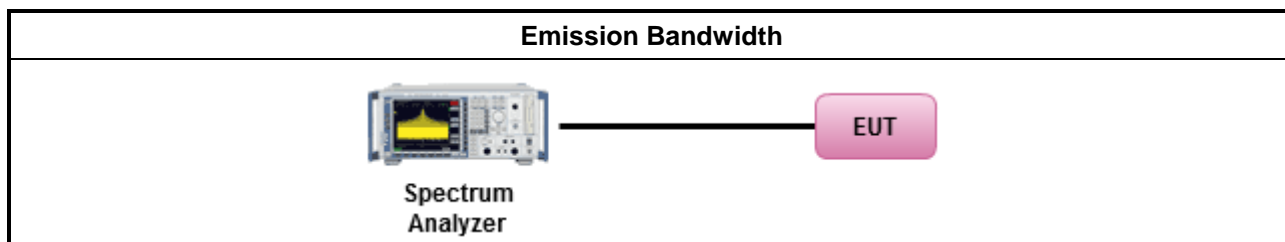
3.2.2 Measuring Instruments

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

3.2.3 Test Procedures

Test Method	
▪ For the emission bandwidth shall be measured using one of the options below:	
<input checked="" type="checkbox"/>	Refer as KDB 558074, clause 8.1 Option 1 for 6 dB bandwidth measurement.
<input type="checkbox"/>	Refer as KDB 558074, clause 8.2 Option 2 for 6 dB bandwidth measurement.
<input type="checkbox"/>	Refer as RSS-Gen, clause 6.7 for for occupied bandwidth testing.
<input type="checkbox"/>	Refer as ANSI C63.10, clause 6.9.3 for occupied bandwidth testing.

3.2.4 Test Setup



3.2.5 Test Result of Emission Bandwidth

Refer as Appendix B

3.3 Maximum Conducted Output Power

3.3.1 Maximum Conducted Output Power Limit

Maximum Conducted Output Power Limit	
	<ul style="list-style-type: none"> If $G_{TX} \leq 6$ dBi, then $P_{Out} \leq 30$ dBm (1 W)
	<ul style="list-style-type: none"> Point-to-multipoint systems (P2M): If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)$ dBm
	<ul style="list-style-type: none"> Point-to-point systems (P2P): If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)/3$ dBm
	<ul style="list-style-type: none"> Smart antenna system (SAS):
	<ul style="list-style-type: none"> - Single beam: If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)/3$ dBm
	<ul style="list-style-type: none"> - Overlap beam: If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)/3$ dBm
	<ul style="list-style-type: none"> - Aggregate power on all beams: If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)/3 + 8$ dB dBm
e.i.r.p. Power Limit:	
	<ul style="list-style-type: none"> 2400-2483.5 MHz Band
	<ul style="list-style-type: none"> Point-to-multipoint systems (P2M): $P_{eirp} \leq 36$ dBm (4 W)
	<ul style="list-style-type: none"> Point-to-point systems (P2P): $P_{eirp} \leq \text{MAX}(36, [P_{Out} + G_{TX}])$ dBm
	<ul style="list-style-type: none"> Smart antenna system (SAS)
	<ul style="list-style-type: none"> - Single beam: $P_{eirp} \leq \text{MAX}(36, P_{Out} + G_{TX})$ dBm
	<ul style="list-style-type: none"> - Overlap beam: $P_{eirp} \leq \text{MAX}(36, P_{Out} + G_{TX})$ dBm
	<ul style="list-style-type: none"> - Aggregate power on all beams: $P_{eirp} \leq \text{MAX}(36, [P_{Out} + G_{TX} + 8])$ dBm
P_{Out} = maximum peak conducted output power or maximum conducted output power in dBm, G_{TX} = the maximum transmitting antenna directional gain in dBi.	

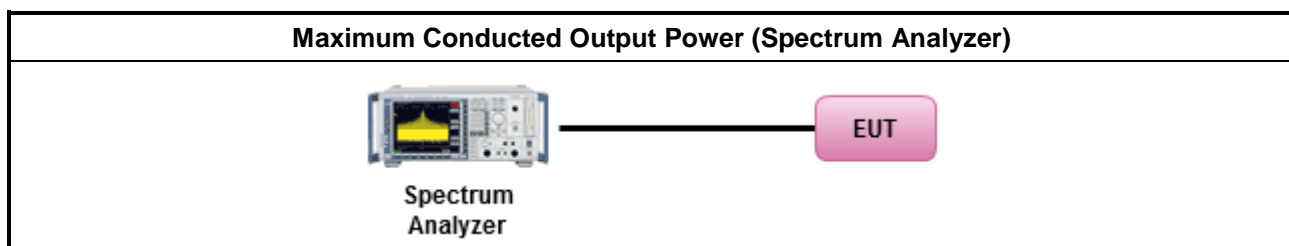
3.3.2 Measuring Instruments

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

3.3.3 Test Procedures

Test Method	
<ul style="list-style-type: none"> Maximum Peak Conducted Output Power 	
<input type="checkbox"/>	Refer as KDB 558074, clause 9.1.1 Option 1 (RBW ≥ EBW method).
<input type="checkbox"/>	Refer as KDB 558074, clause 9.1.2 Option 2 (integrated band power method)
<input type="checkbox"/>	Refer as KDB 558074, clause 9.1.3 Option 3 (peak power meter for VBW ≥ DTS BW)
<ul style="list-style-type: none"> Maximum Average Conducted Output Power 	
Duty cycle ≥ 98%	
<input type="checkbox"/>	Refer as KDB 558074, clause 9.2.2.4 Method AVGSA-2 (spectral trace averaging).
Duty cycle < 98%	
<input type="checkbox"/>	Refer as KDB 558074, clause 9.2.2.5 Method AVGSA-2 Alt. (slow sweep speed)
RF power meter and average over on/off periods with duty factor or gated trigger	
<input checked="" type="checkbox"/>	Refer as KDB 558074, clause 9.2.3.1 Method AVGPM (using an RF average power meter).
<ul style="list-style-type: none"> For conducted measurement. 	
<ul style="list-style-type: none"> If the EUT supports multiple transmit chains using options given below: Refer as KDB 662911, In-band power measurements. Using the measure-and-sum approach, measured all transmit ports individually. Sum the power (in linear power units e.g., mW) of all ports for each individual sample and save them. 	
<ul style="list-style-type: none"> If multiple transmit chains, EIRP calculation could be following as methods: $P_{total} = P_1 + P_2 + \dots + P_n$ (calculated in linear unit [mW] and transfer to log unit [dBm]) $EIRP_{total} = P_{total} + DG$ 	

3.3.4 Test Setup



3.3.5 Test Result of Maximum Conducted Output Power

Refer as Appendix C

3.4 Power Spectral Density

3.4.1 Power Spectral Density Limit

Power Spectral Density Limit	
▪	Power Spectral Density (PSD) ≤ 8 dBm/3kHz

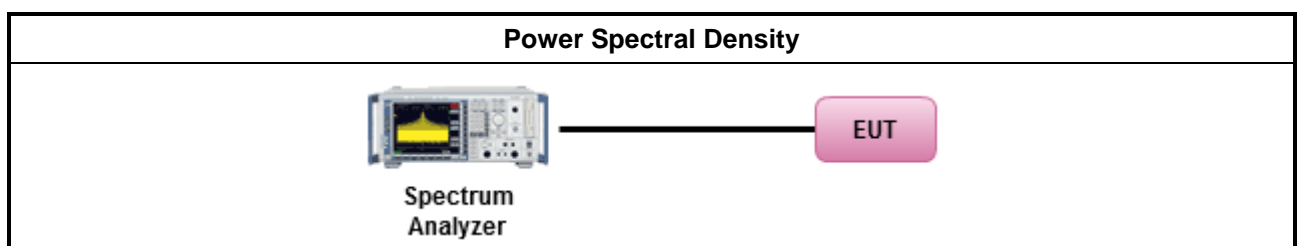
3.4.2 Measuring Instruments

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

3.4.3 Test Procedures

Test Method	
▪	Peak power spectral density procedures that the same method as used to determine the conducted output power. If maximum peak conducted output power was measured to demonstrate compliance to the output power limit, then the peak PSD procedure below (Method PKPSD) shall be used. If maximum conducted output power was measured to demonstrate compliance to the output power limit, then one of the average PSD procedures shall be used, as applicable based on the following criteria (the peak PSD procedure is also an acceptable option).
<input checked="" type="checkbox"/>	Refer as KDB 558074, clause 10.2 Method PKPSD (RBW=3-100kHz; Detector=peak).
▪	For conducted measurement.
▪	If The EUT supports multiple transmit chains using options given below:
▪	Measure and sum the spectra across the outputs. Refer as KDB 662911, In-band power spectral density (PSD). Sample all transmit ports simultaneously using a spectrum analyzer for each transmit port. Where the trace bin-by-bin of each transmit port summing can be performed. (i.e., in the first spectral bin of output 1 is summed with that in the first spectral bin of output 2 and that from the first spectral bin of output 3, and so on up to the NTX output to obtain the value for the first frequency bin of the summed spectrum.). Add up the amplitude (power) values for the different transmit chains and use this as the new data trace.

3.4.4 Test Setup



3.4.5 Test Result of Power Spectral Density

Refer as Appendix D

3.5 Emissions in Non-restricted Frequency Bands

3.5.1 Emissions in Non-restricted Frequency Bands Limit

Un-restricted Band Emissions Limit	
RF output power procedure	Limit (dB)
Peak output power procedure	20
Average output power procedure	30
<p>Note 1: If the peak output power procedure is used to measure the fundamental emission power to demonstrate compliance to requirements, then the peak conducted output power measured within any 100 kHz outside the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum measured in-band peak PSD level.</p> <p>Note 2: If the average output power procedure is used to measure the fundamental emission power to demonstrate compliance to requirements, then the power in any 100 kHz outside of the authorized frequency band shall be attenuated by at least 30 dB relative to the maximum measured in-band average PSD level.</p>	

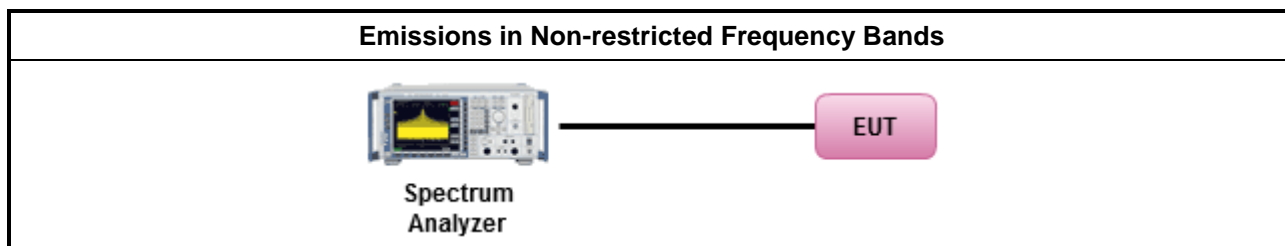
3.5.2 Measuring Instruments

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

3.5.3 Test Procedures

Test Method
<ul style="list-style-type: none"> Refer as KDB 558074, clause 11 for unwanted emissions into non-restricted bands.

3.5.4 Test Setup



3.5.5 Test Result of Emissions in Non-restricted Frequency Bands

Refer as Appendix E

3.6 Emissions in Restricted Frequency Bands

3.6.1 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.

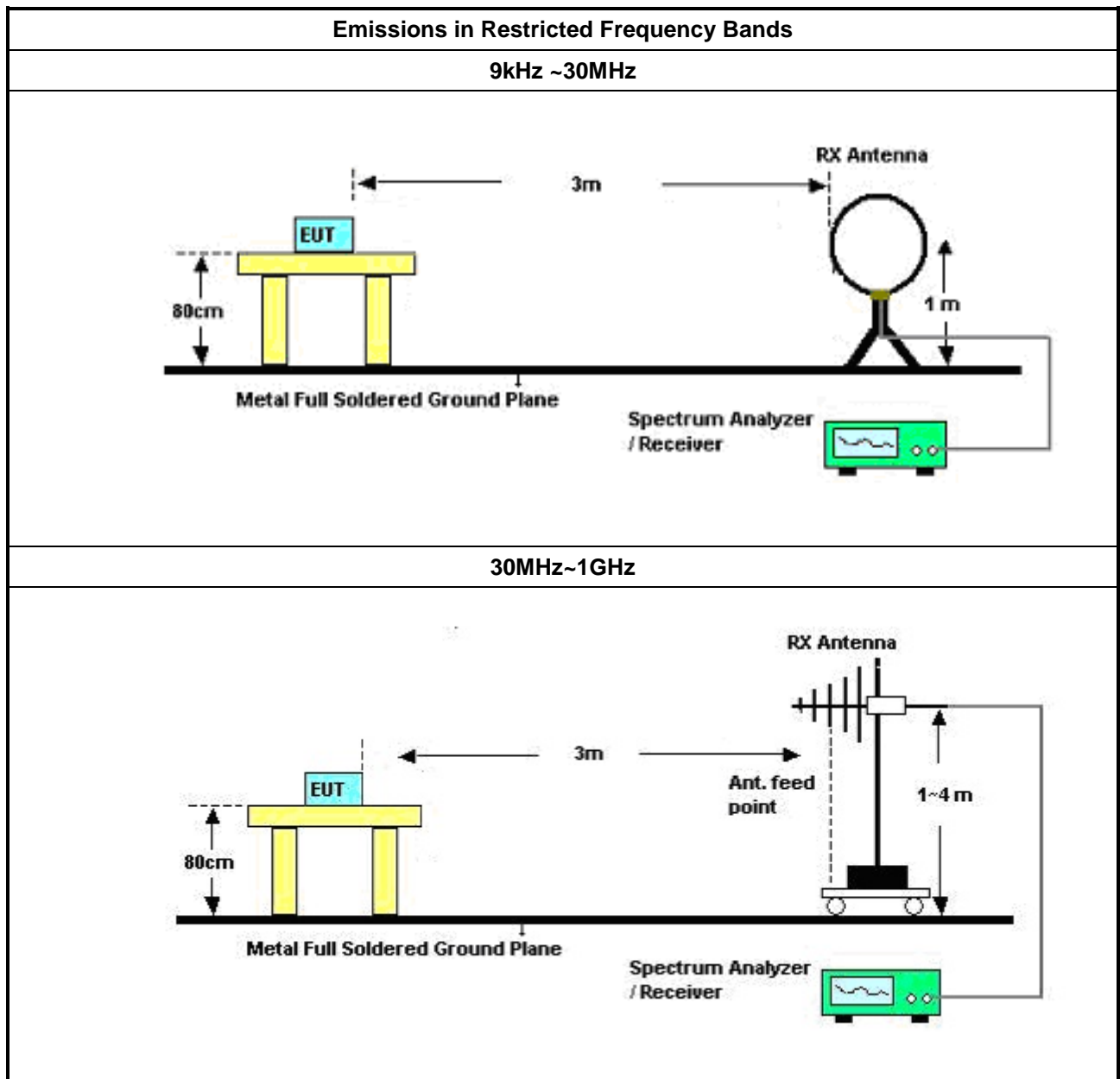
3.6.2 Measuring Instruments

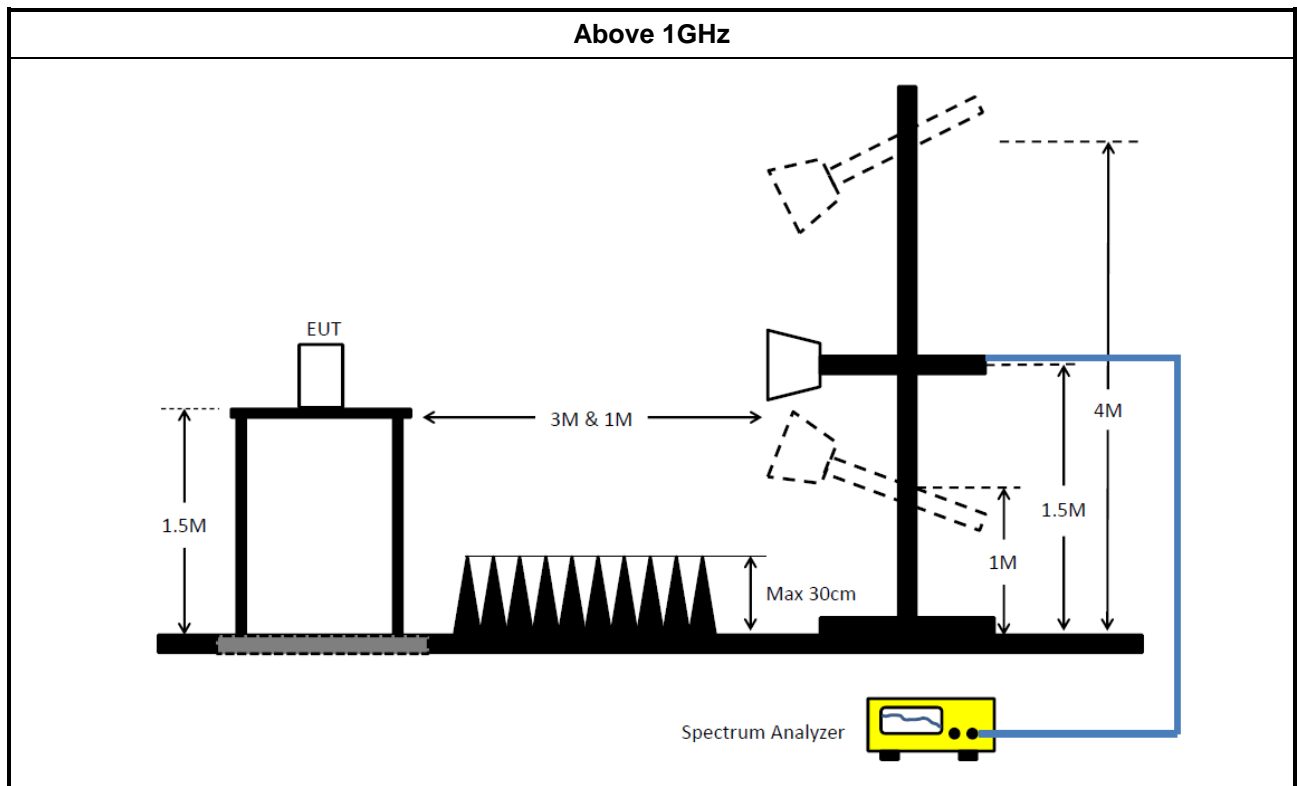
Refer a test equipment and calibration data table in this test report.

3.6.3 Test Procedures

Test Method	
<ul style="list-style-type: none"> The average emission levels shall be measured in [duty cycle ≥ 98 or duty factor]. 	
<ul style="list-style-type: none"> Refer as ANSI C63.10, clause 6.10.3 band-edge testing shall be performed at the lowest frequency channel and highest frequency channel within the allowed operating band. 	
<ul style="list-style-type: none"> For the transmitter unwanted emissions shall be measured using following options below: 	
	<ul style="list-style-type: none"> Refer as KDB 558074, clause 12 for unwanted emissions into restricted bands.
<input checked="" type="checkbox"/>	Refer as KDB 558074, clause 12.2.5.3 (ANSI C63.10, clause 4.1.4.2.3), Reduced VBW $\geq 1/T$.
<input checked="" type="checkbox"/>	Refer as KDB 558074, clause 12.2.4 measurement procedure peak limit.
<ul style="list-style-type: none"> For the transmitter band-edge emissions shall be measured using following options below: 	
	<ul style="list-style-type: none"> Refer as KDB 558074 clause 13.1, When the performing peak or average radiated measurements, emissions within 2 MHz of the authorized band edge may be measured using the marker-delta method described below.
	<ul style="list-style-type: none"> Refer as KDB 558074, clause 13.2 (ANSI C63.10, clause 6.10.6) for marker-delta method for band-edge measurements.
	<ul style="list-style-type: none"> Refer as KDB 558074, clause 13.3 for narrower resolution bandwidth (100kHz) using the band power and summing the spectral levels (i.e., 1 MHz).
<ul style="list-style-type: none"> For conducted and cabinet radiation measurement, refer as KDB 558074, clause 12.2.2. 	
	<ul style="list-style-type: none"> For conducted unwanted emissions into restricted bands (absolute emission limits). Devices with multiple transmit chains using options given below: (1) Measure and sum the spectra across the outputs or (2) Measure and add 10 log(N) dB
	<ul style="list-style-type: none"> For KDB 662911 The methodology described here may overestimate array gain, thereby resulting in apparent failures to satisfy the out-of-band limits even if the device is actually compliant. In such cases, compliance may be demonstrated by performing radiated tests around the frequencies at which the apparent failures occurred.

3.6.4 Test Setup





3.6.5 Test Result of Emissions in Restricted Frequency Bands (Below 30MHz)

The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

3.6.6 Test Result of Emissions in Restricted Frequency Bands

Refer as Appendix F

4 Test Equipment and Calibration Data

Instrument for AC Conduction

Instrument	Manufacturer	Model No.	Serial No.	Spec.	Calibration Date	Calibration Due Date
EMC Receiver	R&S	ESR3	102051	9KHz ~ 3.6GHz	03/May/2018	02/May/2019
LISN	R&S	ENV216	101295	9kHz ~ 30MHz	17/Nov/2017	16/Nov/2018
RF Cable-CON	HUBER+SUHNER	RG213/U	07611832020001	9kHz ~ 30MHz	06/Oct/2017	05/Oct/2018
AC POWER	APC	AFC-11005G	F310050055	47Hz~63Hz 5~300V	NCR	NCR
Impuls Begrenzer Pulse Limiter	SCHWARZBECK	VTSD 9561-F	9561-F041	9 kHz ~ 30 MHz	12/Oct/2017	11/Oct/2018

NCR : Non-Calibration Require

Instrument for Conducted Test

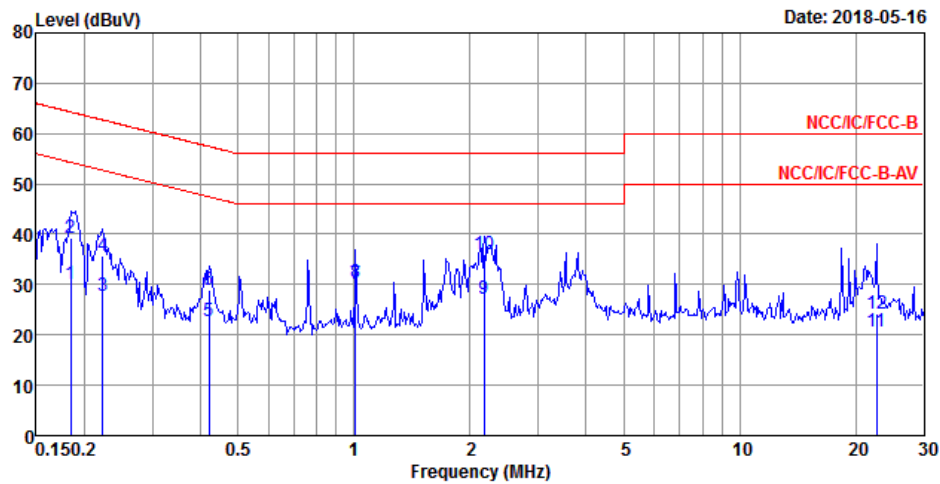
Instrument	Manufacturer	Model No.	Serial No.	Spec.	Calibration Date	Calibration Due Date
Spectrum Analyzer	R&S	FSV 40	101013	9kHz~40GHz	29/Dec/2017	28/Dec/2018
Signal Generator	R&S	SMR40	100116	10MHz ~ 40GHz	27/Jul/2017	26/Jul/2018
Power Sensor	Anritsu	MA2411B	0917017	300MHz ~ 40GHz	05/Feb/2018	04/Feb/2019
Power Meter	Anritsu	ML2495A	0949003	300MHz ~ 40GHz	05/Feb/2018	04/Feb/2019
RF Cable-0.2m	HUBER+SUHNER	SUCOFLEX_104	MY10709/4	30MHz ~ 26.5GHz	25/Aug/2017	24/Aug/2018
RF Cable-0.2m	HUBER+SUHNER	SUCOFLEX_104	MY10712/4	30MHz ~ 26.5GHz	25/Aug/2017	24/Aug/2018

Instrument for Radiated Test

Instrument	Manufacturer	Model No.	Serial No.	Spec.	Calibration Date	Calibration Due Date
3m Semi Anechoic Chamber	TDK	SAC-3M	03CH09-HY	30MHz ~ 1GHz	23/Apr/2018	22/Apr/2019
3m Semi Anechoic Chamber	TDK	SAC-3M	03CH09-HY	1GHz ~ 18GHz	14/Jun/2018	13/Jun/2019
Amplifier	Agilent	8449B	3008A02326	1GHz ~ 26.5GHz	17/Jul/2017	16/Jul/2018
Microwave Preamplifier	Agilent	8449B	3008A02096	1GHz ~ 26.5GHz	10/May/2018	09/May/2019
Amplifier	EMC	EMC9135	980232	9KHz~1GHz	27/Apr/2018	26/Apr/2019
EXA Signal Analyzer	KEYSIGHT	N9010A	MY54200885	10Hz ~ 44GHz	20/Jul/2017	19/Jul/2018
Bilog Antenna & 5dB Attenuator	TESEQ & MTJ	CBL6111D & MTJ6102-05	35418 / 3	30MHz~1GHz	09/Sep/2017	08/Sep/2018
Double Ridged Guide Horn Antenna	SCHWARZBEC K	BBHA 9120 D	BBHA9120 D 1534	1GHz~18GHz	30/Apr/2018	29/Apr/2019
Broadband Horn Antenna	SCHWARZBEC K	BBHA 9170	BBHA9170614	18GHz~40GHz	09/Feb/2018	08/Feb/2019
Preamplifier	MITEQ	TTA1840-35-HG	1864481	18GHz ~ 40GHz	24/Aug/2017	23/Aug/2018
Loop Antenna	TESEQ	HLA 6120	31244	9k-30MHz	29/Mar/2018	28/Mar/2019
RF Cable-R03m	Jye Bao	RG142	CB031	9kHz ~ 1GHz	01/Feb/2018	31/Jan/2019
RF Cable-high	SUHNER	SUCOFLEX104	MY34918/4	1GHz ~ 40GHz	02/Feb/2018	01/Feb/2019

AC Power-line Conducted Emissions Result

Operating Mode	1	Power Phase	Neutral
Operating Function	PoE mode – PIFA antenna		

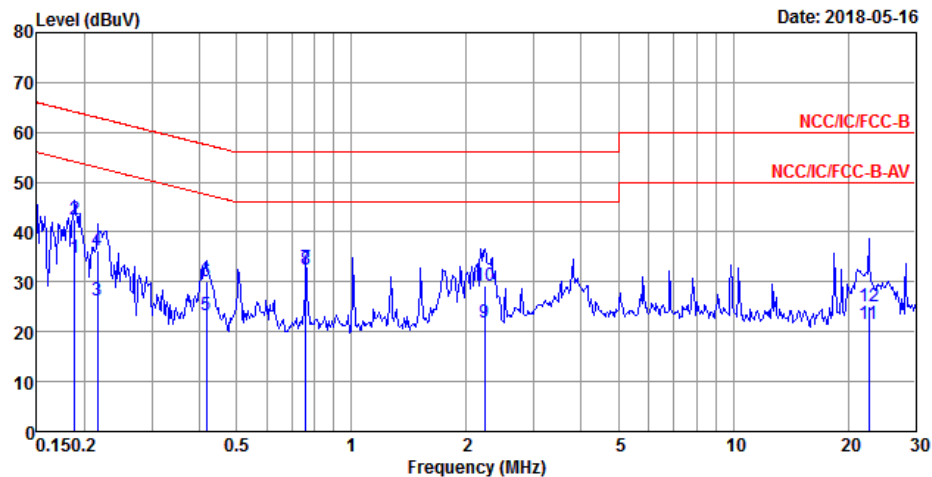


	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.18	29.99	-24.29	54.28	20.36	9.62	0.01	Average
2	0.18	39.20	-25.08	64.28	29.57	9.62	0.01	QP
3	0.22	27.84	-24.86	52.70	18.20	9.62	0.02	Average
4	0.22	35.65	-27.05	62.70	26.01	9.62	0.02	QP
5	0.42	22.87	-24.55	47.42	13.17	9.61	0.09	Average
6	0.42	29.01	-28.41	57.42	19.31	9.61	0.09	QP
7 MAX	1.01	29.99	-16.01	46.00	20.37	9.62	0.00	Average
8	1.01	30.50	-25.50	56.00	20.88	9.62	0.00	QP
9	2.18	27.15	-18.85	46.00	17.51	9.63	0.01	Average
10	2.18	35.94	-20.06	56.00	26.30	9.63	0.01	QP
11	22.66	20.63	-29.37	50.00	10.84	9.70	0.09	Average
12	22.66	24.06	-35.94	60.00	14.27	9.70	0.09	QP

Note 1: ">20dB" means emission levels that exceed the level of 20 dB below the applicable limit.
 Note 2: "N/F" means Nothing Found emissions (No emissions were detected.)

AC Power-line Conducted Emissions Result

Operating Mode	1	Power Phase	Line
Operating Function	PoE mode – PIFA antenna		



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.19	34.83	-19.28	54.11	25.20	9.62	0.01	Average
2	0.19	42.38	-21.73	64.11	32.75	9.62	0.01	QP
3	0.22	26.18	-26.78	52.96	16.55	9.62	0.01	Average
4	0.22	36.31	-26.65	62.96	26.68	9.62	0.01	QP
5	0.42	23.19	-24.32	47.51	13.48	9.61	0.10	Average
6	0.42	30.08	-27.43	57.51	20.37	9.61	0.10	QP
7 MAX	0.76	32.64	-13.36	46.00	23.00	9.61	0.03	Average
8	0.76	32.53	-23.47	56.00	22.89	9.61	0.03	QP
9	2.24	21.77	-24.23	46.00	12.14	9.62	0.01	Average
10	2.24	29.36	-26.64	56.00	19.73	9.62	0.01	QP
11	22.66	21.45	-28.55	50.00	11.78	9.58	0.09	Average
12	22.66	25.01	-34.99	60.00	15.34	9.58	0.09	QP

Note 1: ">20dB" means emission levels that exceed the level of 20 dB below the applicable limit.
 Note 2: "N/F" means Nothing Found emissions (No emissions were detected.)

Summary

Mode	Max-N dB (Hz)	Max-OBW (Hz)	ITU-Code	Min-N dB (Hz)	Min-OBW (Hz)
2.4-2.4835GHz	-	-	-	-	-
BT-LE(1Mbps)	675k	1.062M	1M06F1D	671.25k	1.056M

Max-N dB = Maximum 6dB down bandwidth; **Max-OBW** = Maximum 99% occupied bandwidth;

Min-N dB = Minimum 6dB down bandwidth; **Min-OBW** = Minimum 99% occupied bandwidth;

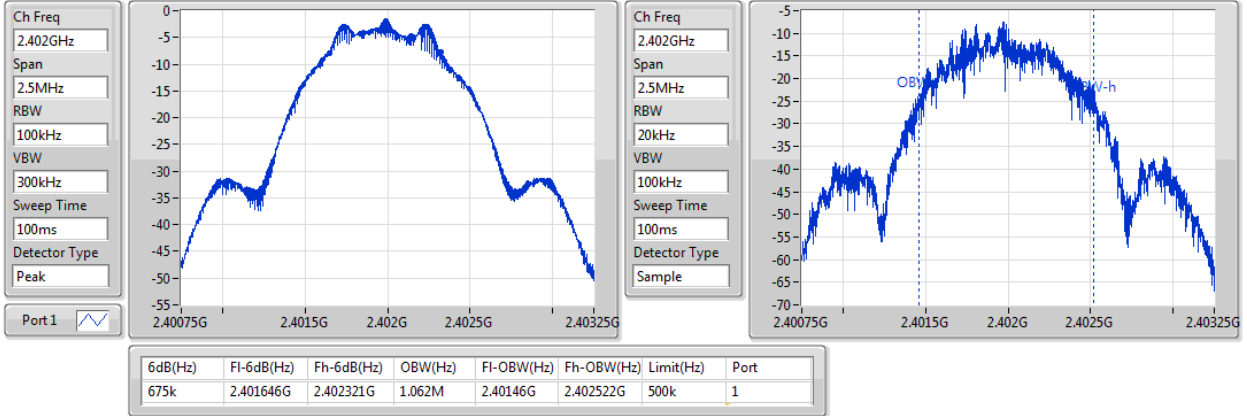
Result

Mode	Result	Limit (Hz)	Port 1-N dB (Hz)	Port 1-OBW (Hz)
BT-LE(1Mbps)	-	-	-	-
2402MHz	Pass	500k	675k	1.062M
2440MHz	Pass	500k	671.25k	1.059M
2480MHz	Pass	500k	673.75k	1.056M

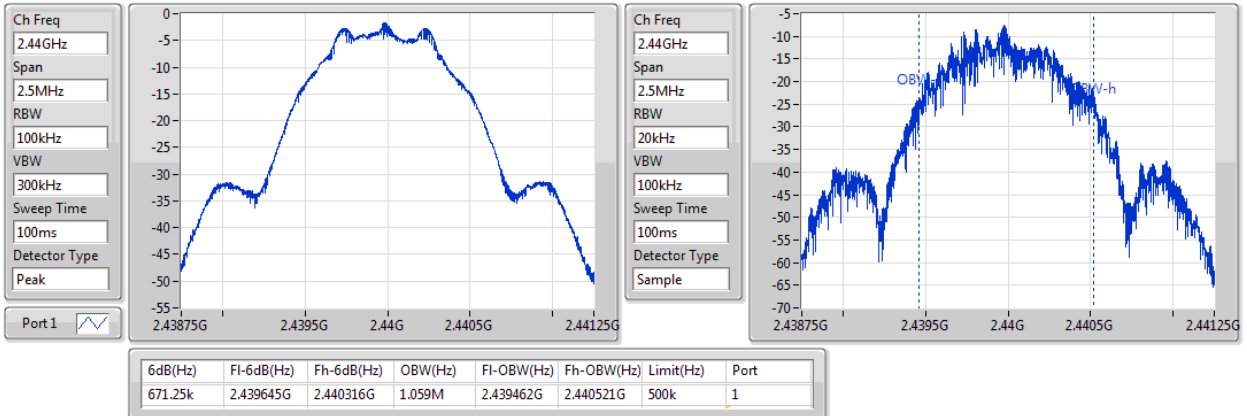
Port X-N dB = Port X 6dB down bandwidth; **Port X-OBW** = Port X 99% occupied bandwidth;

BT-LE(1Mbps)
EBW
2402MHz

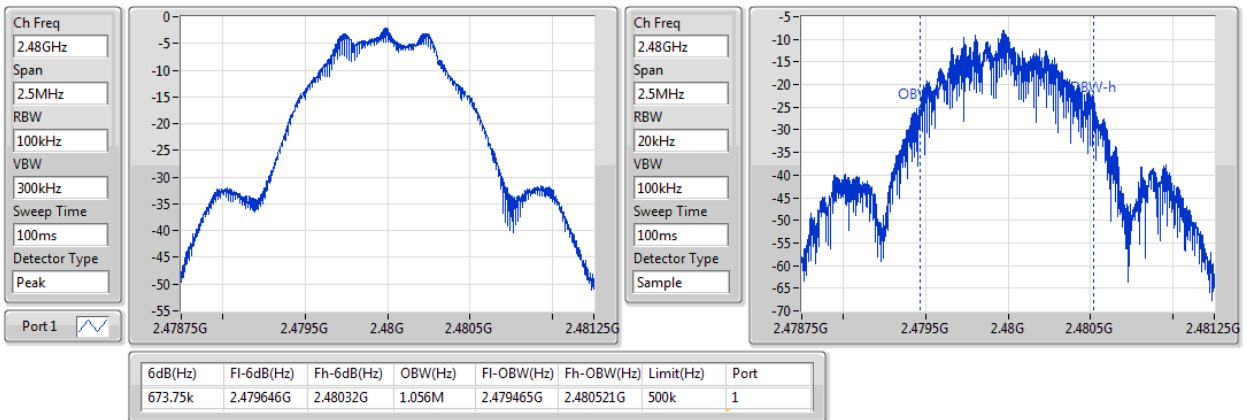
04/05/2018


BT-LE(1Mbps)
EBW
2440MHz

04/05/2018


BT-LE(1Mbps)
EBW
2480MHz

04/05/2018



Summary

Mode	Power	Power
	(dBm)	(W)
2.4-2.4835GHz	-	-
BT-LE(1Mbps)	-1.49	0.00071

Result

Mode	Result	Gain (dBi)	Power (dBm)	Power Limit (dBm)
BT-LE(1Mbps)	-	-	-	-
2402MHz	Pass	-1.27	-1.49	30.00
2440MHz	Pass	-1.27	-1.82	30.00
2480MHz	Pass	-1.27	-2.36	30.00

Summary

Mode	PD (dBm/RBW)
2.4-2.4835GHz	-
BT-LE(1Mbps)	-17.66

RBW=3kHz.

Result

Mode	Result	Gain (dBi)	PD (dBm/RBW)	PD Limit (dBm/RBW)
BT-LE(1Mbps)	-	-	-	-
2402MHz	Pass	-1.27	-17.66	8.00
2440MHz	Pass	-1.27	-18.05	8.00
2480MHz	Pass	-1.27	-19.00	8.00

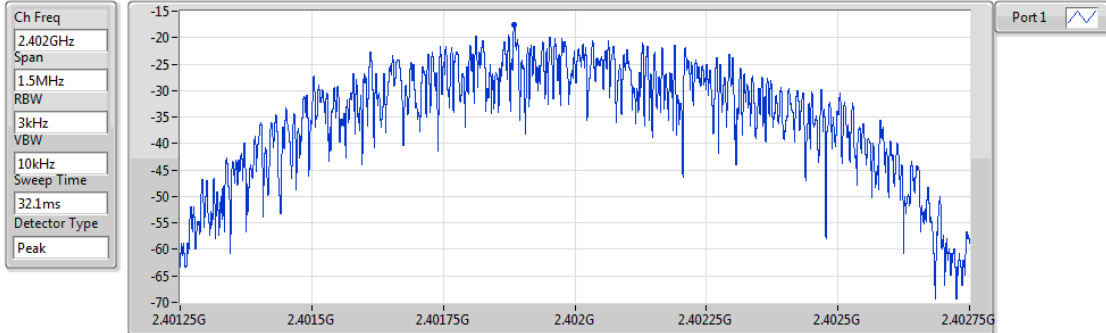
RBW=3kHz.

BT-LE(1Mbps)

PSD

2402MHz

04/05/2018



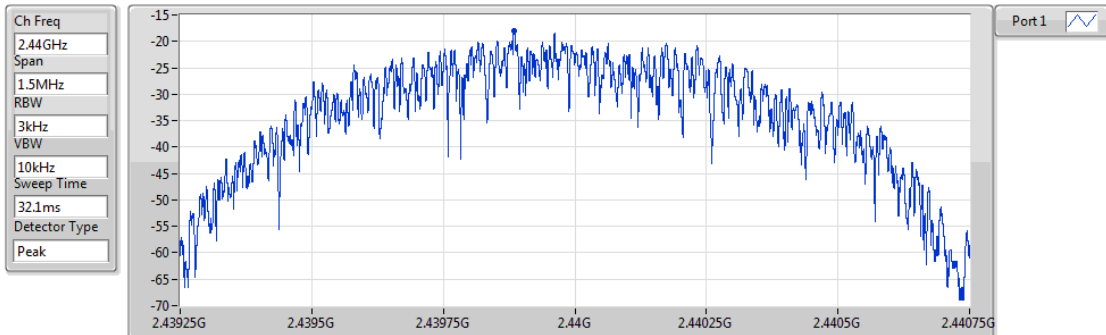
Sum	PD	Port 1
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-17.66	-17.66	-17.66

BT-LE(1Mbps)

PSD

2440MHz

04/05/2018



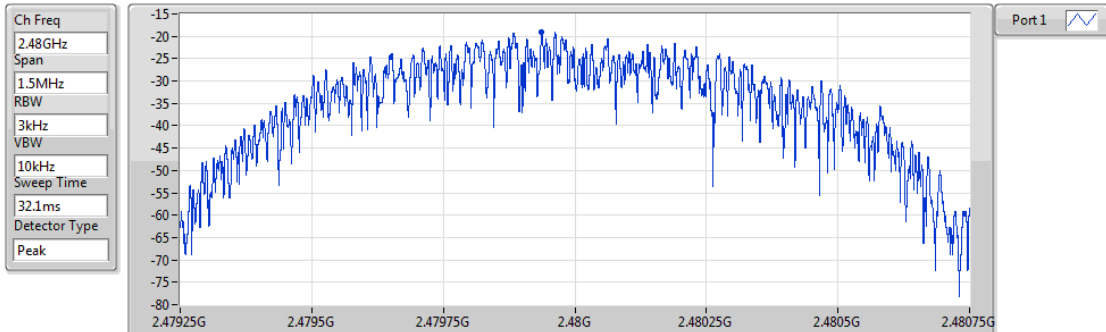
Sum	PD	Port 1
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-18.05	-18.05	-18.05

BT-LE(1Mbps)

PSD

2480MHz

04/05/2018



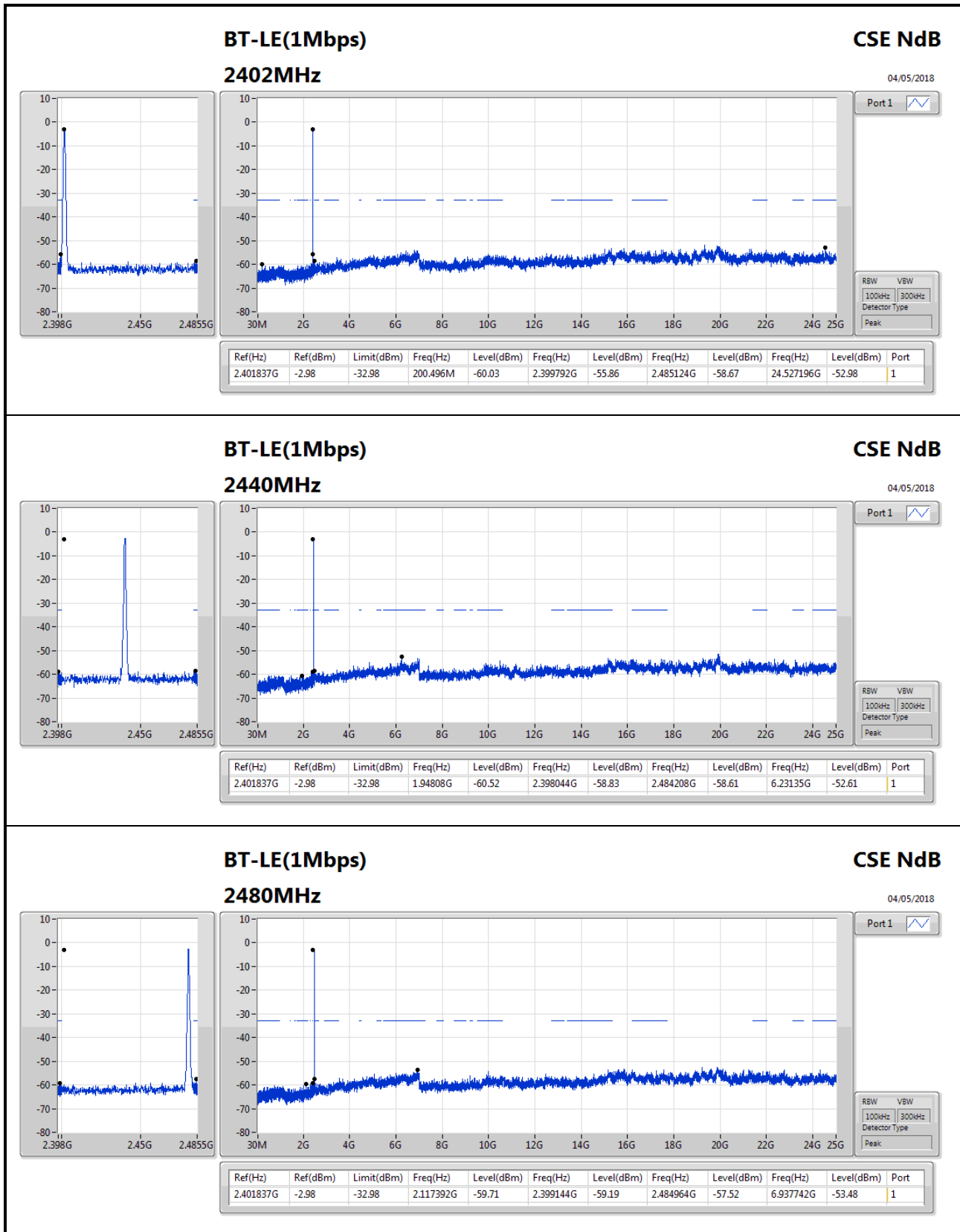
Sum	PD	Port 1
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-19.00	-19.00	-19.00

Summary

Mode	Result	Ref (Hz)	Ref (dBm)	Limit (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Port
2.4-2.4835GHz	-	-	-	-	-	-	-	-	-	-	-	-	-
BT-LE(1Mbps)	Pass	2.401837G	-2.98	-32.98	1.94808G	-60.52	2.398044G	-58.83	2.484208G	-58.61	6.23135G	-52.61	1

Result

Mode	Result	Ref (Hz)	Ref (dBm)	Limit (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Port
BT-LE(1Mbps)	-	-	-	-	-	-	-	-	-	-	-	-	-
2402MHz	Pass	2.401837G	-2.98	-32.98	200.496M	-60.03	2.399792G	-55.86	2.485124G	-58.67	24.527196G	-52.98	1
2440MHz	Pass	2.401837G	-2.98	-32.98	1.94808G	-60.52	2.398044G	-58.83	2.484208G	-58.61	6.23135G	-52.61	1
2480MHz	Pass	2.401837G	-2.98	-32.98	2.117392G	-59.71	2.399144G	-59.19	2.484964G	-57.52	6.937742G	-53.48	1



Summary

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
2.4-2.4835GHz	-	-	-	-	-	-	-	-	-	-	-	-
BT-LE(1Mbps)	Pass	PK	745.86M	40.93	46.00	-5.07	-8.42	3	Horizontal	360	1.00	-

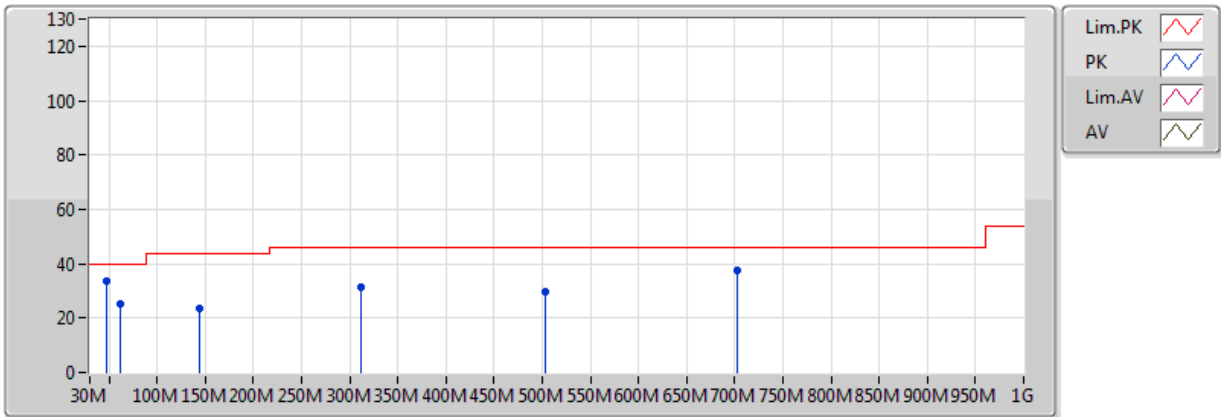
Result

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
BT-LE(1Mbps)	-	-	-	-	-	-	-	-	-	-	-	-
2440MHz	Pass	PK	47.46M	33.63	40.00	-6.37	-22.21	3	Vertical	0	1.00	-
2440MHz	Pass	PK	62.01M	25.11	40.00	-14.89	-25.61	3	Vertical	0	1.00	-
2440MHz	Pass	PK	144.46M	23.28	43.50	-20.22	-19.35	3	Vertical	0	1.00	-
2440MHz	Pass	PK	312.27M	31.12	46.00	-14.88	-16.50	3	Vertical	0	1.00	-
2440MHz	Pass	PK	502.39M	29.54	46.00	-16.46	-12.10	3	Vertical	0	1.00	-
2440MHz	Pass	PK	703.18M	37.41	46.00	-8.59	-9.65	3	Vertical	0	1.00	-
2440MHz	Pass	PK	59.1M	25.83	40.00	-14.17	-25.56	3	Horizontal	360	1.00	-
2440MHz	Pass	PK	108.57M	23.36	43.50	-20.14	-20.14	3	Horizontal	360	1.00	-
2440MHz	Pass	PK	149.31M	19.18	43.50	-24.32	-19.46	3	Horizontal	360	1.00	-
2440MHz	Pass	PK	312.27M	35.52	46.00	-10.48	-16.50	3	Horizontal	360	1.00	-
2440MHz	Pass	PK	502.39M	29.87	46.00	-16.13	-12.10	3	Horizontal	360	1.00	-
2440MHz	Pass	PK	745.86M	40.93	46.00	-5.07	-8.42	3	Horizontal	360	1.00	-

BT-LE(1Mbps)

2440MHz_PoE

22/05/2018

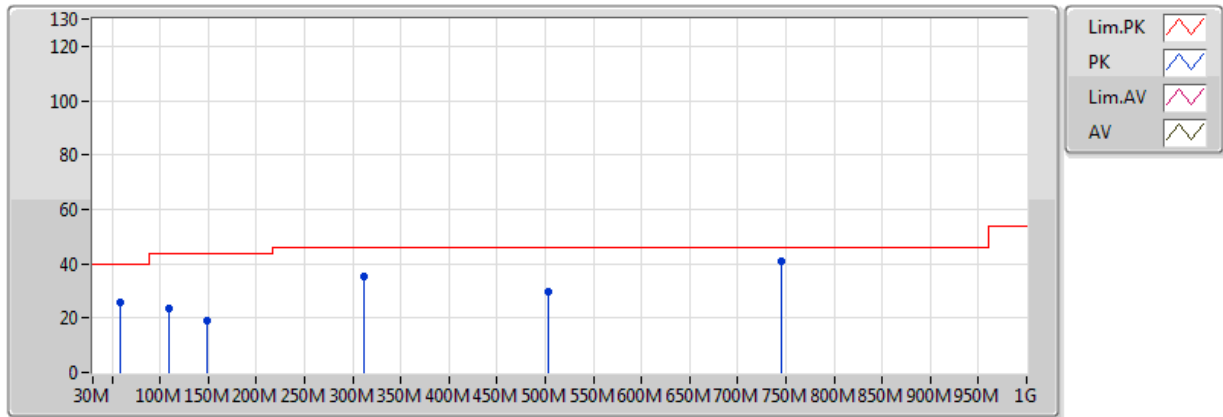


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
PK	47.46M	33.63	40.00	-6.37	-22.21	3	Vertical	0	1.00	-
PK	62.01M	25.11	40.00	-14.89	-25.61	3	Vertical	0	1.00	-
PK	144.46M	23.28	43.50	-20.22	-19.35	3	Vertical	0	1.00	-
PK	312.27M	31.12	46.00	-14.88	-16.50	3	Vertical	0	1.00	-
PK	502.39M	29.54	46.00	-16.46	-12.10	3	Vertical	0	1.00	-
PK	703.18M	37.41	46.00	-8.59	-9.65	3	Vertical	0	1.00	-

BT-LE(1Mbps)

2440MHz_PoE

22/05/2018



Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
PK	59.1M	25.83	40.00	-14.17	-25.56	3	Horizontal	360	1.00	-
PK	108.57M	23.36	43.50	-20.14	-20.14	3	Horizontal	360	1.00	-
PK	149.31M	19.18	43.50	-24.32	-19.46	3	Horizontal	360	1.00	-
PK	312.27M	35.52	46.00	-10.48	-16.50	3	Horizontal	360	1.00	-
PK	502.39M	29.87	46.00	-16.13	-12.10	3	Horizontal	360	1.00	-
PK	745.86M	40.93	46.00	-5.07	-8.42	3	Horizontal	360	1.00	-

Summary

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
2.4-2.4835GHz	-	-	-	-	-	-	-	-	-	-	-	-
BT-LE(1Mbps)	Pass	AV	2.483502G	44.71	54.00	-9.29	30.69	3	Vertical	248	1.29	-

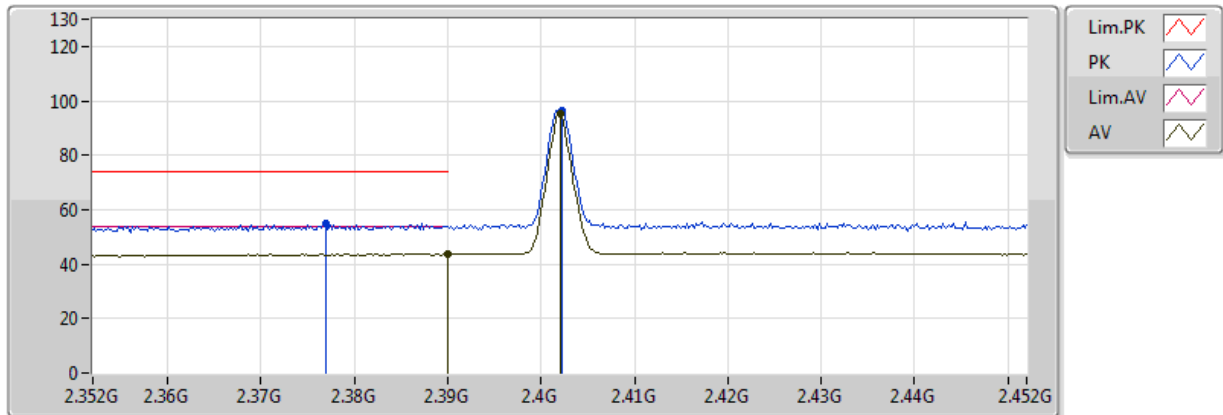
Result

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
BT-LE(1Mbps)	-	-	-	-	-	-	-	-	-	-	-	-
2402MHz	Pass	AV	2.389998G	43.76	54.00	-10.24	30.38	3	Vertical	250	1.13	-
2402MHz	Pass	AV	2.402G	95.29	Inf	-Inf	30.42	3	Vertical	250	1.13	-
2402MHz	Pass	PK	2.377G	54.98	74.00	-19.02	30.33	3	Vertical	250	1.13	-
2402MHz	Pass	PK	2.4022G	96.65	Inf	-Inf	30.42	3	Vertical	250	1.13	-
2402MHz	Pass	AV	2.3866G	43.82	54.00	-10.18	30.37	3	Horizontal	228	1.23	-
2402MHz	Pass	AV	2.402G	92.60	Inf	-Inf	30.42	3	Horizontal	228	1.23	-
2402MHz	Pass	PK	2.3678G	55.10	74.00	-18.90	30.30	3	Horizontal	228	1.23	-
2402MHz	Pass	PK	2.4022G	94.00	Inf	-Inf	30.42	3	Horizontal	228	1.23	-
2402MHz	Pass	AV	4.79688G	31.44	54.00	-22.56	5.77	3	Vertical	275	1.01	-
2402MHz	Pass	PK	4.79956G	44.84	74.00	-29.16	5.78	3	Vertical	275	1.01	-
2402MHz	Pass	AV	4.79888G	31.69	54.00	-22.31	5.78	3	Horizontal	76	1.50	-
2402MHz	Pass	PK	4.80832G	45.81	74.00	-28.19	5.80	3	Horizontal	76	1.50	-
2440MHz	Pass	AV	2.388G	43.77	54.00	-10.23	30.37	3	Vertical	248	1.29	-
2440MHz	Pass	AV	2.44G	93.84	Inf	-Inf	30.55	3	Vertical	248	1.29	-
2440MHz	Pass	AV	2.4972G	44.29	54.00	-9.71	30.74	3	Vertical	248	1.29	-
2440MHz	Pass	PK	2.3888G	54.73	74.00	-19.27	30.37	3	Vertical	248	1.29	-
2440MHz	Pass	PK	2.4396G	95.25	Inf	-Inf	30.54	3	Vertical	248	1.29	-
2440MHz	Pass	PK	2.4876G	54.88	74.00	-19.12	30.71	3	Vertical	248	1.29	-
2440MHz	Pass	AV	2.3784G	43.74	54.00	-10.26	30.34	3	Horizontal	37	1.52	-
2440MHz	Pass	AV	2.44G	91.37	Inf	-Inf	30.55	3	Horizontal	37	1.52	-
2440MHz	Pass	AV	2.4976G	44.46	54.00	-9.54	30.74	3	Horizontal	37	1.52	-
2440MHz	Pass	PK	2.3576G	55.19	74.00	-18.81	30.27	3	Horizontal	37	1.52	-
2440MHz	Pass	PK	2.4396G	92.83	Inf	-Inf	30.54	3	Horizontal	37	1.52	-
2440MHz	Pass	PK	2.49G	55.60	74.00	-18.40	30.72	3	Horizontal	37	1.52	-
2440MHz	Pass	AV	4.87478G	31.21	54.00	-22.79	5.94	3	Vertical	52	1.50	-
2440MHz	Pass	PK	4.879G	44.48	74.00	-29.52	5.95	3	Vertical	52	1.50	-
2440MHz	Pass	AV	4.87256G	31.63	54.00	-22.37	5.93	3	Horizontal	50	1.50	-
2440MHz	Pass	PK	4.87952G	44.91	74.00	-29.09	5.95	3	Horizontal	50	1.50	-
2480MHz	Pass	AV	2.48G	92.81	Inf	-Inf	30.68	3	Vertical	248	1.29	-
2480MHz	Pass	AV	2.483502G	44.71	54.00	-9.29	30.69	3	Vertical	248	1.29	-
2480MHz	Pass	PK	2.4802G	94.26	Inf	-Inf	30.68	3	Vertical	248	1.29	-
2480MHz	Pass	PK	2.4946G	55.69	74.00	-18.31	30.73	3	Vertical	248	1.29	-
2480MHz	Pass	AV	2.48G	90.27	Inf	-Inf	30.68	3	Horizontal	179	1.33	-
2480MHz	Pass	AV	2.483502G	44.57	54.00	-9.43	30.69	3	Horizontal	179	1.33	-
2480MHz	Pass	PK	2.4802G	91.72	Inf	-Inf	30.68	3	Horizontal	179	1.33	-
2480MHz	Pass	PK	2.494G	56.31	74.00	-17.69	30.73	3	Horizontal	179	1.33	-
2480MHz	Pass	AV	4.9587G	31.18	54.00	-22.82	6.11	3	Vertical	78	1.50	-
2480MHz	Pass	PK	4.96298G	44.47	74.00	-29.53	6.12	3	Vertical	78	1.50	-
2480MHz	Pass	AV	4.95722G	31.35	54.00	-22.65	6.11	3	Horizontal	5	1.50	-
2480MHz	Pass	PK	4.95662G	44.47	74.00	-29.53	6.11	3	Horizontal	5	1.50	-

BT-LE(1Mbps)

2402MHz_TX

12/05/2018

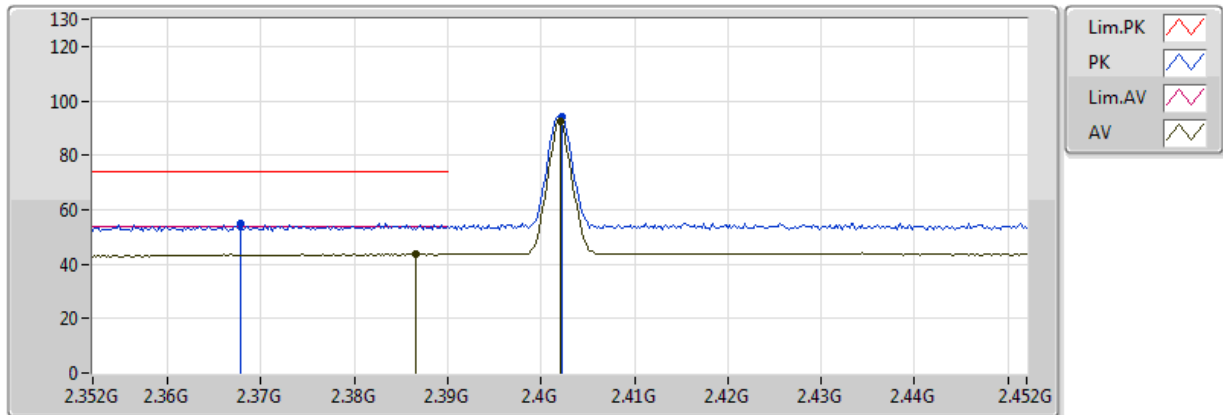


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
AV	2.389998G	43.76	54.00	-10.24	30.38	3	Vertical	250	1.13	-
AV	2.402G	95.29	Inf	-Inf	30.42	3	Vertical	250	1.13	-
PK	2.377G	54.98	74.00	-19.02	30.33	3	Vertical	250	1.13	-
PK	2.4022G	96.65	Inf	-Inf	30.42	3	Vertical	250	1.13	-

BT-LE(1Mbps)

2402MHz_TX

12/05/2018

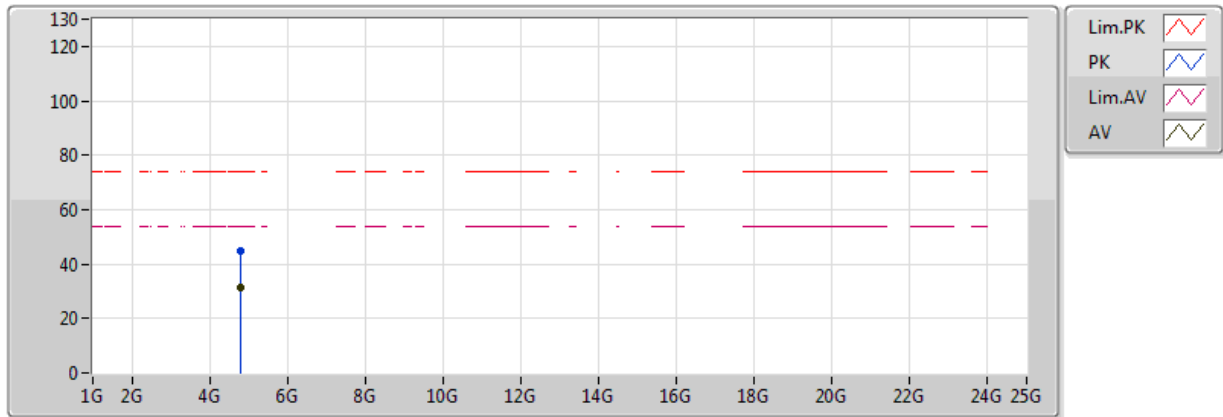


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
AV	2.3866G	43.82	54.00	-10.18	30.37	3	Horizontal	228	1.23	-
AV	2.402G	92.60	Inf	-Inf	30.42	3	Horizontal	228	1.23	-
PK	2.3678G	55.10	74.00	-18.90	30.30	3	Horizontal	228	1.23	-
PK	2.4022G	94.00	Inf	-Inf	30.42	3	Horizontal	228	1.23	-

BT-LE(1Mbps)

2402MHz_TX

12/05/2018

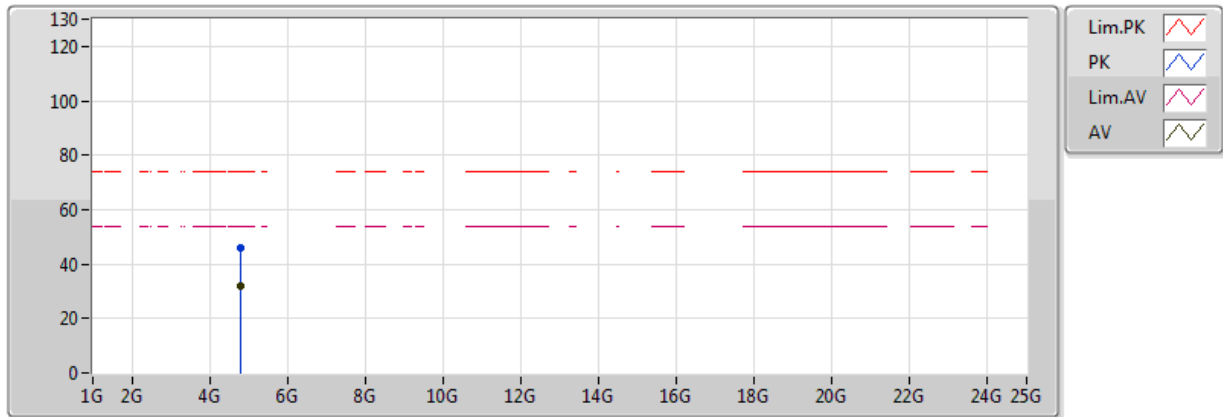


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
AV	4.79688G	31.44	54.00	-22.56	5.77	3	Vertical	275	1.01	-
PK	4.79956G	44.84	74.00	-29.16	5.78	3	Vertical	275	1.01	-

BT-LE(1Mbps)

2402MHz_TX

12/05/2018

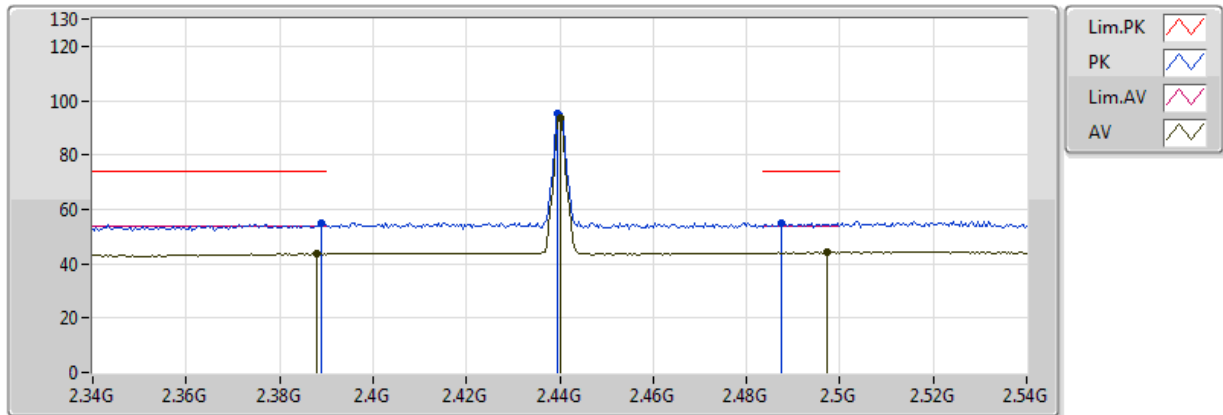


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
AV	4.79888G	31.69	54.00	-22.31	5.78	3	Horizontal	76	1.50	-
PK	4.80832G	45.81	74.00	-28.19	5.80	3	Horizontal	76	1.50	-

BT-LE(1Mbps)

2440MHz_TX

12/05/2018

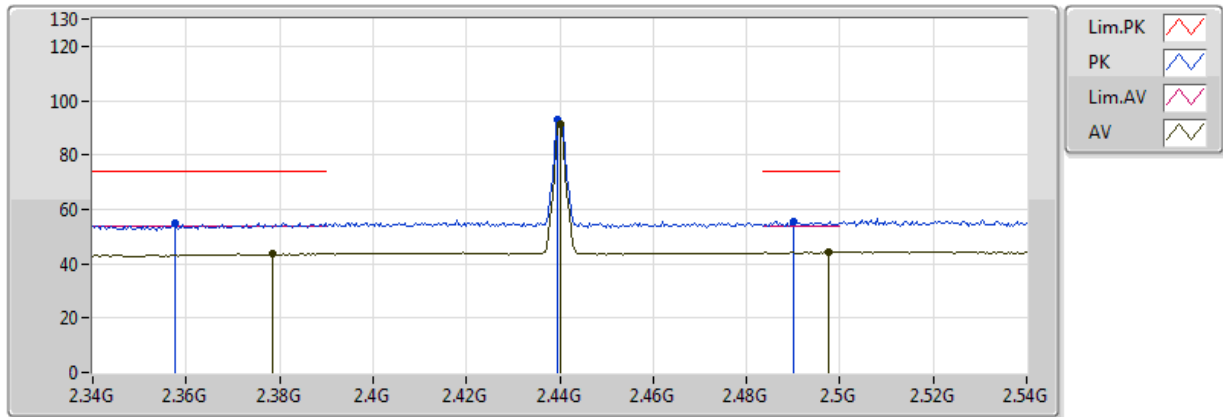


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
AV	2.388G	43.77	54.00	-10.23	30.37	3	Vertical	248	1.29	-
AV	2.44G	93.84	Inf	-Inf	30.55	3	Vertical	248	1.29	-
AV	2.4972G	44.29	54.00	-9.71	30.74	3	Vertical	248	1.29	-
PK	2.3888G	54.73	74.00	-19.27	30.37	3	Vertical	248	1.29	-
PK	2.4396G	95.25	Inf	-Inf	30.54	3	Vertical	248	1.29	-
PK	2.4876G	54.88	74.00	-19.12	30.71	3	Vertical	248	1.29	-

BT-LE(1Mbps)

2440MHz_TX

12/05/2018

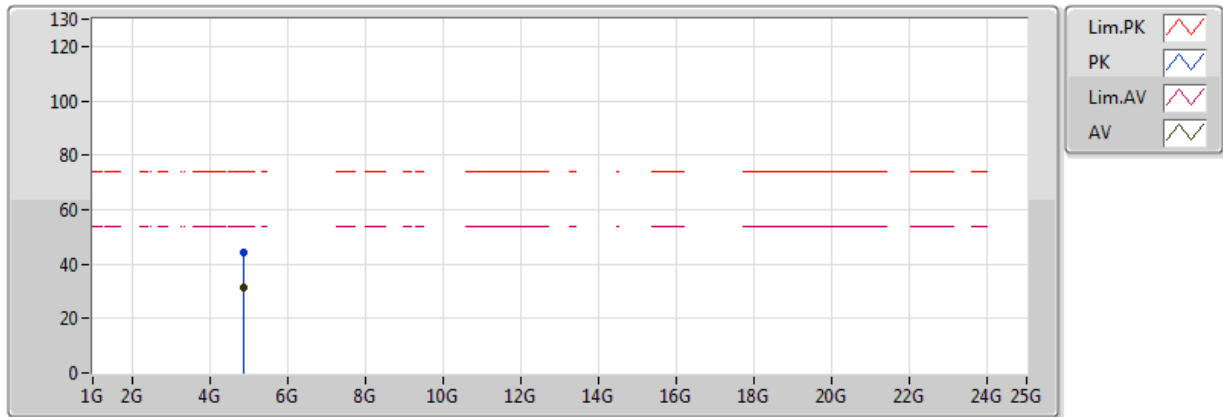


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
AV	2.3784G	43.74	54.00	-10.26	30.34	3	Horizontal	37	1.52	-
AV	2.44G	91.37	Inf	-Inf	30.55	3	Horizontal	37	1.52	-
AV	2.4976G	44.46	54.00	-9.54	30.74	3	Horizontal	37	1.52	-
PK	2.3576G	55.19	74.00	-18.81	30.27	3	Horizontal	37	1.52	-
PK	2.4396G	92.83	Inf	-Inf	30.54	3	Horizontal	37	1.52	-
PK	2.49G	55.60	74.00	-18.40	30.72	3	Horizontal	37	1.52	-

BT-LE(1Mbps)

2440MHz_TX

12/05/2018

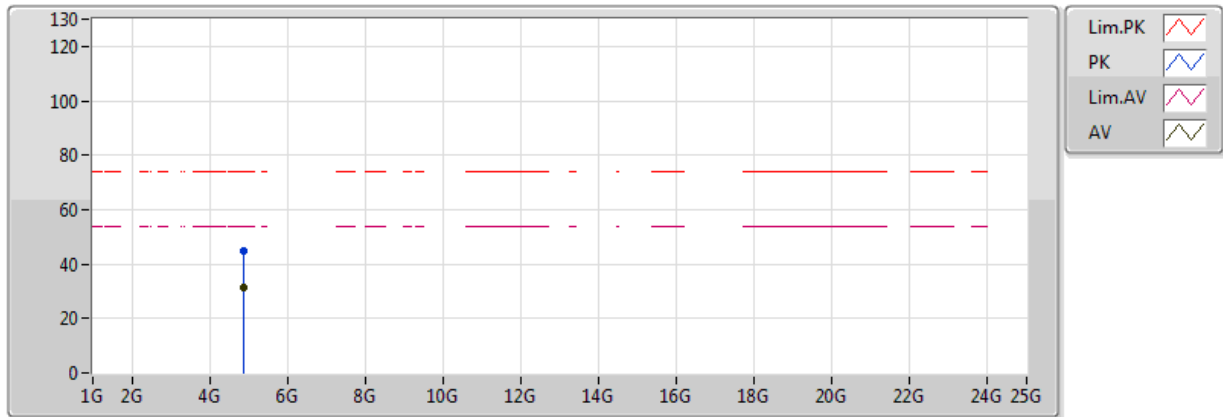


Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	
AV	4.87478G	31.21	54.00	-22.79	5.94	3	Vertical	52	1.50	-
PK	4.879G	44.48	74.00	-29.52	5.95	3	Vertical	52	1.50	-

BT-LE(1Mbps)

2440MHz_TX

12/05/2018

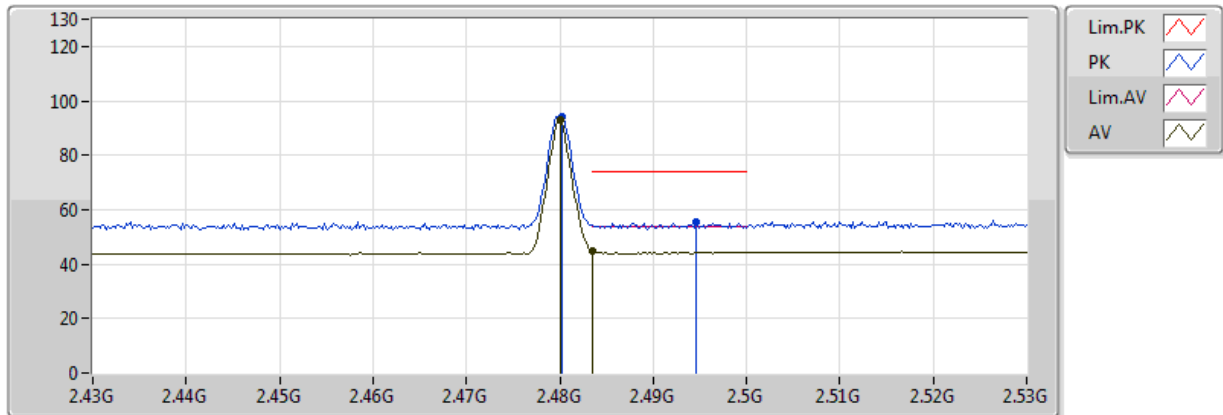


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
AV	4.87256G	31.63	54.00	-22.37	5.93	3	Horizontal	50	1.50	-
PK	4.87952G	44.91	74.00	-29.09	5.95	3	Horizontal	50	1.50	-

BT-LE(1Mbps)

2480MHz_TX

12/05/2018

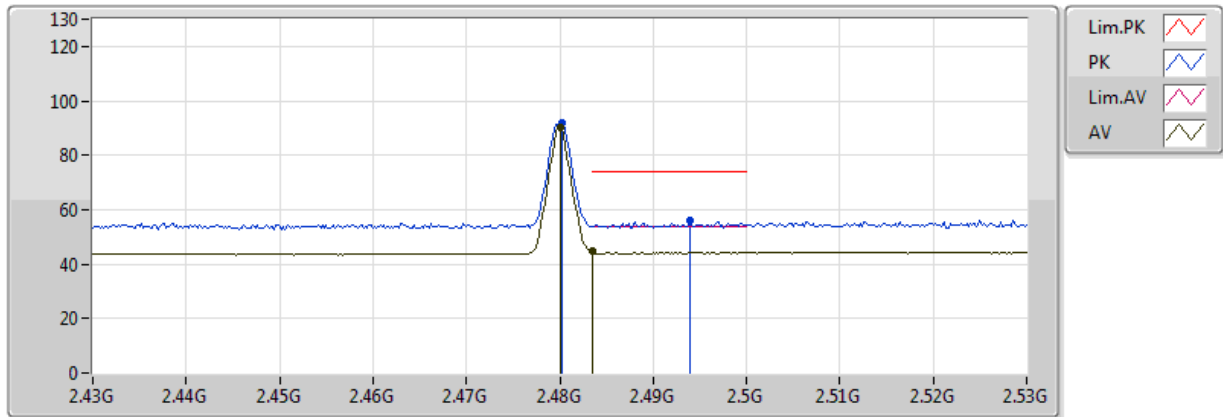


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
AV	2.48G	92.81	Inf	-Inf	30.68	3	Vertical	248	1.29	-
AV	2.483502G	44.71	54.00	-9.29	30.69	3	Vertical	248	1.29	-
PK	2.4802G	94.26	Inf	-Inf	30.68	3	Vertical	248	1.29	-
PK	2.4946G	55.69	74.00	-18.31	30.73	3	Vertical	248	1.29	-

BT-LE(1Mbps)

2480MHz_TX

12/05/2018

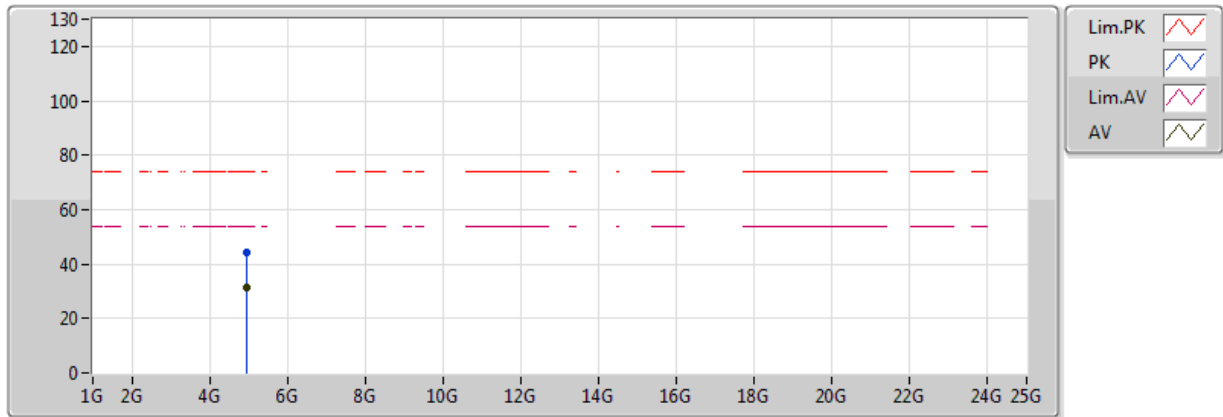


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
AV	2.48G	90.27	Inf	-Inf	30.68	3	Horizontal	179	1.33	-
AV	2.483502G	44.57	54.00	-9.43	30.69	3	Horizontal	179	1.33	-
PK	2.4802G	91.72	Inf	-Inf	30.68	3	Horizontal	179	1.33	-
PK	2.494G	56.31	74.00	-17.69	30.73	3	Horizontal	179	1.33	-

BT-LE(1Mbps)

2480MHz_TX

12/05/2018

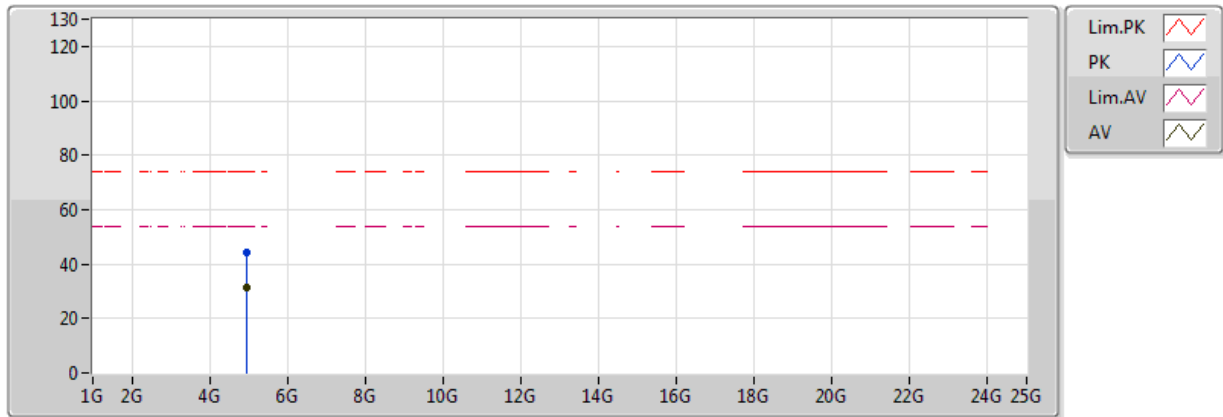


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
AV	4.9587G	31.18	54.00	-22.82	6.11	3	Vertical	78	1.50	-
PK	4.96298G	44.47	74.00	-29.53	6.12	3	Vertical	78	1.50	-

BT-LE(1Mbps)

2480MHz_TX

12/05/2018



Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
AV	4.95722G	31.35	54.00	-22.65	6.11	3	Horizontal	5	1.50	-
PK	4.95662G	44.47	74.00	-29.53	6.11	3	Horizontal	5	1.50	-

**Summary**

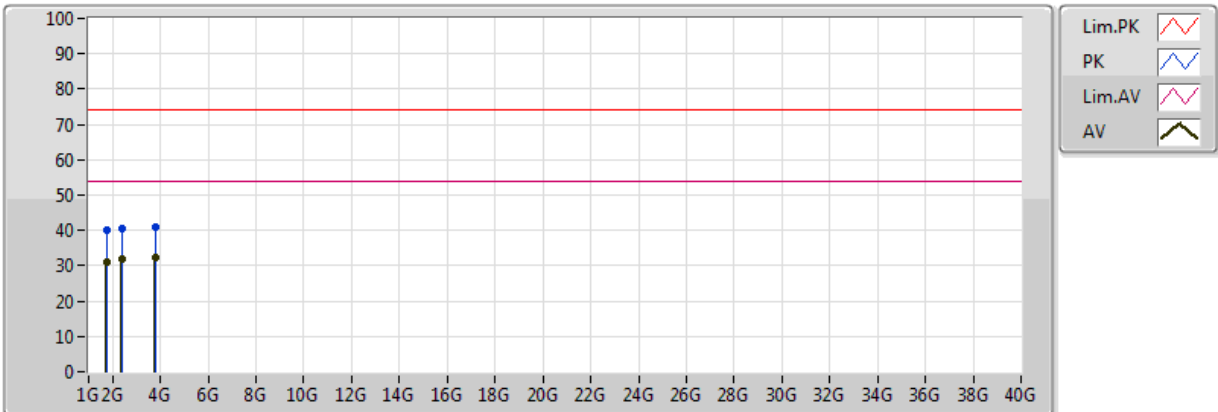
Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
Mode 1	Pass	AV	3.774G	32.47	54.00	-21.53	0.33	3	Vertical	360	1.00	-
Mode 2	Pass	AV	3.861G	36.85	54.00	-17.15	0.66	3	Horizontal	0	1.00	-

Result

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
Mode 1	Pass	AV	1.667G	31.10	54.00	-22.90	-4.84	3	Horizontal	0	1.00	-
Mode 1	Pass	AV	2.387G	31.27	54.00	-22.73	-2.48	3	Horizontal	0	1.00	-
Mode 1	Pass	AV	3.337G	31.36	54.00	-22.64	-0.63	3	Horizontal	0	1.00	-
Mode 1	Pass	PK	1.667G	40.12	74.00	-33.88	-4.84	3	Horizontal	0	1.00	-
Mode 1	Pass	PK	2.387G	39.64	74.00	-34.36	-2.48	3	Horizontal	0	1.00	-
Mode 1	Pass	PK	3.337G	40.34	74.00	-33.66	-0.63	3	Horizontal	0	1.00	-
Mode 1	Pass	AV	1.745G	30.88	54.00	-23.12	-4.61	3	Vertical	360	1.00	-
Mode 1	Pass	AV	2.38G	32.05	54.00	-21.95	-2.50	3	Vertical	360	1.00	-
Mode 1	Pass	AV	3.774G	32.47	54.00	-21.53	0.33	3	Vertical	360	1.00	-
Mode 1	Pass	PK	1.745G	39.88	74.00	-34.12	-4.61	3	Vertical	360	1.00	-
Mode 1	Pass	PK	2.38G	40.67	74.00	-33.33	-2.50	3	Vertical	360	1.00	-
Mode 1	Pass	PK	3.774G	40.80	74.00	-33.12	0.33	3	Vertical	360	1.00	-
Mode 2	Pass	AV	1.227G	29.38	54.00	-24.62	-6.79	3	Horizontal	0	1.00	
Mode 2	Pass	AV	2.552G	32.56	54.00	-21.44	-1.91	3	Horizontal	0	1.00	
Mode 2	Pass	AV	3.861G	36.85	54.00	-17.15	0.66	3	Horizontal	0	1.00	
Mode 2	Pass	PK	1.227G	38.48	74.00	-35.52	-6.79	3	Horizontal	0	1.00	
Mode 2	Pass	PK	2.552G	41.15	74.00	-32.85	-1.91	3	Horizontal	0	1.00	
Mode 2	Pass	PK	3.861G	41.21	74.00	-32.79	0.66	3	Horizontal	0	1.00	
Mode 2	Pass	AV	1.174G	28.15	54.00	-25.85	-7.07	3	Vertical	360	1.00	
Mode 2	Pass	AV	2.447G	30.20	54.00	-23.80	-2.26	3	Vertical	360	1.00	
Mode 2	Pass	AV	3.881G	32.84	54.00	-21.16	0.73	3	Vertical	360	1.00	
Mode 2	Pass	PK	1.174G	37.55	74.00	-36.45	-7.07	3	Vertical	360	1.00	
Mode 2	Pass	PK	2.447G	38.31	74.00	-35.69	-2.26	3	Vertical	360	1.00	
Mode 2	Pass	PK	3.881G	41.74	74.00	-32.26	0.73	3	Vertical	360	1.00	

Radiation-above 1GHz_Mode 1

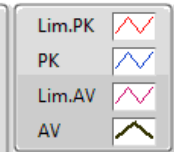
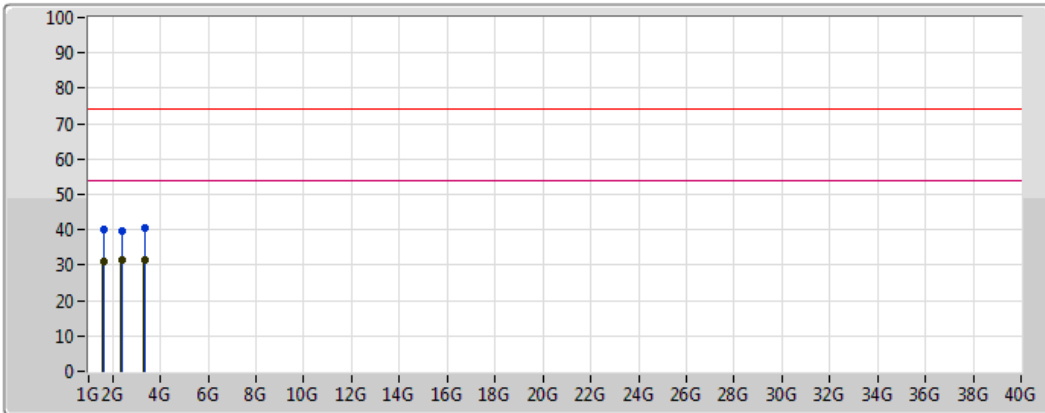
31/01/2018



Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments	Raw	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)	(dB)	(dB)	(dB)
AV	1.745G	30.88	54.00	-23.12	-4.61	3	Vertical	360	1.00	-	35.49	25.64	4.91	35.16
AV	2.38G	32.05	54.00	-21.95	-2.50	3	Vertical	360	1.00	-	34.55	26.96	5.72	35.18
AV	3.774G	32.47	54.00	-21.53	0.33	3	Vertical	360	1.00	-	32.14	29.15	6.44	35.26
PK	1.745G	39.88	74.00	-34.12	-4.61	3	Vertical	360	1.00	-	44.49	25.64	4.91	35.16
PK	2.38G	40.67	74.00	-33.33	-2.50	3	Vertical	360	1.00	-	43.17	26.96	5.72	35.18
PK	3.774G	40.88	74.00	-33.12	0.33	3	Vertical	360	1.00	-	40.55	29.15	6.44	35.26

Radiation-above 1GHz_Mode 1

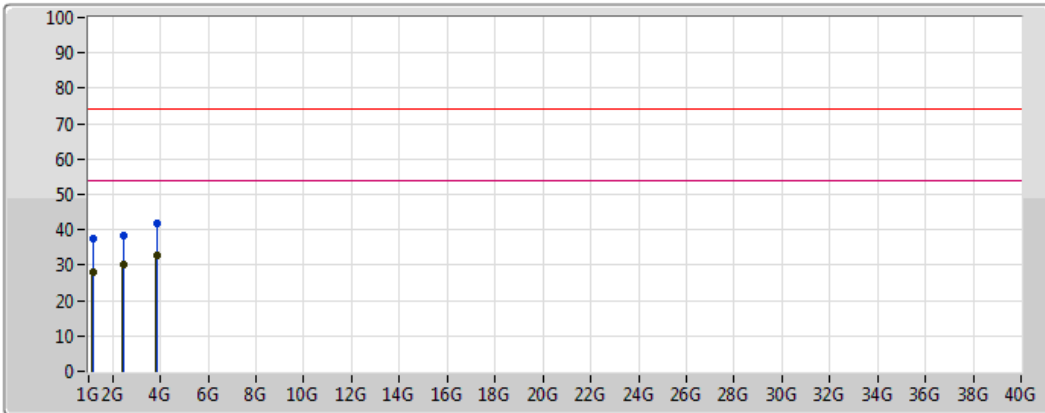
31/01/2018



Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments	Raw	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)	(dB)	(dB)	(dB)
AV	1.667G	31.10	54.00	-22.90	-4.84	3	Horizontal	0	1.00	-	35.94	25.57	4.79	35.20
AV	2.387G	31.27	54.00	-22.73	-2.48	3	Horizontal	0	1.00	-	33.75	26.98	5.73	35.19
AV	3.337G	31.36	54.00	-22.64	-0.63	3	Horizontal	0	1.00	-	31.99	28.60	6.09	35.33
PK	1.667G	40.12	74.00	-33.88	-4.84	3	Horizontal	0	1.00	-	44.96	25.57	4.79	35.20
PK	2.387G	39.64	74.00	-34.36	-2.48	3	Horizontal	0	1.00	-	42.12	26.98	5.73	35.19
PK	3.337G	40.34	74.00	-33.66	-0.63	3	Horizontal	0	1.00	-	40.97	28.60	6.09	35.33

Radiation-above 1GHz_Mode 2

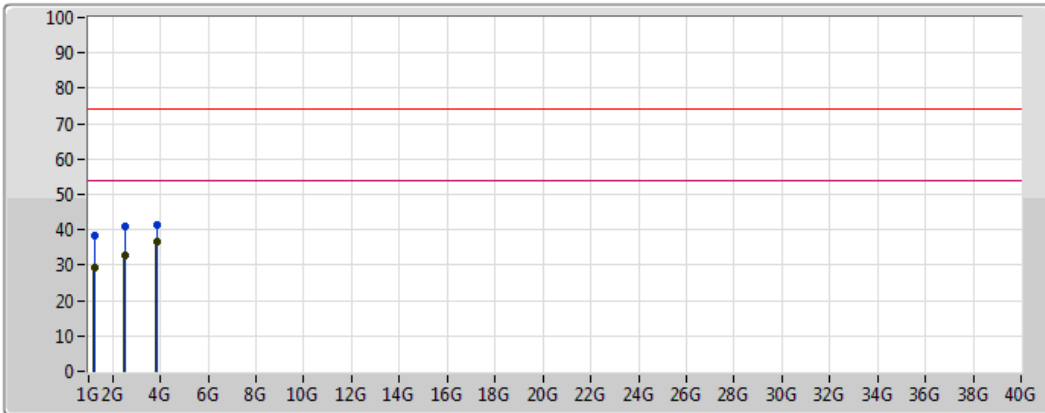
31/01/2018



Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments	Raw	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)	(dB)	(dB)	(dB)
AV	1.174G	28.15	54.00	-25.85	-7.07	3	Vertical	360	1.00	-	35.22	24.75	4.06	35.88
AV	2.447G	30.20	54.00	-23.80	-2.26	3	Vertical	360	1.00	-	32.46	27.15	5.80	35.21
AV	3.881G	32.84	54.00	-21.16	0.73	3	Vertical	360	1.00	-	32.11	29.36	6.60	35.23
PK	1.174G	37.55	74.00	-36.45	-7.07	3	Vertical	360	1.00	-	44.62	24.75	4.06	35.88
PK	2.447G	38.31	74.00	-35.69	-2.26	3	Vertical	360	1.00	-	40.57	27.15	5.80	35.21
PK	3.881G	41.74	74.00	-32.26	0.73	3	Vertical	360	1.00	-	41.01	29.36	6.60	35.23

Radiation-above 1GHz_Mode 2

31/01/2018



Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments	Raw	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)	(dB)	(dB)	(dB)
AV	1.227G	29.38	54.00	-24.62	-6.79	3	Horizontal	0	1.00	-	36.17	24.85	4.14	35.78
AV	2.552G	32.56	54.00	-21.44	-1.91	3	Horizontal	0	1.00	-	34.47	27.44	5.90	35.25
AV	3.861G	36.85	54.00	-17.15	0.66	3	Horizontal	0	1.00	-	36.19	29.32	6.57	35.24
PK	1.227G	38.48	74.00	-35.52	-6.79	3	Horizontal	0	1.00	-	45.27	24.85	4.14	35.78
PK	2.552G	41.15	74.00	-32.85	-1.91	3	Horizontal	0	1.00	-	43.06	27.44	5.90	35.25
PK	3.861G	41.21	74.00	-32.79	0.66	3	Horizontal	0	1.00	-	40.55	29.32	6.57	35.24



Summary

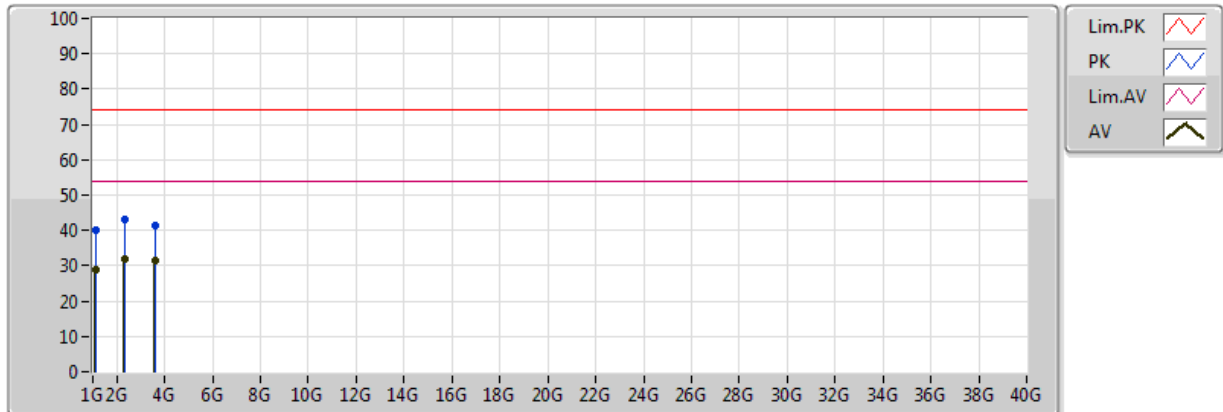
Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
Mode 1.	Pass	AV	4.031G	33.02	54.00	-20.98	1.31	3	Horizontal	0	1.00	-
Mode 2.	Pass	AV	3.951G	33.18	54.00	-20.82	0.99	3	Vertical	360	1.00	-

Result

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
Mode 1	Pass	AV	1.21G	28.59	54.00	-25.41	-6.88	3	Horizontal	0	1.00	-
Mode 1	Pass	AV	2.23G	31.04	54.00	-22.96	-3.04	3	Horizontal	0	1.00	-
Mode 1	Pass	AV	4.031G	33.02	54.00	-20.98	1.31	3	Horizontal	0	1.00	-
Mode 1	Pass	PK	1.21G	38.55	74.00	-35.45	-6.88	3	Horizontal	0	1.00	-
Mode 1	Pass	PK	2.23G	40.43	74.00	-33.57	-3.04	3	Horizontal	0	1.00	-
Mode 1	Pass	PK	4.031G	42.09	74.00	-31.91	1.31	3	Horizontal	0	1.00	-
Mode 1	Pass	AV	1.135G	28.80	54.00	-25.20	-7.28	3	Vertical	360	1.00	-
Mode 1	Pass	AV	2.307G	31.70	54.00	-22.30	-2.76	3	Vertical	360	1.00	-
Mode 1	Pass	AV	3.595G	31.39	54.00	-22.61	-0.34	3	Vertical	360	1.00	-
Mode 1	Pass	PK	1.135G	40.10	74.00	-33.90	-7.28	3	Vertical	360	1.00	-
Mode 1	Pass	PK	2.307G	43.17	74.00	-30.83	-2.76	3	Vertical	360	1.00	-
Mode 1	Pass	PK	3.595G	41.55	74.00	-32.45	-0.34	3	Vertical	360	1.00	-
Mode 2	Pass	AV	1.165G	29.57	54.00	-24.43	-7.12	3	Horizontal	0	1.00	
Mode 2	Pass	AV	2.28G	31.97	54.00	-22.03	-2.86	3	Horizontal	0	1.00	
Mode 2	Pass	AV	3.695G	32.27	54.00	-21.73	0.03	3	Horizontal	0	1.00	
Mode 2	Pass	PK	1.165G	38.58	74.00	-35.42	-7.12	3	Horizontal	0	1.00	
Mode 2	Pass	PK	2.28G	40.74	74.00	-33.26	-2.86	3	Horizontal	0	1.00	
Mode 2	Pass	PK	3.695G	40.79	74.00	-33.21	0.03	3	Horizontal	0	1.00	
Mode 2	Pass	AV	1.189G	29.13	54.00	-24.87	-6.99	3	Vertical	360	1.00	
Mode 2	Pass	AV	2.427G	30.53	54.00	-23.47	-2.33	3	Vertical	360	1.00	
Mode 2	Pass	AV	3.951G	33.18	54.00	-20.82	0.99	3	Vertical	360	1.00	
Mode 2	Pass	PK	1.189G	38.74	74.00	-35.26	-6.99	3	Vertical	360	1.00	
Mode 2	Pass	PK	2.427G	38.54	74.00	-35.46	-2.33	3	Vertical	360	1.00	
Mode 2	Pass	PK	3.951G	42.60	74.00	-31.40	0.99	3	Vertical	360	1.00	

Radiation-above 1GHz_Mode 1

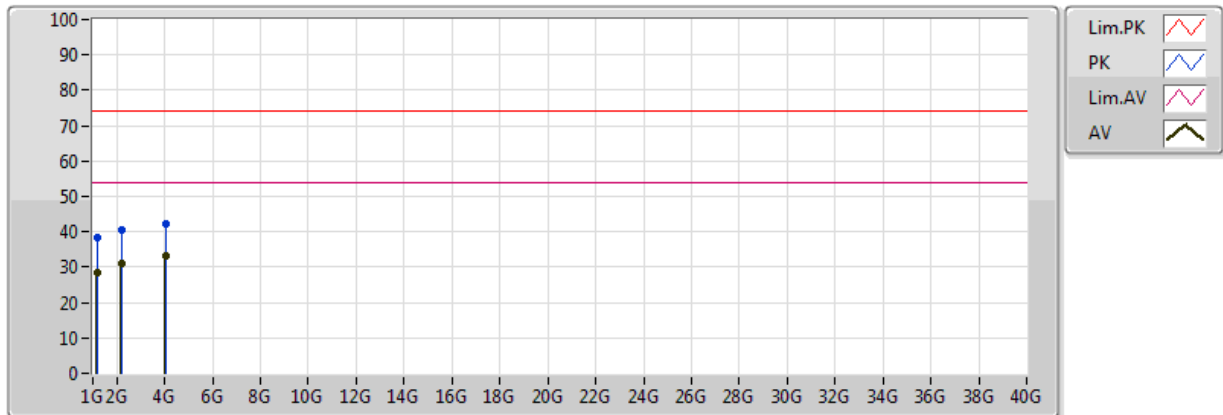
24/01/2018



Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments	Raw	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)	(dB)	(dB)	(dB)
AV	1.135G	28.80	54.00	-25.20	-7.28	3	Vertical	360	1.00	-	36.08	24.67	4.00	35.95
AV	2.307G	31.70	54.00	-22.30	-2.76	3	Vertical	360	1.00	-	34.46	26.76	5.64	35.16
AV	3.595G	31.39	54.00	-22.61	-0.34	3	Vertical	360	1.00	-	31.73	28.79	6.16	35.29
PK	1.135G	40.10	74.00	-33.90	-7.28	3	Vertical	360	1.00	-	47.38	24.67	4.00	35.95
PK	2.307G	43.17	74.00	-30.83	-2.76	3	Vertical	360	1.00	-	45.94	26.76	5.64	35.16
PK	3.595G	41.55	74.00	-32.45	-0.34	3	Vertical	360	1.00	-	41.89	28.79	6.16	35.29

Radiation-above 1GHz_Mode 1

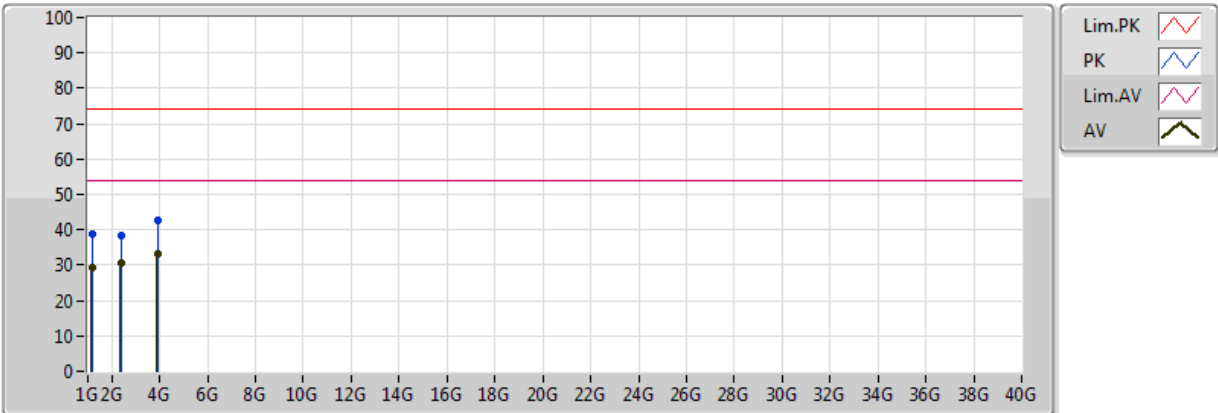
24/01/2018



Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments	Raw	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)	(dB)	(dB)	(dB)
AV	1.21G	28.59	54.00	-25.41	-6.88	3	Horizontal	0	1.00	-	35.47	24.82	4.11	35.81
AV	2.23G	31.04	54.00	-22.96	-3.04	3	Horizontal	0	1.00	-	34.08	26.54	5.55	35.13
AV	4.031G	33.02	54.00	-20.98	1.31	3	Horizontal	0	1.00	-	31.71	29.67	6.85	35.20
PK	1.21G	38.55	74.00	-35.45	-6.88	3	Horizontal	0	1.00	-	45.43	24.82	4.11	35.81
PK	2.23G	40.43	74.00	-33.57	-3.04	3	Horizontal	0	1.00	-	43.47	26.54	5.55	35.13
PK	4.031G	42.09	74.00	-31.91	1.31	3	Horizontal	0	1.00	-	40.77	29.67	6.85	35.20

Radiation-above 1GHz_Mode 2

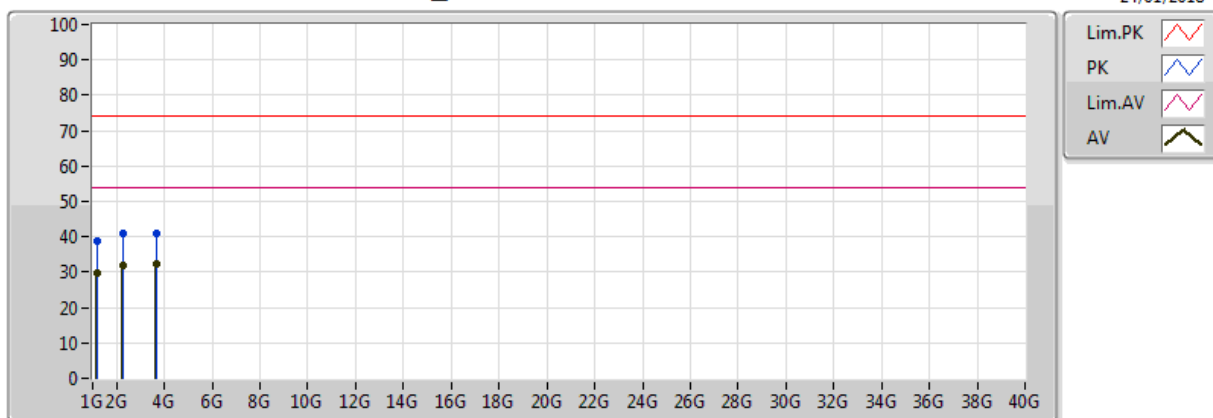
24/01/2018



Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	1.189G	29.13	54.00	-24.87	-6.99	3	Vertical	360	1.00	-	36.12	24.78	4.08	35.85
AV	2.427G	30.53	54.00	-23.47	-2.33	3	Vertical	360	1.00	-	32.86	27.10	5.77	35.20
AV	3.951G	33.18	54.00	-20.82	0.99	3	Vertical	360	1.00	-	32.19	29.50	6.71	35.22
PK	1.189G	38.74	74.00	-35.26	-6.99	3	Vertical	360	1.00	-	45.73	24.78	4.08	35.85
PK	2.427G	38.54	74.00	-35.46	-2.33	3	Vertical	360	1.00	-	40.87	27.10	5.77	35.20
PK	3.951G	42.60	74.00	-31.40	0.99	3	Vertical	360	1.00	-	41.61	29.50	6.71	35.22

Radiation-above 1GHz_Mode 2

24/01/2018



Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments	Raw	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)	(dB)	(dB)	(dB)
AV	1.165G	29.57	54.00	-24.43	-7.12	3	Horizontal	0	1.00	-	36.69	24.73	4.05	35.90
AV	2.28G	31.97	54.00	-22.03	-2.86	3	Horizontal	0	1.00	-	34.84	26.68	5.61	35.15
AV	3.695G	32.27	54.00	-21.73	0.03	3	Horizontal	0	1.00	-	32.24	28.99	6.31	35.27
PK	1.165G	38.58	74.00	-35.42	-7.12	3	Horizontal	0	1.00	-	45.70	24.73	4.05	35.90
PK	2.28G	40.74	74.00	-33.26	-2.86	3	Horizontal	0	1.00	-	43.60	26.68	5.61	35.15
PK	3.695G	40.79	74.00	-33.21	0.03	3	Horizontal	0	1.00	-	40.75	28.99	6.31	35.27