TEST REPORT NO: RU1202/6588

COPY NO: 2

ISSUE NO: 1

FCC ID: QIWDM03-2

REPORT ON THE CERTIFICATION TESTING OF A
Saitek plc.
A-250 Wireless 2.1 Speaker System (Dongle)
WITH RESPECT TO
THE FCC RULES CFR 47, PART 15.247
INTENTIONAL RADIATOR SPECIFICATION

TEST DATE: 22nd - 30th September 2005

TESTED BY: John Charters — Digitally signed by John Charters DN: CN = John Charters, C = GB, O = TRL Compliance Ltd Reason: I am the author of this document Date: 2005.11.15 15:51:07 Z — J CHARTERS

APPROVED BY: Peter Green — Digitally signed by Peter Green DN: CN = Peter Green, C = GB Reason: I am approving this document Date: 2005.11.15 15:56:01 Z — P GREEN PRODUCT MANAGER

DATE: 14th November 2005

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FS 21805 0728

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Notes:

1. Component failure during test — YES [ ] NO [X]
2. If Yes, details of failure:
3. The facilities used for the testing of the product contain in this report are FCC Listed.
4. The contents of the attached applicants declarations and other supplied information are not covered by the scope of this laboratory's UKAS or FCC accreditations' and is provided in good faith.

CERTIFICATE OF CONFORMITY & COMPLIANCE

FCC IDENTITY:	QIWDM03-2					
PURPOSE OF TEST:	CERTIFICATION					
TEST SPECIFICATION:	FCC RULES CFR 47, Part 15.247					
TEST RESULT:	Compliant to Specification					
EQUIPMENT UNDER TEST:	A-250 Wireless 2.1 Speaker System (Dongle)					
EQUIPMENT SERIAL No:	Engineering sample					
EQUIPMENT TYPE:	Wireless Bluetooth speaker system					
PRODUCT USE:	Wireless Speakers					
CARRIER EMISSION:	0.0003mW EIRP					
ANTENNA TYPE:	Integral					
ALTERNATIVE ANTENNA:	Not applicable					
CHANNEL SPACING:	Bluetooth is wideband application.					
FREQUENCY GENERATION.: BLUETOOTH	SAW Resonator	[ ]	Crystal	[ ]	Synthesiser	[X]
MODULATION METHOD: BLUETOOTH	Amplitude	[ ]	Digital	[X]	Angle	[ ]
POWER SOURCE(s):	+5VDC Via USB lead					
TEST DATE(s):	22nd – 30th September 2005					
ORDER No(s):	3294					
APPLICANT:	Saitek plc					
ADDRESS:	3/4 West Point Row, Great Park Road Bristol BS32 4QG					

TESTED BY: John Charters — Digitally signed by John Charters DN: CN = John Charters, C = GB, O = TRL Compliance Ltd Reason: I am the author of this document Date: 2005.11.15 15:51:30 Z — J Charters

APPROVED BY: Peter Green — Digitally signed by Peter Green DN: CN = Peter Green, C = GB Reason: I am approving this document Date: 2005.11.15 15:56:22 Z — P Green, Product manager

APPLICANT'S SUMMARY

EQUIPMENT UNDER TEST (EUT):	A-250 Wireless 2.1 Speaker System (Dongle)
EQUIPMENT TYPE:	Audio speakers with Bluetooth interface
SERIAL NUMBER OF EUT:	Engineering sample
PURPOSE OF TEST:	CERTIFICATION
TEST SPECIFICATION(s):	FCC RULES CFR 47, Part 15.247
TEST RESULT:	COMPLIANT Yes [X] No [ ]
APPLICANT'S CATEGORY:	MANUFACTURER [X] IMPORTER [ ] DISTRIBUTOR [ ] TEST HOUSE [ ] AGENT [ ]
APPLICANT'S ORDER No(s):	3294
APPLICANT'S CONTACT PERSON(s):	Mr M Mannix
E-mail address:	mmannix@saitek.com
APPLICANT:	Saitek plc
ADDRESS:	3/4 West Point Row Great Park Road Bristol BS32 4QG
TEL:	+44(0) 1454 451900
FAX:	+44(0) 1454 451901
MANUFACTURER:	Saitek plc
EUT(s) COUNTRY OF ORIGIN:	United Kingdom
TEST LABORATORY:	TRL EMC
UKAS ACCREDITATION No:	0728
TEST DATE(s)	22nd – 30th September 2005
TEST REPORT No:	RU1202/6588

EQUIPMENT TEST / EXAMINATIONS REQUIRED

1.

TEST/EXAMINATION	RULE PART	DETECTOR	APPLICABILITY
Intentional Emission Frequency:	15.247	Peak	Yes
Intentional Emission Field Strength:	-	-	No
Intentional Emission Band Occupancy:	15.247(a)1	Peak	Yes
Intentional Emission EIRP (mW):	15.247(b)1	Peak	Yes
Spurious Emissions – Conducted:	15.207	Quasi Peak Average	Yes
Spurious Emissions – Conducted:	15.247	Peak	Yes
Spurious Emissions – Radiated <1000MHz:	15.209 ,15.247	Quasi Peak	Yes
Spurious Emissions – Radiated >1000MHz:	15.247 15.209	Peak average	Yes
Transmitter Carrier Frequency Separation	15.247(a)(1)	Peak	Yes
Transmitter Maximum Peak Power Output Power	15.247(b)(1)	Peak	Yes
Transmitter Band Edge Conducted Emissions	15.247(c)	Peak	Yes
Transmitter Band Edge Radiated Emission	15.247(c)	Peak	Yes
Extrapolation Factor	15.31(f)	-	Yes
Maximum Frequency of Search:	15.33	-	Yes
Antenna Arrangements Integral:	15.203	-	Yes
Antenna Arrangements External Connector:	15.204	-	Yes
Restricted Bands	15.205	-	Yes

2. Product Description : The system provides wireless free audio from a PC. The system consists of a dongle for connection to the PC and speaker unit. The speaker unit is powered from 4 AA batteries or from the mains. The system operates using Bluetooth protocol. The dongle is powered via the USB lead.

3. Temperatures: Ambient (Tnom) 21^{o}C

4. Supply Voltages: Vnom +5Vdc

Note: Vnom voltages are as stated above unless otherwise shown on the test report page

5. Equipment Category: Single channel [ ]
Multi-channel [X]

6. Channel spacing: Narrowband [ ]
Wideband [X]

TRANSMITTER TESTS BLUETOOTH UNIT

TRANSMITTER CONDUCTED EMISSIONS – AC POWER LINE Part 15.207

Ambient temperature = 20^{o}C(<1GHz),
Relative humidity = 58%(<1GHz),
Conditions = Power Line Laboratory
Supply voltage = 110V AC power to PC
Supply Frequency = 60Hz

SIGNIFICANT EMISSIONS

FREQUENCY (MHz)	**MEASUREMENT RECEIVER READING (dBµV)**	**DETECTOR**	**CONDUCTOR (L or N)**	**LIMIT (dBµV)**
Note 3				

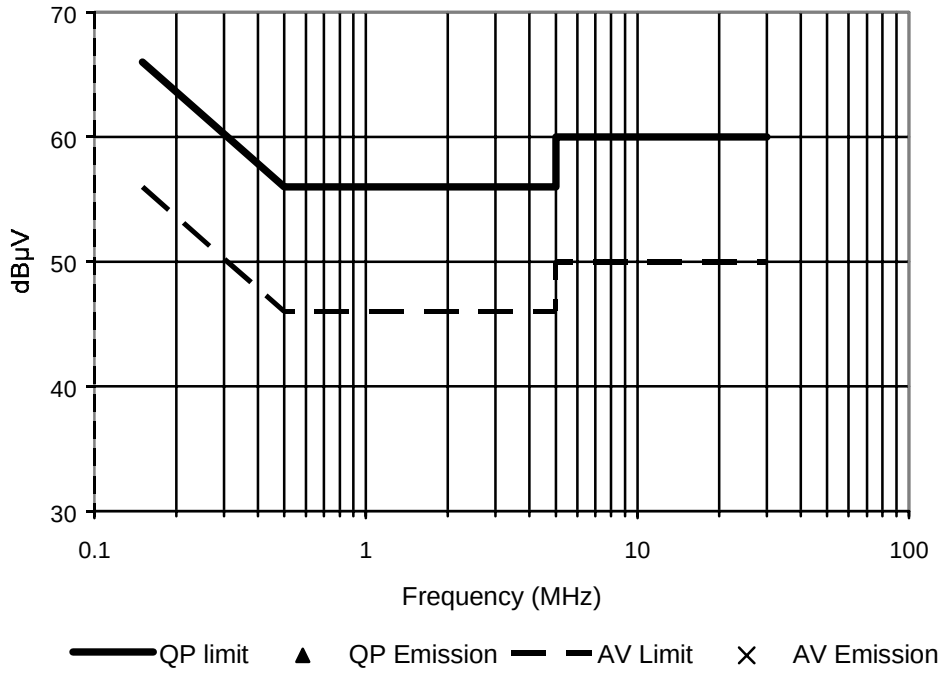
Notes:
1 See attached plot annex D
2 Measurement taken at the PC mains power port.
3 Only emissions within 20dB of limit are recorded., See appendix D.

Test Method:
1 As per Radio – Noise Emissions, ANSI C63.4: 1992

The test equipment used for the Transmitter Conducted Emissions – AC Power Line Part 15.207 test was:

TYPE OF EQUIPMENT	MAKER/ SUPPLIER	MODEL No	SERIAL No	TRL No	ACTUAL EQUIPMENT USED
RECEIVER	ROHDE & SCHWARZ	ESHS20	837960/003	237	
LISN / AMN	ROHDE & SCHWARZ	ESH3-Z5	83746/010	289	
RECEIVER	ROHDE & SCHWARZ	ESHS10	844077/019	353	
RECEIVER	ROHDE & SCHWARZ	ESHS 10	830051/001	UH03	**X**
LISN/AMN	ROHDE & SCHWARZ	ESH3-Z5	863906/018	UH05	**X**
SPECTRUM ANALYSER	MARCONI	2386/2380	152076/004	UH120	

POWER LINE CONDUCTION EMISSIONS



No emissions within 20dB's of the limit.

TRANSMITTER TESTS BLUETOOTH UNIT

TRANSMITTER CARRIER FREQUENCY SEPARATION – CONDUCTED – Part 15.247(a)(1)

Ambient temperature = 24°C
Relative humidity = 58%
Conditions = Conducted –Radio Lab
Supply voltage = 5Vdc

Transmitter Carrier Frequency Separation (MHz)
1.0MHz
LIMIT SPECIFIED IN 15.247 (A)(1): The channels should be separated by at least 25kHz or the 20dB bandwidth which ever is greater.

See spectrum analyser plot – Annex E
See note 1

Notes:

1 20dB Bandwidth of one carrier is 788kHz therefore carrier frequency separation must be greater than 788kHz.
2 Conducted measurements were performed with a temporary antenna connector provided by the client.
3 For analyser setting see scan data annex E.

Test Method:

1 Test method as per 15.247 and public notice DA 00-705.
2 With the unit operating in hopping mode with maximum data rate a graphical plot of two adjacent channels was taken.
3 Delta marker function was used to measure the difference between the peak emission of each channel.

The test equipment used for the tests is shown below:

TYPE OF EQUIPMENT	MAKER/ SUPPLIER	MODEL No	SERIAL No	TRL No	ACTUAL EQUIPMENT USED
RECEIVER	ANRITSU	MS2665C	MT26089	479	**X**
RECEIVER	ROHDE & SCHWARZ	ESVS 10	825892/003	UH04	
RANGE 1	TRL	3 METRE	N/A	UH06	
AE, LOOP, Z2, 9kHz - 30MHz	ROHDE & SCHWARZ	HFH2	881058 - 53	07	
BILOG ANTENNA	CHASE	CBL6112	2129	UH93	
SPECTRUM ANALYSER	MARCONI	2386/2380	152076/004	UH120	

TRANSMITTER TESTS BLUETOOTH UNIT

TRANSMITTER 20dB BANDWIDTH – CONDUCTED – Part 15.247(a)(1)

Ambient temperature = 24°C
Relative humidity = 58%
Conditions = Conducted –Radio Lab
Supply voltage = 5Vdc

20dB Bandwidth (kHz)
788
Limit >500kHz

See spectrum analyser plot – Annex G

Notes:

1 The EUT has 79 hopping channels see annex F.
2 Conducted measurements were performed with a temporary antenna connector provided by the client.
3 For analyser setting see scan data annex G.

Test Method:

1 Test method as per 15.247 and public notice DA 00-705.
2 With the unit operating in hopping mode with maximum data rate.
3 The analyser was centre frequency was tuned to the centre of a hopping channel.
4 The peak hold function was used to establish a 20dB band width level.

The test equipment used for the tests is shown below:

TYPE OF EQUIPMENT	MAKER/ SUPPLIER	MODEL No	SERIAL No	TRL No	ACTUAL EQUIPMENT USED
RECEIVER	ANRITSU	MS2665C	MT26089	479	**X**
RECEIVER	ROHDE & SCHWARZ	ESVS 10	825892/003	UH04	
RANGE 1	TRL	3 METRE	N/A	UH06	
AE, LOOP, Z2, 9kHz - 30MHz	ROHDE & SCHWARZ	HFH2	881058 - 53	07	
BILOG ANTENNA	CHASE	CBL6112	2129	UH93	
SPECTRUM ANALYSER	MARCONI	2386/2380	152076/004	UH120	

TRANSMITTER TESTS BLUETOOTH UNIT

TRANSMITTER AVERAGE TIME OF OCCUPANCY – CONDUCTED – Part 15.247(a)(1)(iii)

Ambient temperature = 25°C
Relative humidity = 58%
Conditions = Conducted –Radio Lab
Supply voltage = 5Vdc

Packet Width (µs)	Number of Transmissions in 30 Seconds	Average time of Occupancy (s)
526.85	200	0.105
Limit 0.4 seconds		

See spectrum analyser plot – Annex H

Notes:

1 Conducted measurements were performed with a temporary antenna connector provided by the client.
2 For analyser setting see scan data annex H.

Test Method:

1 As per15.247 and Public Notice DA 00-705.
2 The analyser was tuned to the centre frequency of the hopping channel
3 With the analyser set to zero span a sweep of 30 seconds was performed. The number of transmission was recorded.
4 The sweep time was reduced to show the length of one transmission.
The time occupancy of the system was tested on a single carrier. The maximum packet length was measured and multiplied by the number of transmissions within a 30 second period. The result was noted as being the average time of occupancy.

The test equipment used for the tests is shown below:

TYPE OF EQUIPMENT	MAKER/ SUPPLIER	MODEL No	SERIAL No	TRL No	ACTUAL EQUIPMENT USED
RECEIVER	ROHDE & SCHWARZ	ESIB 7	100182	630	**X**
RECEIVER	ROHDE & SCHWARZ	ESVS 10	825892/003	UH04	
RANGE 1	TRL	3 METRE	N/A	UH06	
AE, LOOP, Z2, 9kHz - 30MHz	ROHDE & SCHWARZ	HFH2	881058 - 53	07	
BILOG ANTENNA	CHASE	CBL6112	2129	UH93	
SPECTRUM ANALYSER	MARCONI	2386/2380	152076/004	UH120	

TRANSMITTER TESTS BLUETOOTH UNIT

TRANSMITTER PEAK OUTPUT POWER – CONDUCTED – Part 15.247(b)(1)

Ambient temperature = 24°C
Relative humidity = 55%
Conditions = Conducted
Supply voltage = See results

Channel Frequency (MHz)	Input voltage (Volts)	Transmitter Peak Power Output (dBm)	Transmitter Peak Power Output (Watts)	Limit (Watts)
2402	4.75	-3.51	0.00024	1.0
2402	5.25	-3.67	0.000233	1.0
2441	4.75	-3.21	0.000209	1.0
2441	5.25	-3.43	0.00022	1.0
2480	4.75	-3.90	0.000245	1.0
2480	5.25	-4.31	0.00027	1.0

See spectrum analyser plot – Annex I

Notes:

1 Number of hopping channels employed is 79 see annex G.
2 Conducted measurements were performed with a temporary antenna connector provided by the client.
3 For analyser setting see scan data annex I.

Test Method:

1 As per 15.247 and Public Notice DA 00-705.
2 The analyser was centered on a hopping channel with peak hold enabled.
3 Marker to peak function was used to find the peak emission.

The test equipment used for the tests is shown below:

TYPE OF EQUIPMENT	MAKER/ SUPPLIER	MODEL No	SERIAL No	TRL No	ACTUAL EQUIPMENT USED
RECEIVER	ANRITSU	MS2665C	MT26089	479	**X**
RECEIVER	ROHDE & SCHWARZ	ESVS 10	825892/003	UH04	

TRANSMITTER TESTS BLUETOOTH UNIT

TRANSMITTER PEAK OUTPUT POWER EIRP – RADIATED – Part 15.247(b)(1)

Ambient temperature = 24°C(<1GHz),
Relative humidity = 58%(<1GHz),
Conditions = OATS –Radio Lab
Supply voltage = 5Vdc

Channel Frequency (MHz)	Input voltage (Volts)	Transmitter Peak Power Output (dBm)	Transmitter Peak Power Output (Watts)	Limit (Watts)
2402	5	2.92	0.00029	1.0
2441	5	3.64	0.00031	1.0
2480	5	4.63	0.00039	1.0

Notes: 1 Number of hopping channels employed is 79 see annex H.

Test Method:

1 As per Public Notice DA 00-705.
2 Measuring distances 3m.
3 EUT 0.8 metre above ground plane.
4 Emissions maximised by rotation of EUT, on an automatic turntable.
Raising and lowering the receiver antenna between 1m & 4m >30MHz
Horizontal and vertical polarisations, of the receive antenna.
EUT orientation in three orthagonal planes.
Maximum results recorded.
5 EUT was replaced by antenna and signal generator to produce EIRP level.

The test equipment used for the tests is shown below:

TYPE OF EQUIPMENT	MAKER/ SUPPLIER	MODEL No	SERIAL No	TRL No	ACTUAL EQUIPMENT USED
RECEIVER	ANRITSU	MS2665C	MT26089	479	**X**
ANTENNA	EMCO	3115	9010-35810	138	**X**
RANGE 1	TRL	3 METRE	N/A	UH06	**X**
SIGNAL GENERATOR	MARCONI	2042	119388/080	176	**X**
ANTENNA	EMCO	3115	9010-3581	139	**X**

TRANSMITTER TESTS BLUETOOTH UNIT

TRANSMITTER CONDUCTED SPURIOUS EMISSIONS – CONDUCTED – Part 15.247(c)

Ambient temperature = 24°C
Relative humidity = 58%
Conditions = Conducted –Radio Lab
Supply voltage = +5Vdc

Top Channel

Range Frequency (MHz)	Emission Frequency (MHz)	Emission Level	Cable loss	Level (dBm)	Limit (dBm)
30 – 26000	Note 3		-	<-35.38	-15.38

See spectrum analyser scan plots – Annex J

Middle Channel

Range Frequency (MHz)	Emission Frequency (MHz)	Emission Level	Cable loss	Level (dBm)	Limit (dBm)
30 – 26000	Note3		-	<-36.36	-16.36

See spectrum analyser scan plots – Annex J

Bottom Channel

Range Frequency (MHz)	Emission Frequency (MHz)	Emission Level	Cable loss	Level (dBm)	Limit (dBm)
30 – 26000	Note 3		-	<-37.08	-17.08

See spectrum analyser scan plots – Annex J

Hopping at maximum data rate

Range Frequency (MHz)	Emission Frequency (MHz)	Emission Level	Cable loss	Level (dBm)	Limit (dBm)
30 – 26000	Note 3		-	<-34.91	-14.91

See spectrum analyser scan plots – Annex J

Notes:

1 During the scans the unit was operated in the following modes:
Hopping stopped unit operating on lowest channel
Hopping stopped unit operating on mid channel
Hopping sopped unit operating on highest channel
Hopping over all frequencies.
2 Section 15.247(c) states that all spurious emissions measured within a100kHz bandwidth shall be attenuated by at least 20dB below the level of the highest fundamental level measured within a 100kHz bandwidth.
3 Only emissions within 20dB of limit are recorded.

Test Method:

1 As per section 15.247 and Public Notice DA 00-705.
2 Frequency sweeps were performed to check for spurious emissions.
3 Anyemissions discovered were checked for compliance with the limit.

The test equipment used for the tests is shown below:

TYPE OF EQUIPMENT	MAKER/ SUPPLIER	MODEL No	SERIAL No	TRL No	ACTUAL EQUIPMENT USED
RECEIVER	ANRITSU	MS2665C	MT26089	479	**X**
RECEIVER	ROHDE & SCHWARZ	ESVS 10	825892/003	UH04	
RANGE 1	TRL	3 METRE	N/A	UH06	
SPECTRUM ANALYSER	MARCONI	2386/2380	152076/004	UH120	

TRANSMITTER TESTS BLUETOOTH UNIT

TRANSMITTER EMISSIONS – RADIATED – Part 15.247(c) and 15.209

Ambient temperature = 19°C
Relative humidity = 58%
Conditions = Radiated OATS
Supply voltage = +5Vdc

Bottom Channel 30MHz -26000MHz

	Emission Frequency (MHz)	Meas. Rx. (dBuV)	Cable loss (dB)	Ant. Factor	Field Strength (dBµV/m)	Extrap. Factor (dB)	Result (µV/m)	Limit (µV/m)
30MHz – 88MHz Restricted band	Note 7							100
88MHz – 216MHz Restricted band	Note 7							150
216MHz – 960MHz Restricted band	Note 7							200
960MHz – 1GHz Restricted band	Note 7							500
1GHz – 26GHz Restricted band	Note 7							500
30MHz -26GHz	Note 7							-20dBc

Middle Channel 30MHz -26000MHz

	Emission Frequency (MHz)	Meas. Rx. (dBuV)	Cable loss (dB)	Ant. Factor	Field Strength (dBµV/m)	Extrap. Factor (dB)	Result (µV/m)	Limit (µV/m)
30MHz – 88MHz Restricted band	Note 7							100
88MHz – 216MHz Restricted band	Note 7							150
216MHz – 960MHz Restricted band	Note 7							200
960MHz – 1GHz Restricted band	Note 7							500
1GHz – 26GHz Restricted band	Note 7							500
30MHz -26GHz	Note 7							-20dBc

TRANSMITTER TESTS BLUETOOTH UNIT

TRANSMITTER EMISSIONS cont. – RADIATED – Part 15.247(c) and 15.209

Top Channel 30MHz -26000MHz

	Emission Frequency (MHz)	Meas. Rx. (dBuV)	Cable loss (dB)	Ant. Factor	Field Strength (dBµV/m)	Extrap. Factor (dB)	Result (µV/m)	Limit (µV/m)
30MHz – 88MHz Restricted band	Note 7							100
88MHz – 216MHz Restricted band	Note 7							150
216MHz – 960MHz Restricted band	Note 7							200
960MHz – 1GHz Restricted band	Note 7							500
1GHz – 26GHz Restricted band	Note 7							500
30MHz -26GHz	Note 7							-20dBc

Hopping at maximum data rate 30MHz -26000MHz

	Emission Frequency (MHz)	Meas. Rx. (dBuV)	Cable loss (dB)	Ant. Factor	Field Strength (dBµV/m)	Extrap. Factor (dB)	Result (µV/m)	Limit (µV/m)
30MHz – 88MHz Restricted band	Note 7							100
88MHz – 216MHz Restricted band	Note 7							150
216MHz – 960MHz Restricted band	Note 7							200
960MHz – 1GHz Restricted band	Note 7							500
1GHz – 26GHz Restricted band	Note 7							500
30MHz -26GHz	Note 7							-20dBc

Notes:

1 During the scans the unit was operated in the following modes:
Hopping stopped unit operating on lowest channel
Hopping stopped unit operating on mid channel
Hopping sopped unit operating on highest channel
Hopping over all frequencies,
2 R indicates frequency with a restricted band.
3 Initial pre scans were performed see Annex L for plots.
4 Emissions above 1GHz were measured with both a peak and average detectors.
5 Measurements <1GHz were performed at 3 meters.
6 Measurements >1GHz were initial performed at 0.3metres. This distance was increased if sensitivity of analyser allowed.
7 Only emissions with in 20dB of limit are recorded.

Test Method:

1 As per section 15.247 and Public Notice DA 00-705.
2 Measuring distances as Notes 5 to 6 above.
3 EUT 0.8 metre above ground plane.
4 Emissions maximised by rotation of EUT, on an automatic turntable.
Raising and lowering the receiver antenna between 1m & 4m >30MHz.
Horizontal and vertical polarisations, of the receive antenna.
EUT orientation in three orthagonal planes. Maximum results recorded.

The test equipment used for the tests is shown below:

TYPE OF EQUIPMENT	MAKER/ SUPPLIER	MODEL No	SERIAL No	TRL No	ACTUAL EQUIPMENT USED
RECEIVER	ROHDE & SCHWARZ	ESHS 10	830051/001	UH03	**X**
RECEIVER	ROHDE & SCHWARZ	ESVS 10	825892/003	UH04	
RANGE 1	TRL	3 METRE	N/A	UH06	**X**
SPECTRUM ANALYSER	MARCONI	2386/2380	152076/004	UH120	

TRANSMITTER TESTS BLUETOOTH UNIT

TRANSMITTER BAND EDGE EMISSIONS – CONDUCTED – Part 15.247(c)

Ambient temperature = 24°C
Relative humidity = 58%
Conditions = Conducted –Radio Lab
Supply voltage = +5Vdc

Test Result

Measure as compliant see analyser plots

Notes:

1 The EUT was set in a hopping mode using all hopping channels.
2 A temporary antenna connector was used to take the measurement.
3 See Annex K for analysers plots.

Test Method:

1 As per section 15.247 and Public Notice DA 00-705.
2 A plot covering the lowest channel and band edge was taken. A marker was set on the peak emission of the lowest channel. The delta marker function was then used to measure the highest out of band emissions. (If no peaks exist outside the band the level is taken at the band edge).
3 A plot covering the highest channel and band edge was taken. A marker was set on the peak emission of the highest channel. The delta marker function was then used to measure the highest out of band emissions. (If no peaks exist outside the band the level is taken at the band edge).

The test equipment used for the tests is shown below:

TYPE OF EQUIPMENT	MAKER/ SUPPLIER	MODEL No	SERIAL No	TRL No	ACTUAL EQUIPMENT USED
RECEIVER	ANRITSU	MS2665C	MT26089	479	**X**
RECEIVER	ROHDE & SCHWARZ	ESVS 10	825892/003	UH04	
RANGE 1	TRL	3 METRE	N/A	UH06	
RECEIVER	ANRITSU	MS2665C	MT26089	479	

TRANSMITTER TESTS BLUETOOTH UNIT

TRANSMITTER BAND EDGE EMISSIONS – RADIATED – Part 15.247(c)

Ambient temperature	=	24^{o}C
Relative humidity	=	58%
Conditions	=	Conducted –Radio Lab
Supply voltage	=	+5Vdc

Test Result

Measured as compliant see analyser plots

Notes:

1 The EUT was set in a hopping mode using all hopping channels.

2 See Annex L for analysers plots.

Test Method:

1 As per section 15.247 and Public Notice DA 00-705.
2 A plot covering the lowest channel and band edge was taken. A marker was set on the peak emission of the lowest channel. The delta marker function was then used to measure the highest out of band emissions. (If no peaks exist outside the band the level is taken at the band edge).
3 A plot covering the highest channel and band edge was taken. A marker was set on the peak emission of the highest channel. The delta marker function was then used to measure the highest out of band emissions. (If no peaks exist outside the band the level is taken at the band edge).

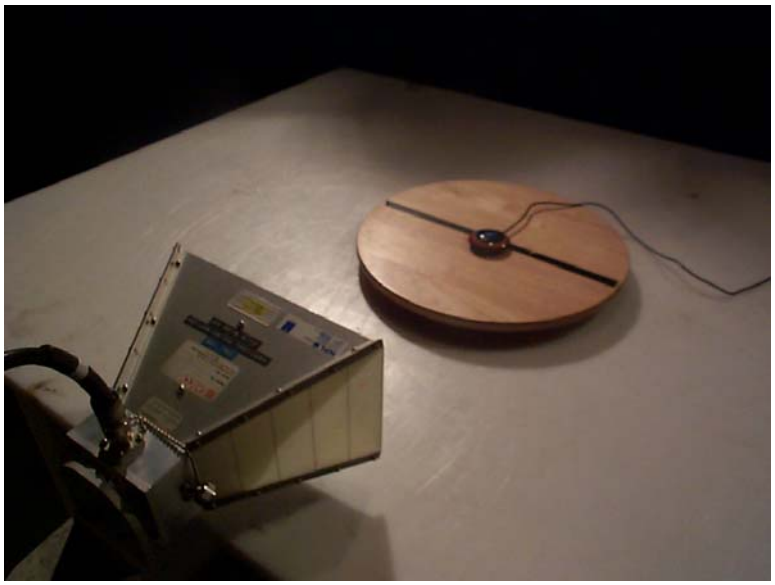
The test equipment used for the tests is shown below:

TYPE OF EQUIPMENT	MAKER/ SUPPLIER	MODEL No	SERIAL No	TRL No	ACTUAL EQUIPMENT USED
RECEIVER	ROHDE & SCHWARZ	ESHS 10	830051/001	UH03	**X**
RECEIVER	ROHDE & SCHWARZ	ESVS 10	825892/003	UH04	
RANGE 1	TRL	3 METRE	N/A	UH06	**X**
RECEIVER	ANRITSU	MS2665C	MT26089	479	**X**

ANNEX A

PHOTOGRAPHS

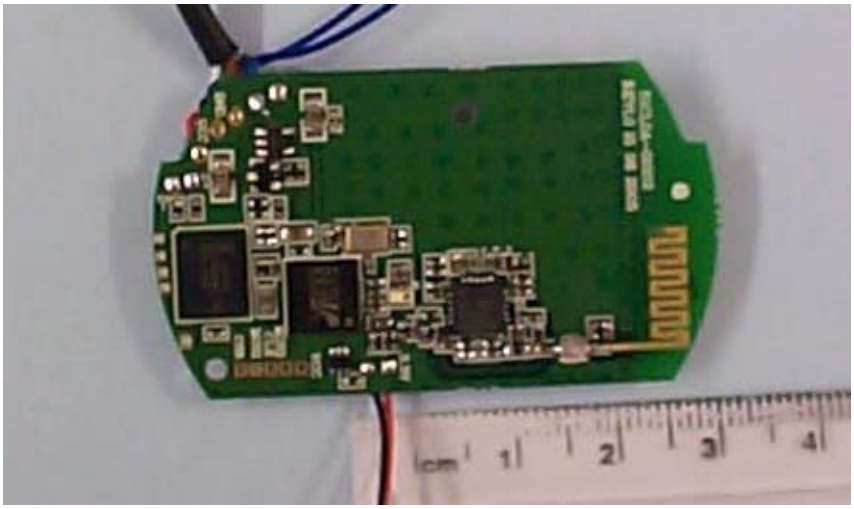
PHOTOGRAPH No. 1 **TEST SETUP**



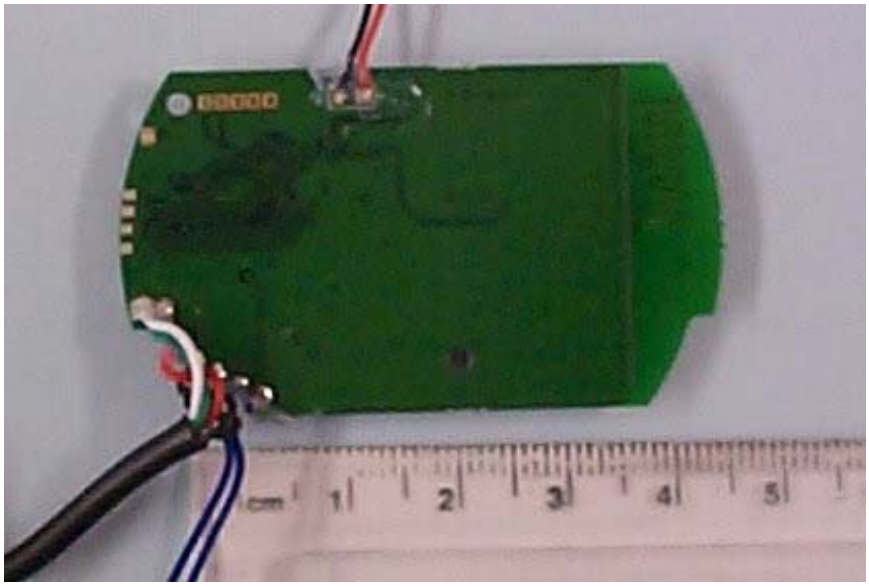
PHOTOGRAPH No. 2 **FRONT VIEW**

PHOTOGRAPH No. 3 **BACK VIEW**

PHOTOGRAPH No. 4 **TRANSMITTER PCB TOP**



PHOTOGRAPH No. 5 **TRANSMITTER PCB BOTTOM**



PHOTOGRAPH No. 6 **PCB 1 TOP**

PHOTOGRAPH No. 7 **PCB 1 BOTTOM**

ANNEX B

APPLICANT'S SUBMISSION OF DOCUMENTATION LIST

APPLICANT'S SUBMISSION OF DOCUMENTATION LIST

a.	TCB	-	APPLICATION	[X]
		-	FEE	[X]
b.	AGENT'S LETTER OF AUTHORISATION	-		[X]
c.	MODEL(s) vs IDENTITY	-		[ ]
d.	ALTERNATIVE TRADE NAME DECLARATION(s)	-		[X]
e.	LABELLING	-	PHOTOGRAPHS	[X]
		-	DECLARATION	[ ]
		-	DRAWINGS	[X]
f.	TECHNICAL DESCRIPTION	-		[X]
g.	BLOCK DIAGRAMS	-	Tx	[X]
		-	Rx	[ ]
		-	PSU	[ ]
		-	AUX	[ ]
h.	CIRCUIT DIAGRAMS	-	Tx	[X]
		-	Rx	[ ]
		-	PSU	[ ]
		-	AUX	[ ]
i.	COMPONENT LOCATION	-	Tx	[X]
		-	Rx	[ ]
		-	PSU	[ ]
		-	AUX	[ ]
j.	PCB TRACK LAYOUT	-	Tx	[X]
		-	Rx	[ ]
		-	PSU	[ ]
		-	AUX	[ ]
k.	BILL OF MATERIALS	-	Tx	[X]
		-	Rx	[ ]
		-	PSU	[ ]
		-	AUX	[ ]
l.	USER INSTALLATION / OPERATING INSTRUCTIONS	-		[X]

ANNEX C

EQUIPMENT CALIBRATION DETAILS

TRL Number	Equipment Type	Manufacturer	Last Cal Calibration	Calibration Period
UH006	3m Range ERP CAL	TRL	01/03/05	12
UH028	Log Periodic Ant	Schwarbeck	28/04/05	24
UH029	Bicone Antenna	Schwarbeck	27/04/05	24
UH041	Multimeter	AVOmeter	14/12/04	12
UH120	Spectrum Analyser	Marconi	15/03/05	12
UH122	Oscilloscope	Tektronix	07/06/05	24
UH162	ERP Cable Cal	TRL	23/05/05	12
UH179	Power Sensor	Marconi	14/12/04	12
UH228	Power Sensor	Marconi	17/01/05	12
UH253	1m Cable N type	TRL	10/01/05	12
UH254	1m Cable N type	TRL	10/01/05	12
UH265	Notch filer	Telonic	24/06/05	12
L005	CMTA	R&S	22/10/04	12
L007	Loop Antenna	R&S	29/03/05	24
L138	1-18GHz Horn	EMCO	15/04/05	24
L139	1-18GHz Horn	EMCO	03/05/05	24
L176	Signal Generator	Marconi	31/01/05	12
L193	Bicone Antenna	Chase	12/10/03	24
L203	Log Periodic Ant	Chase	21/10/03	24
L254	Signal Generator	Marconi	13/12/04	12
L280	18GHz Cable	Rosenberger	10/01/05	12
L343	CCIR Noise Filter	TRL	07/06/05	12
L426	Temperature Indicator	Fluke	14/12/04	12
L478	Signal Generator	R&S	19/05/04	12
L479	Analyser	Anritsu	05/10/04	12
L552	Signal Generator	Agilent	25/04/05	12

ANNEX D

POWER LINE CONDUCTION

Powerline Conduction

11 Oct 2005 09:23

150kHz - 30MHz

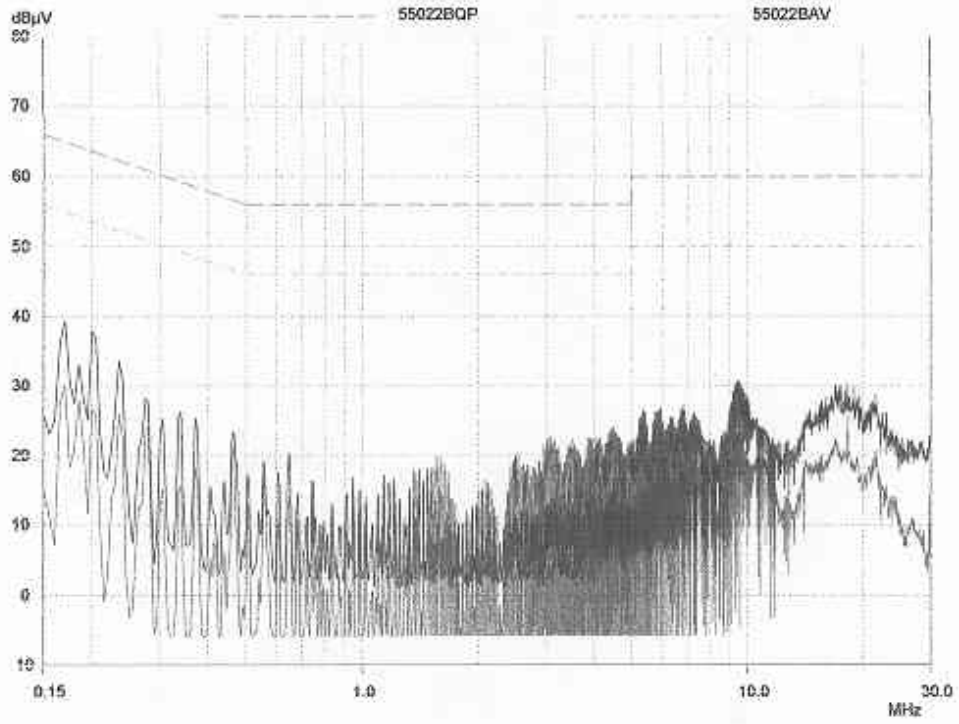
EUT:	Dongle and PC
Manuf:	Saitek
Op Cond:	LISN UH195, cable UH21 & Receiver UH03
Operator:	J charters
Test Spec:	EN55022 Class B (or Variant)
Comment:	Live

Scan Settings (1 Range)

Frequencies			Receiver Settings					
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp	OpRge
150kHz	30MHz	5kHz	10kHz	PK+AV	50msec	Auto	OFF	60dB

Transducer	No.	Start	Stop	Name
	1	150kHz	30MHz	UH21

Prescan Measurement:		
	Detectors:	X PK / + AV
	Meas Time:	see scan settings
	Subranges:	25
	Acc Margin:	20 dB



PAGE 1

Powerline Conduction

11 Oct 2005 09:07

150kHz - 30MHz

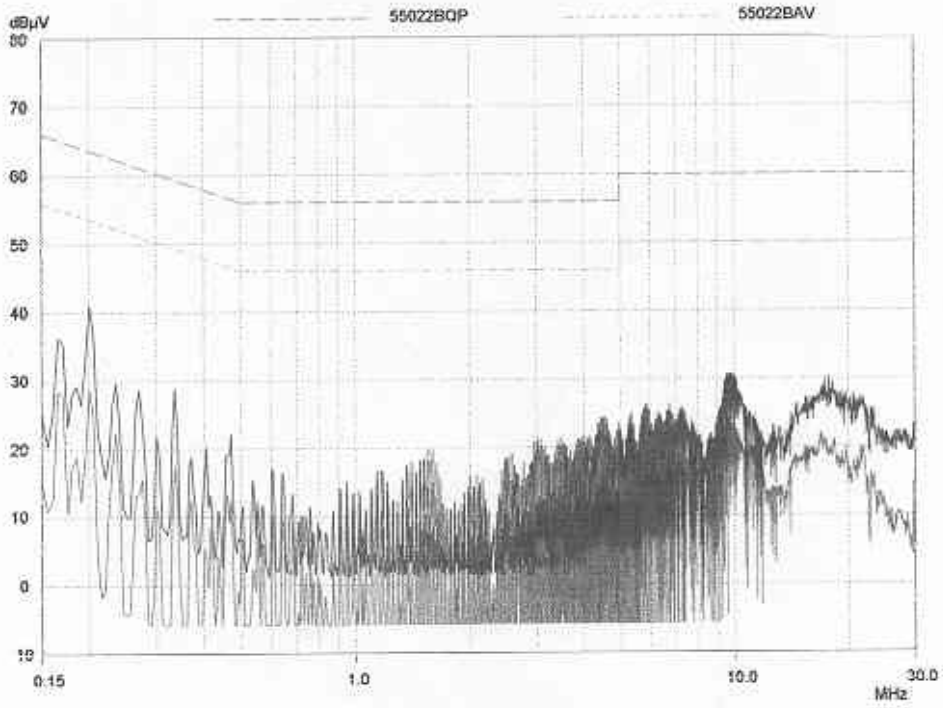
EUT:	Dongle and PC
Manuf:	Seitek
Op Cond:	LISN UH195, cable UH21 & Receiver UH03
Operator:	J charters
Test Spec:	EN55022 Class B (or Variant)
Comment:	Neutral

Scan Settings (1 Range)

Frequencies			Receiver Settings					
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp	OpRge
150kHz	30MHz	5kHz	10kHz	PK+AV	50msec	Auto	OFF	60dB

Transducer	No.	Start	Stop	Name
	1	150kHz	30MHz	UH21

Prescan Measurement:		
	Detectors:	X PK / + AV
	Meas Time:	see scan settings
	Subranges:	25
	Acc Margin:	20 dB

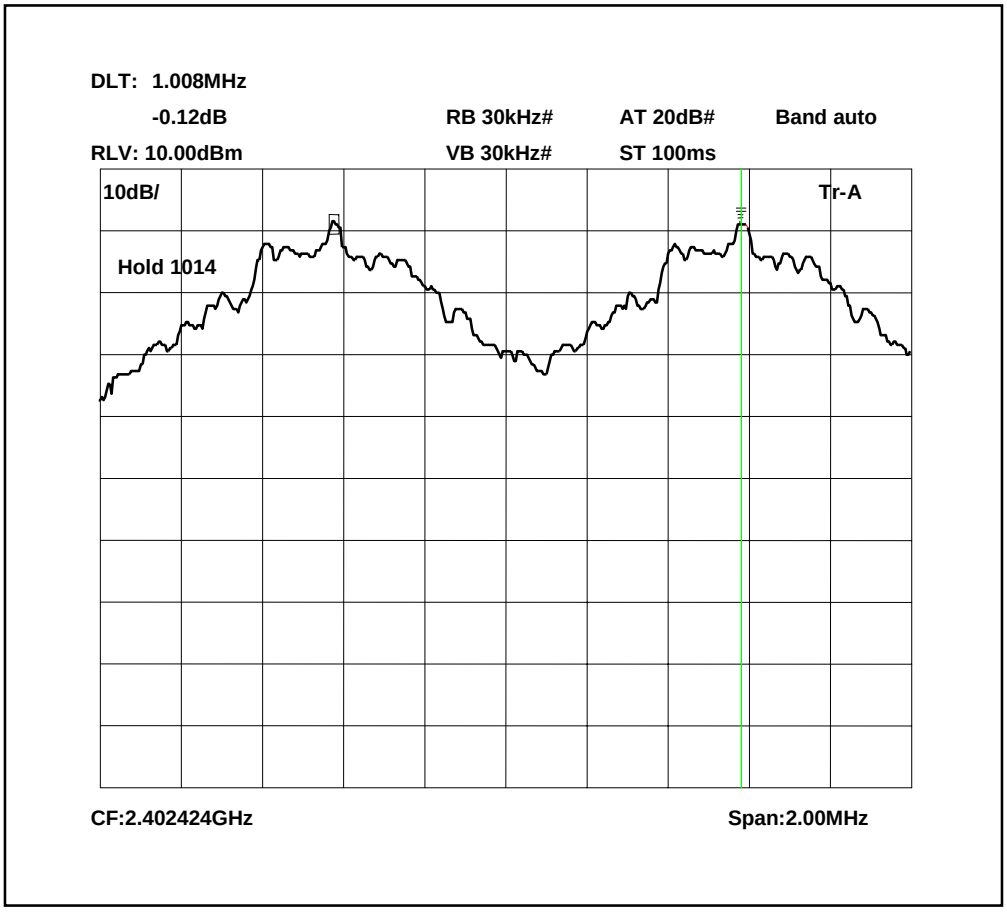


PAGE 1

ANNEX E

CARRIER FREQUENCY SEPARATION

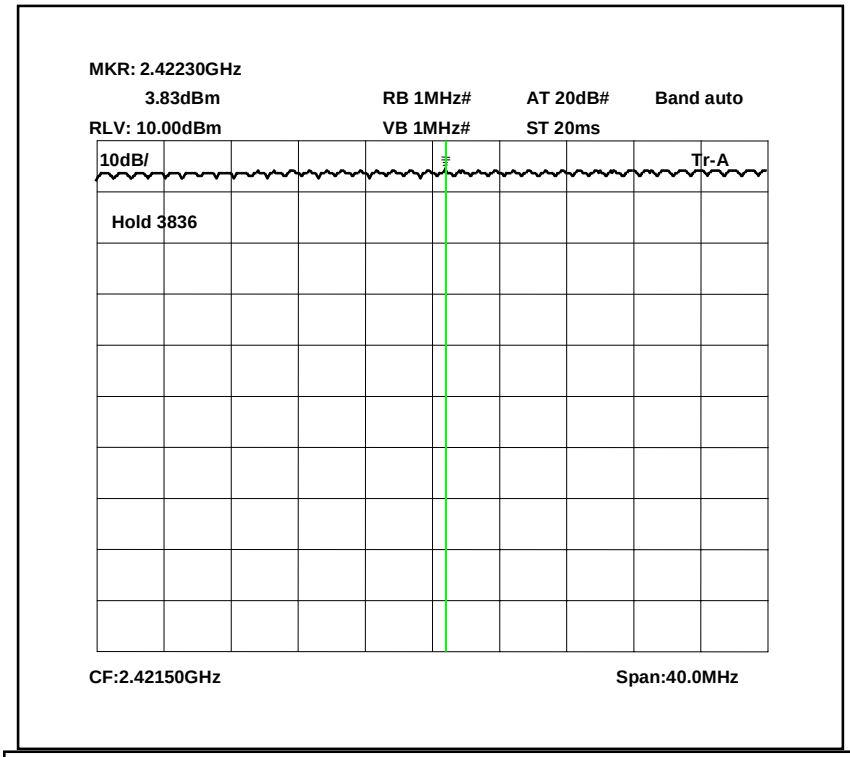
BLUETOOTH

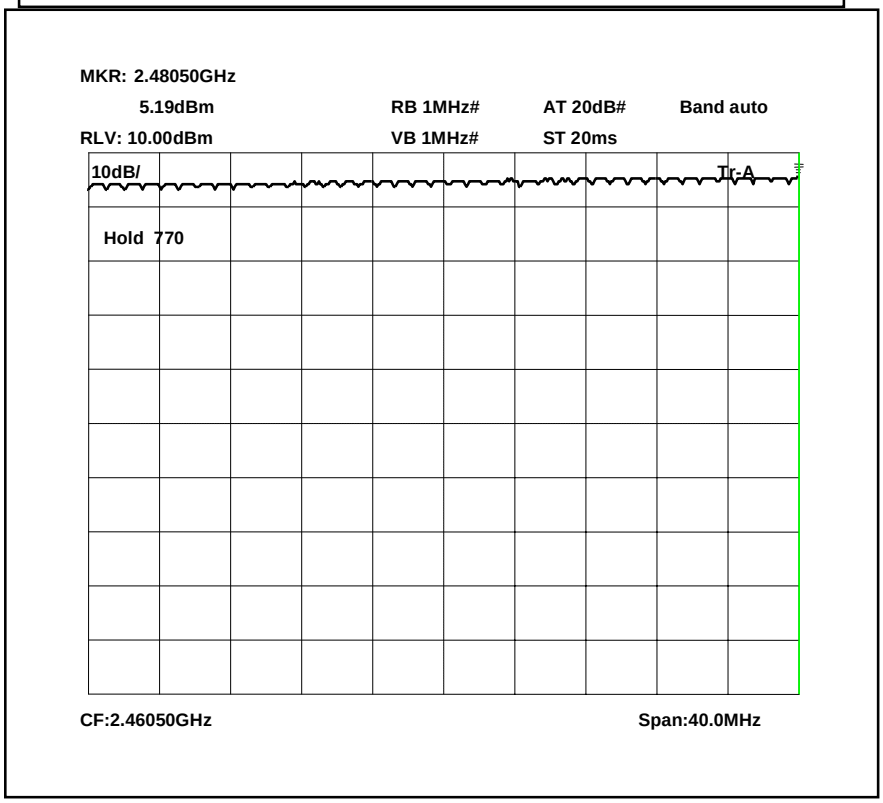

DLT: 1.008MHz
-0.12dB
RB 30kHz#
AT 20dB#
Band auto
RLV: 10.00dBm
VB 30kHz#
ST 100ms
10dB/
Tr-A
Hold 1014
CF:2.402424GHz
Span:2.00MHz

ANNEX F

NUMBER OF HOPPING CHANNEL

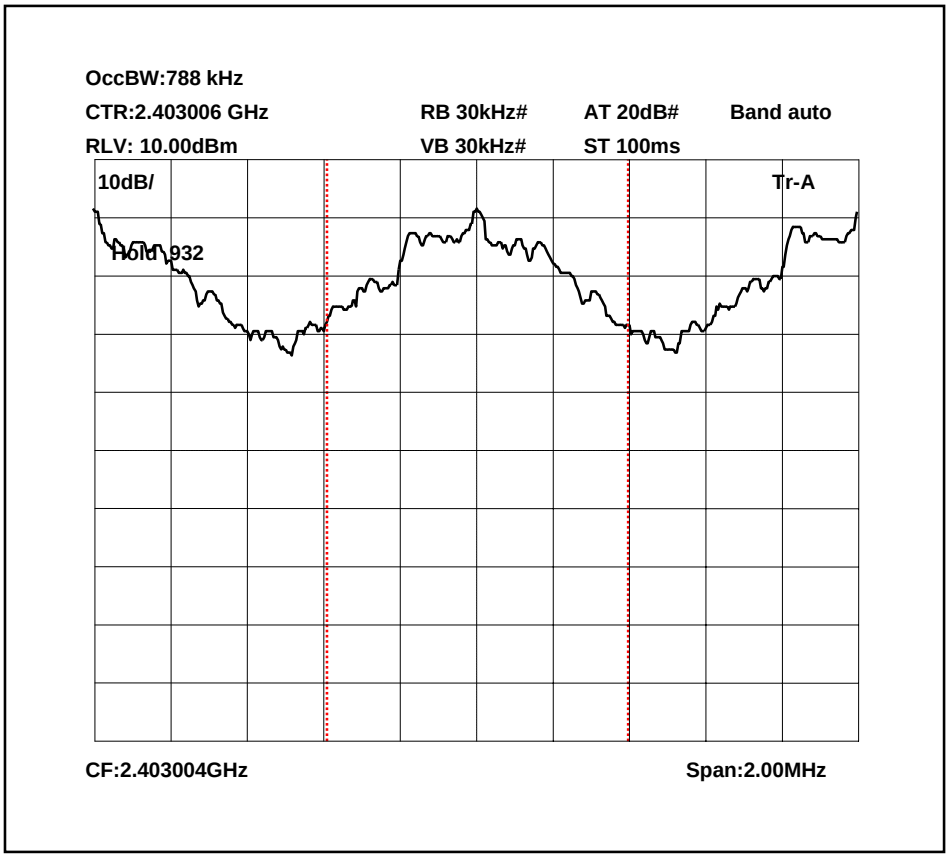
BLUETOOTH


MKR: 2.42230GHz
3.83dBm
RB 1MHz#
AT 20dB#
Band auto
RLV: 10.00dBm
VB 1MHz#
ST 20ms
10dB/
Tr-A
Hold 3836
CF:2.42150GHz
Span:40.0MHz


MKR: 2.48050GHz
5.19dBm
RB 1MHz#
AT 20dB#
Band auto
RLV: 10.00dBm
VB 1MHz#
ST 20ms
10dB/
Tr-A
Hold 770
CF:2.46050GHz
Span:40.0MHz

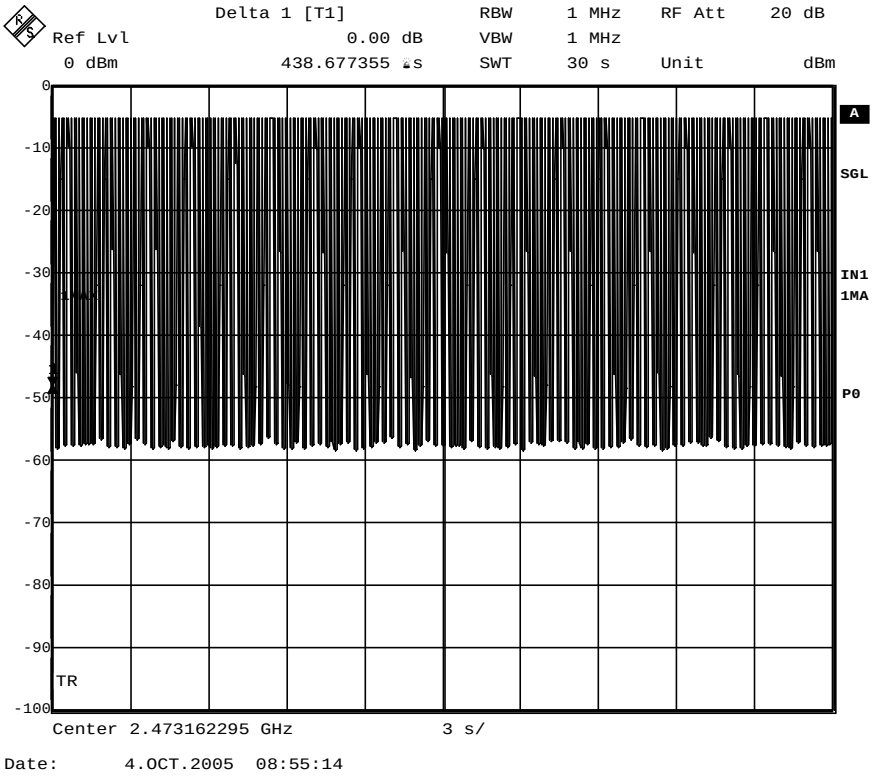
ANNEX G

20dB BANDWIDTH

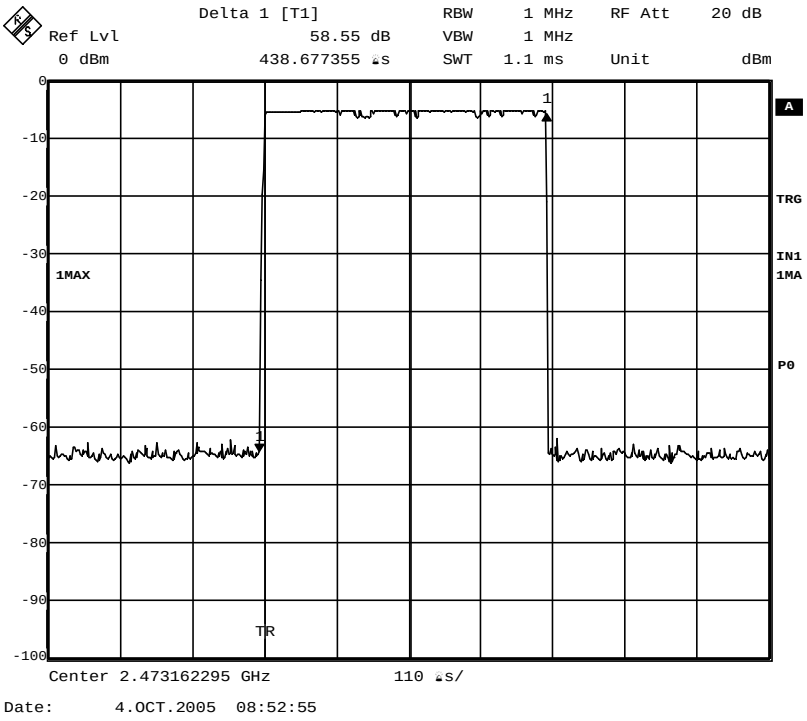

OccBW:788 kHz
CTR:2.403006 GHz
RB 30kHz#
AT 20dB#
Band auto
RLV: 10.00dBm
VB 30kHz#
ST 100ms
10dB/
Tr-A
Hold 932
CF:2.403004GHz
Span:2.00MHz

ANNEX H

AVERAGE TIME OF OCCUPANCY



Number of transmissions made within 30 seconds

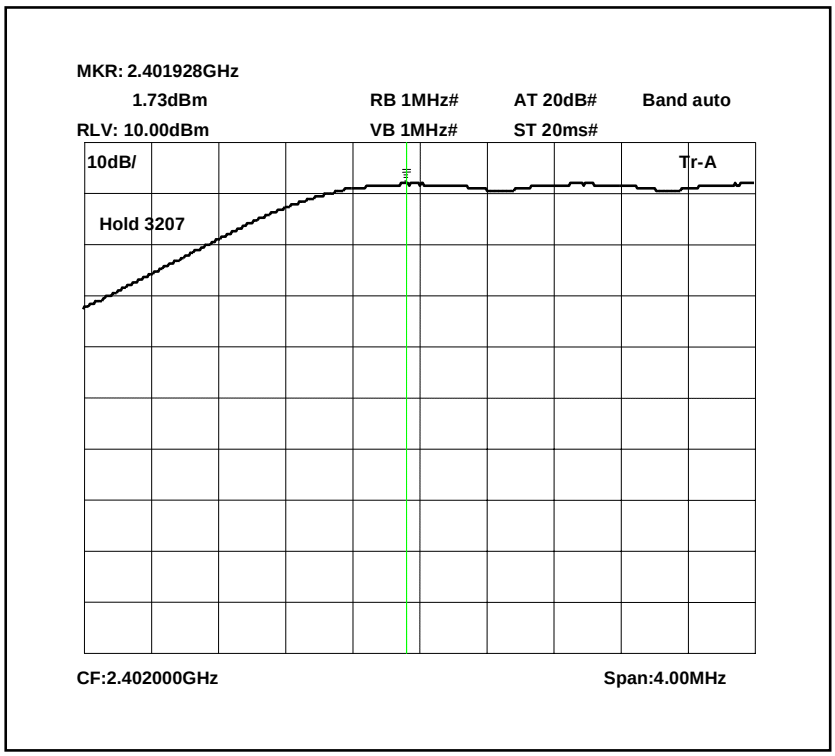


Length of one packet

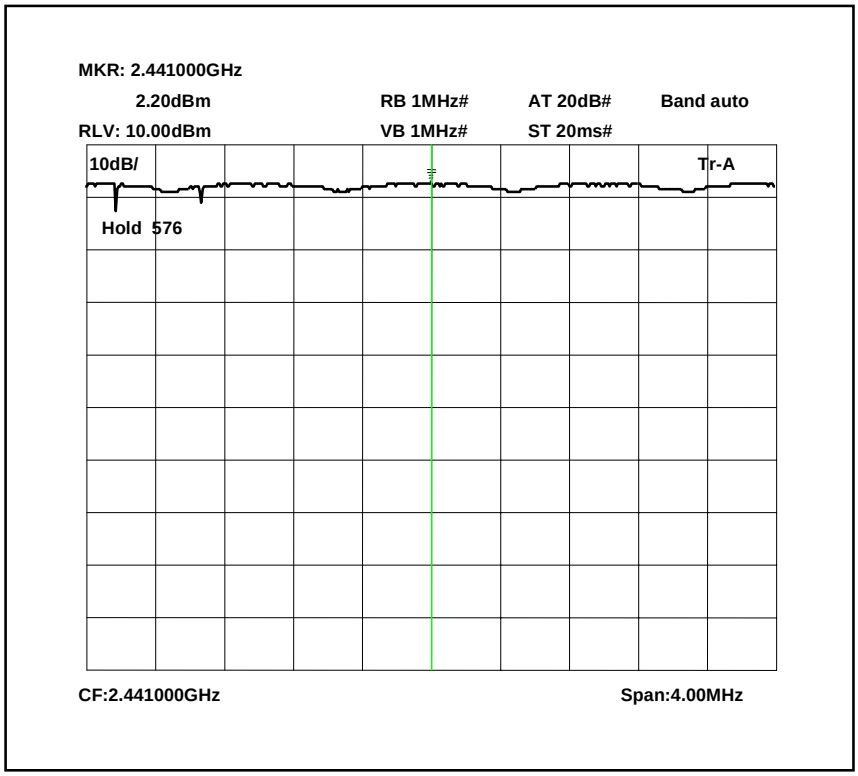
ANNEX I

PEAK POWER CONDUCTED

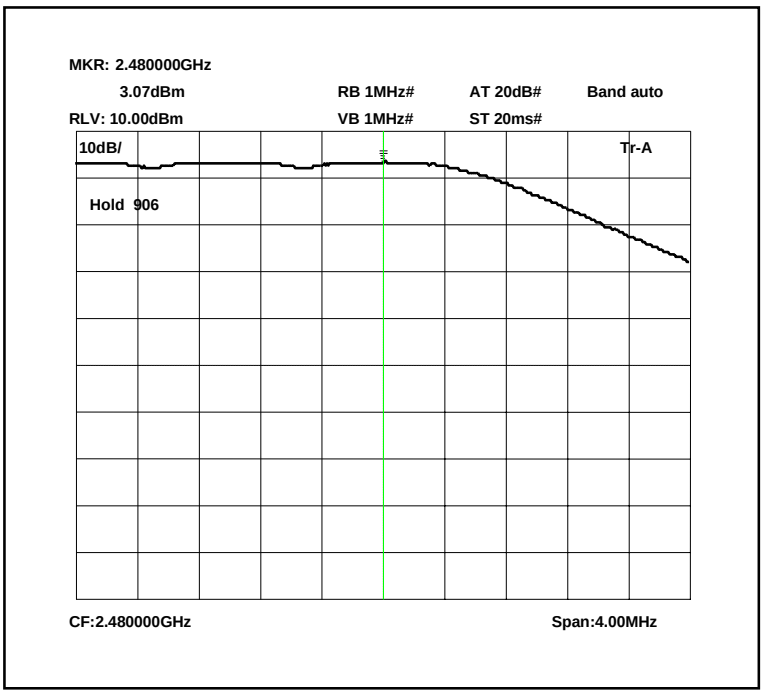
BLUETOOTH



PEAK POWER LOW CHANNEL



PEAK POWER MID CHANNEL

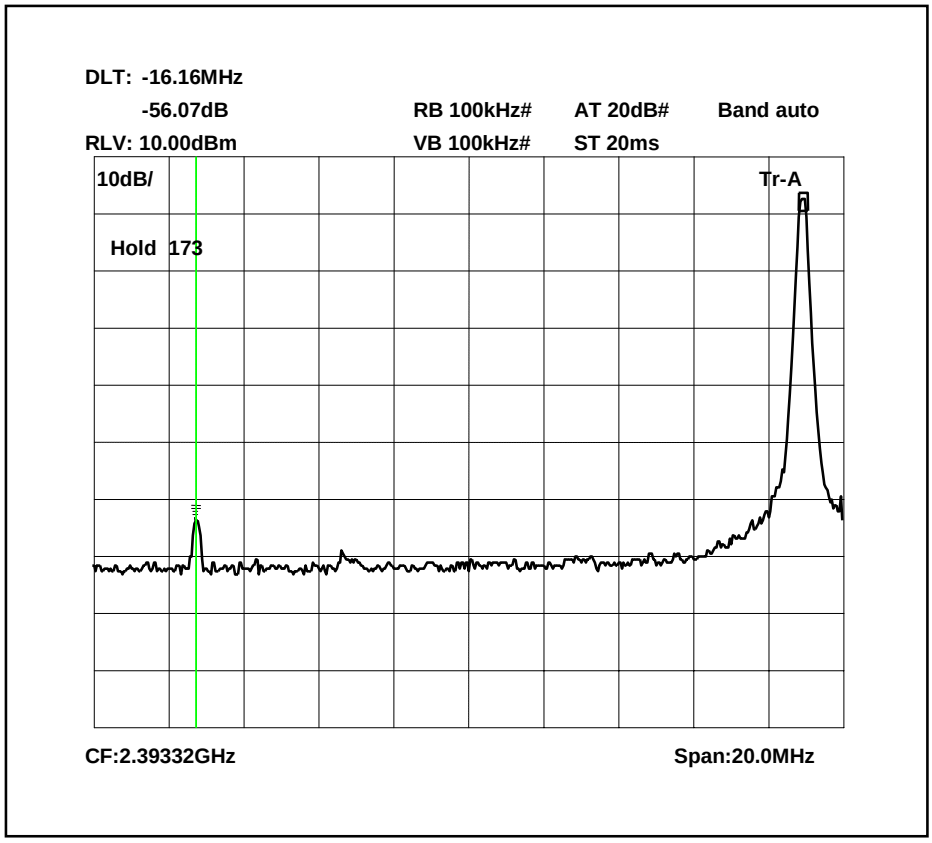


PEAK POWER HIGH CHANNEL

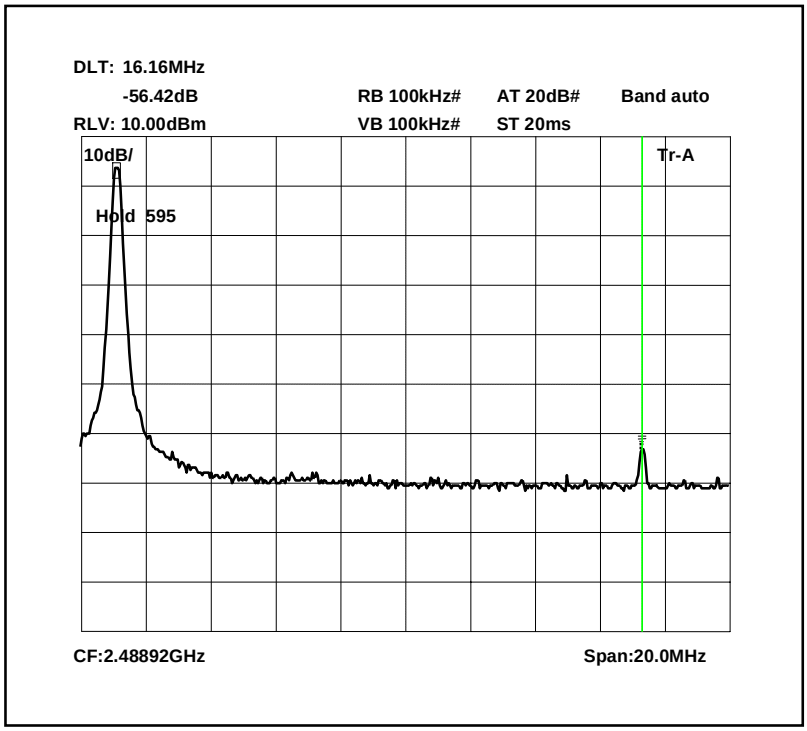
ANNEX J

CONDUCTED SPURIOUS EMISSIONS

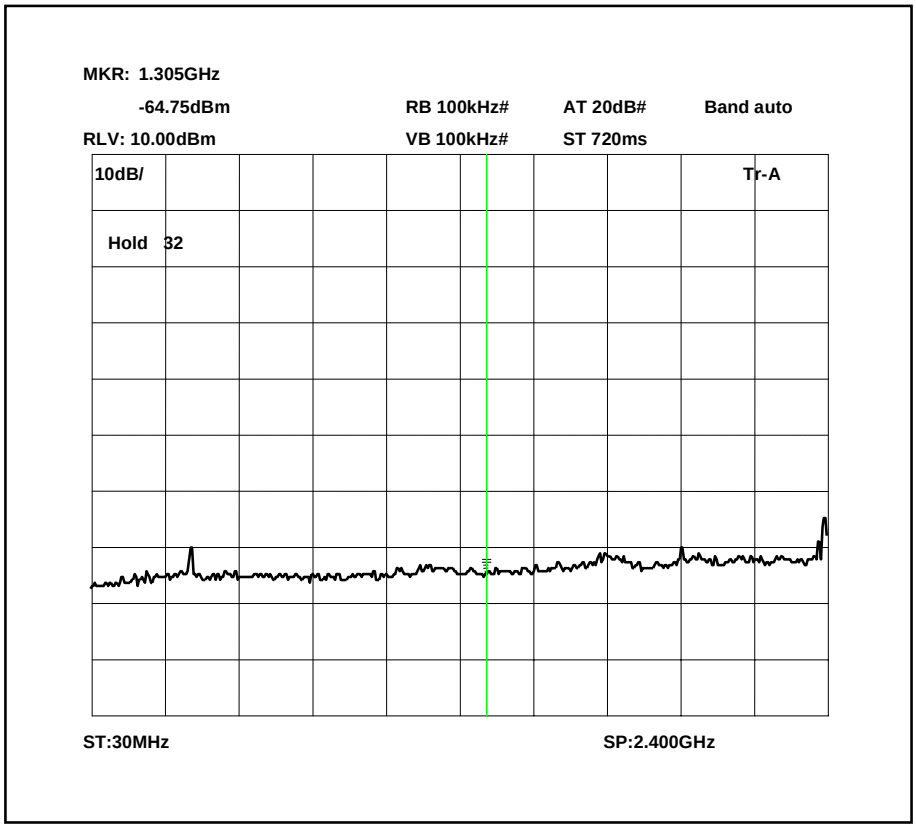
BLUETOOTH



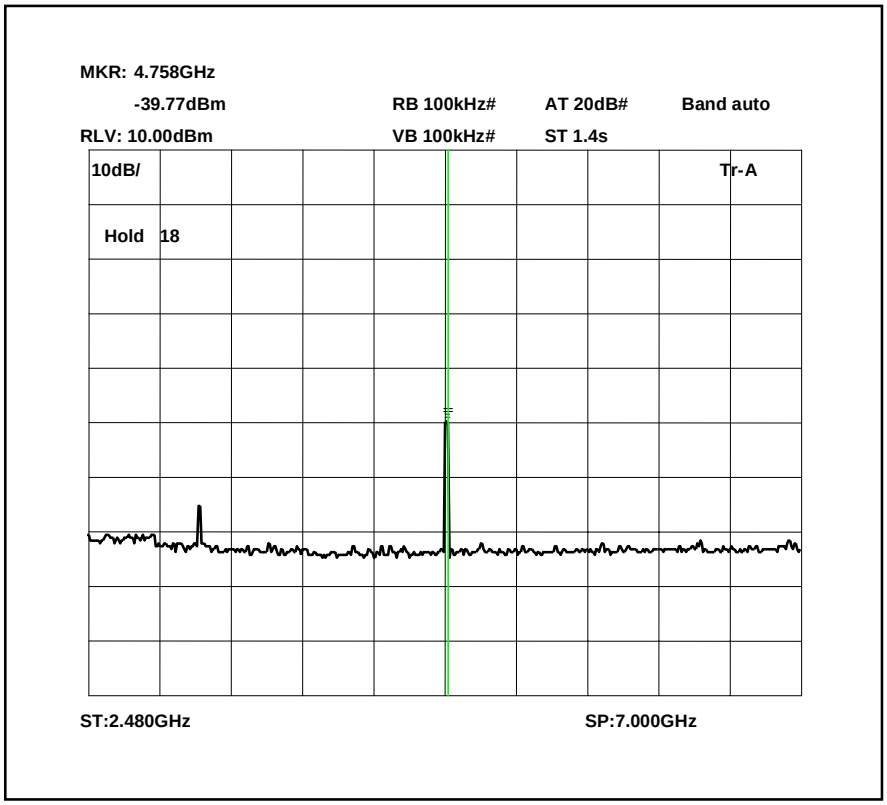
Spurious Emissions Bottom Channel CW Band-edge



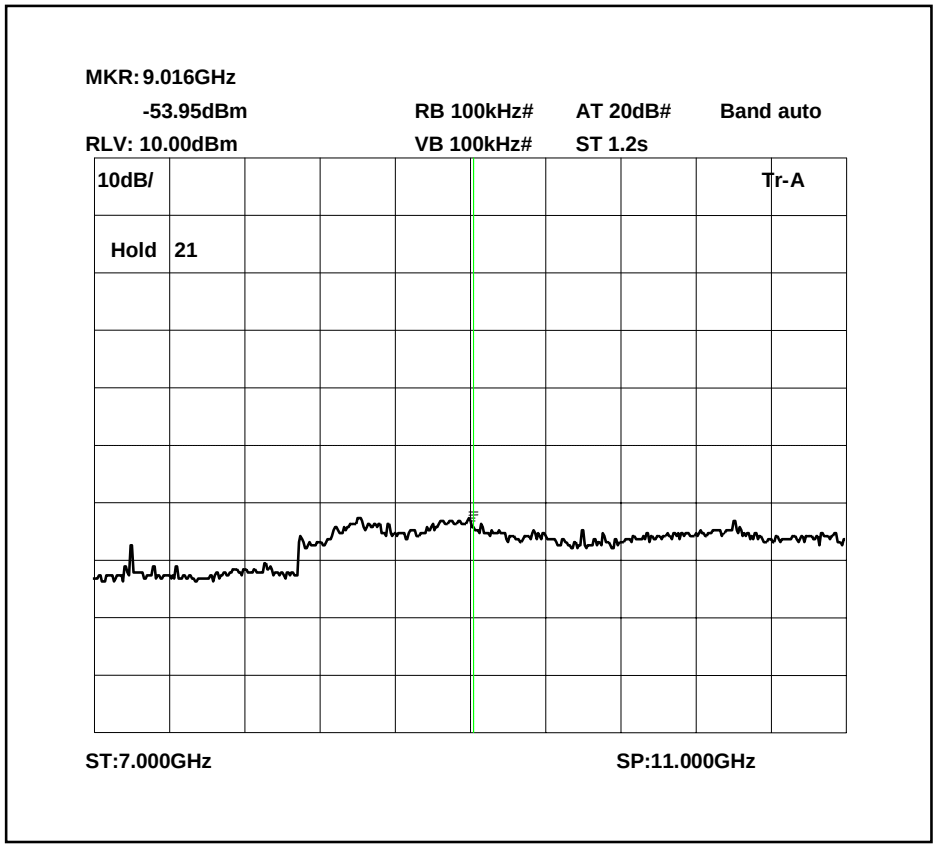
Spurious Emissions Bottom Channel CW in Band



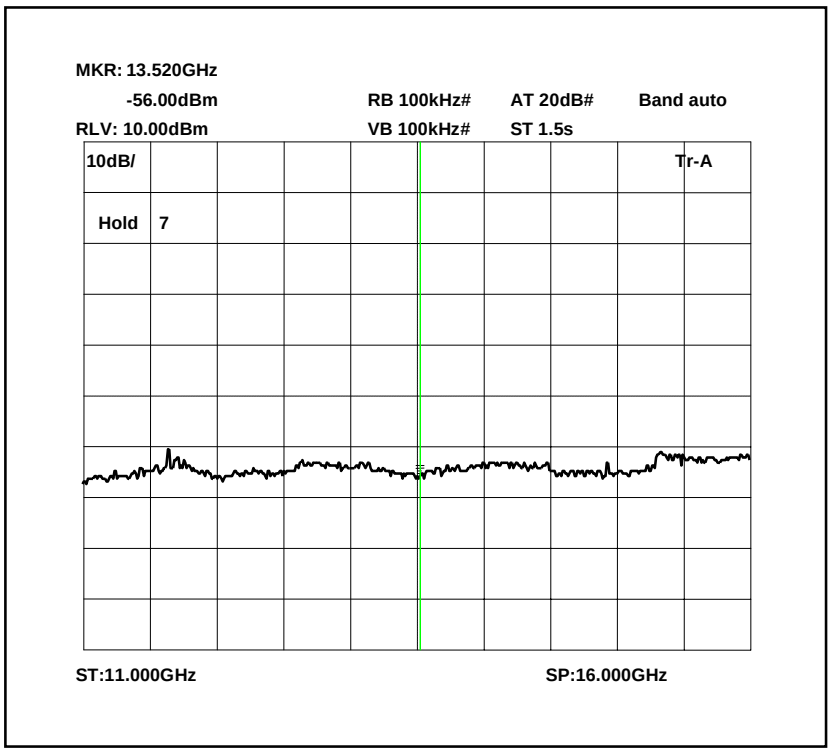
Spurious Emissions Bottom Channel 30MHz - 2.4GHz



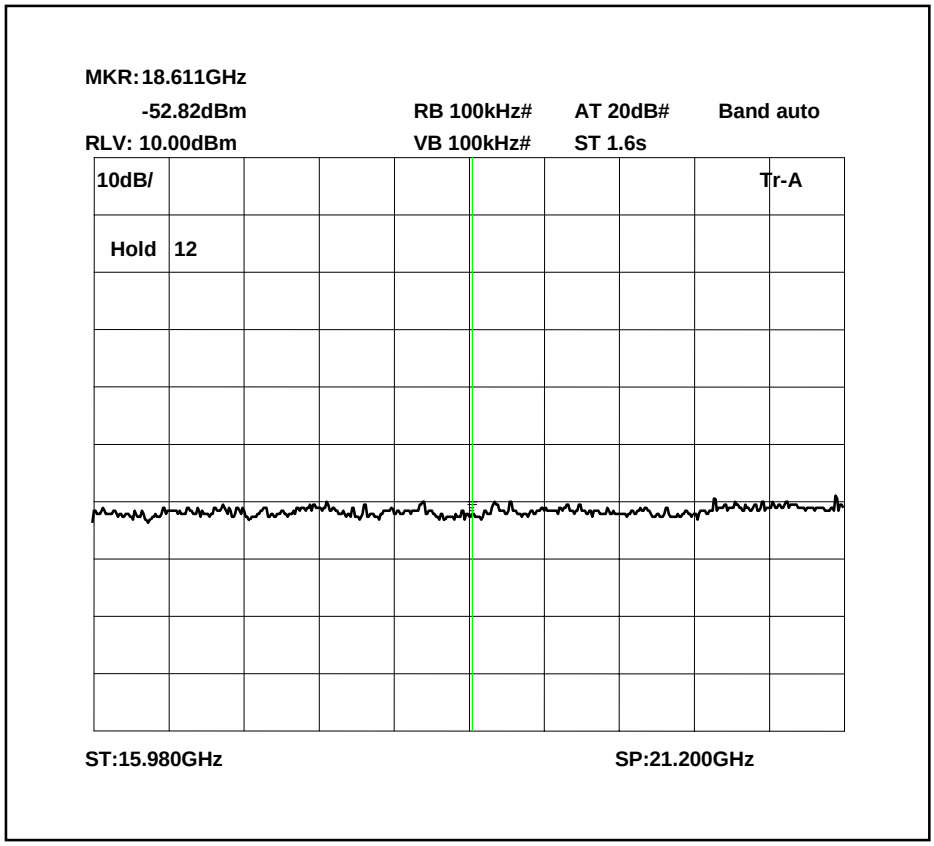
Spurious Emissions Bottom Channel 2.4835GHz – 7GHz



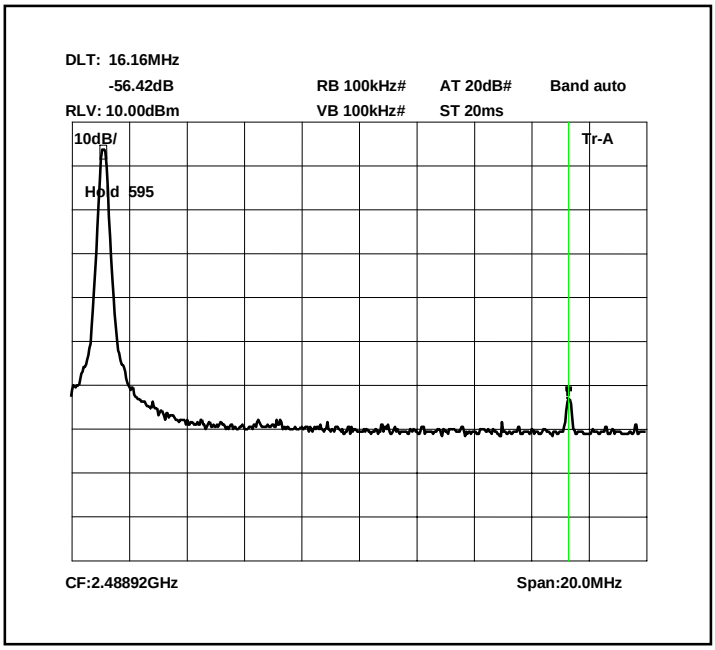
Spurious Emissions Bottom Channel CW 7GHz – 11GHz



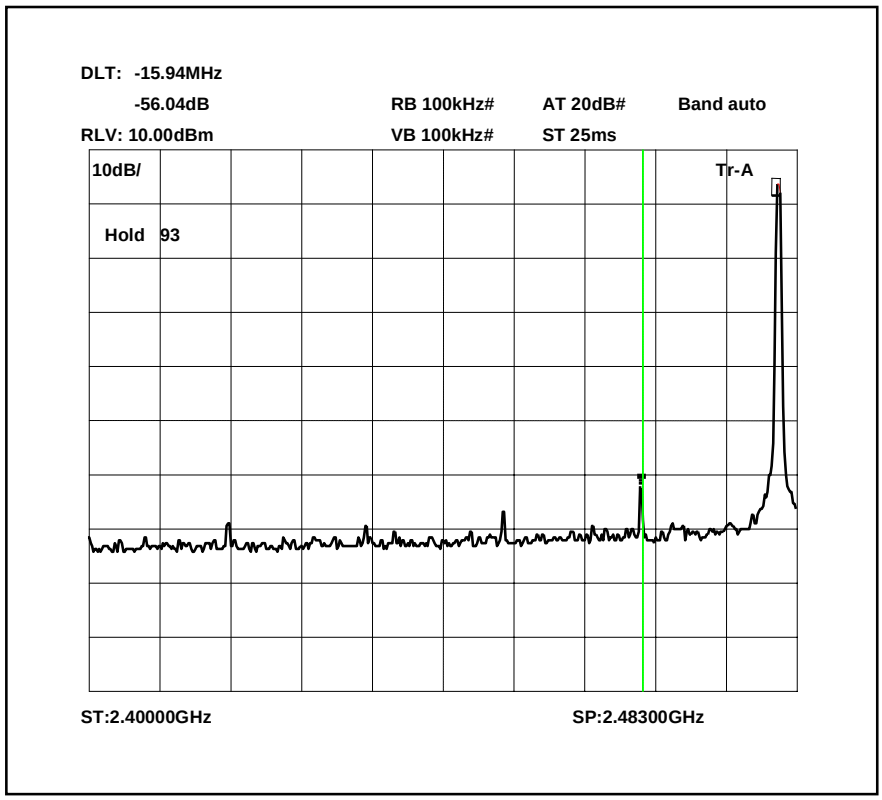
Spurious Emissions Bottom Channel CW 11GHz -16GHz



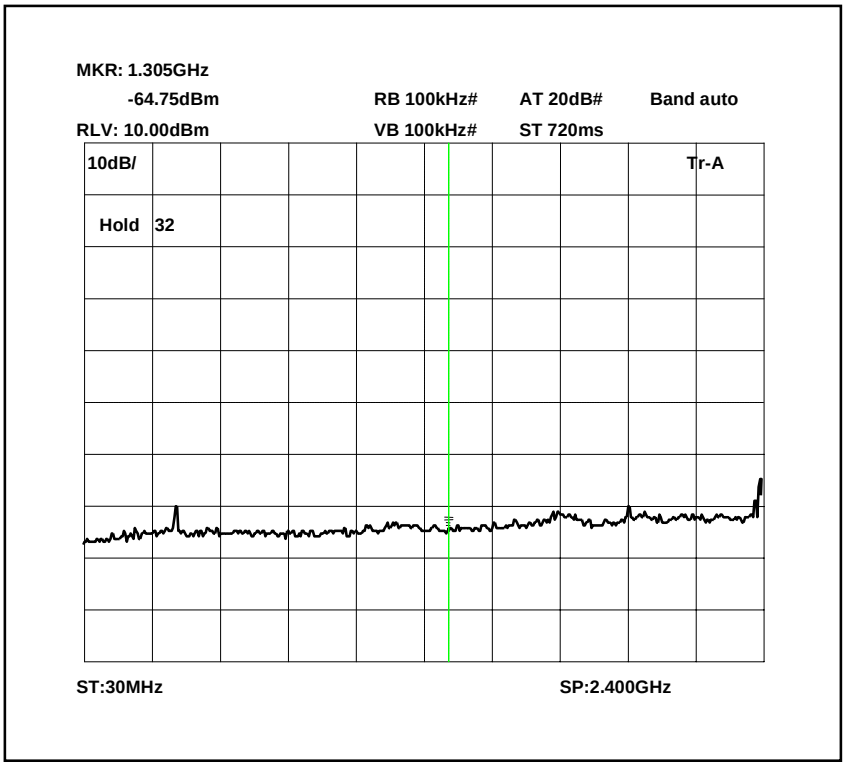
Spurious Emissions Bottom Channel CW 16GHz -22GHz



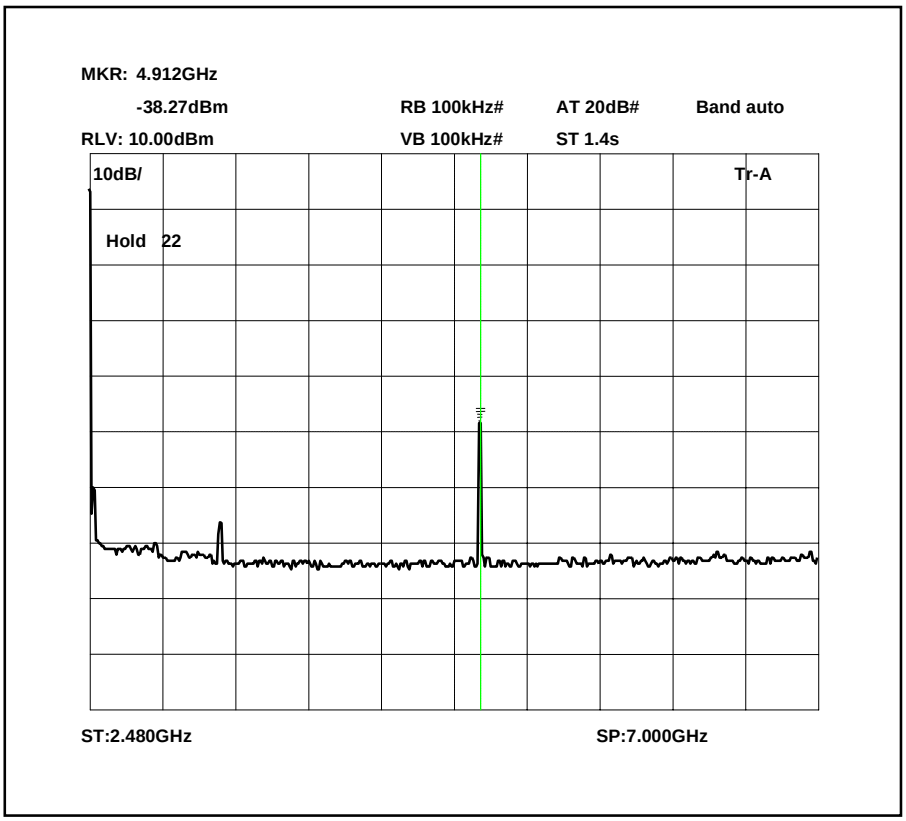
Spurious Emissions Top Channel CW Band-edge



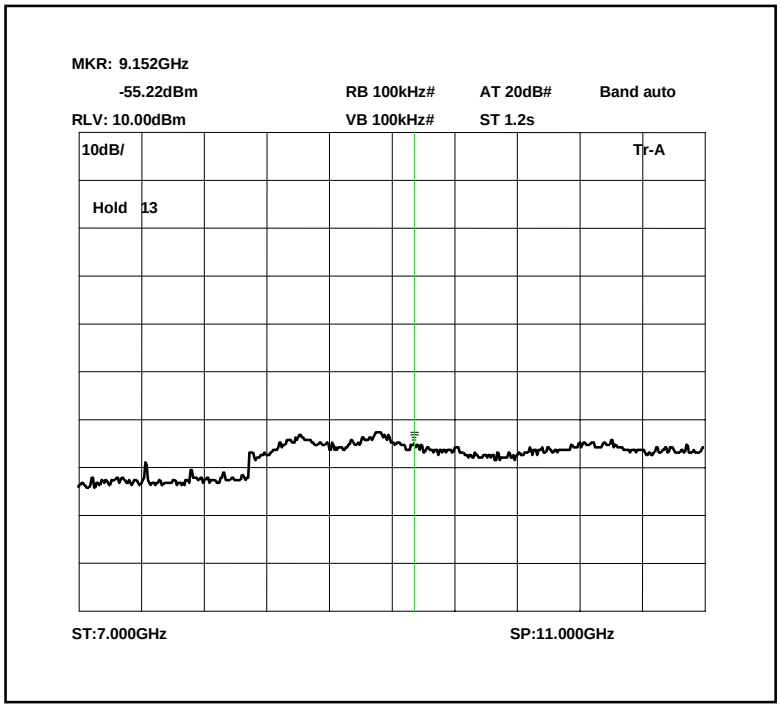
Spurious Emissions Top Channel CW In Band



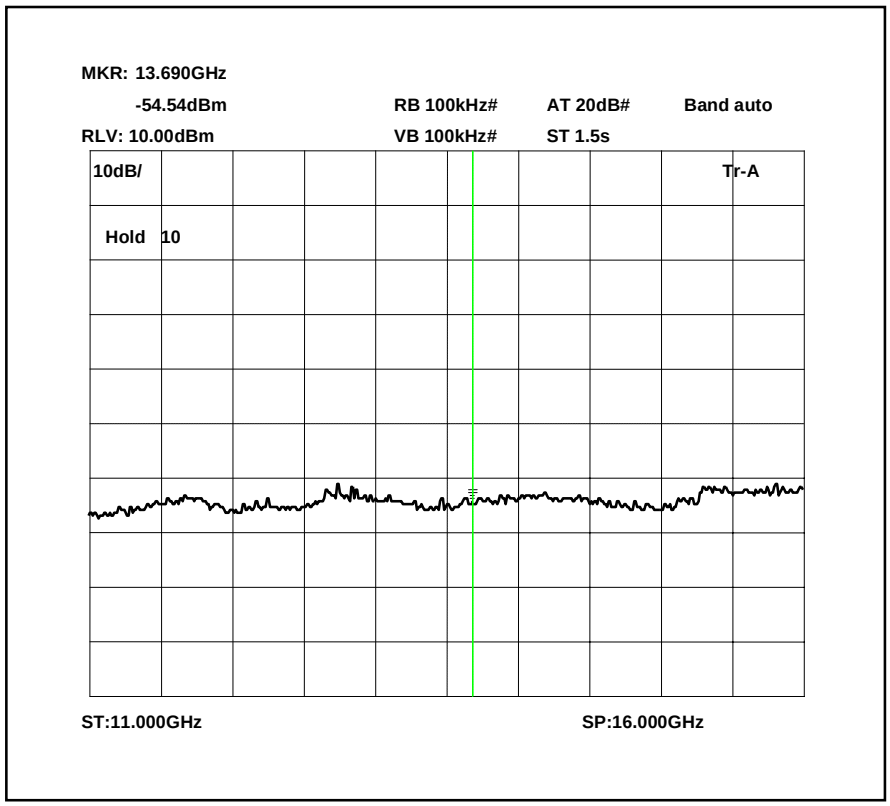
Spurious Emissions Top Channel CW 30MHz – 2.4GHz



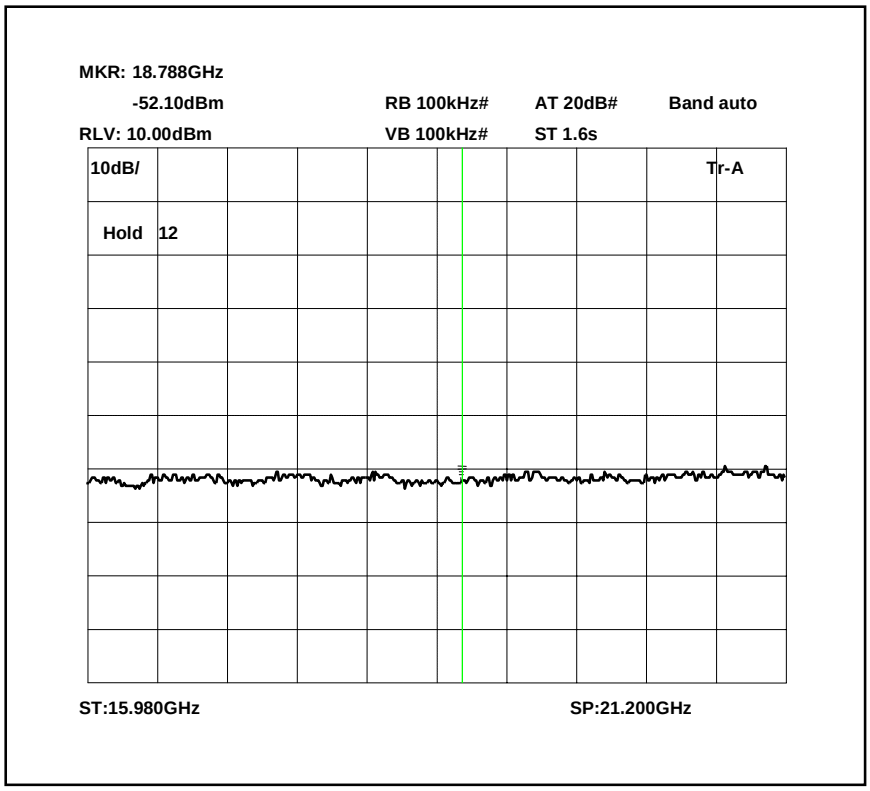
Spurious Emissions Top Channel CW 2.4835GHz – 7GHz



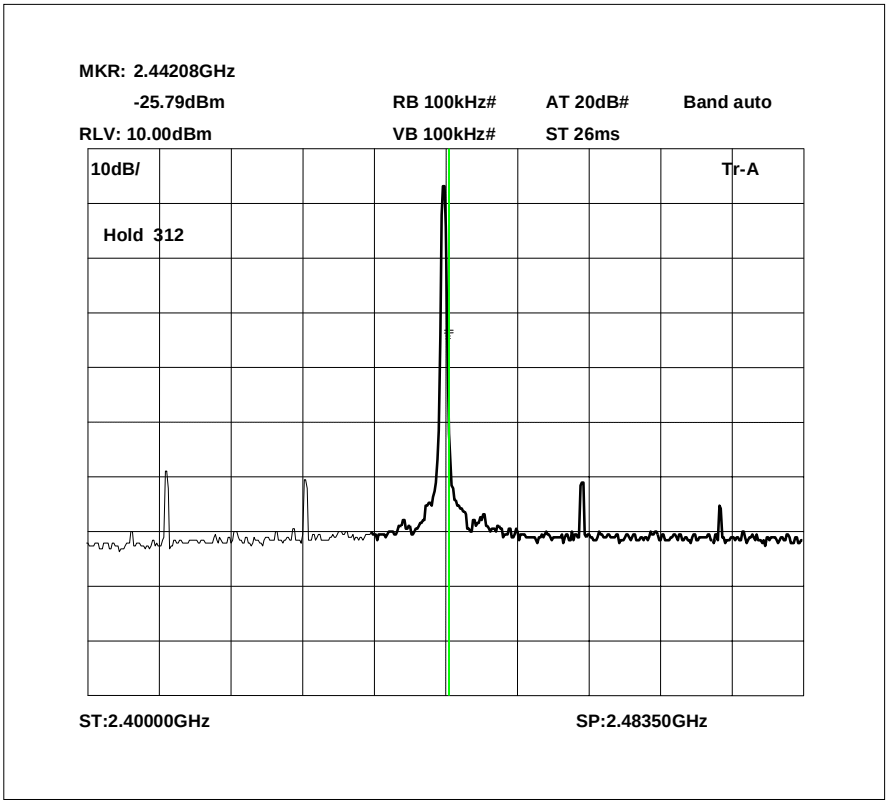
Spurious Emissions Top Channel CW 7GHz – 11GHz



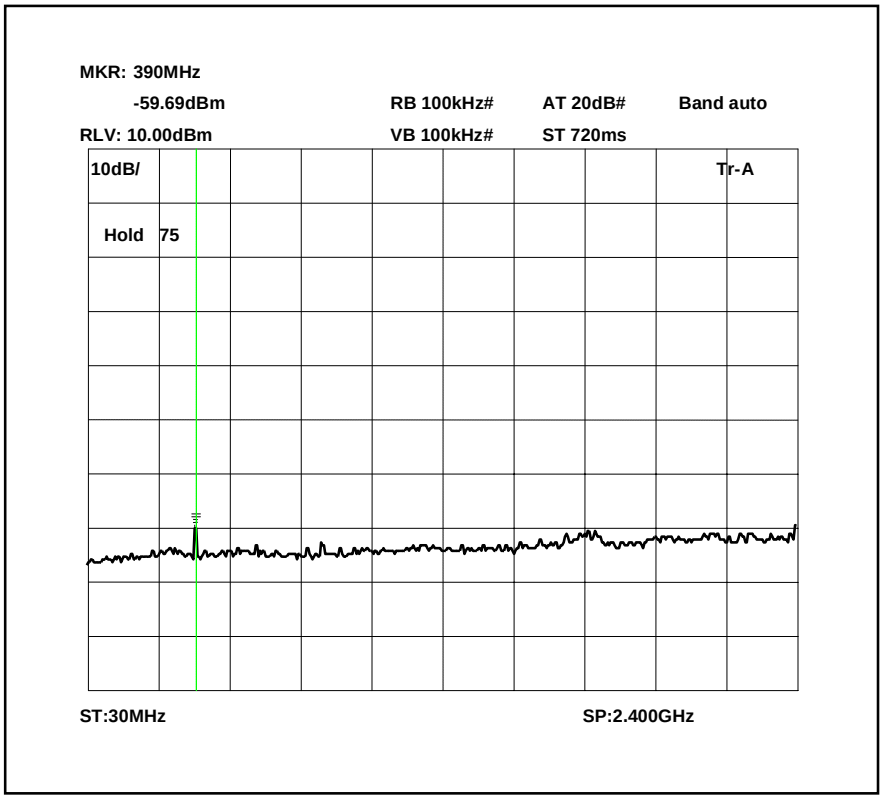
Spurious Emissions Top Channel CW 11GHz – 16GHz



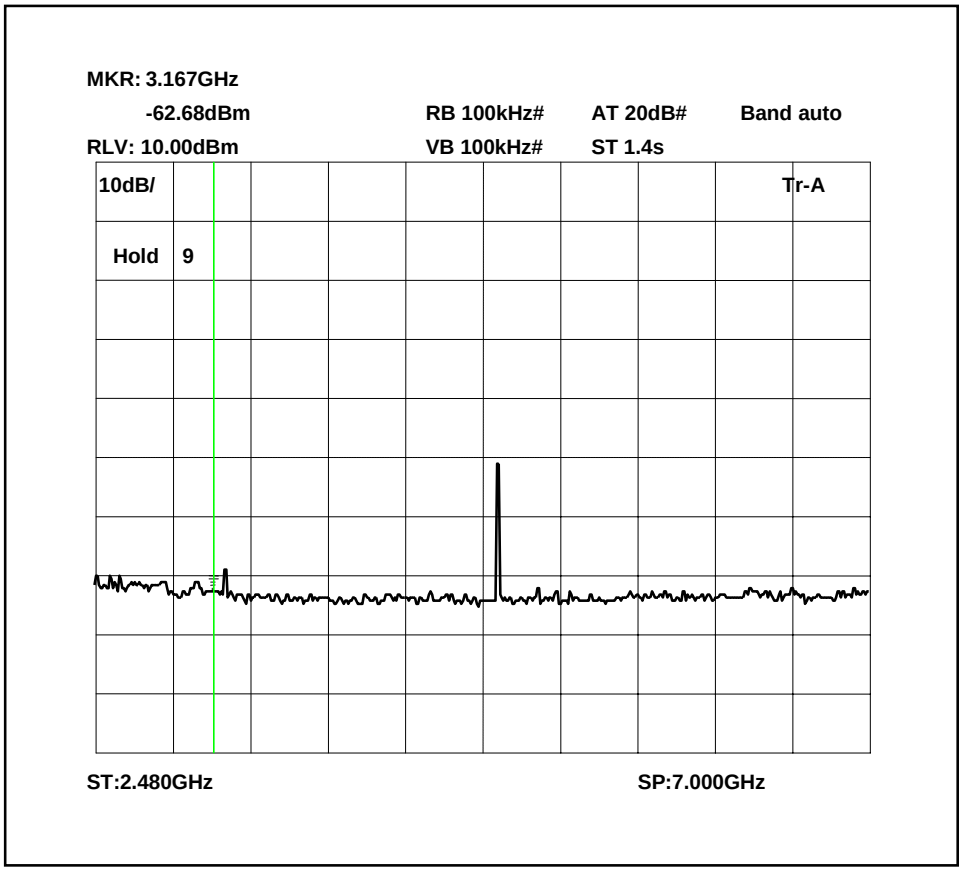
Spurious Emissions Top Channel CW 16GHz – 22GHz



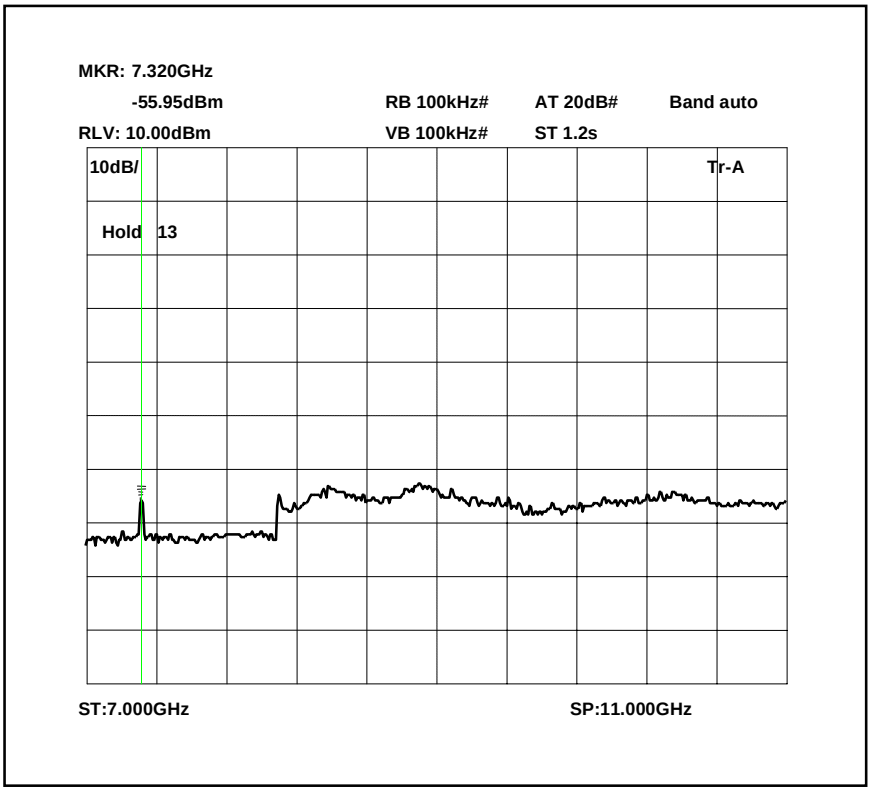
Spurious Emissions Middle Channel CW In Band



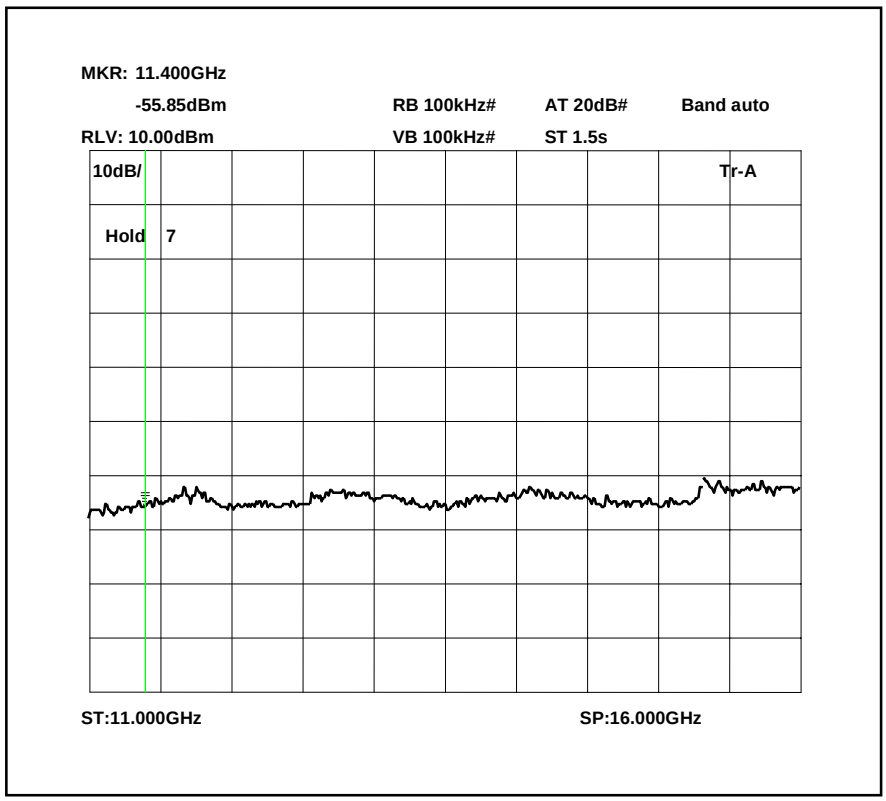
Spurious Emissions Middle Channel CW 30MHz – 2.4GHz



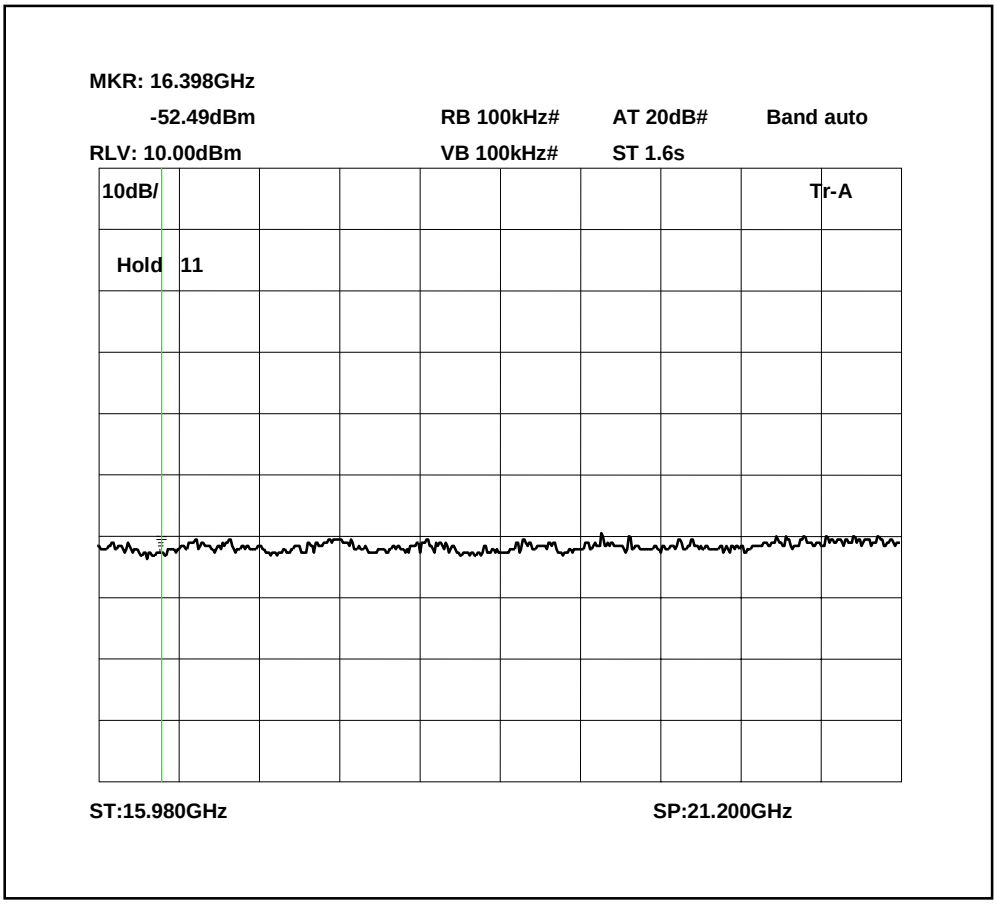
Spurious Emissions Middle Channel CW 2.4835MHz – 7 GHz



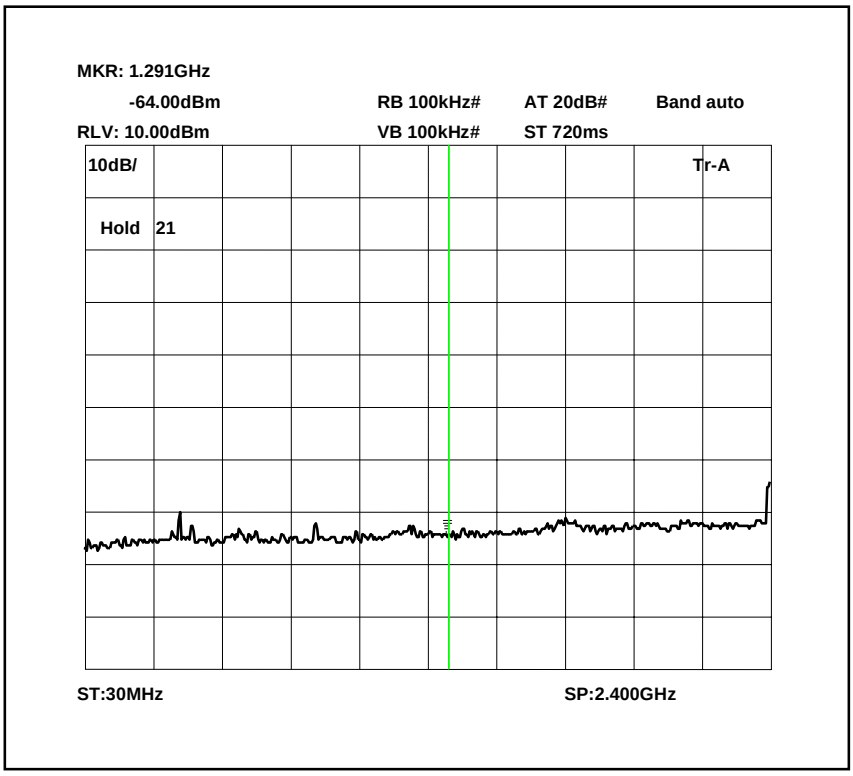
Spurious Emissions Middle Channel CW 7GHz – 11GHz



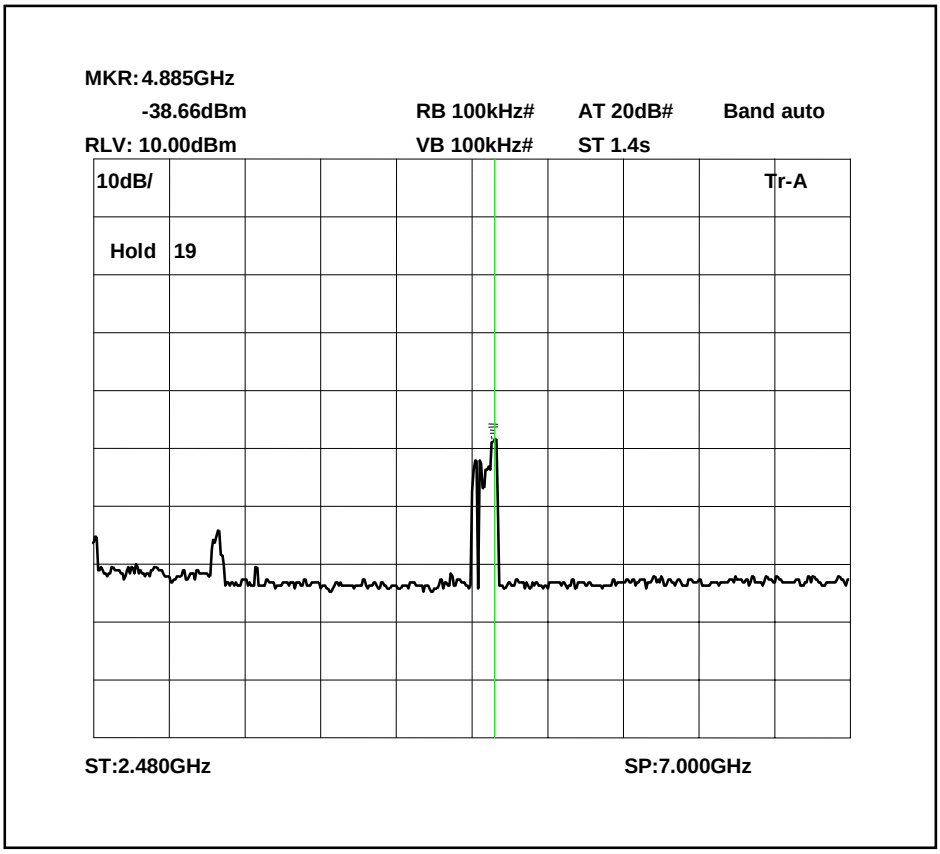
Spurious Emissions Middle Channel CW 11GHz - 16GHz



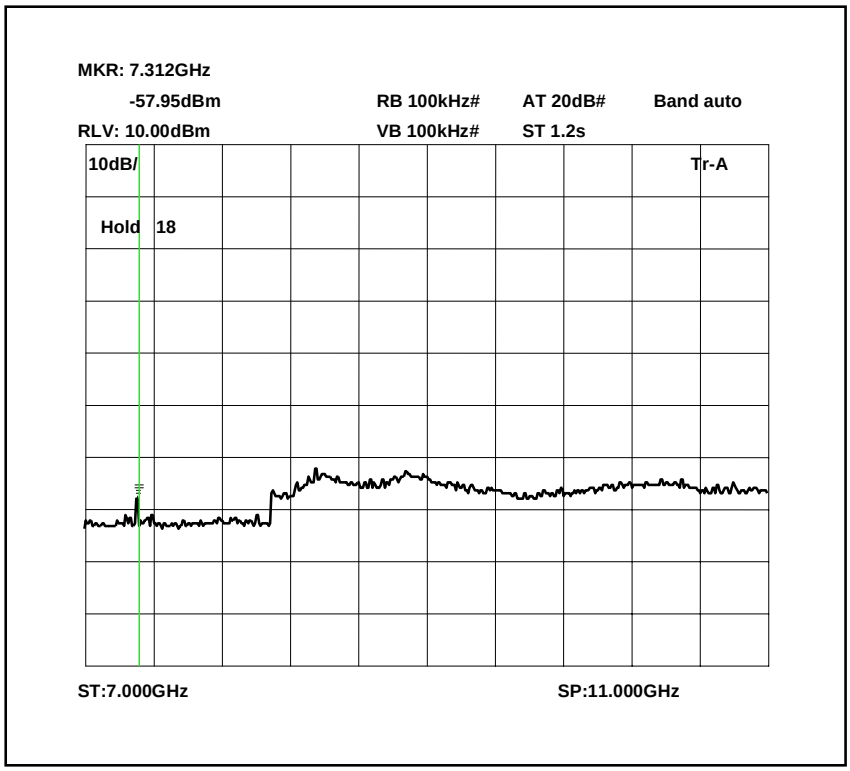
Spurious Emissions Middle Channel CW 16GHz – 21.2GHz



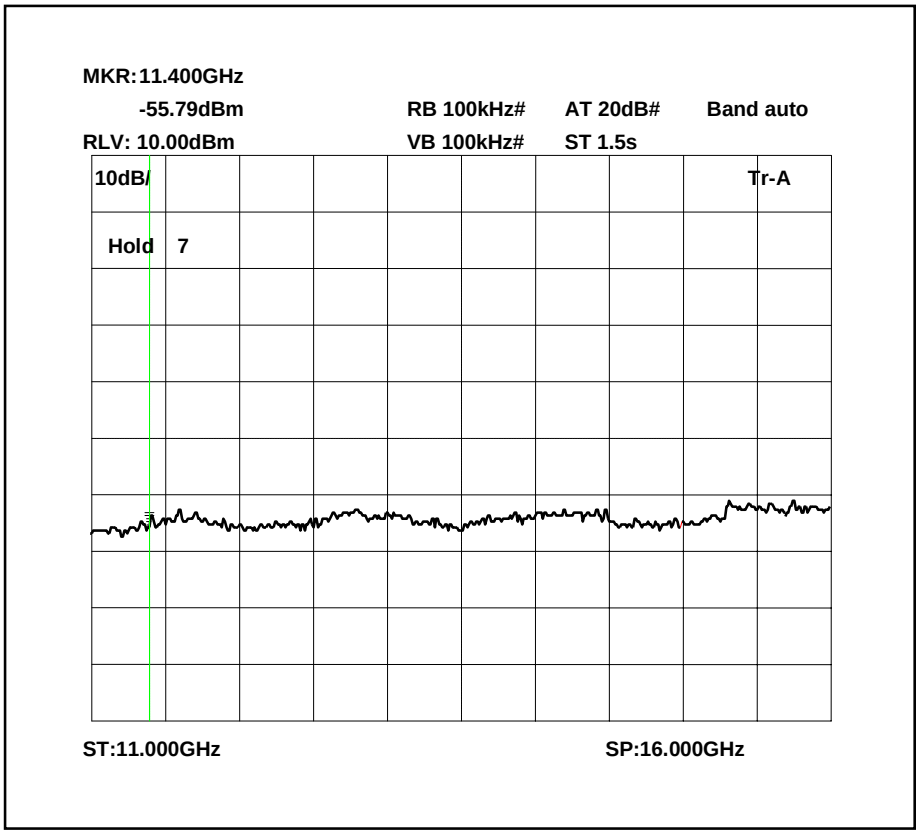
Spurious Emissions Hopping All Channels 30MHz -2.4GHz



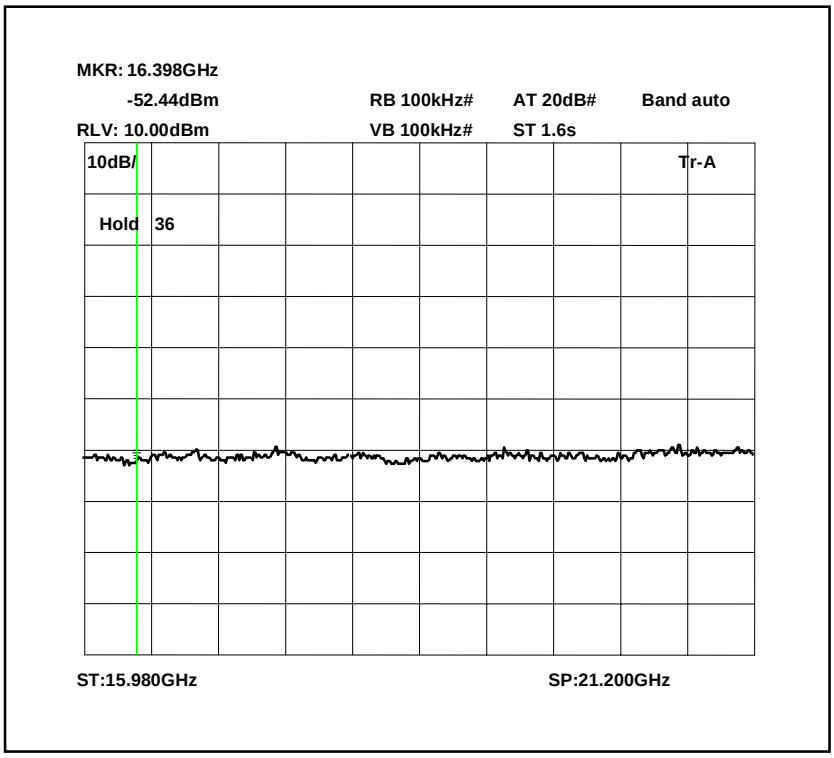
Spurious Emissions Hopping All Channels 2.4835GHz - 7GHz



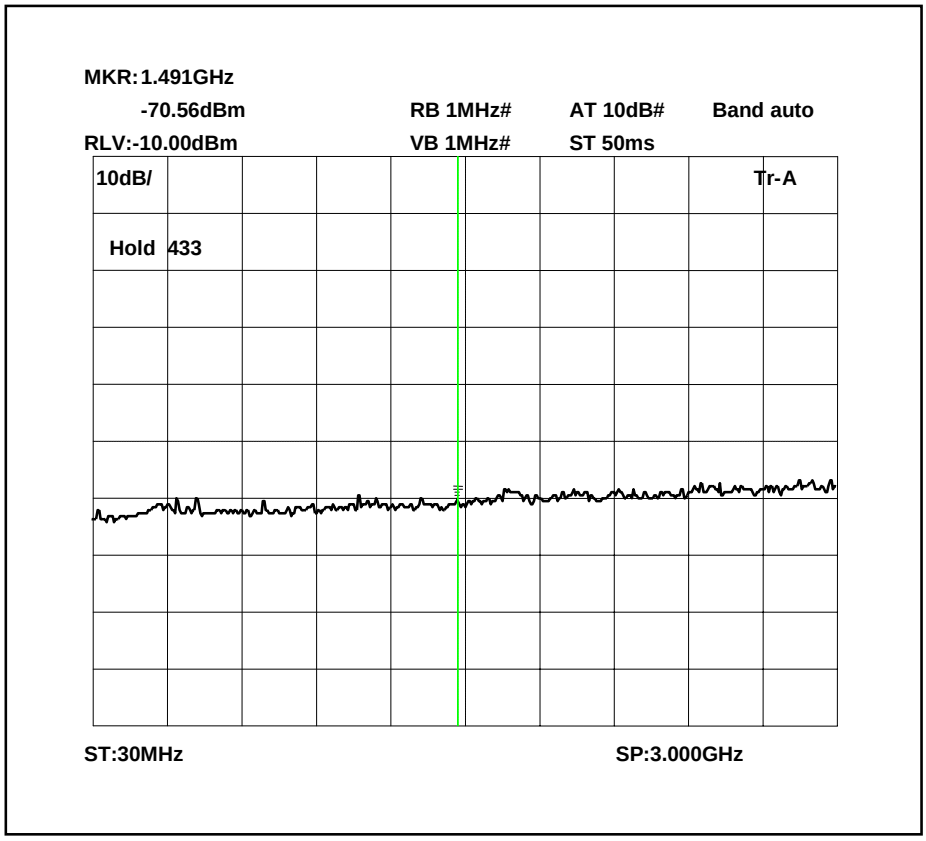
Spurious Emissions Hopping All Channels 7GHz - 11GHz



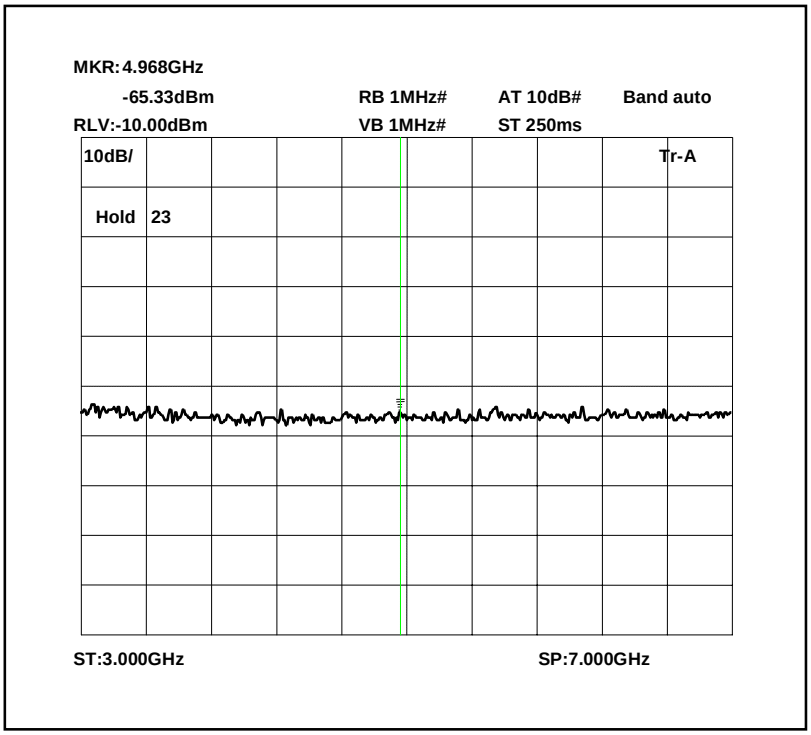
Spurious Emissions Hopping All Channels 11 GHz – 16GHz



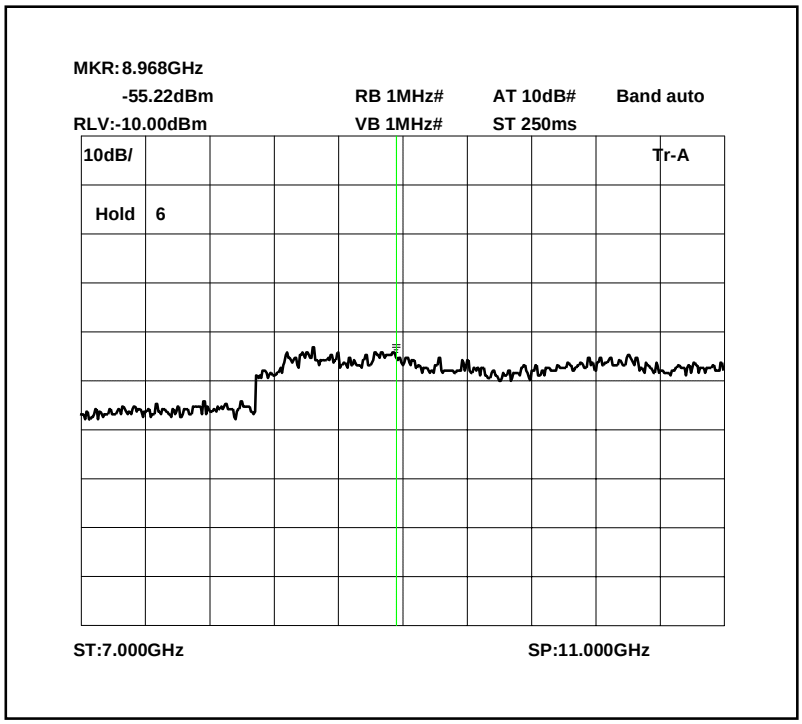
Spurious Emissions Hopping All Channels 16GHz – 21GHz



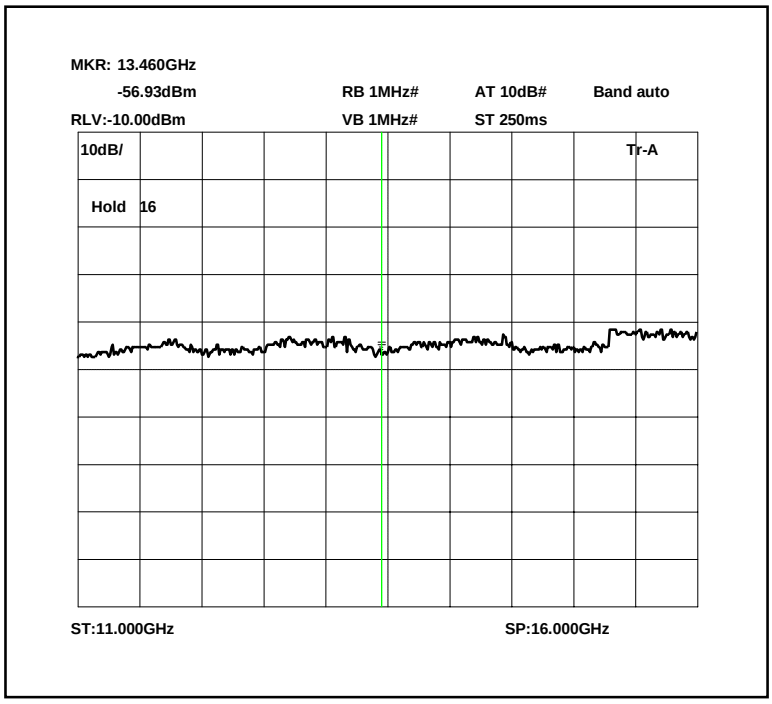
Spurious Emissions Receiver Operating 30MHz – 3GHz



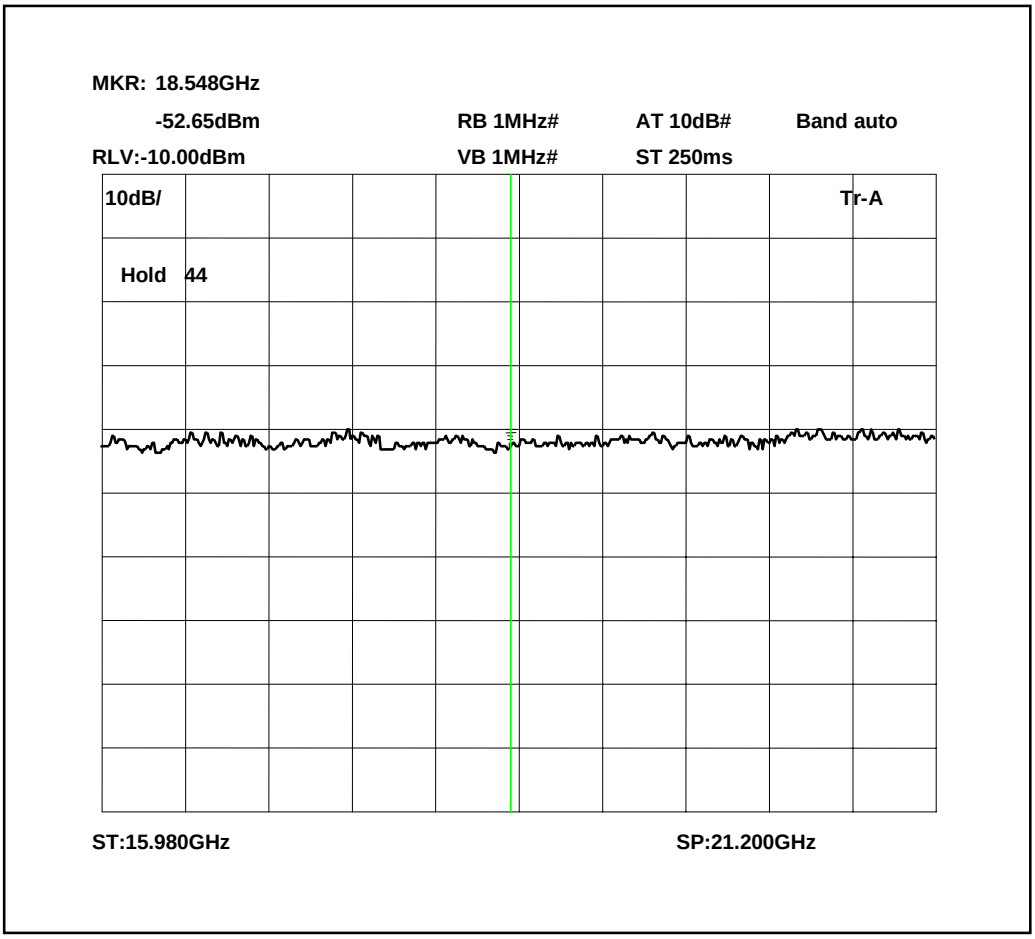
Spurious Emissions Receiver Operating 3GHz – 7GHz



Spurious Emissions Receiver Operating 7GHz – 11GHz



Spurious Emissions Receiver Operating 11GHz – 16GHz

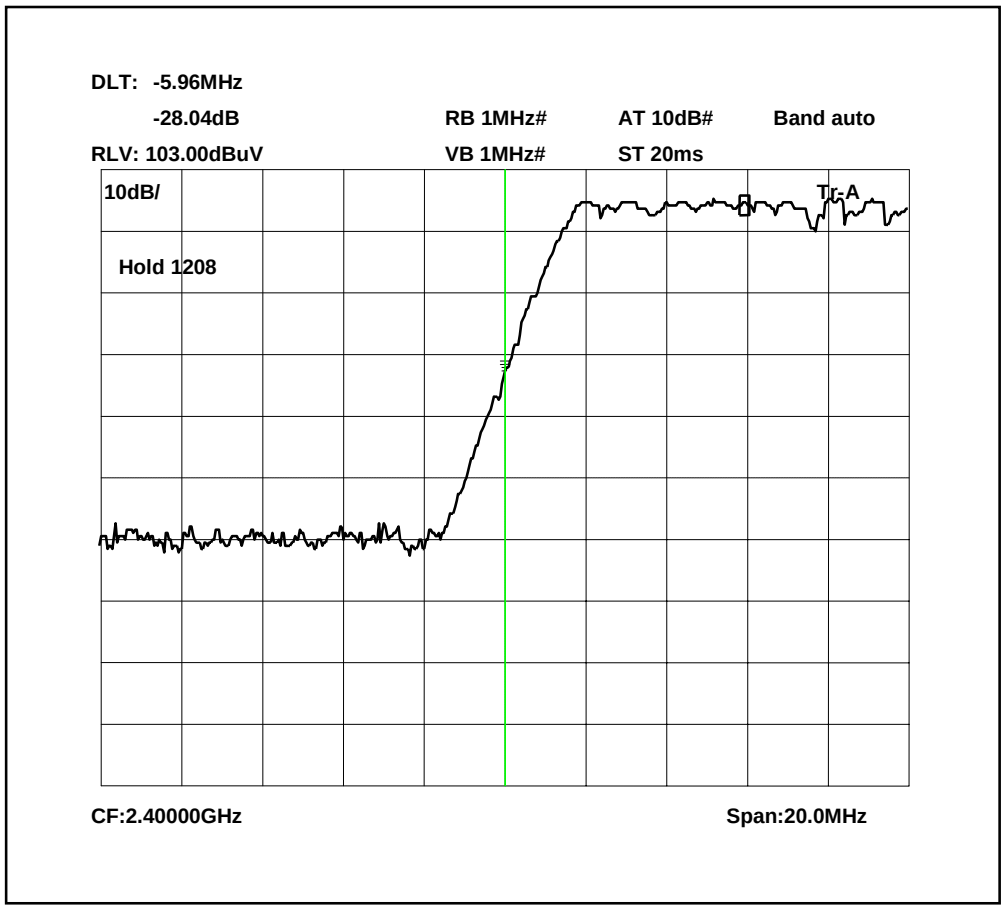


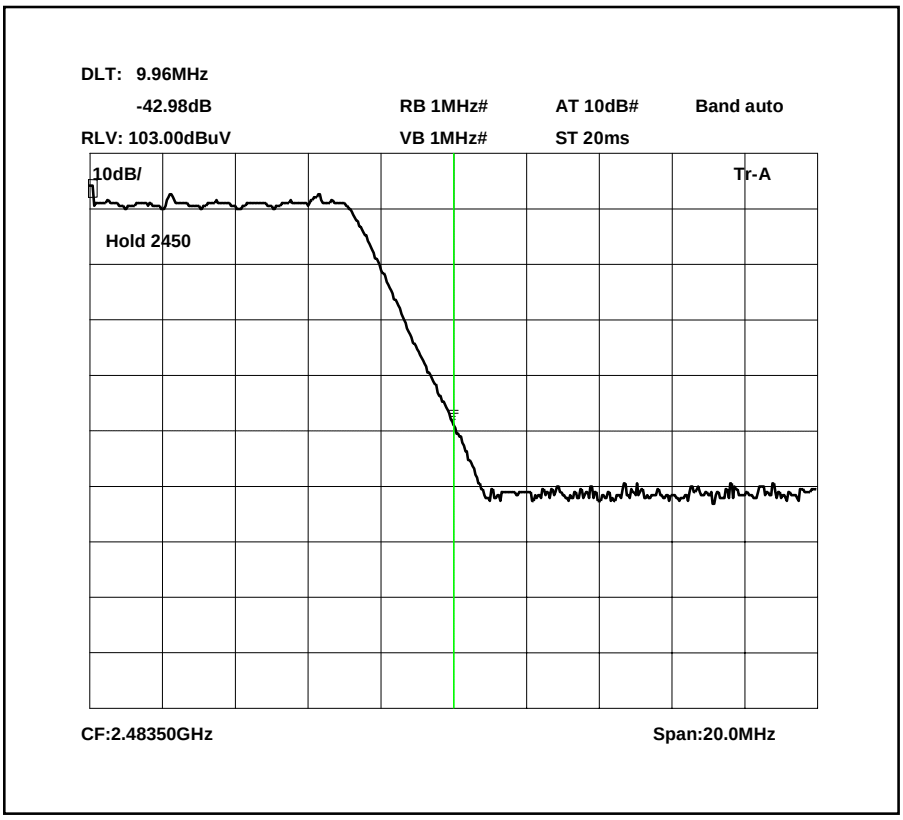
Spurious Emissions Receiver Operating 16GHz – 21.2GHz

ANNEX K

BAND EDGE CONDUCTED EMISSION

BLUETOOTH

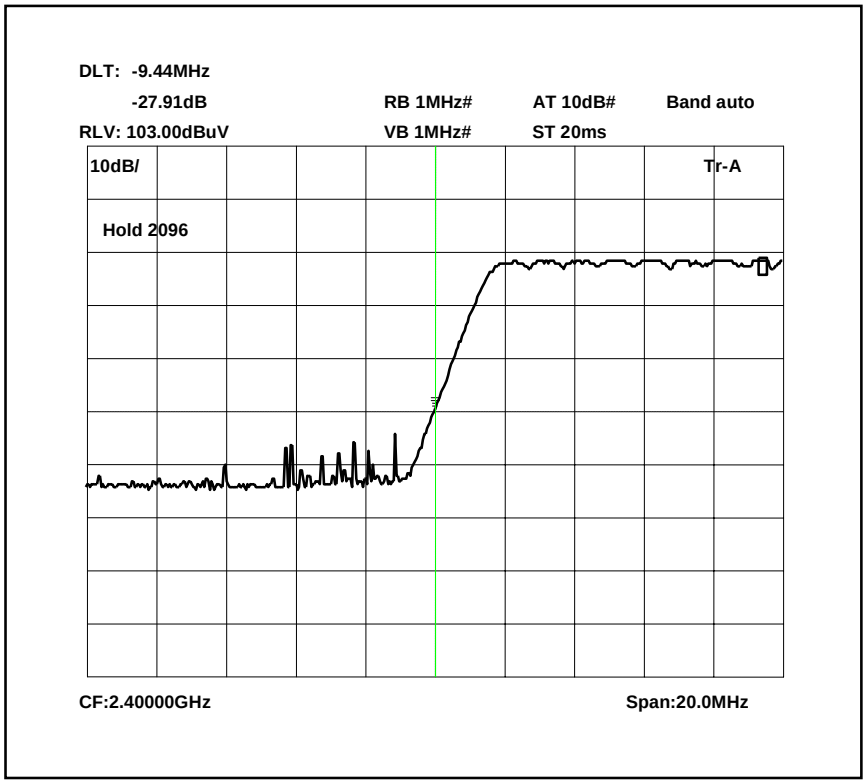

DLT: -5.96MHz
-28.04dB
RB 1MHz#
AT 10dB#
Band auto
RLV: 103.00dBuV
VB 1MHz#
ST 20ms
10dB/
Tr-A
Hold 1208
CF:2.40000GHz
Span:20.0MHz

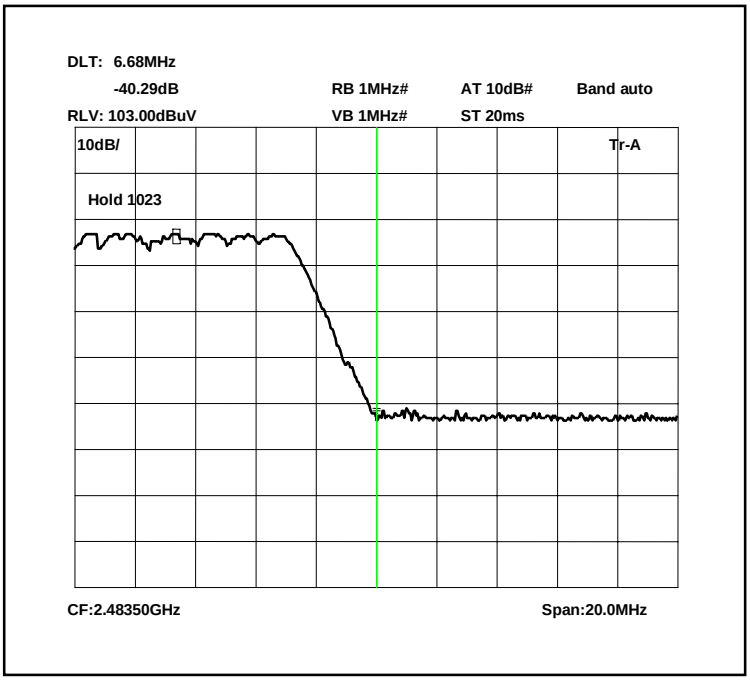

DLT: 9.96MHz
-42.98dB
RB 1MHz#
AT 10dB#
Band auto
RLV: 103.00dBuV
VB 1MHz#
ST 20ms
10dB/
Tr-A
Hold 2450
CF:2.48350GHz
Span:20.0MHz

ANNEX L

BAND EDGE EMISSIONS RADIATED

BLUETOOTH


DLT: -9.44MHz
-27.91dB
RB 1MHz#
AT 10dB#
Band auto
RLV: 103.00dBuV
VB 1MHz#
ST 20ms
10dB/
Tr-A
Hold 2096
CF:2.40000GHz
Span:20.0MHz


DLT: 6.68MHz
-40.29dB
RB 1MHz#
AT 10dB#
Band auto
RLV: 103.00dBuV
VB 1MHz#
ST 20ms
10dB/
Tr-A
Hold 1023
CF:2.48350GHz
Span:20.0MHz