Introduction of thin plate broadband antenna for proximity immunity testing

Specifications

Frequency range	700 MHz ~ 6 GHz
VSWR	≦2 (0.7 ~ 3.2GHz)
	≦3.5 (3.2 ~ 6GHz)
Gain	2.15 dBi (typ)
Maximum power input	20 W (continuous) (0.7 ~ 3.2 GHz)*1
	15 W (continuous) (3.2 ~ 6 GHz)
Input impedance	50 Ω
Connector	SMA(J)
Dimensions	188 mm (length)
	50 mm (width)
	8 mm (thickness)
Weight	73.5 g

*1 30 W (continuous 10minutes)

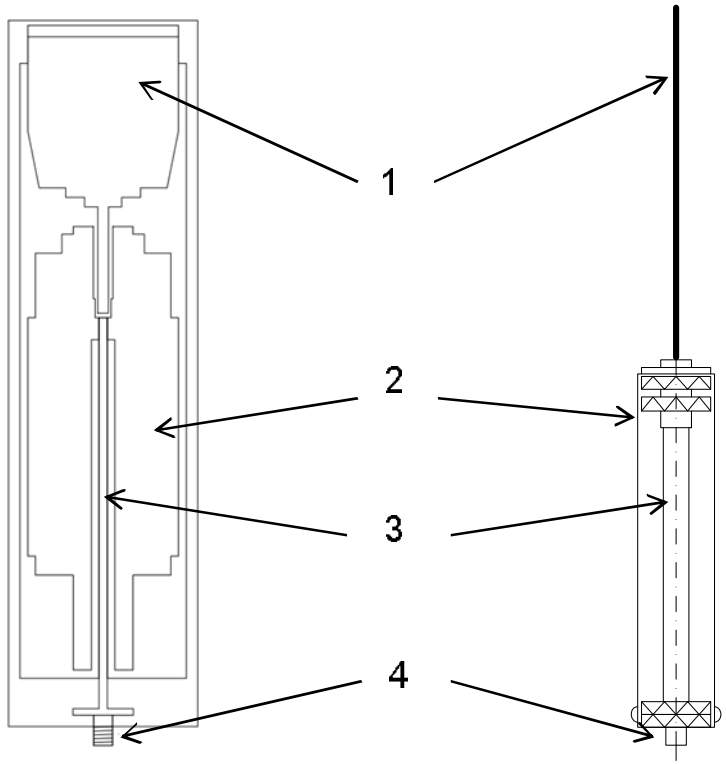
It is available with one antenna

ISO11452-9 Annex A

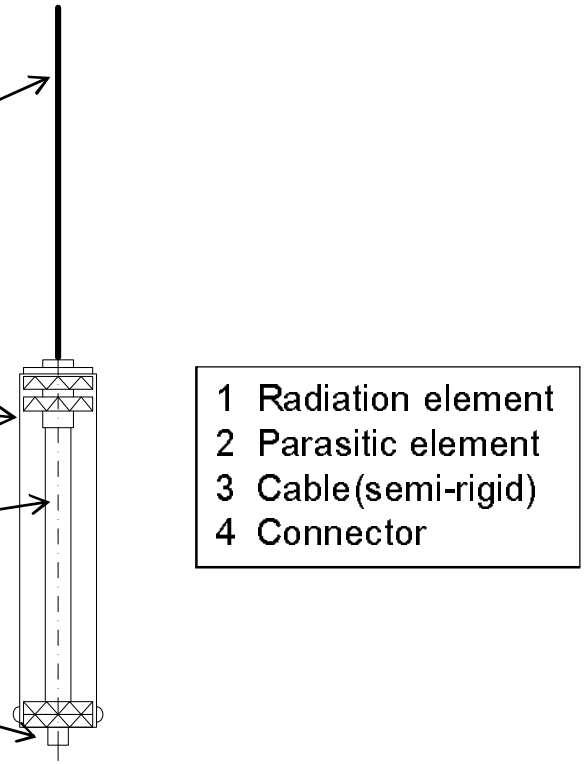
Transmitter designation	Frequency band MHz	Power W	Typical transmitter modulation	Test modulation
10m	26-30	10(RMS)	Telegraphy,AM,SSB,FM	AM 1kHz,80%
2m	146-174	10(RMS)	Telegraphy,AM,SSB,FM	CW
70cm	410-470	10(RSM)	Telegraphy,AM,SSB,FM	CW
TETRA /TETRAPOL	380-390 410-420 450-460 806-825 870-876	10(peak)	TDMA/FDMA Tetra:π/4 DQPSK	PM 18Hz 50%duty cycle
AMPS/ GSM850	824-849	10(peak)	GMSK,PSK,DS	PM 217Hz 50%duty cycle or PM 217Hz Ton=577us t=4600us
GSM900	876-915	16(peak) Or 2(peak)	GMSK	PM217Hz 50%duty cycle or PM 217Hz Ton=577us t=4600us
PDC	893-898 925-958 1429-1453	0.8(peak)	TDMA	PM 50Hz 50%duty cycle
PCS GSM 1800/1900	1710-1785 1850-1910	2(peak) Or 1(peak)	GMSK	PM217Hz 50%duty cycle or PM 217Hz Ton=577us t=4600us
IMT-2000	1885-2025	CW-1(RMS) PM-1(peak)	QPSK	CW and PM 1600Hz, 50% duty cycle
Bluetooth/ WLAN	2400-2500	0.5(peak)	QPSK	PM 1600Hz 50%duty cycle
IEEE 802.11a	5725-5850	1(peak)	QPSK	PM 1600Hz 50%duty cycle

Structure of the antenna

- It functions as a broadband sleeve antenna
- Compact and light-weight print circuit board antenna



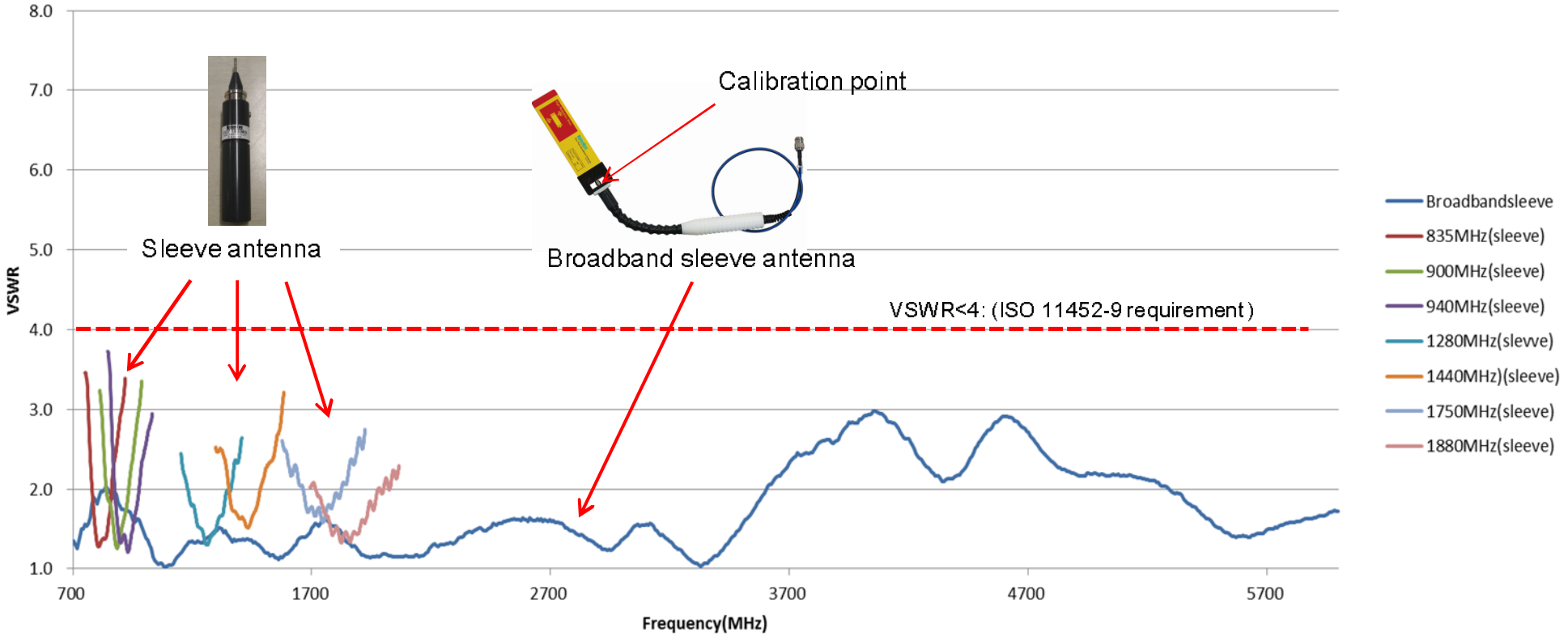
Structure of broadband sleeve antenna
(without case)



sleeve antenna

1 Radiation element
2 Parasitic element
3 Cable(semi-rigid)
4 Connector

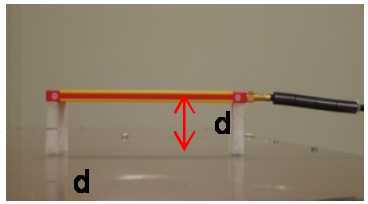
VSWR 1 (measured data)

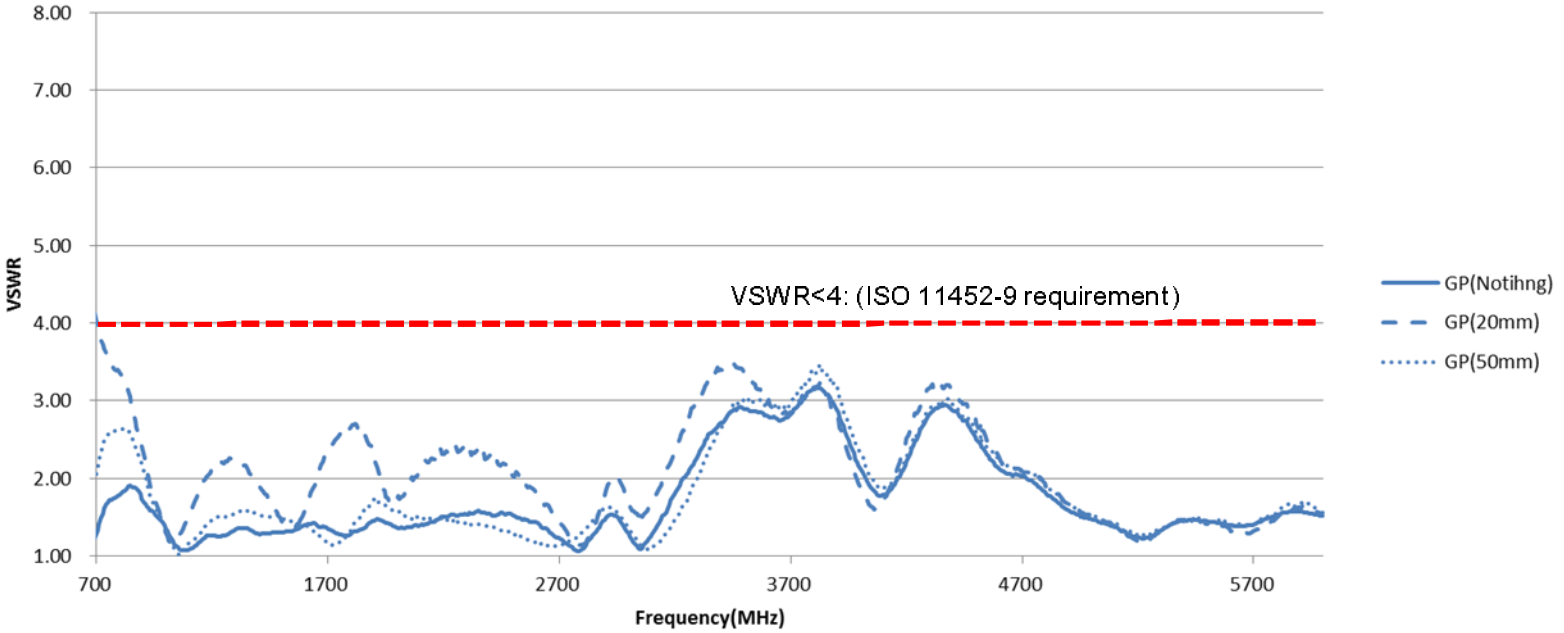


A very wide frequency range eliminating the need for antenna changes

VSWR 2 (measured data)

Evaluation as to how a ground plane affects the antenna VSWR





VSWR is highly stable even in proximity to the ground plane, making consistent tests.

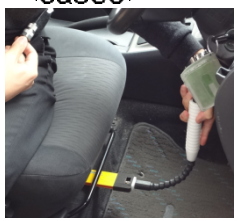
VSWR 3 (measured data)

Evaluation of VSWR in Vehicle

<case1>

<case2>

<case3>



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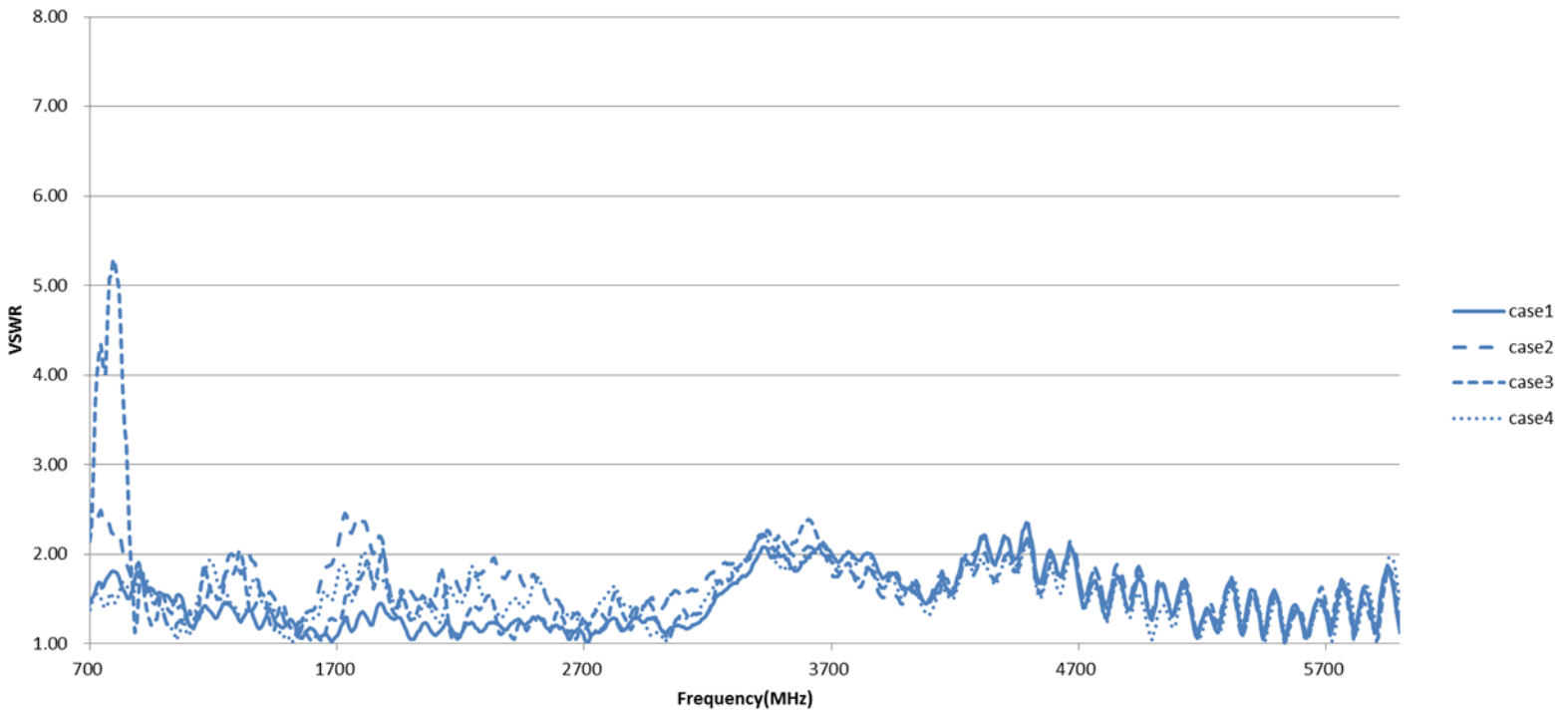


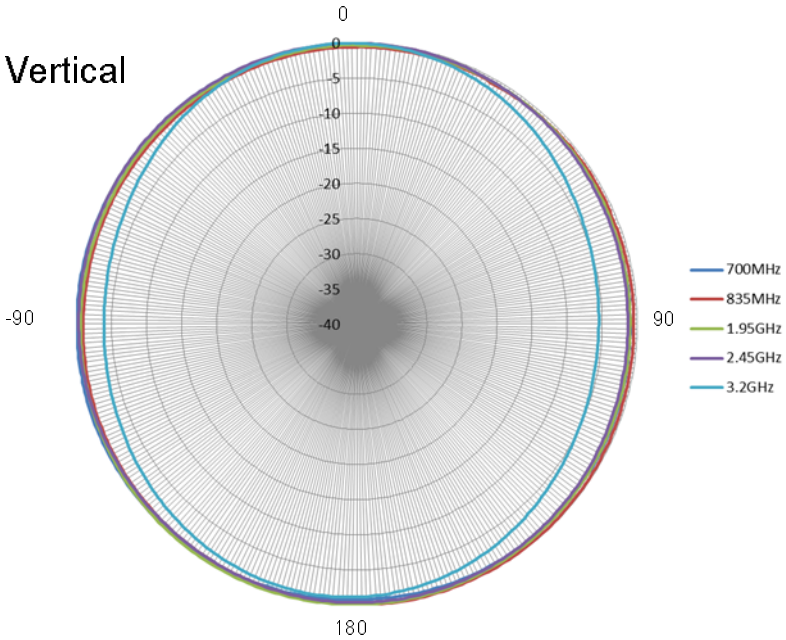
Testing in a real vehicle exhibits almost the same VSWR measured with the ground plane

Radiation directional pattern (measured data)

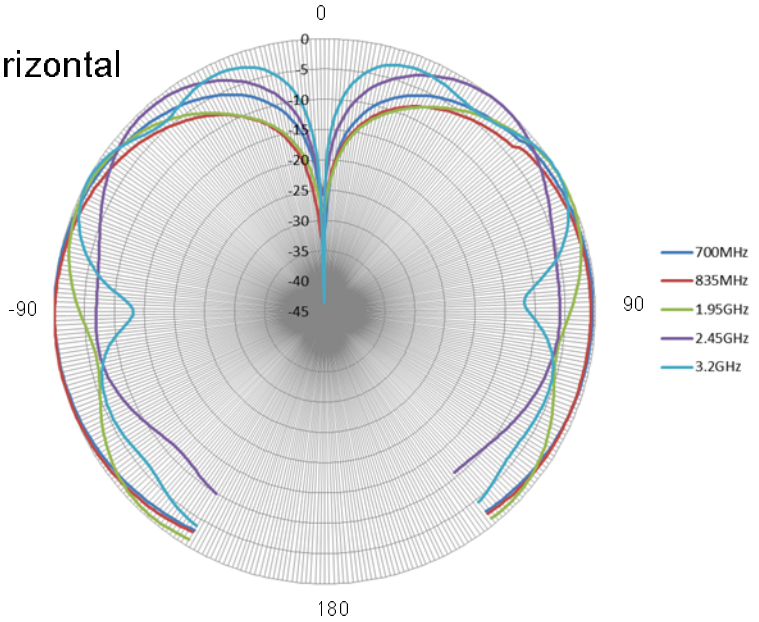
Similar radiation patterns to sleeve antennas

<700 MHz ~ 3.2 GHz>

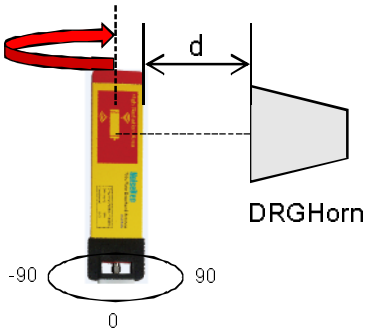
Vertical

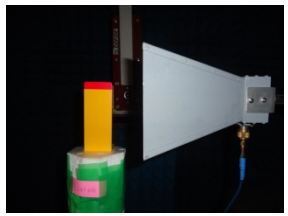


Horizontal



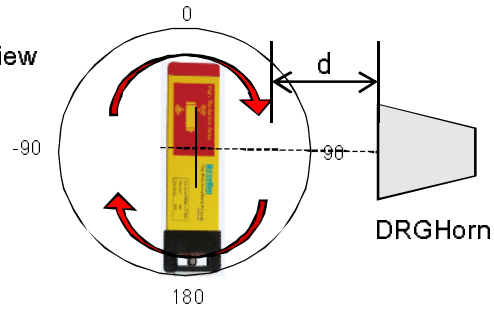
Side view





d=50 mm

Top view

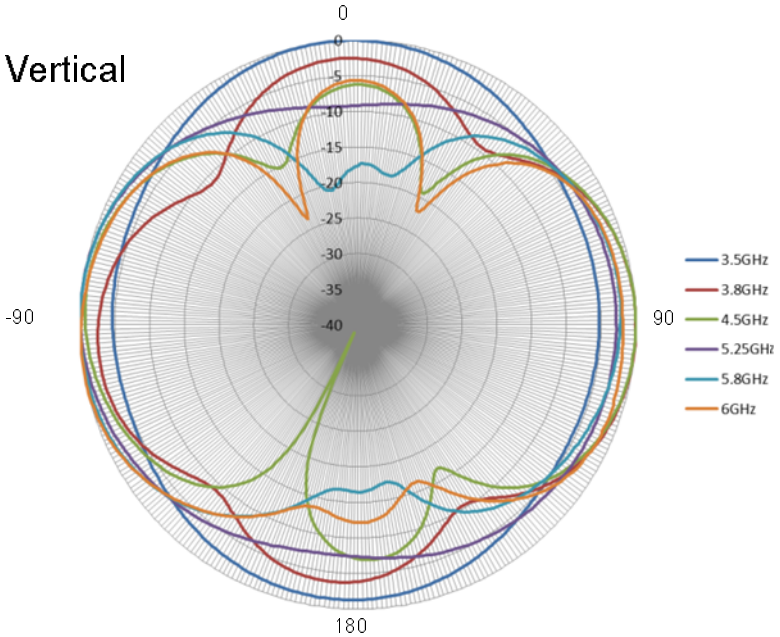


d=50 mm

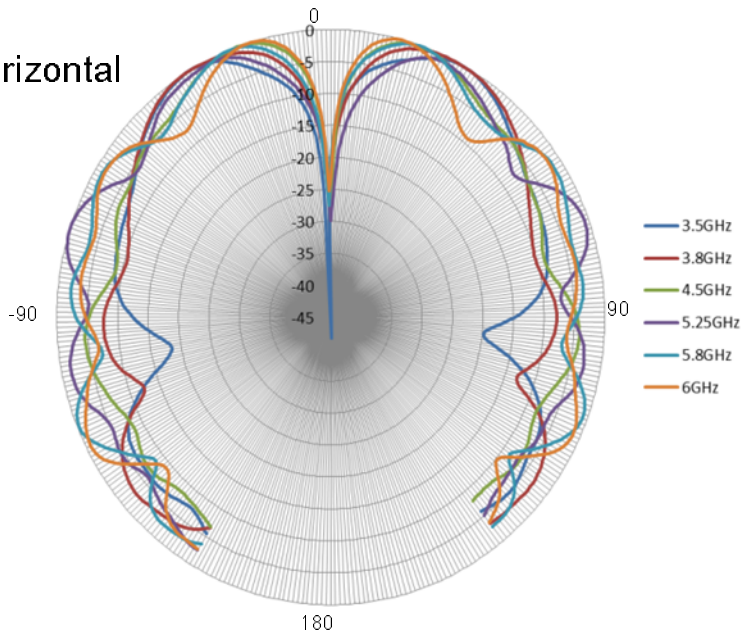
Radiation directional pattern (measured data)

<3.2 GHz ~ 6 GHz>

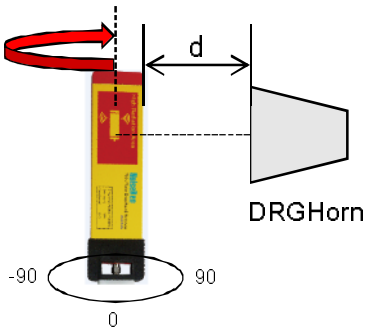
Vertical

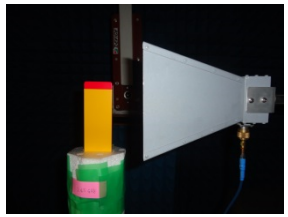


Horizontal



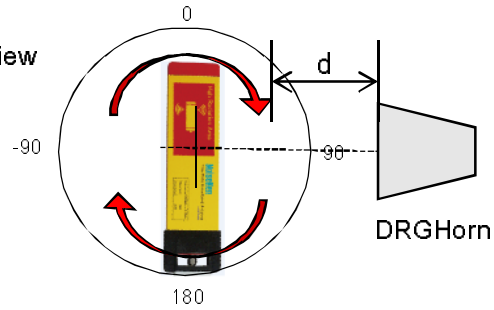
Side view





d=50 mm

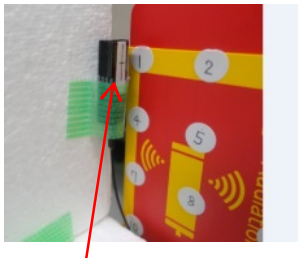
Top view



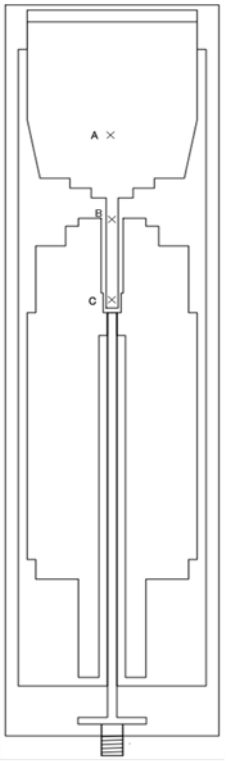
d=50 mm

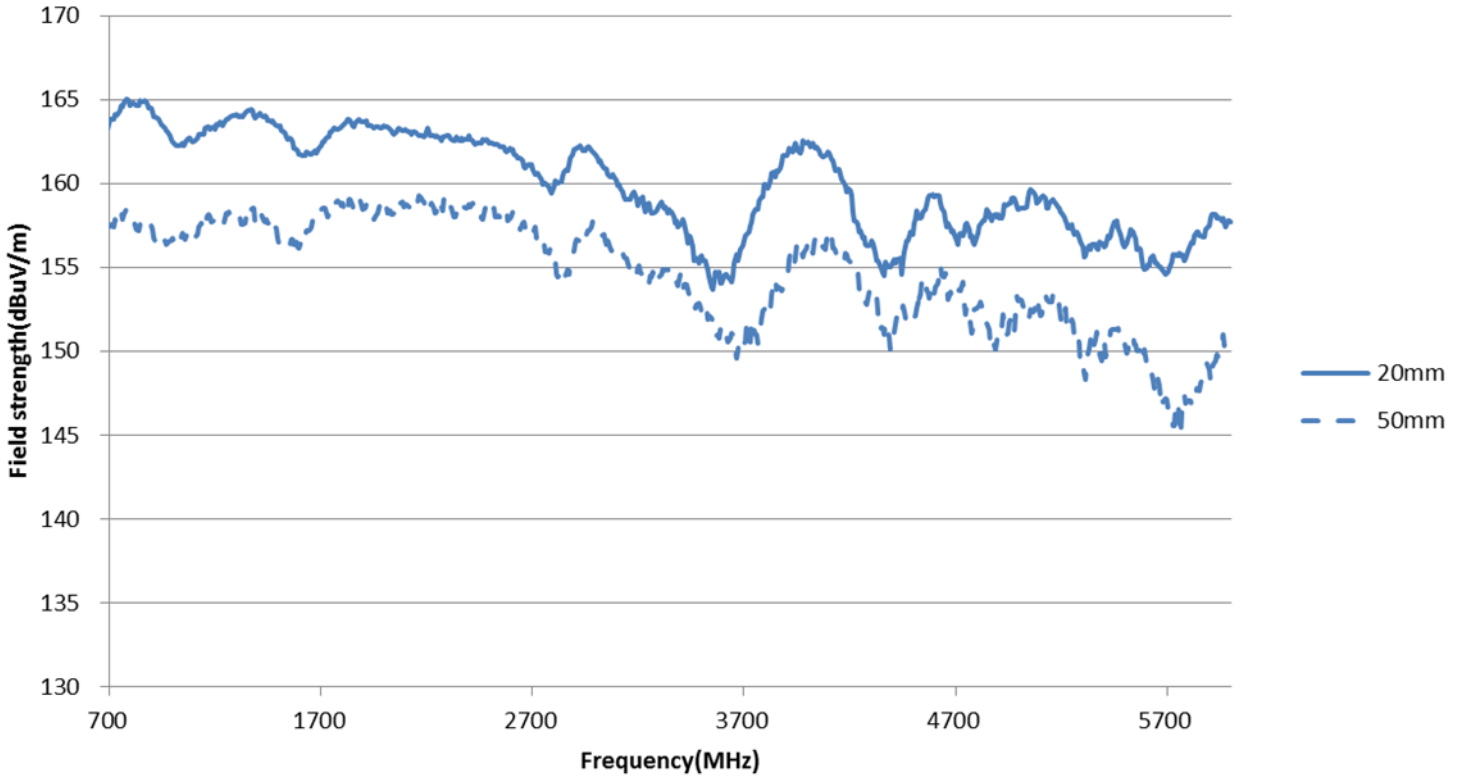
Characteristic of field strength

Antenna input : 1 W (Net Power)
The maximum field strength measured at a distance of 20 mm/50 mm away from points A, B, and C



Rx dipole antenna
(10mm element)

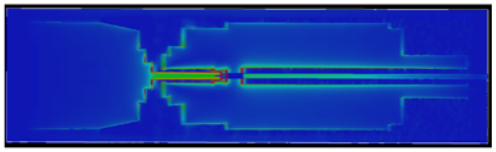




Current distribution of element

<Simulation>

<700MHz>



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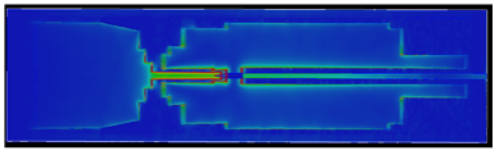

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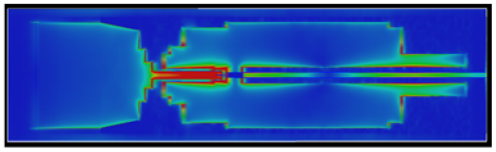
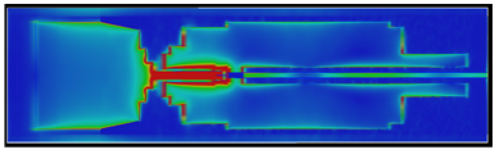


<2450MHz>



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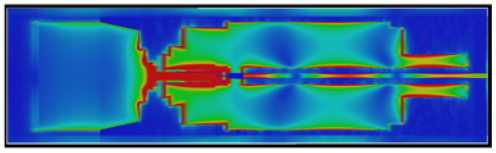
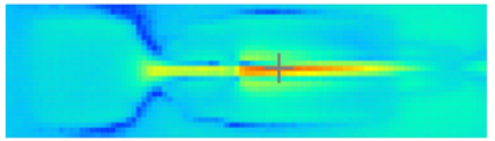


<measured data>

700MHz>



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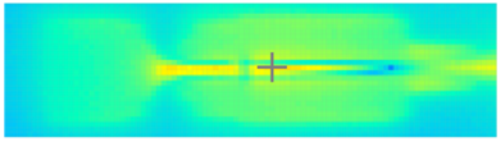

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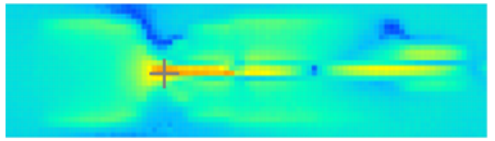

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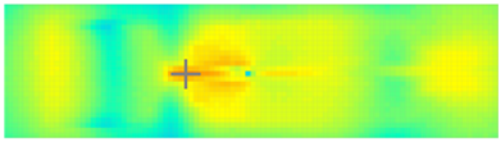

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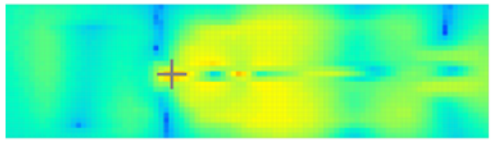

Concentration of currents over the radiation element allows for easy positioning of the antenna.